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Research Institute “Astronomical observatory”
Department of space research

ATLAS
of light curves of space objects

Part 6
(2019-2020)

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Compiled by E.A.Korobeynikova

2021

1963-014A	574	1993-061A	22823	2006-021A	29228	2013-067A	39451
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1968-040B	3230	1994-077B	23405	2007-012D	31120	2013-078A	39490
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MIDAS 6 (FTV 1169)

NORAD ID: 574

Int'l Code: 1963-014A

Dimensions: cylinder 9m long, 1.5m dia

Initial orbit:

Perigee: 3604 km

Apogee: 3680 km

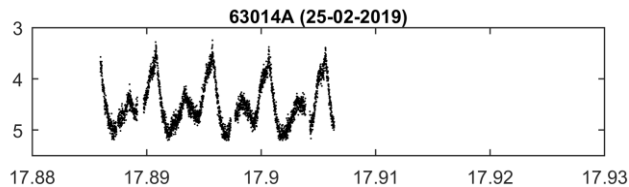
Inclination: 87.42°

Period: 166.48 min

Eccentricity: 0.004

Launch date: 1963-05-09

Source: United States (US)



MIDAS 7

NORAD ID: 622

Int'l Code: 1963-030A

Dimensions: cylinder 9m long, 1.5m dia

Initial orbit:

Perigee: 3670 km

Apogee: 3727 km

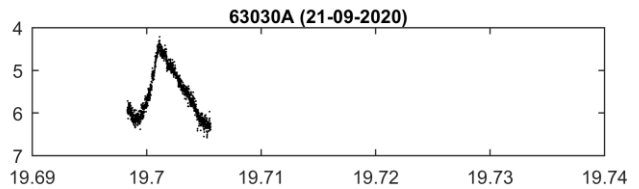
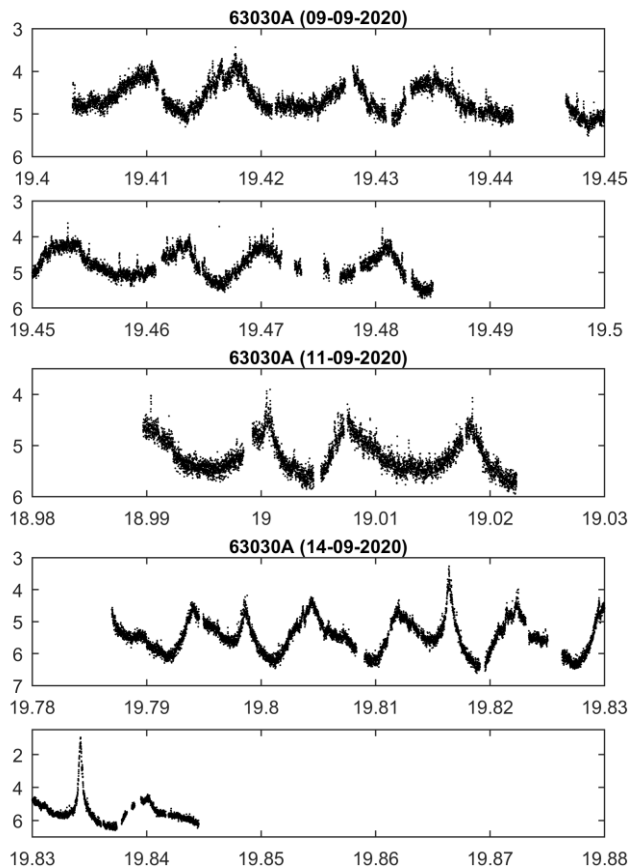
Inclination: 88.41°

Period: 167.80 min

Eccentricity: 0.003

Launch date: 1963-07-19

Source: United States (US)



SL-8 R/B

NORAD ID: 01589

Int'l Code: 1965-073F

Dimensions: cylinder 7.4m long, 2.4m dia

Initial orbit:

Perigee: 1379 km

Apogee: 1695 km

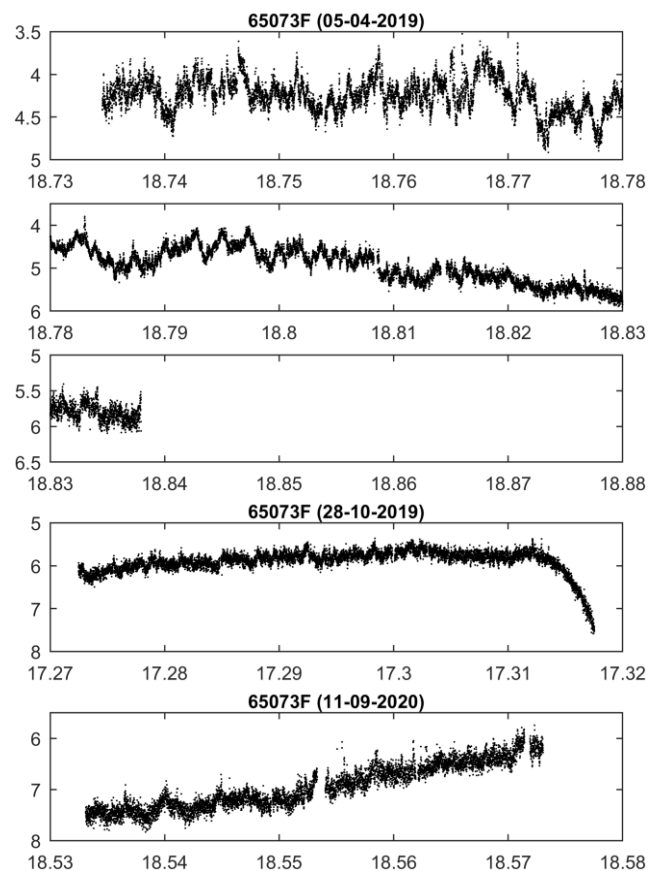
Inclination: 56.03°

Period: 116.75 min

Eccentricity: 0.02

Launch date: 1965-09-18

Source: Commonwealth of Independent States (former USSR) (CIS)



SL-8 R/B

(Kosmos 11K65M 2nd stage)

NORAD ID: 02802

Int'l Code: 1967-045B

Dimensions: cylinder 7.4m long, 2.4m dia

Initial orbit:

Perigee: 732 km

Apogee: 847 km

Inclination: 74.01°

Period: 100.59 min

Eccentricity: 0.008

Launch date: 1967-05-15

Source: Commonwealth of Independent States (former USSR) (CIS)

**SL-8 R/B (S3M) (11K65M) (2nd stage)
(COSMOS 220 ROCKET)**

NORAD ID: 03230

Int'l Code: 1968-040B

Dimensions: cylinder 7.4m long, 2.4m dia

Initial orbit:

Perigee: 678 km

Apogee: 759 km

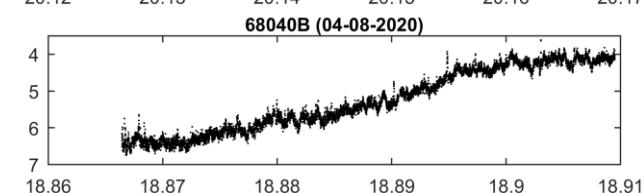
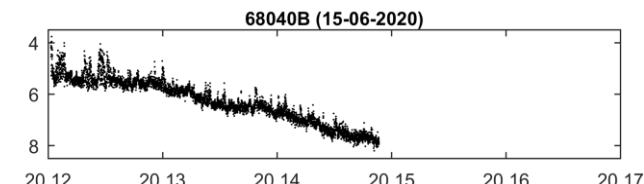
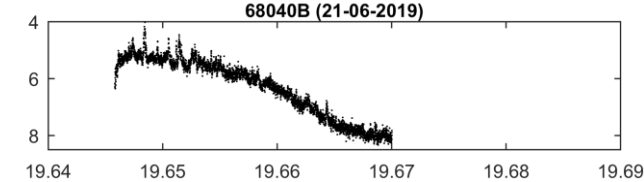
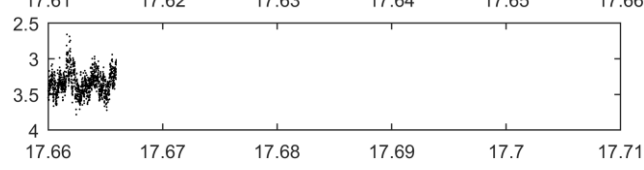
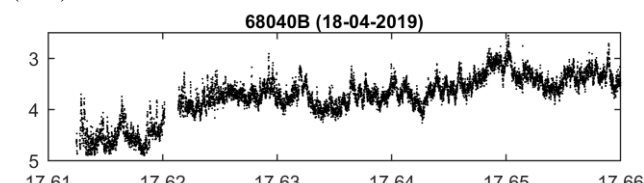
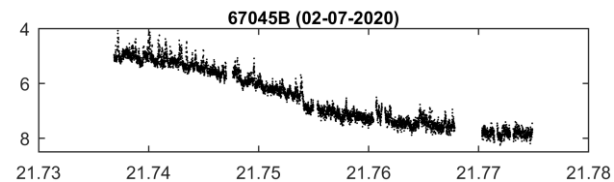
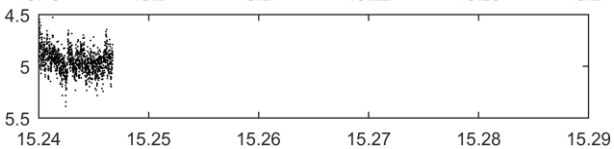
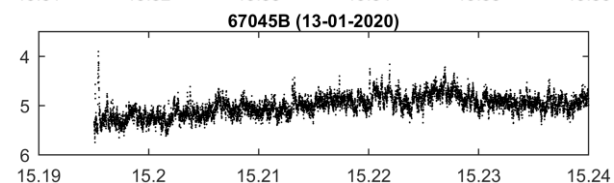
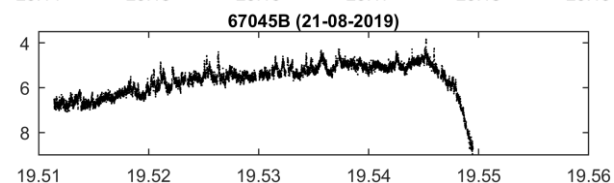
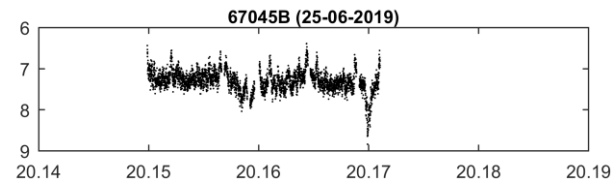
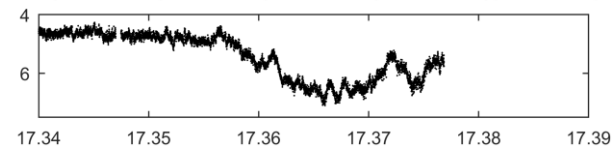
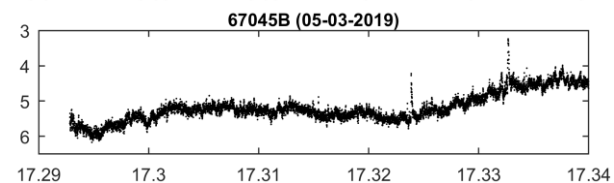
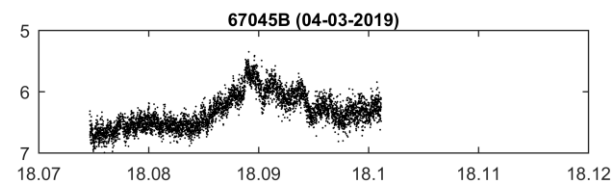
Inclination: 74.05°

Period: 99.17 min

Eccentricity: 0.006

Launch date: 1968-05-07

Source: Commonwealth of Independent States (former USSR)
(CIS)



THOR BURNER 2 R/B

NORAD ID: 04048

Int'l Code: 1969-062B

Dimensions: 12-faced frustum

1.64 m long, 1.31 m to 1.10 m dia

Initial orbit:

Perigee: 788 km

Apogee: 856 km

Inclination: 98.80°

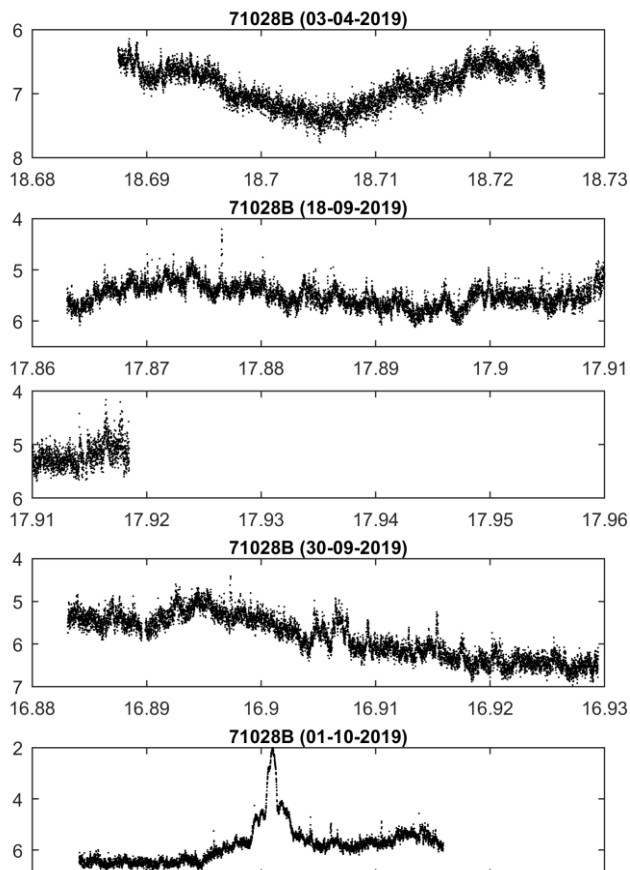
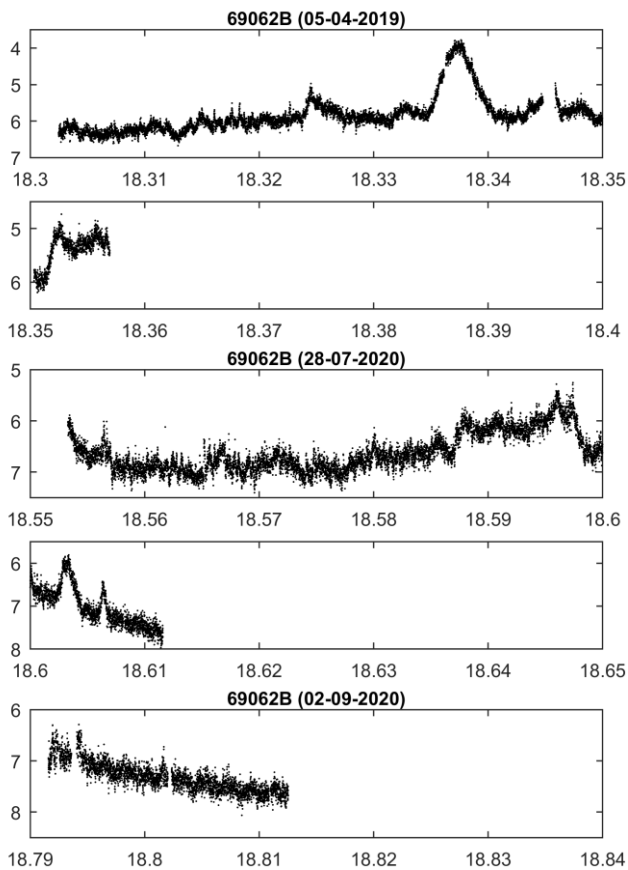
Period: 101.36 min

Eccentricity: 0.005

Launch date: 1969-07-23

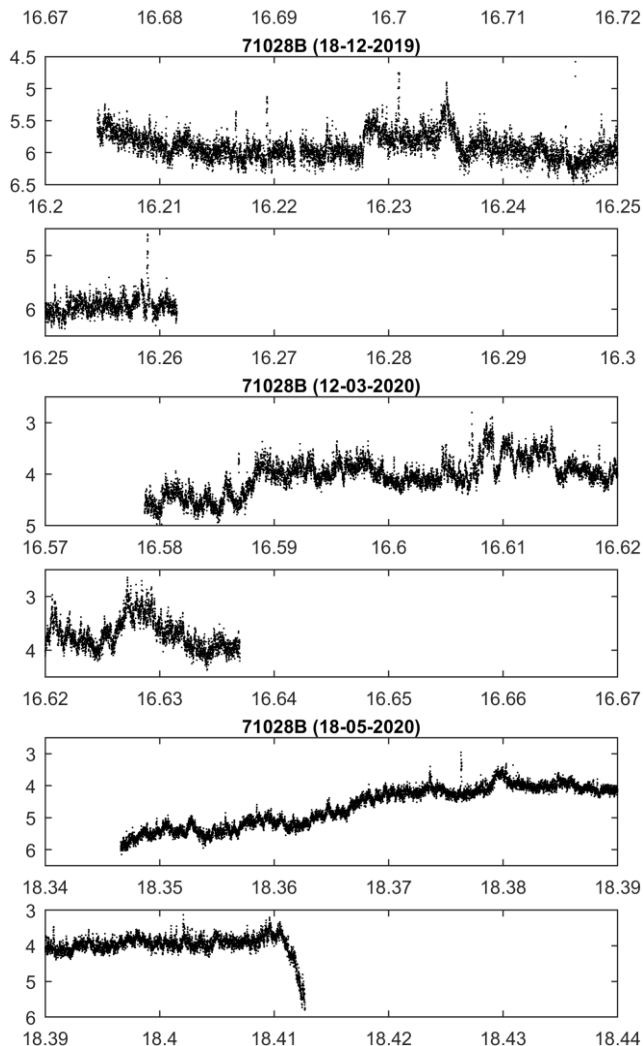
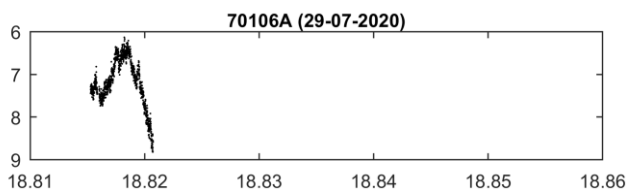
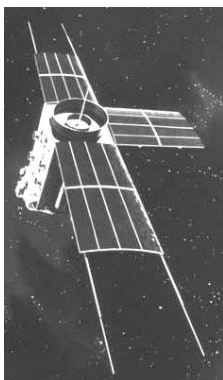
Source: United States (US)





NOAA 1 (ITOS, TIROS-M)

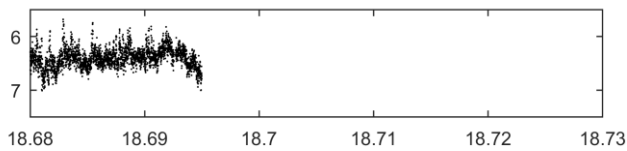
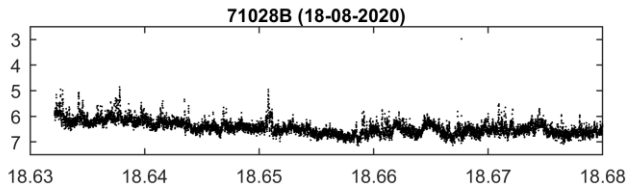
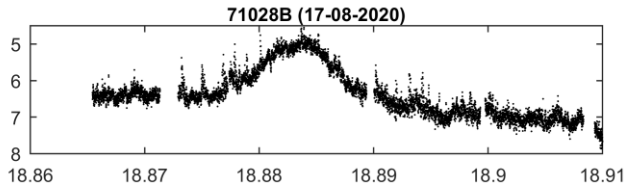
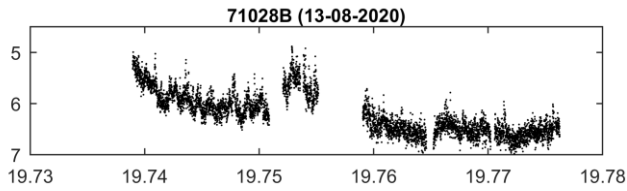
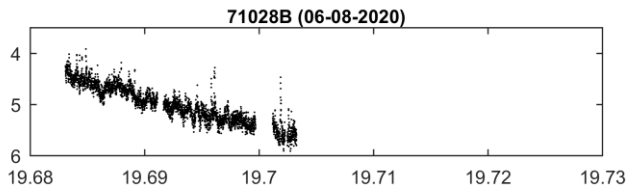
NORAD ID: 04793
 Int'l Code: 1970-106A
 Dimensions: box
 1.02m square x 1.25m long
 Initial orbit:
 Perigee: 1429 km
 Apogee: 1473 km
 Inclination: 101.94°
 Period: 114.93 min
 Eccentricity: 0.003
 Launch date: 1970-12-11
 Source: United States (US)



SL-3 R/B (VOSTOK-2M (8A92M))

(Block E 3rd stag)
 NORAD ID: 5118
 Int'l Code: 1971-028B
 Dimensions: cylinder 3.8m long,
 2.6m dia
 Initial orbit:
 Perigee: 616 km
 Apogee: 749 km
 Inclination: 81.25°
 Period: 98.43 min
 Eccentricity: 0.009
 Launch date: 1971-04-07
 Source: Commonwealth of Independent
 States (former USSR) (CIS)





COSMOS 482 DESCENT CRAFT

NORAD ID: 06073

Int'l Code: 1972-023E

Dimensions:

Initial orbit (2002-12-22):

Perigee: 211 km

Apogee: 4765 km

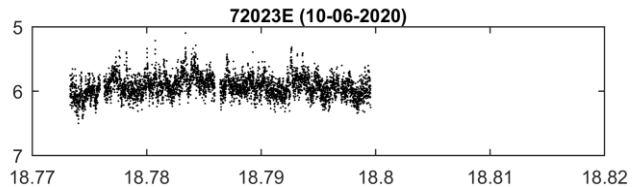
Inclination: 52.10°

Period: 138.47 min

Eccentricity: 0.257

Launch date: 1972-03-31

Source: Commonwealth of Independent States (former USSR) (CIS)



OPS 7323 (DMSP 5B F3)

(DSAP-5B F3)

NORAD ID: 06275

Int'l Code: 1972-089A

Dimensions: 12-faced frustum

1.64m long,

1.31m to 1.10m dia

Initial orbit:

Perigee: 813 km

Apogee: 872 km

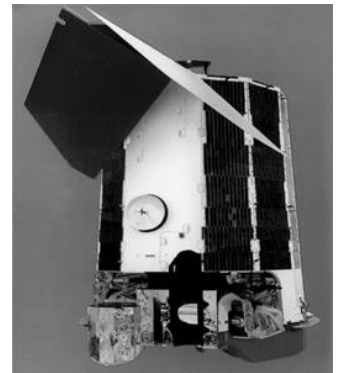
Inclination: 98.65°

Period: 101.8 min

Eccentricity: 0.004

Launch date: 1972-11-09

Source: United States (US)



RIGIDSPHERE 2 (LCS 4) (Grid Sphere 1)

NORAD ID: 05398

Int'l Code: 1971-067E

Dimensions: sphere (magnesium) 1.12m dia

Initial orbit:

Perigee: 795 km

Apogee: 913 km

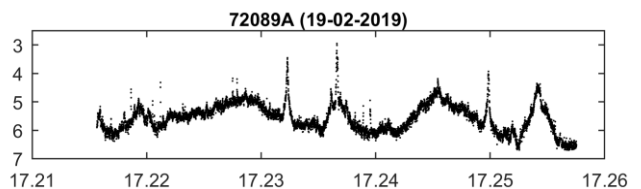
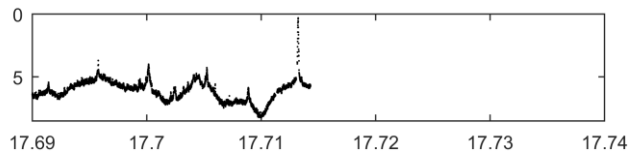
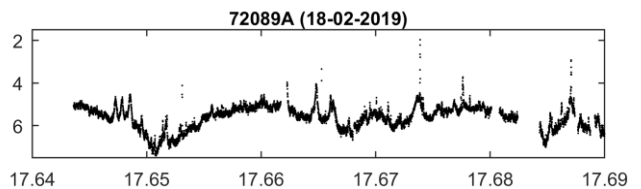
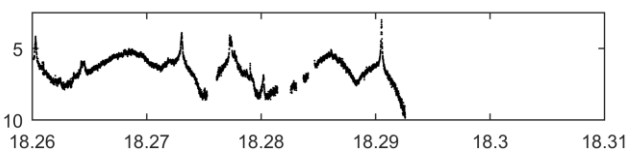
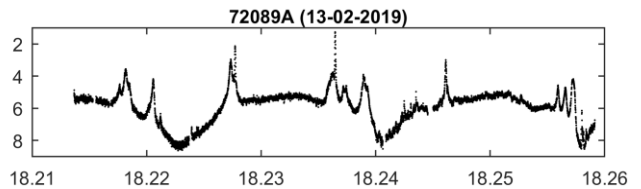
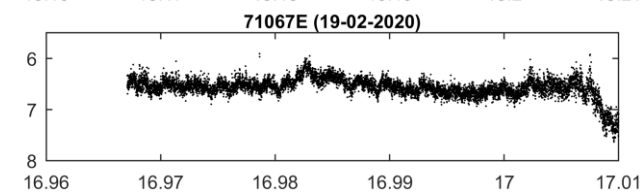
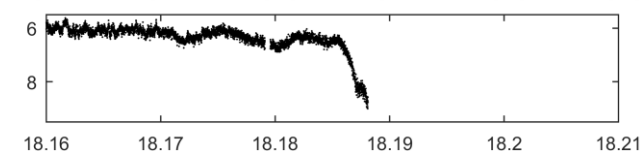
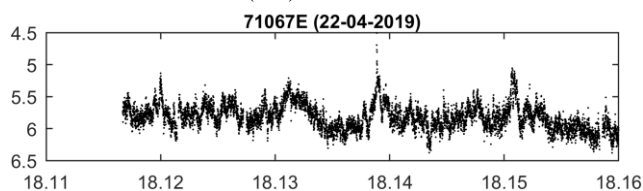
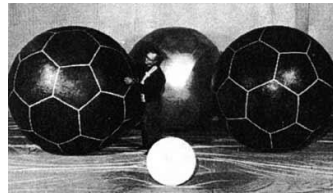
Inclination: 87.62°

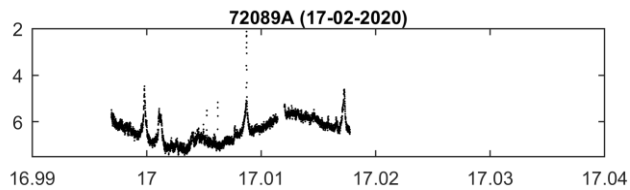
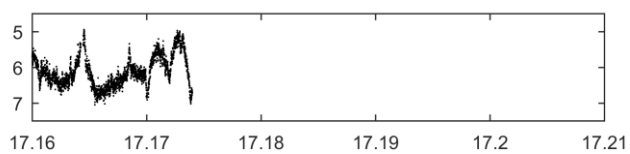
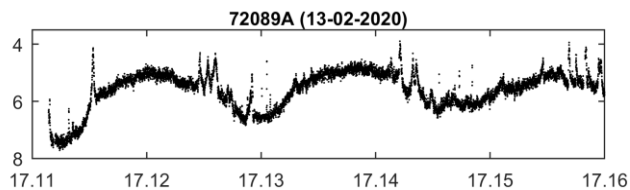
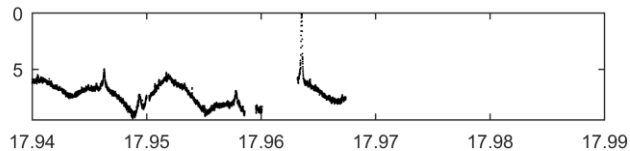
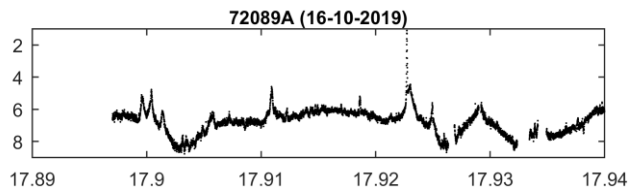
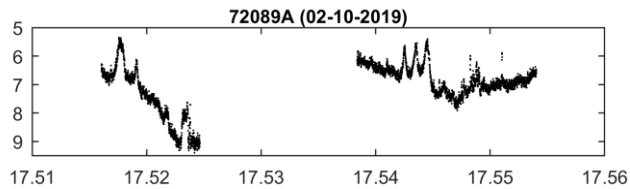
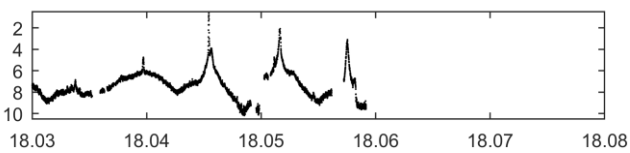
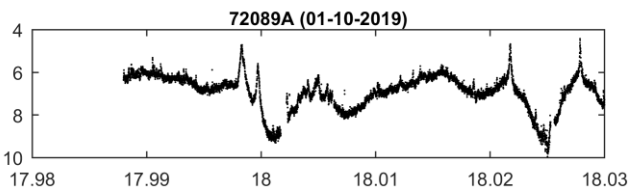
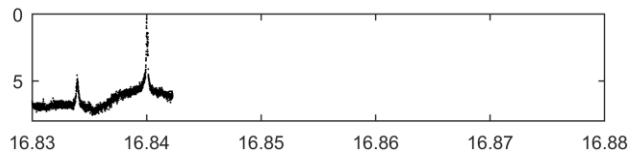
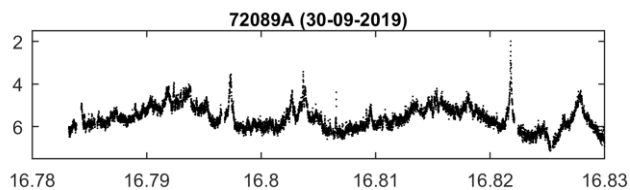
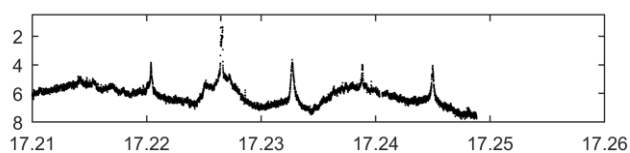
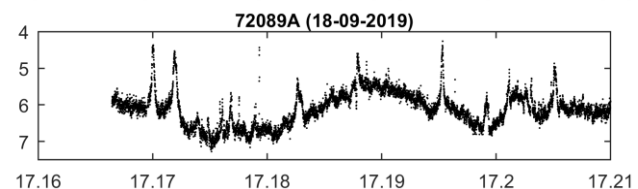
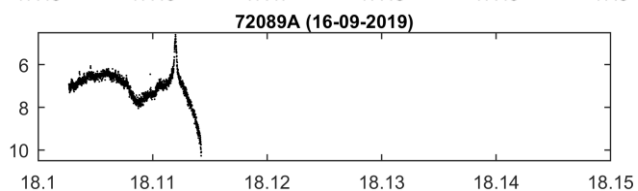
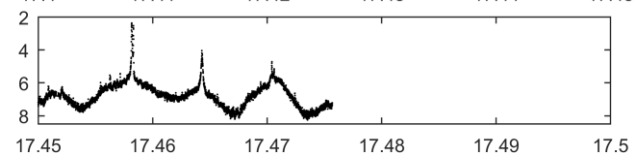
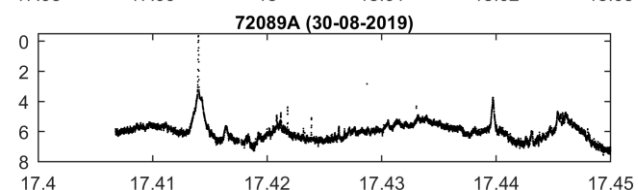
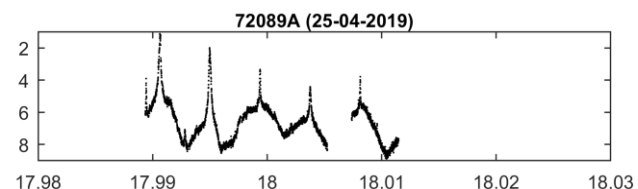
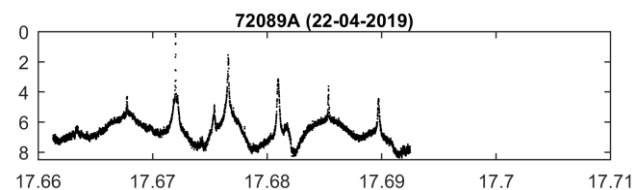
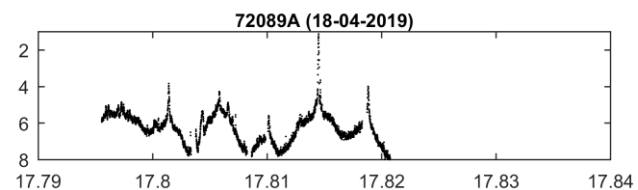
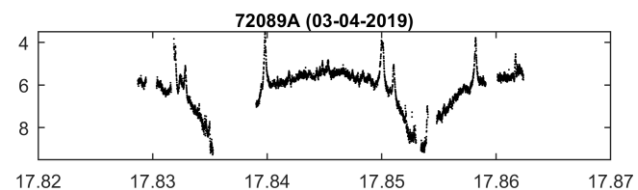
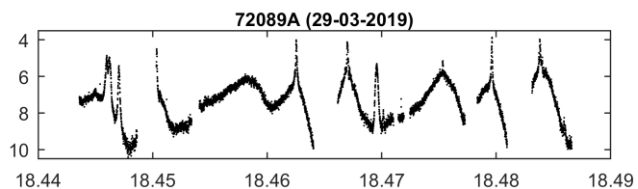
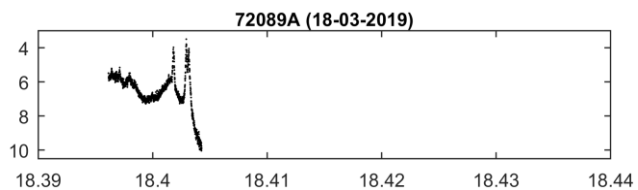
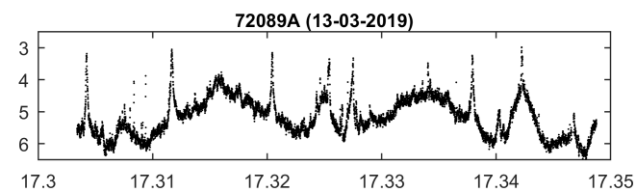
Period: 102.03 min

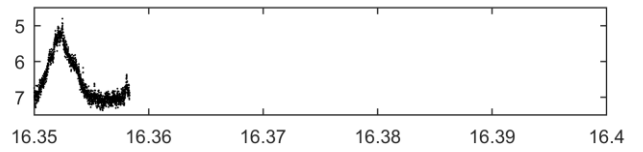
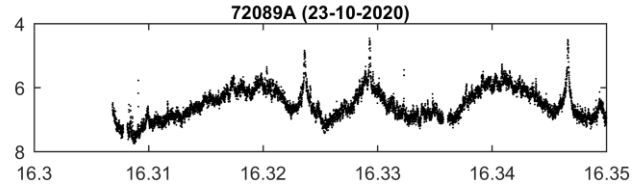
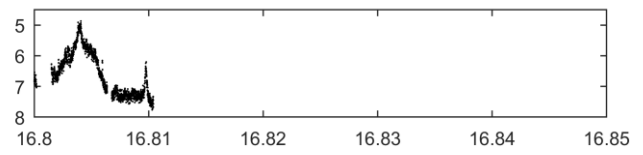
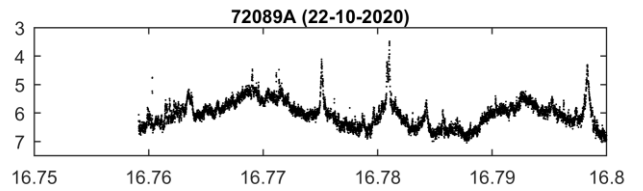
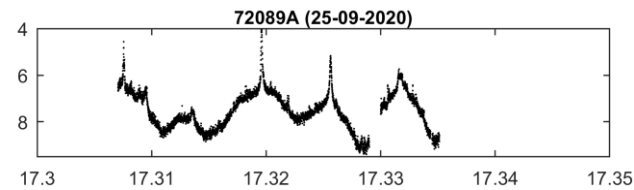
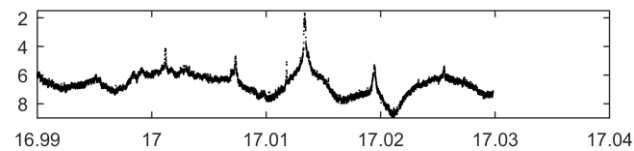
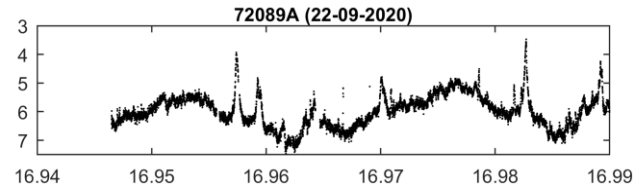
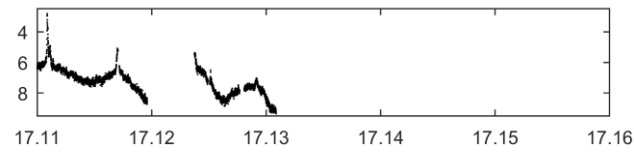
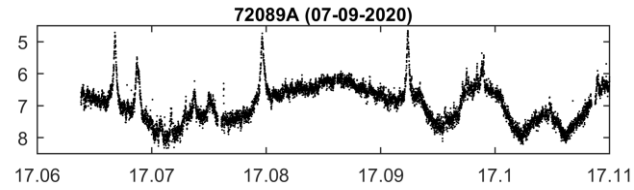
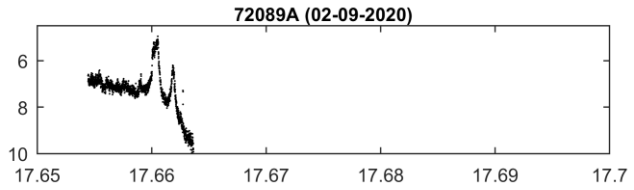
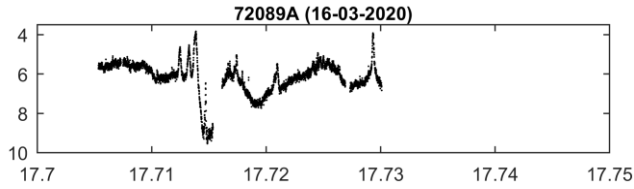
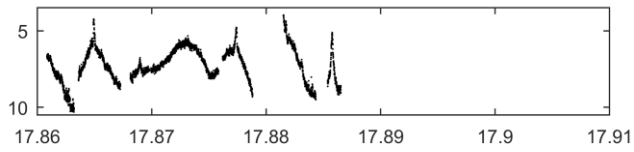
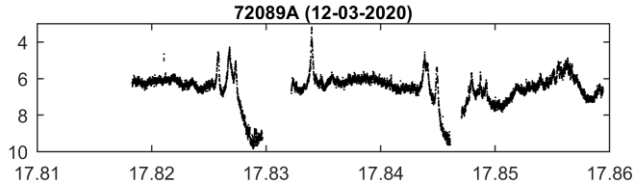
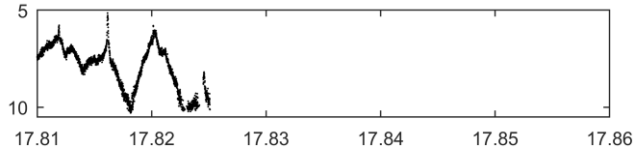
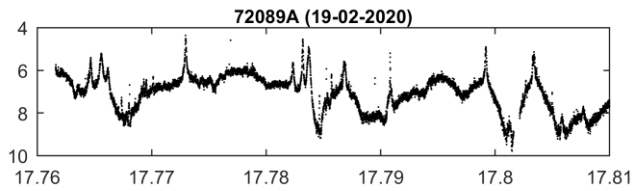
Eccentricity: 0.008

Launch date: 1971-08-07

Source: United States (US)







COSMOS 546 (Zaliv-GVM #2)

NORAD ID: 06350

Int'l Code: 1973-005A

Dimensions:

Initial orbit:

Perigee: 575 km

Apogee: 614 km

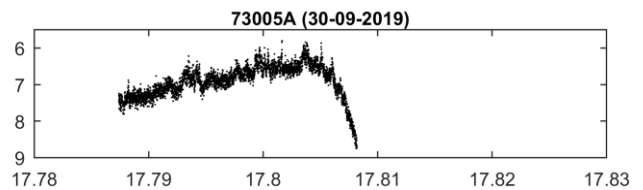
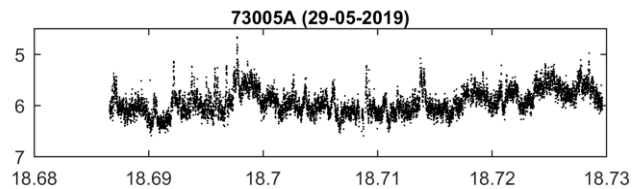
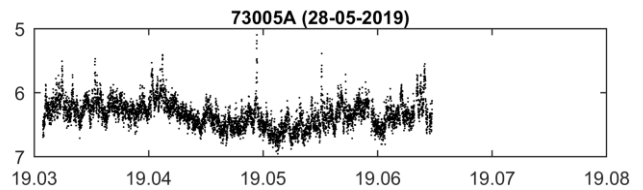
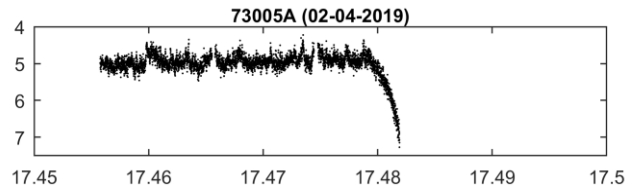
Inclination: 50.66°

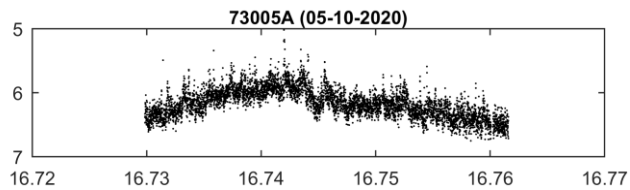
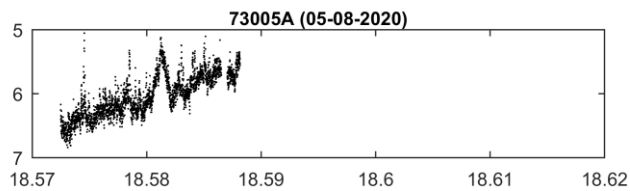
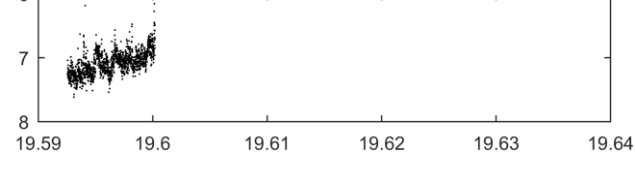
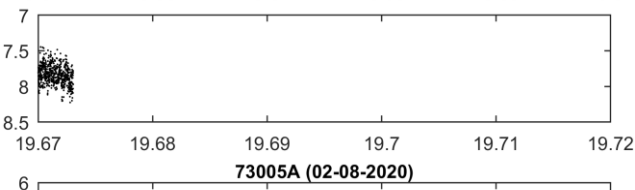
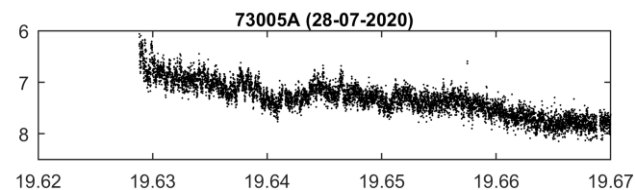
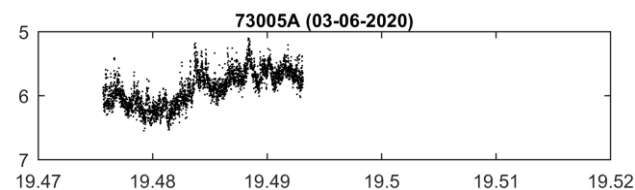
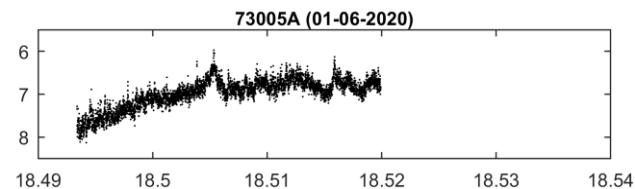
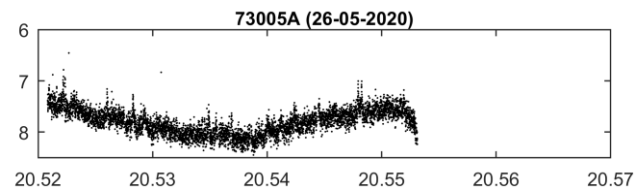
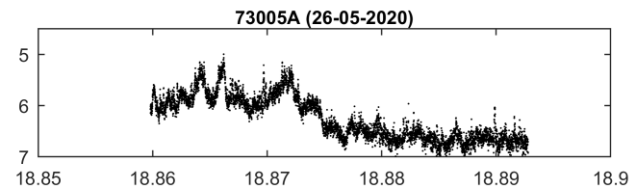
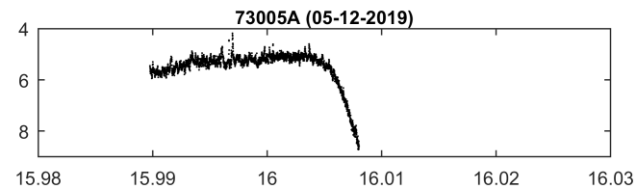
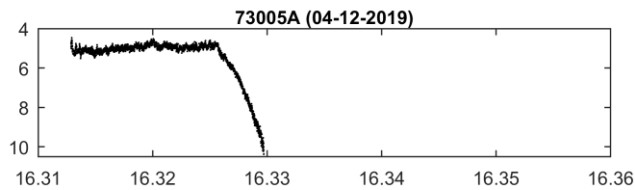
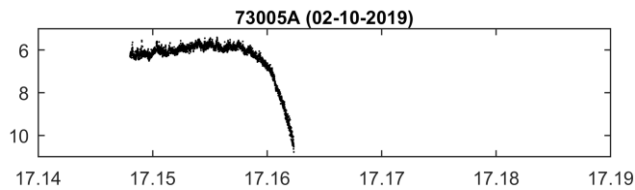
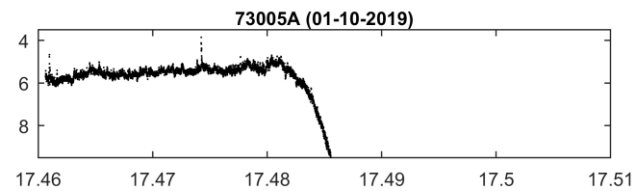
Period: 96.51 min

Eccentricity: 0.003

Launch date: 1973-01-26

Source: Commonwealth of Independent States (former USSR) (CIS)





**SL-8 R/B (S3M) (11K65M)(2nd stage)
(COSMOS 585 ROCKET)**

NORAD ID: 06826

Int'l Code: 1973-064B

Dimensions: cylinder 7.4m long, 2.4m dia

Initial orbit:

Perigee: 1375 km

Apogee: 1395 km

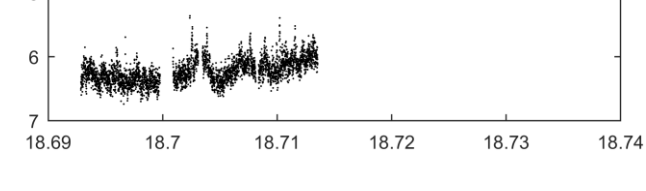
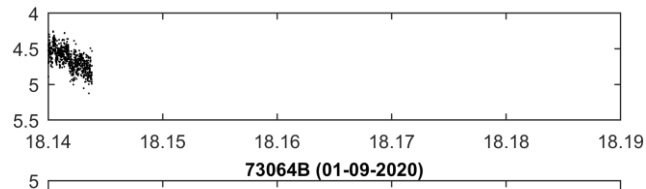
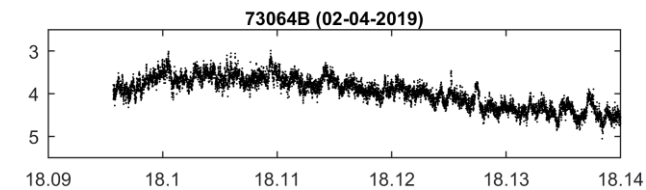
Inclination: 73.97°

Period: 113.49 min

Eccentricity: 0.001

Launch date: 1973-09-08

Source: Commonwealth of Independent States (former USSR)
(CIS)



**OPS 6983 (DMSP 5C F1) (DMSP
9532)**

NORAD ID: 7411

Int'l Code: 1974-063A

Dimensions: 12-sided frustum
1.64m long, 1.31m to 1.10m dia

Initial orbit:

Perigee: 806 km

Apogee: 875 km

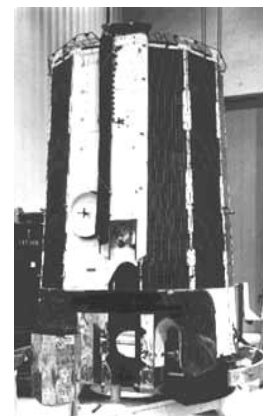
Inclination: 98.86°

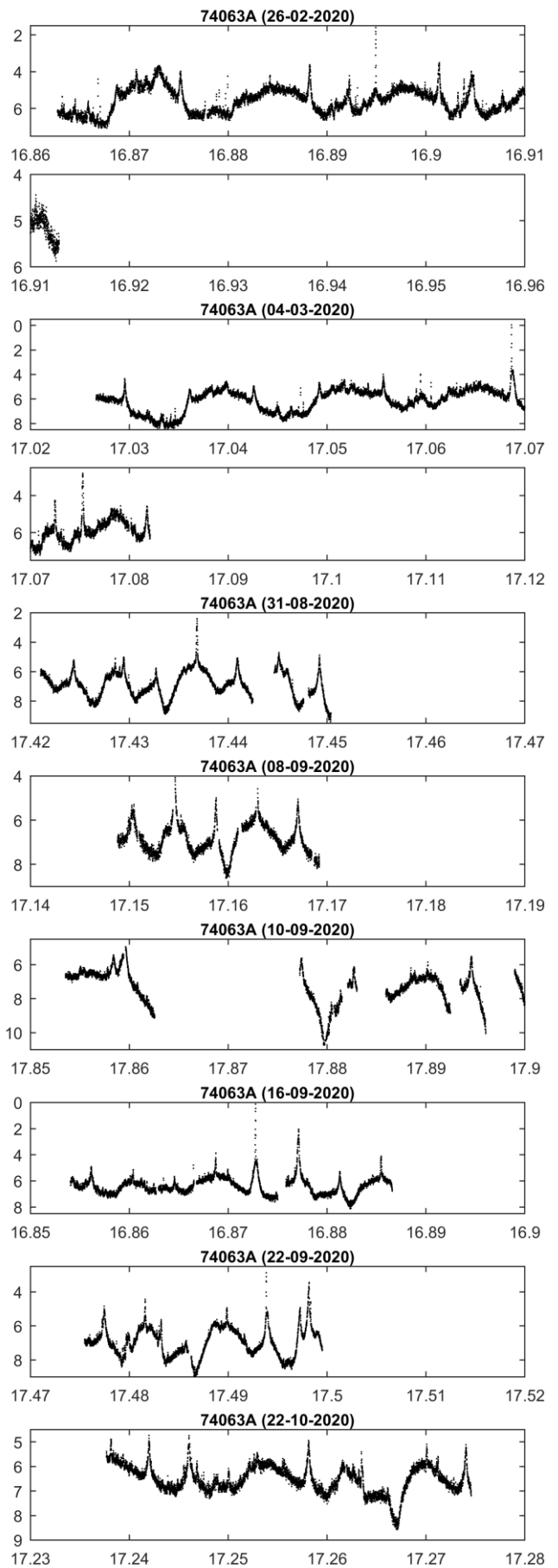
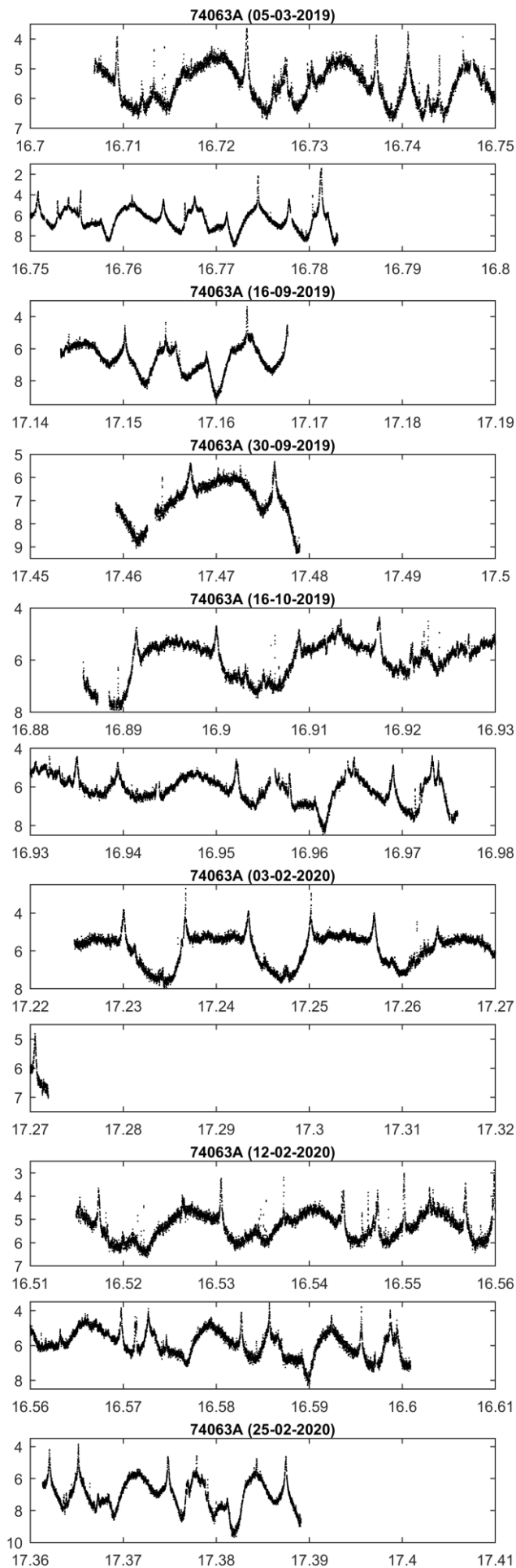
Period: 101.76 min

Eccentricity: 0.005

Launch date: 1974-08-09

Source: United States (US)





THOR BURNER 2A R/B

NORAD ID: 07412

Int'l Code: 1974-063B

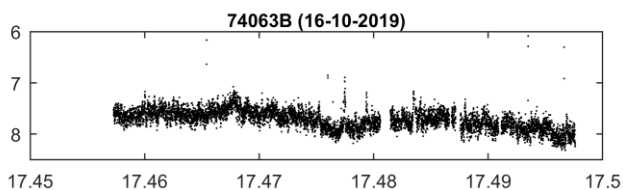
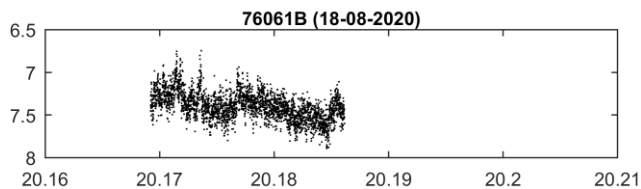
Dimensions: sphere-cone

1.32m long, 0.94m dia

Initial orbit:

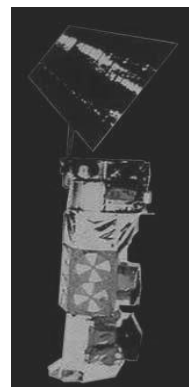


Perigee: 805 km
 Apogee: 872 km
 Inclination: 98.87°
 Period: 101.71 min
 Eccentricity: 0.005
 Launch date: 1974-08-09
 Source: United States (US)



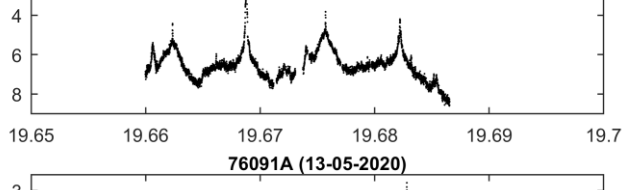
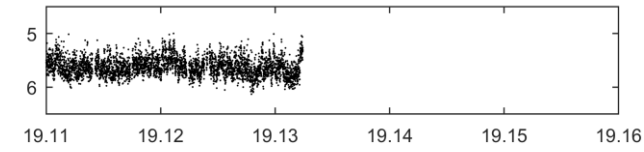
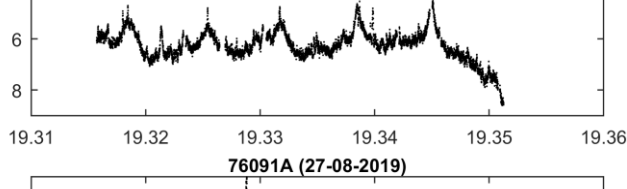
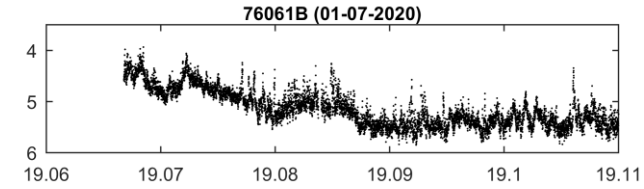
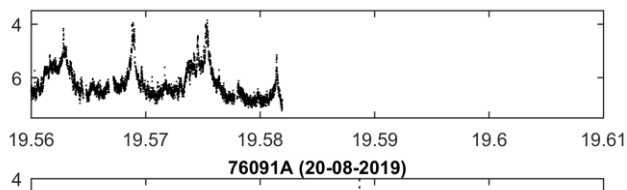
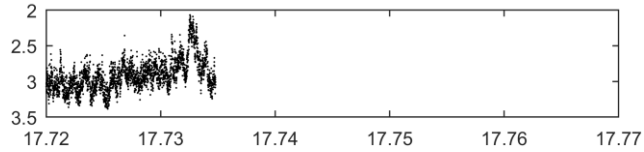
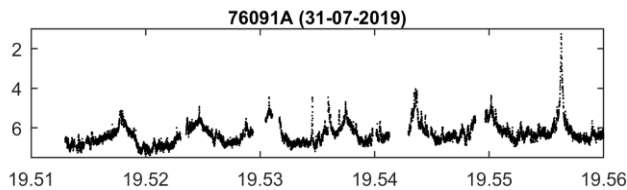
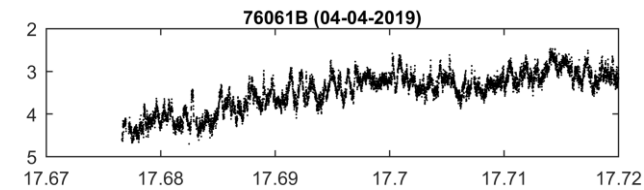
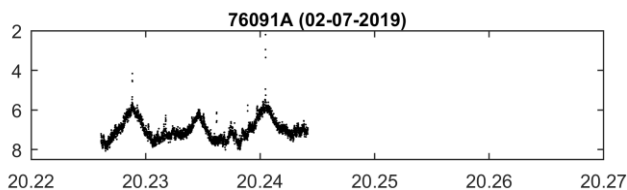
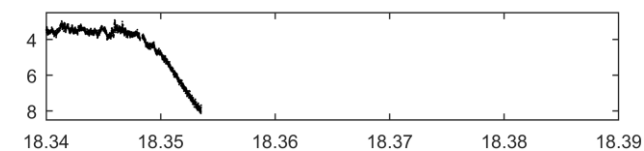
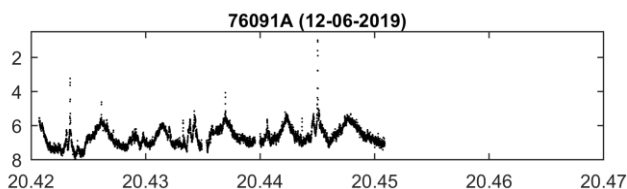
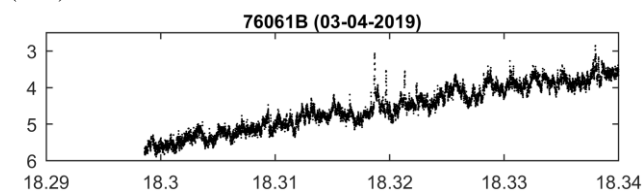
OPS 5721 (DMSP 5D F-1) (AMS 1)

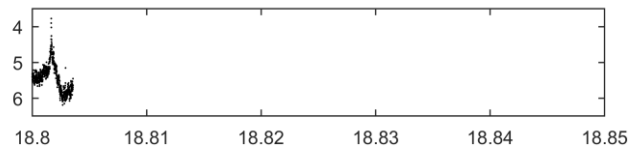
NORAD ID: 9415
 Int'l Code: 1976-091A
 Dimensions: irregular 6.40m long,
 1.68m dia
 Initial orbit:
 Perigee: 818 km
 Apogee: 848 km
 Inclination: 98.70°
 Period: 101.60 min
 Eccentricity: 0.002
 Launch date: 1976-09-11
 Source: United States (US)



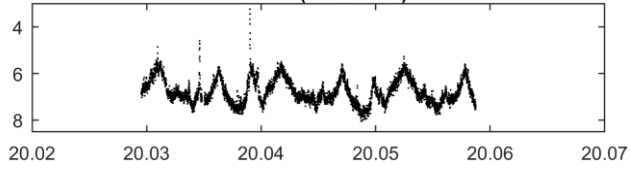
**SL-8 R/B (S3M) (11K65M)(2nd stage)
 (COSMOS 836 ROCKET)**

NORAD ID: 08924
 Int'l Code: 1976-061B
 Dimensions: cylinder 7.4m long, 2.4m dia
 Initial orbit:
 Perigee: 784 km
 Apogee: 815 km
 Inclination: 74.07°
 Period: 100.88 min
 Eccentricity: 0.002
 Launch date: 1976-01-28
 Source: Commonwealth of Independent States (former USSR) (CIS)

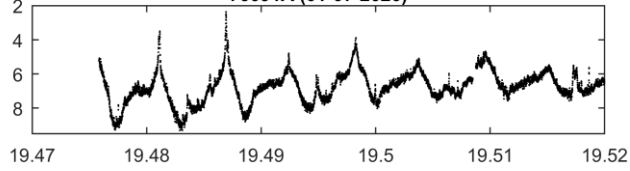




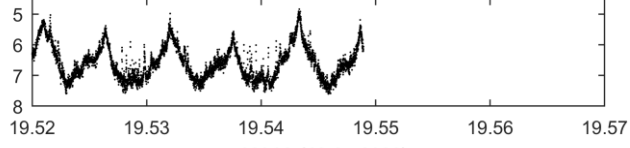
76091A (22-06-2020)



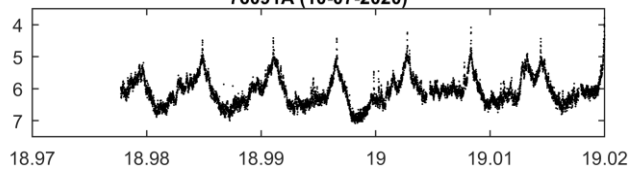
76091A (01-07-2020)



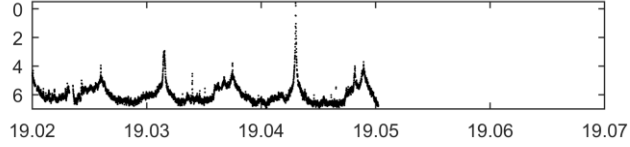
76091A (10-07-2020)



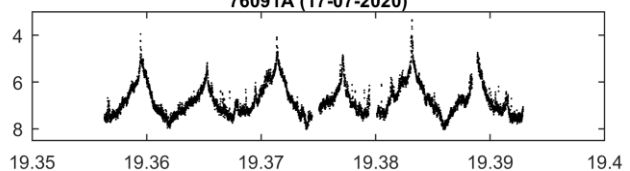
76091A (17-07-2020)



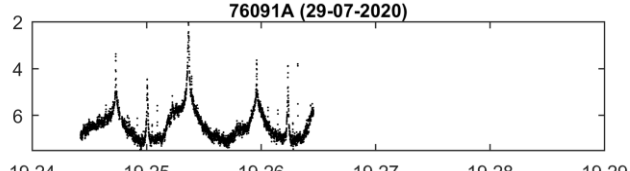
76091A (17-07-2020)



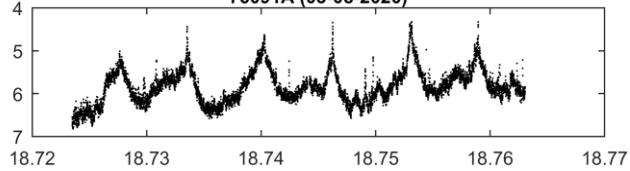
76091A (17-07-2020)



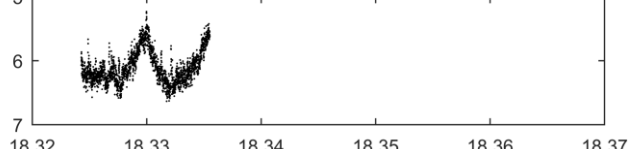
76091A (29-07-2020)



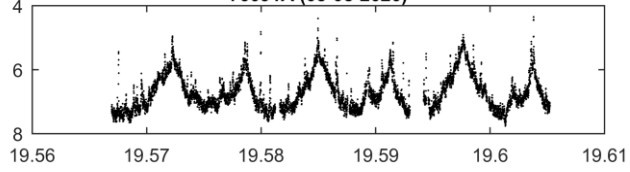
76091A (03-08-2020)



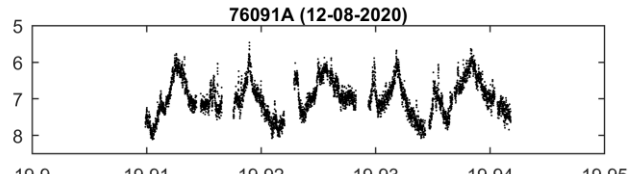
76091A (04-08-2020)



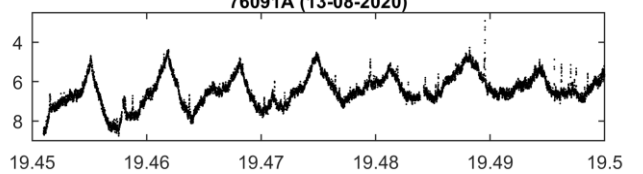
76091A (05-08-2020)



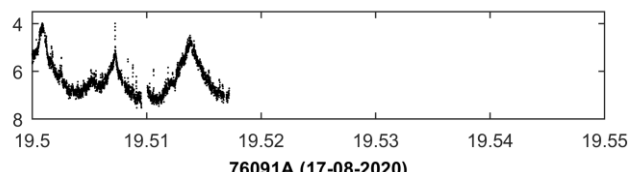
76091A (05-08-2020)



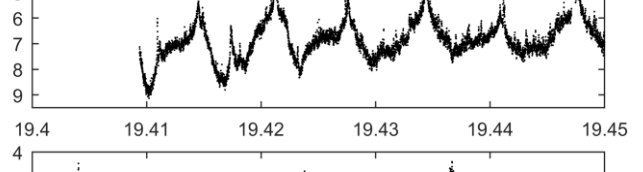
76091A (12-08-2020)



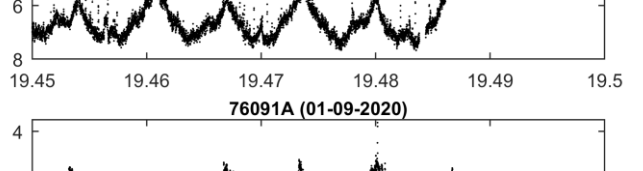
76091A (13-08-2020)



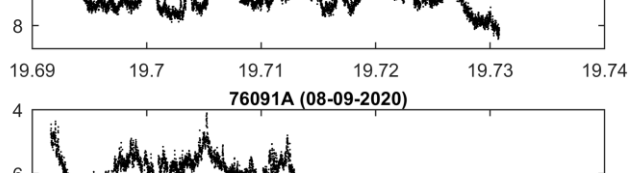
76091A (17-08-2020)



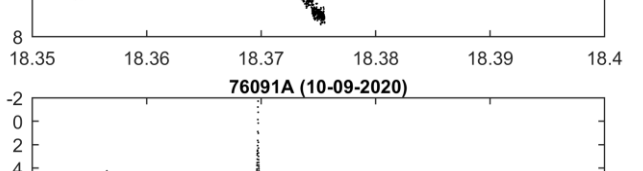
76091A (17-08-2020)



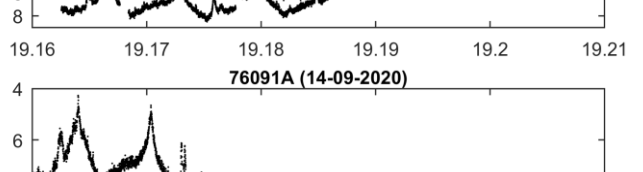
76091A (01-09-2020)



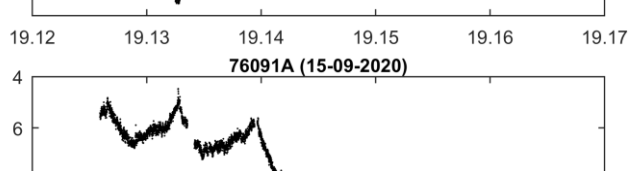
76091A (08-09-2020)



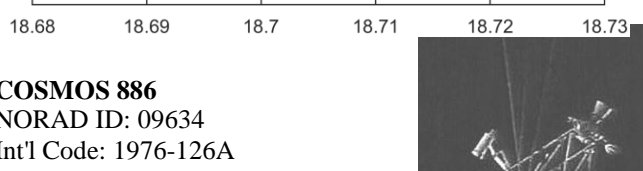
76091A (10-09-2020)



76091A (14-09-2020)

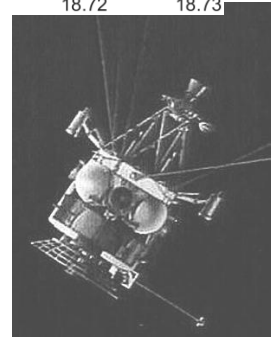


76091A (15-09-2020)

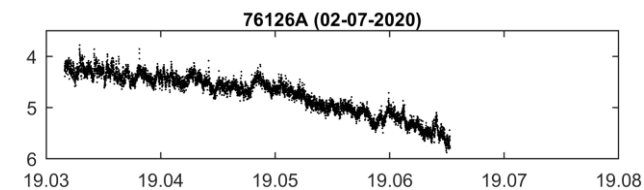
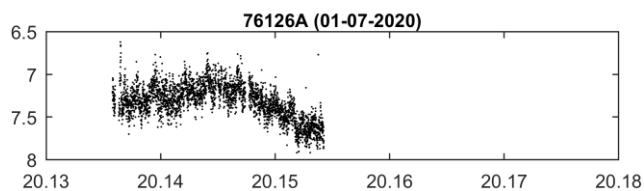


76091A (15-09-2020)

COSMOS 886
 NORAD ID: 09634
 Int'l Code: 1976-126A
 Dimensions: cylinder? 4m long? 2m dia?
 Initial orbit:

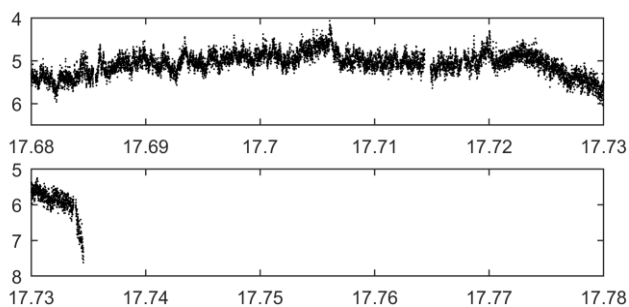
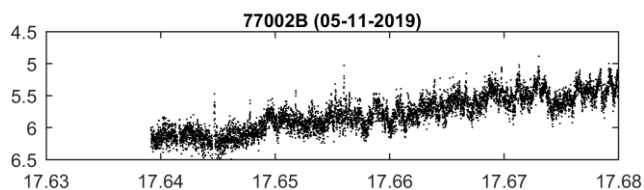
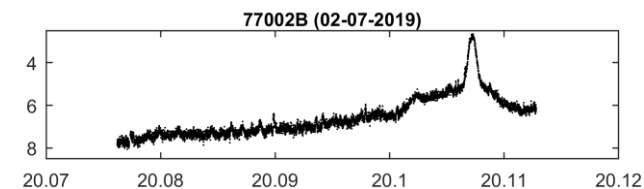
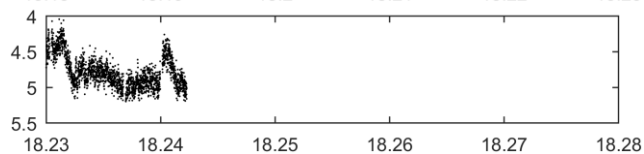
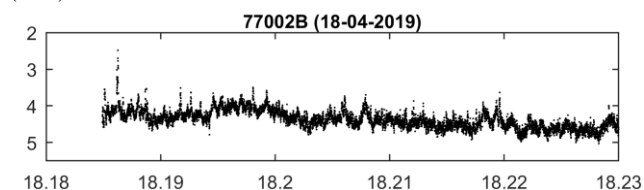


Perigee: 594 km
 Apogee: 2295 km
 Inclination: 65.845°
 Period: 114.79 min
 Eccentricity: 0.109
 Launch date: 1976-12-27
 Source: Commonwealth of Independent States (former USSR)
 (CIS)

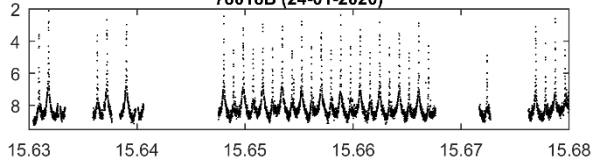
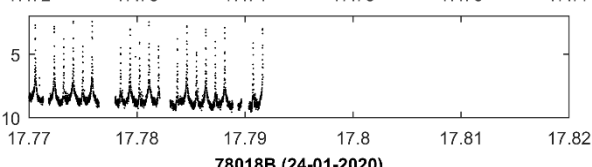
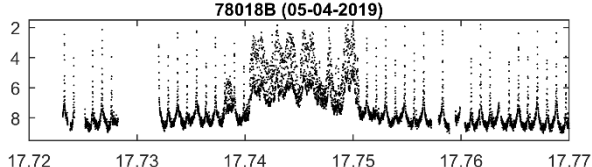
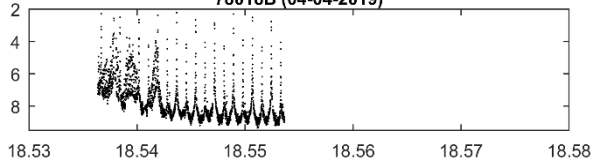
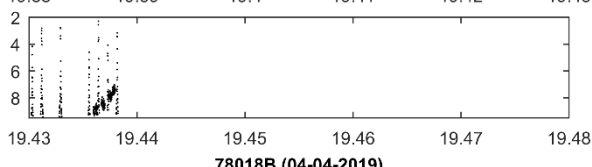
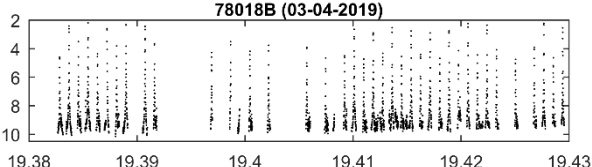
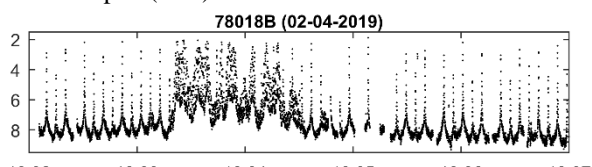


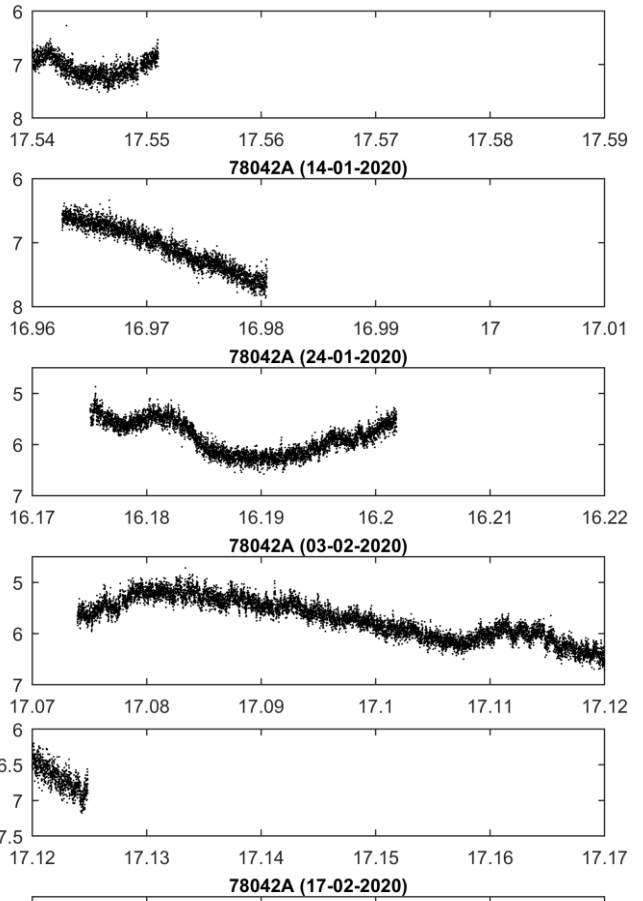
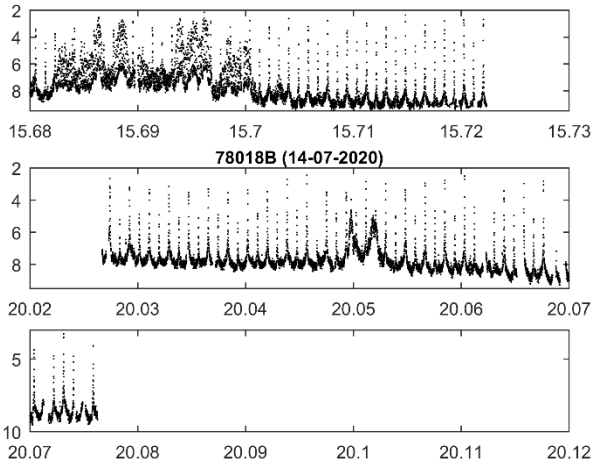
SL-3 R/B (8A92ME)
VOSTOK-2M (Block E 3rd stage)
(METEOR-2 02 ROCKET)

NORAD ID: 09662
 Int'l Code: 1977-002B
 Dimensions: cylinder 3.8m long,
 2.6m dia
 Initial orbit:
 Perigee: 862 km
 Apogee: 942 km
 Inclination: 81.28°
 Period: 103.05 min
 Eccentricity: 0.005
 Launch date: 1977-01-06
 Source: Commonwealth of Independent States (former USSR)
 (CIS)

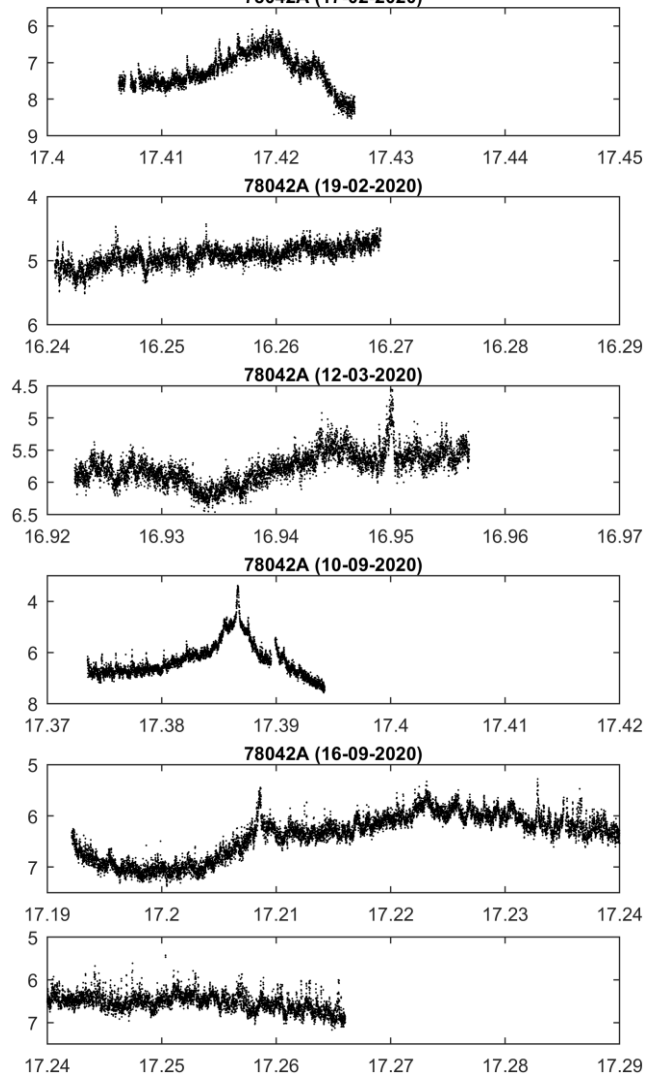
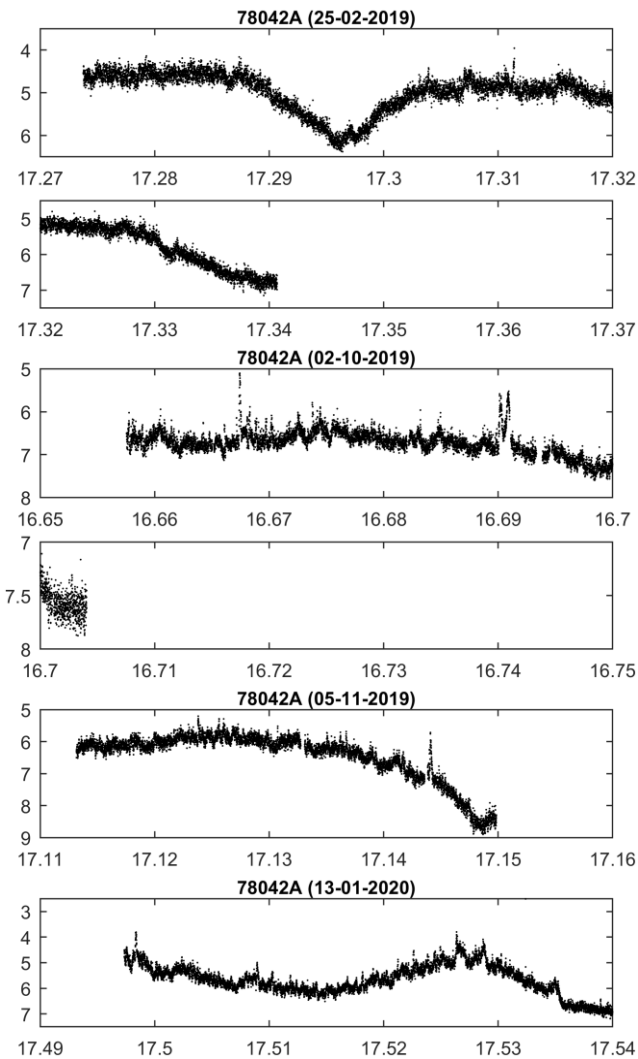


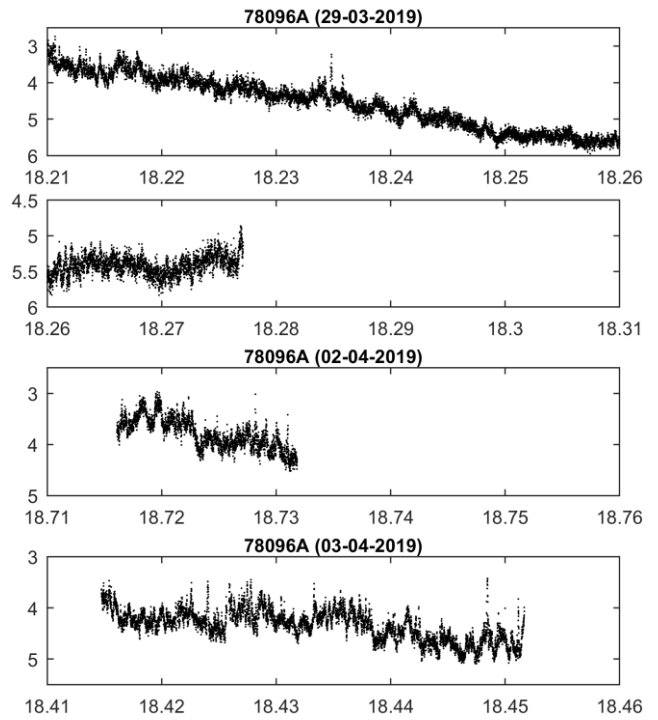
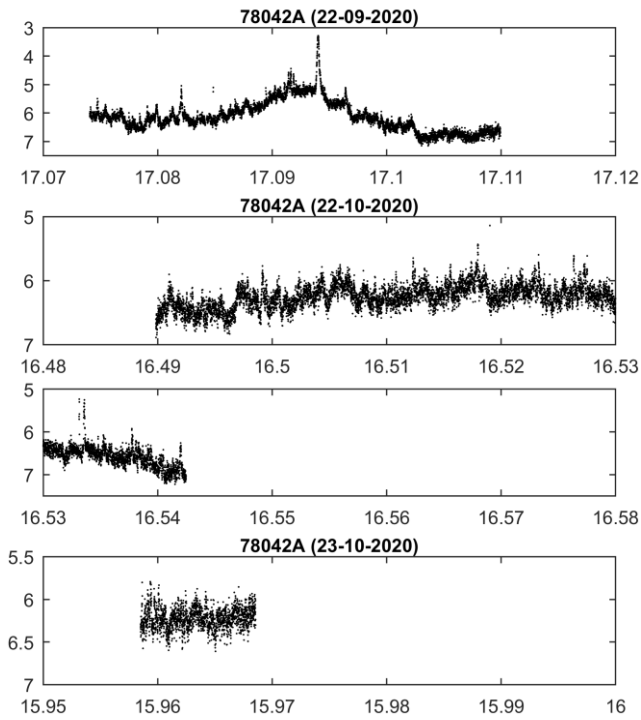
UME 2 (nu 3rd stage)
 NORAD ID: 10675
 Int'l Code: 1978-018B
 Dimensions: cylinder 1.74m long, 1.65m dia
 Initial orbit:
 Perigee: 975 km
 Apogee: 1223 km
 Inclination: 69.36°
 Period: 107.24 min
 Eccentricity: 0.017
 Launch date: 1978-02-16
 Source: Japan (JPN)



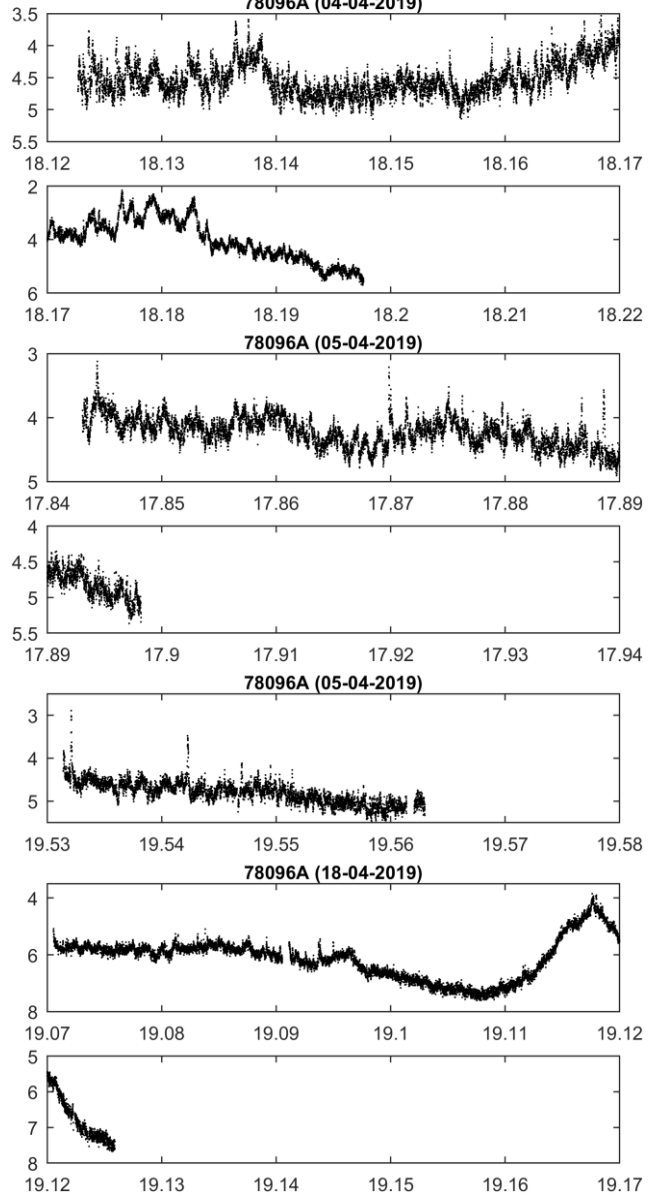
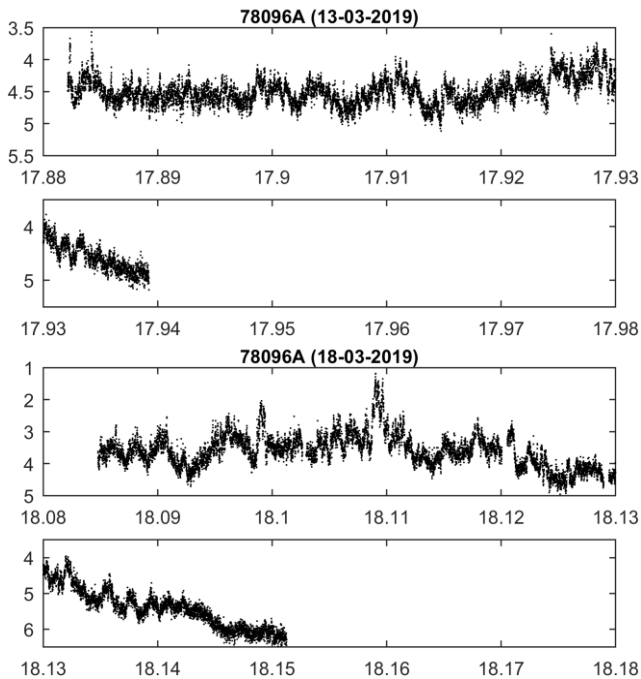


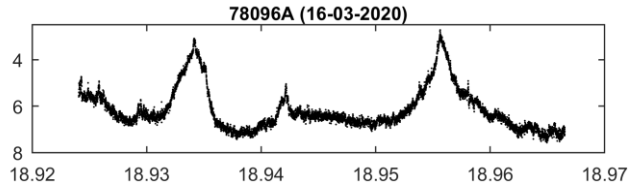
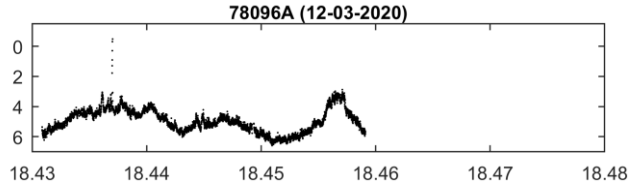
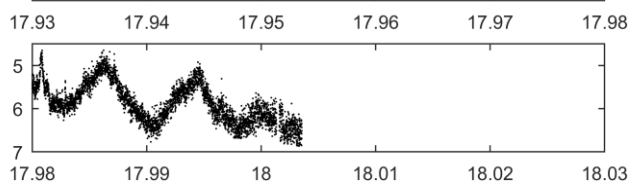
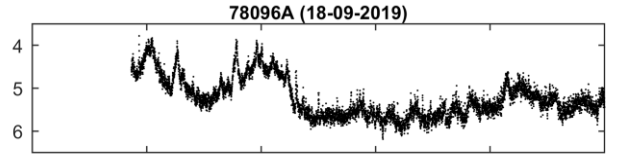
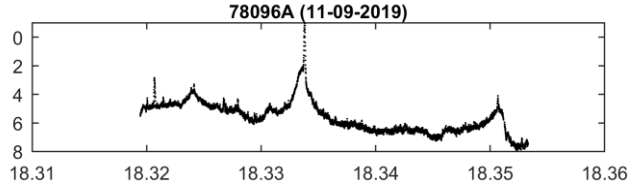
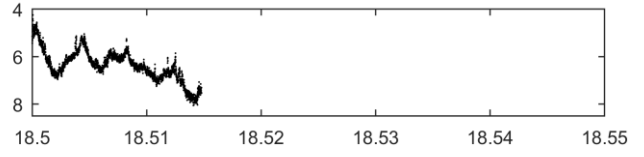
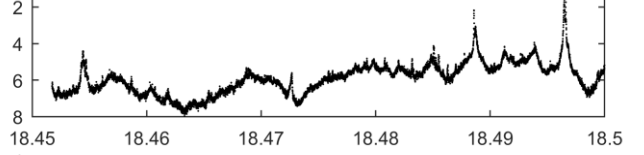
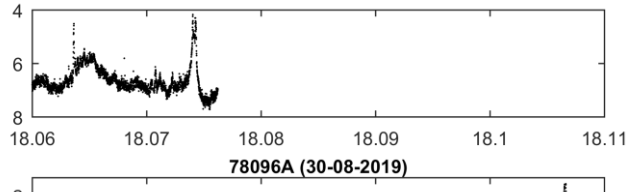
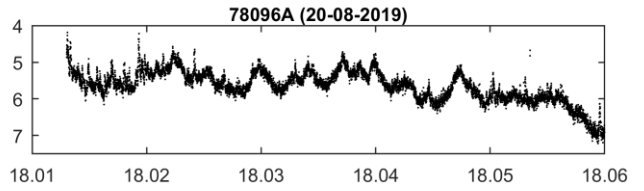
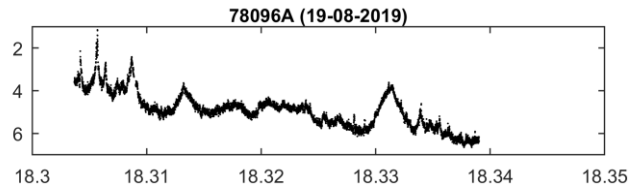
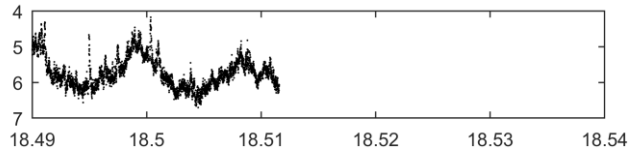
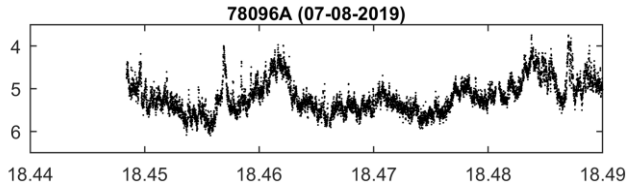
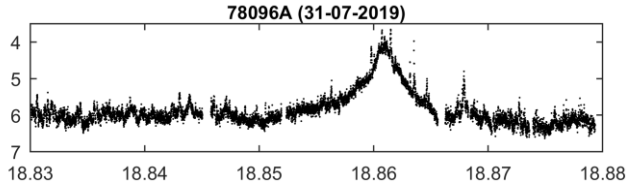
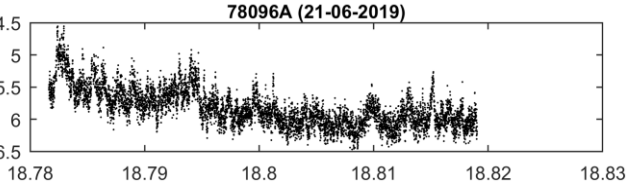
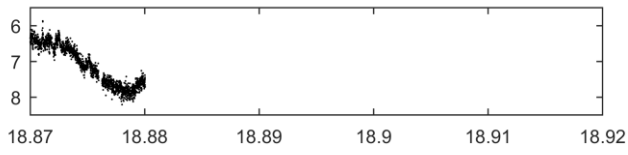
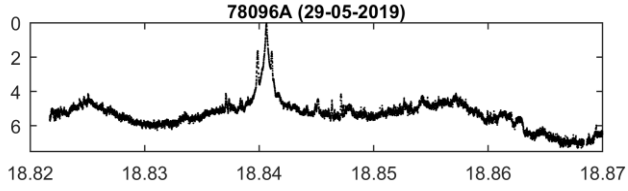
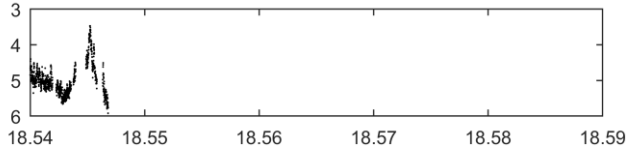
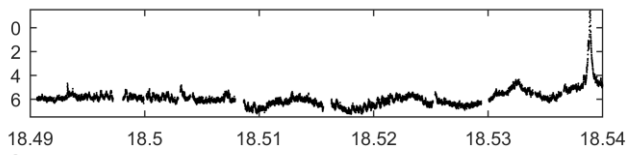
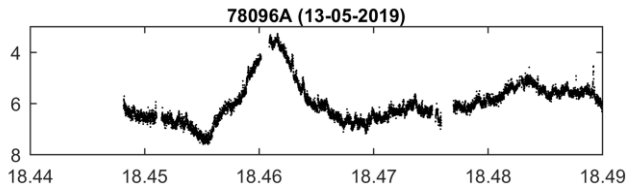
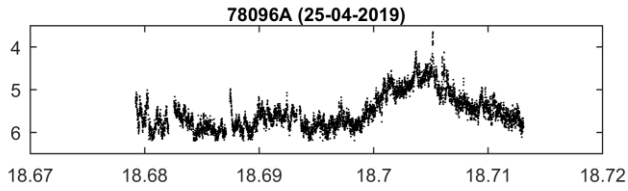
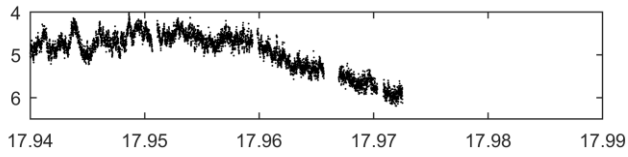
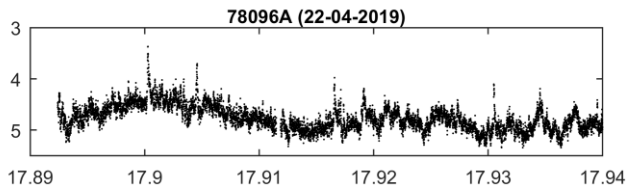
OPS 6182 (DMSP 5D-1 F2) (AMS 3)
 NORAD ID: 10820
 Int'l Code: 1978-042A
 Dimensions:
 Initial orbit: irregular 6.40m long,
 1.68m dia
 Perigee: 820 km
 Apogee: 835 km
 Inclination: 98.71°
 Period: 101.47 min
 Eccentricity: 0.001
 Launch date: 1978-05-01
 Source: United States (US)

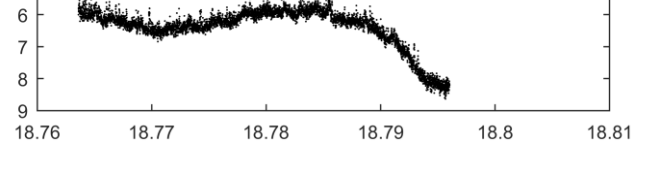
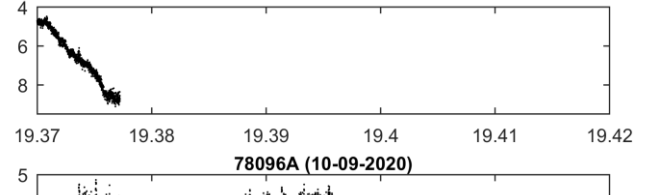
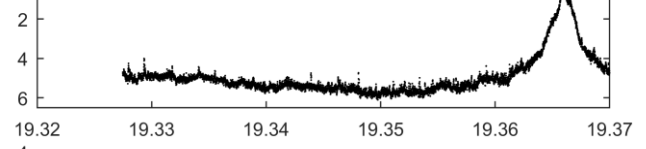
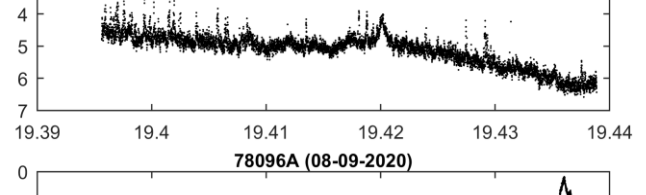
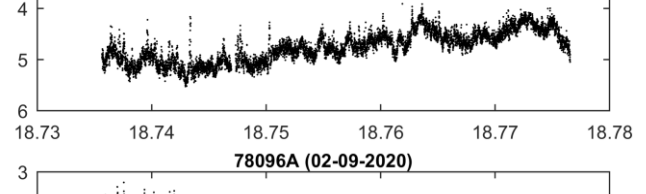
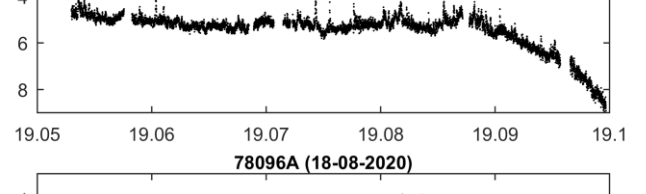
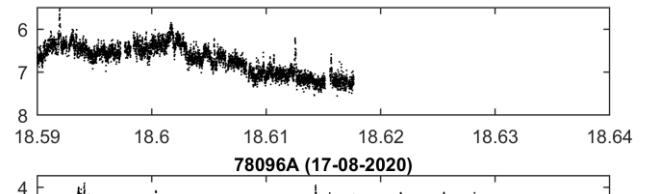
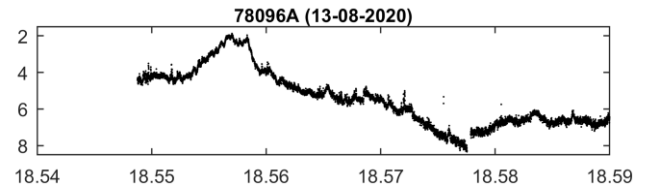
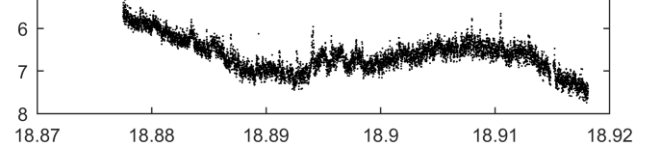
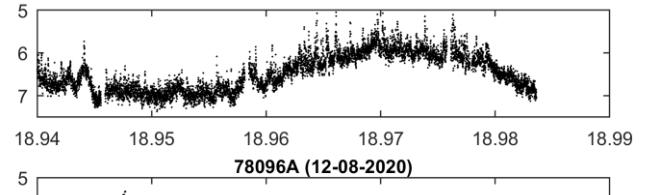
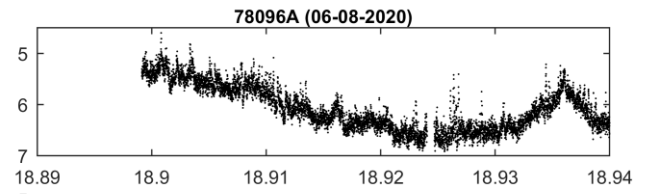
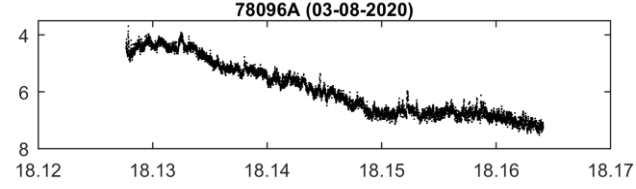
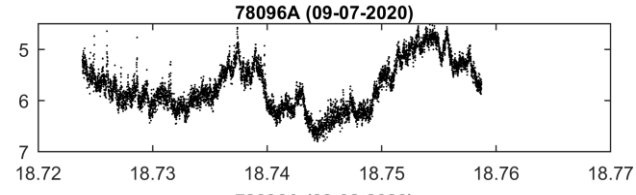
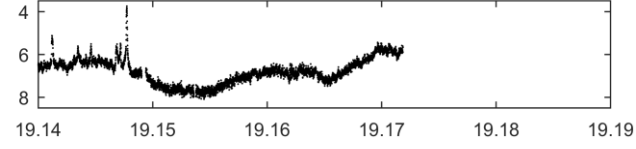
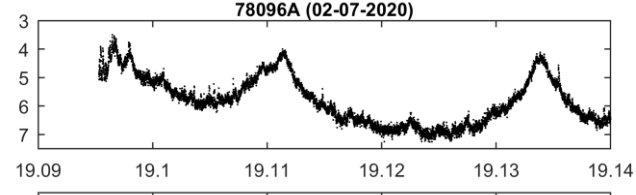
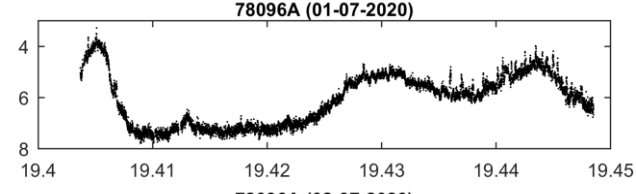
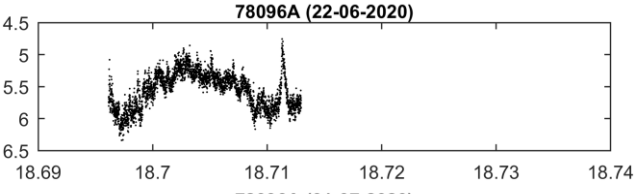
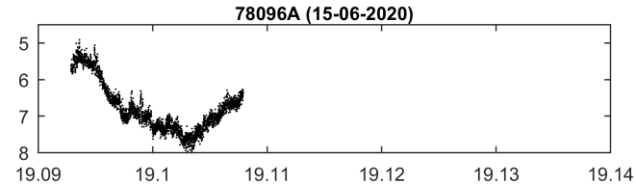
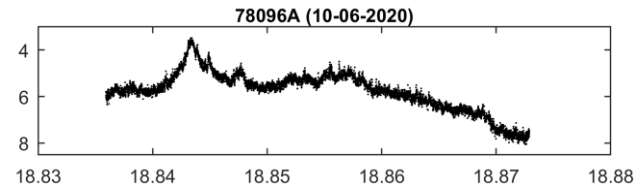
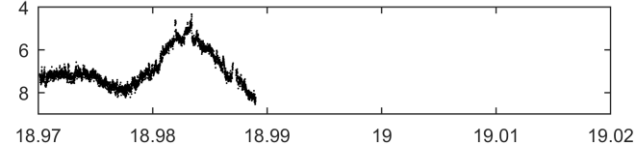
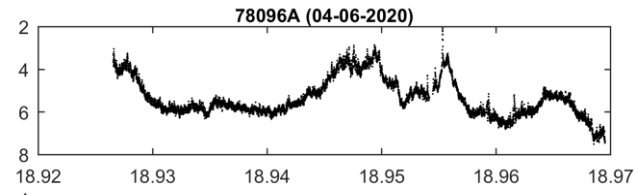
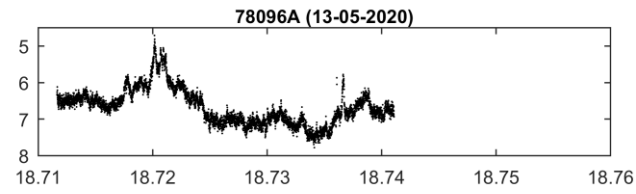


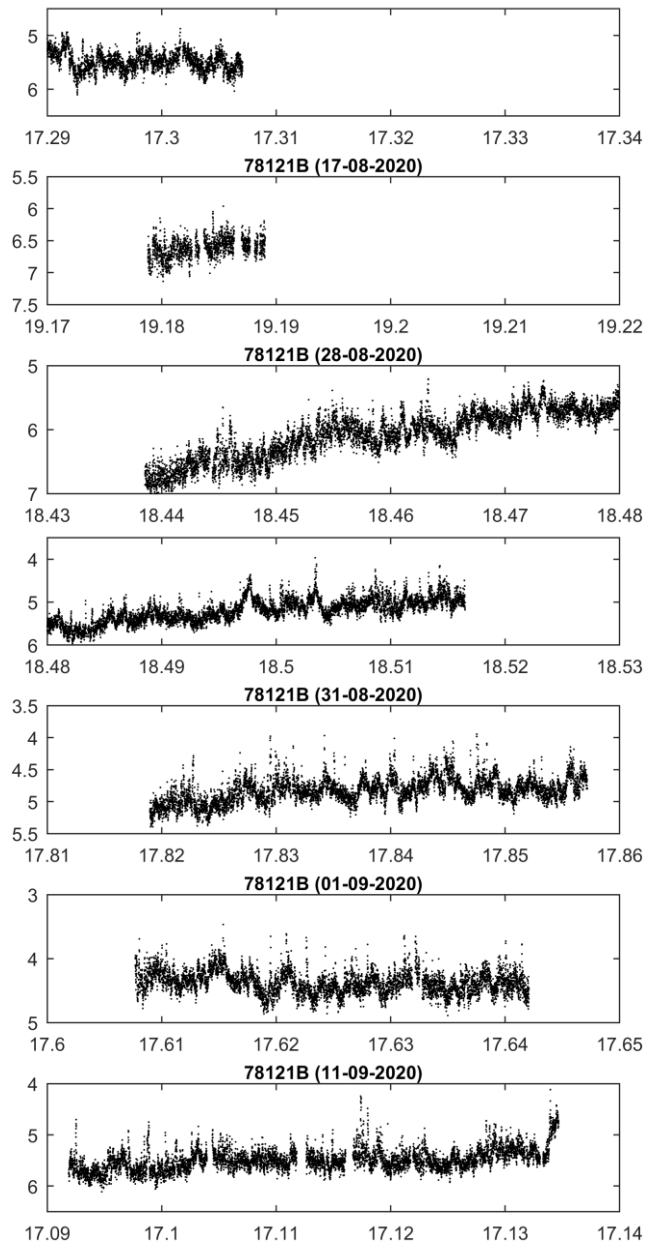
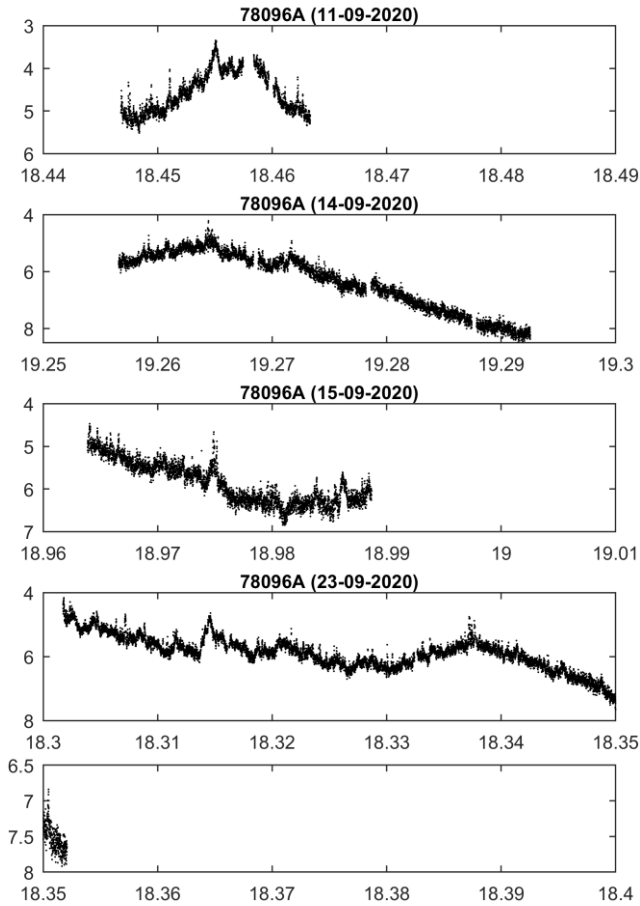


TIROS N
 NORAD ID: 11060
 Int'l Code: 1978-096A
 Dimensions: cylinder 3.71 m long,
 1.88 m dia
 Initial orbit:
 Perigee: 850 km
 Apogee: 866 km
 Inclination: 98.91°
 Period: 102.12 min
 Eccentricity: 0.001
 Launch date: 1978-10-13
 Source: United States (US)

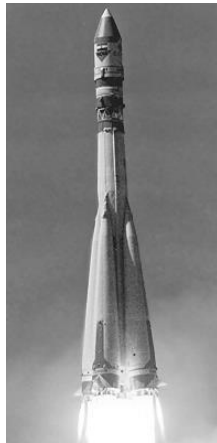




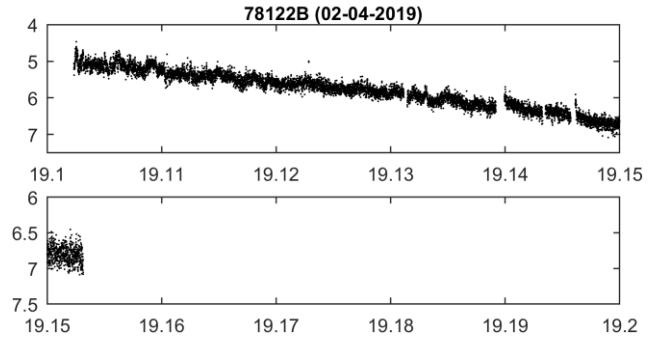
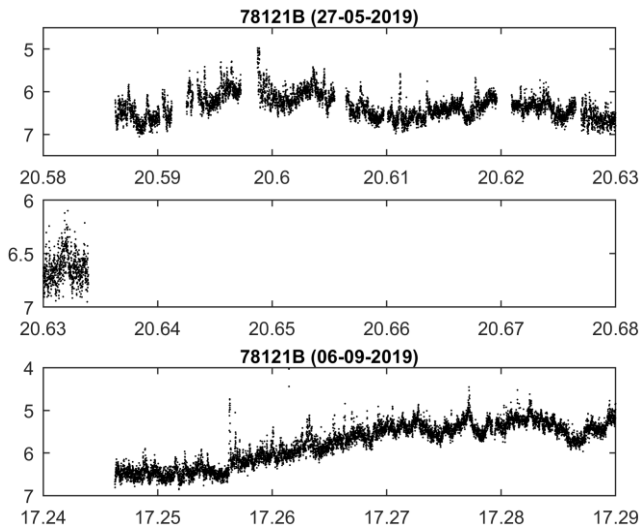


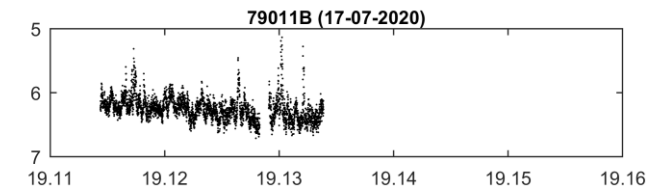
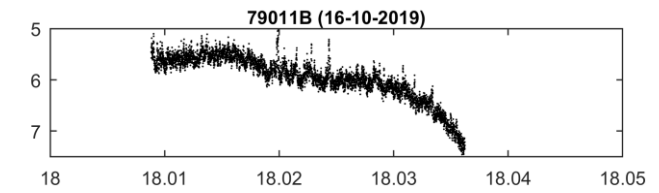
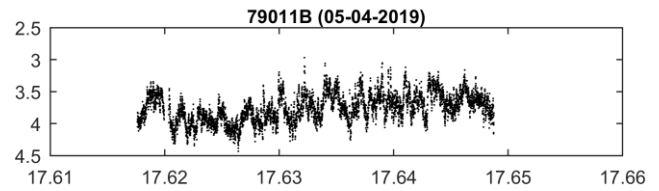
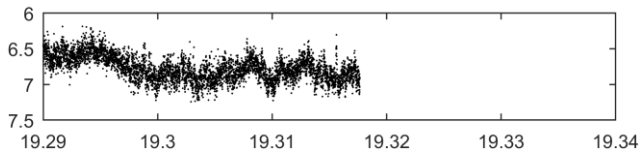
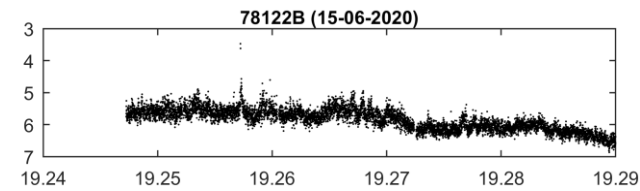
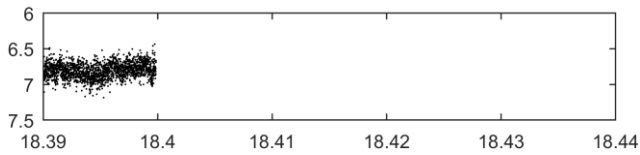
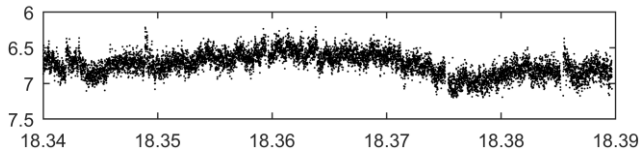
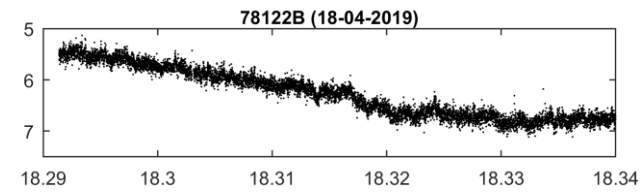
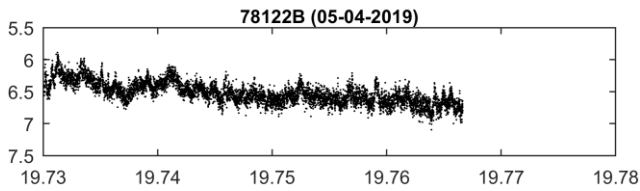


SL-3 R/B (8A92ME)
Vostok-2M (Block E 3rd stage)
(COSMOS 1066 ROCKET)
 NORAD ID: 11166
 Int'l Code: 1978-121B
 Dimensions: cylinder 3.8m long,
 2.6m dia
 Initial orbit:
 Perigee: 816 km
 Apogee: 898 km
 Inclination: 81.25°
 Period: 102.10 min
 Eccentricity: 0.006
 Launch date: 1978-12-23
 Source: Commonwealth of Independent
 States (former USSR) (CIS)



SL-8 R/B (Cosmos 1067 2nd stage)
 NORAD ID: 11170
 Int'l Code: 1978-122B
 Dimensions: cylinder 7.4m long, 2.4m dia
 Initial orbit:
 Perigee: 1157 km
 Apogee: 1197 km
 Inclination: 82.97°
 Period: 108.95 min
 Eccentricity: 0.003
 Launch date: 1978-12-26
 Source: Commonwealth of Independent States
 (former USSR) (CIS)



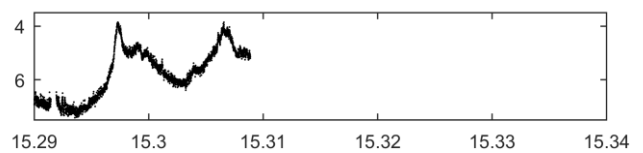
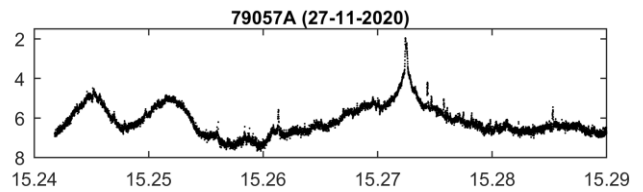


NOAA 6
 NORAD ID: 11416
 Int'l Code: 1979-057A
 Dimensions: box
 1.25m long?, 1.02m sq?
 Initial orbit:
 Perigee: 812 km
 Apogee: 828 km
 Inclination: 98.75°
 Period: 101.31 min
 Eccentricity: 0.001
 Launch date: 1979-06-27
 Source: United States (US)



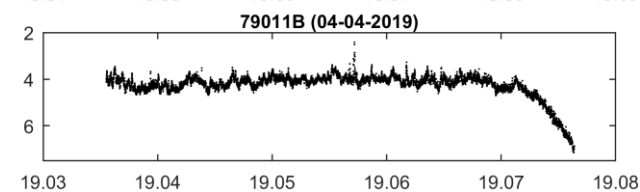
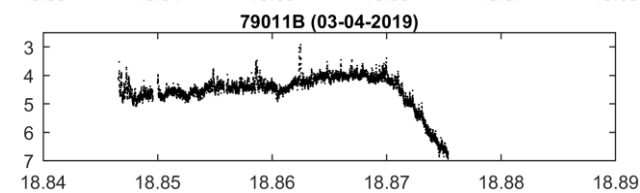
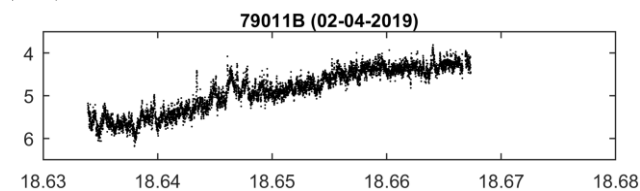
**SL-14 R/B (S5M) (2nd stage)
 (COSMOS 1076 ROCKET)**

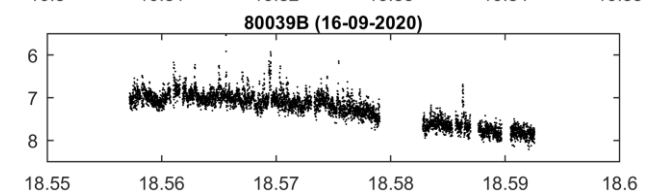
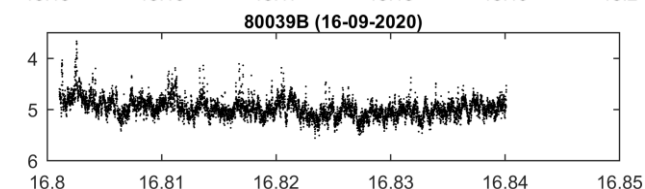
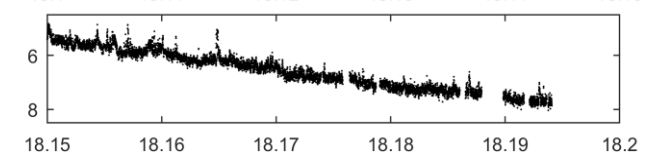
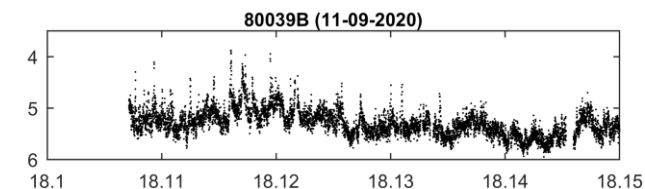
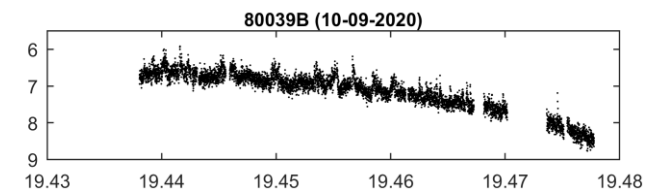
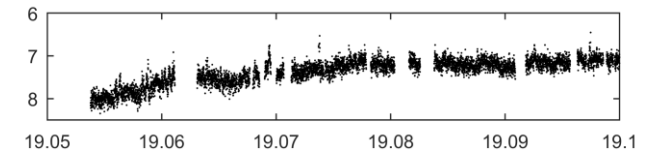
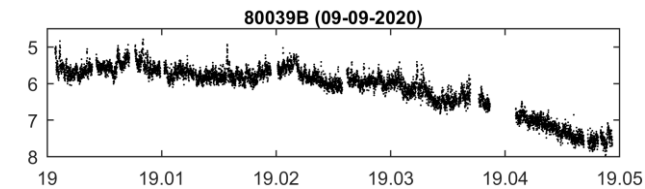
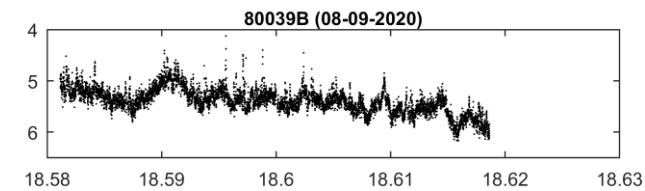
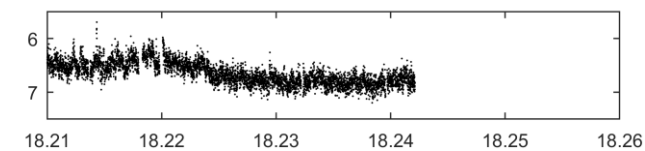
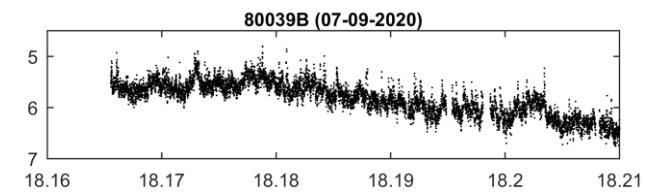
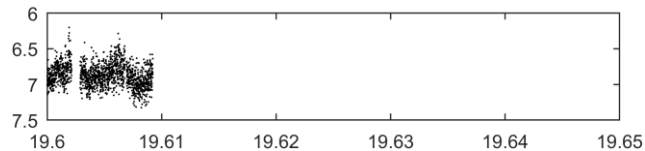
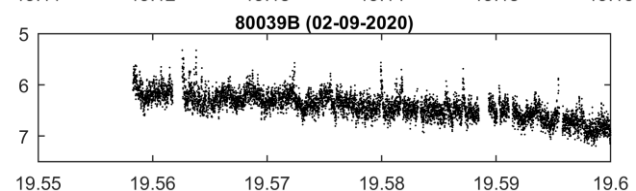
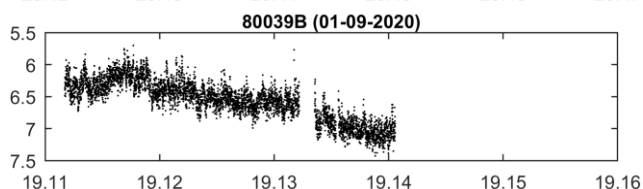
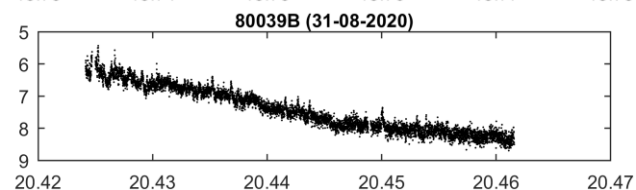
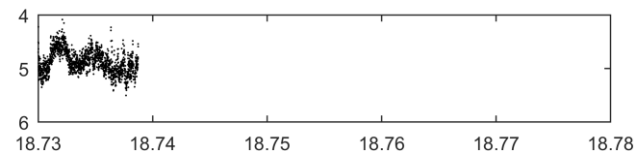
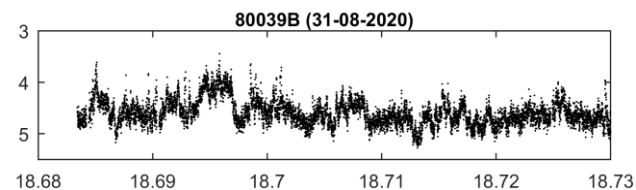
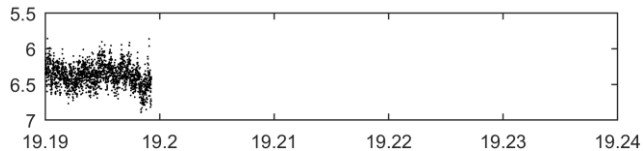
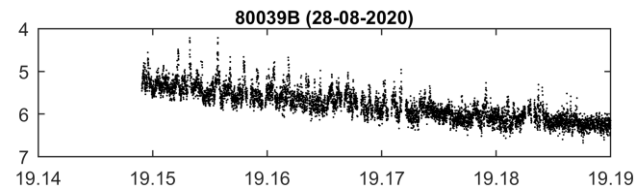
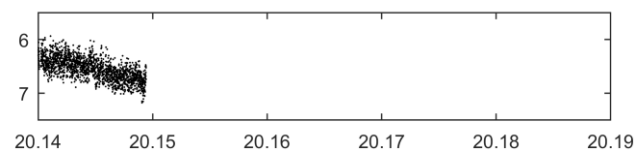
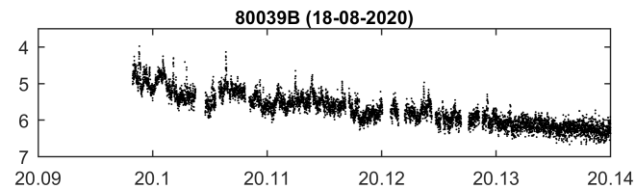
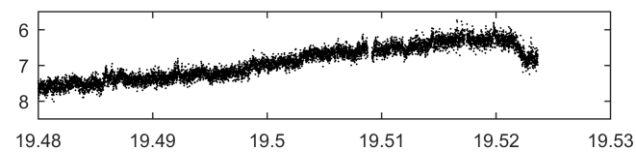
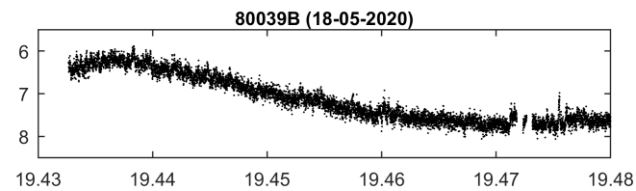
NORAD ID: 11267
 Int'l Code: 1979-011B
 Dimensions: cylinder 7.4m long, 2.4m dia
 Initial orbit:
 Perigee: 635 km
 Apogee: 664 km
 Inclination: 82.54°
 Period: 97.75 min
 Eccentricity: 0.002
 Launch date: 1979-02-12
 Source: Commonwealth of Independent States (former USSR) (CIS)

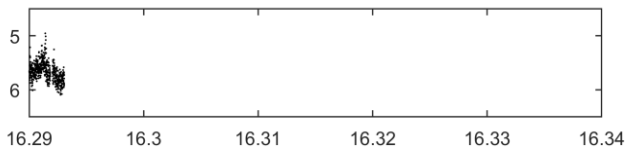
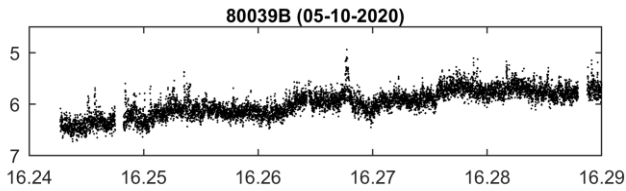
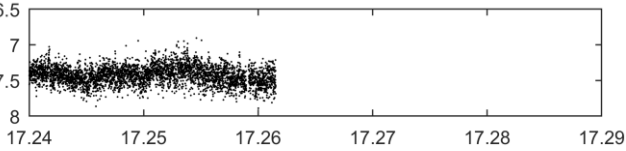
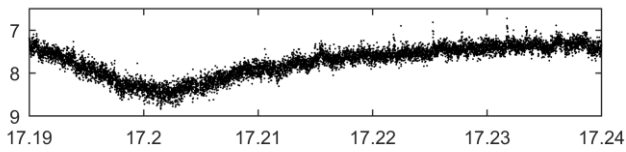
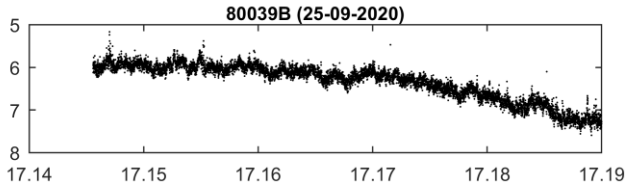
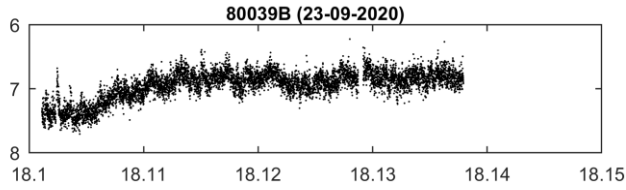
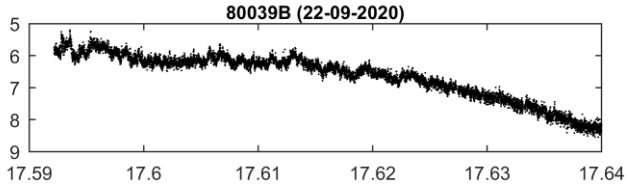
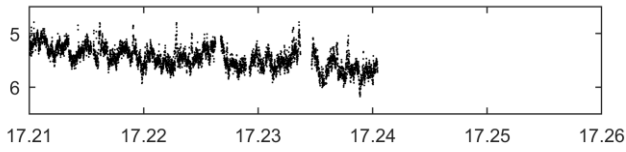
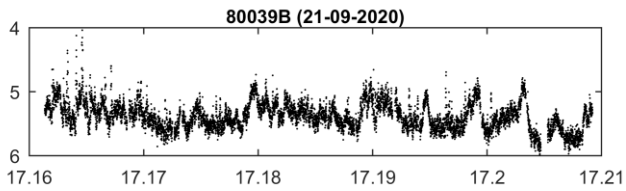


COSMOS 1181 (2nd stage)

SL-8 R/B
 NORAD ID: 11804
 Int'l Code: 1980-039B
 Dimensions: cylinder
 7.4m long, 2.4m dia
 Initial orbit:
 Perigee: 975 km
 Apogee: 997 km
 Inclination: 82.95°
 Period: 104.85 min
 Eccentricity: 0.002
 Launch date: 1980-05-20
 Source: Commonwealth of Independent States (former USSR) (CIS)

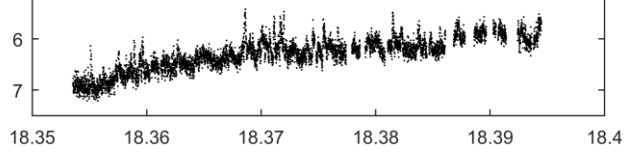
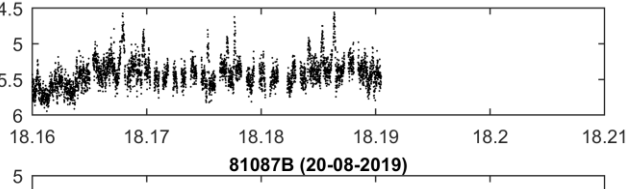
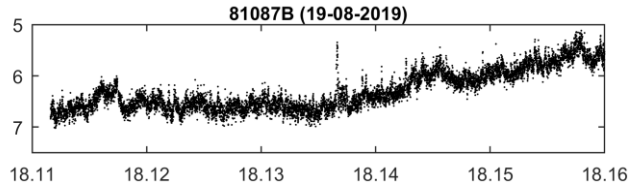
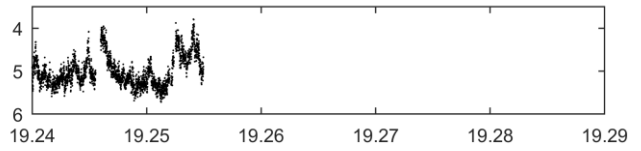
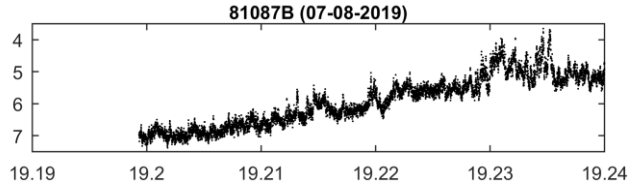
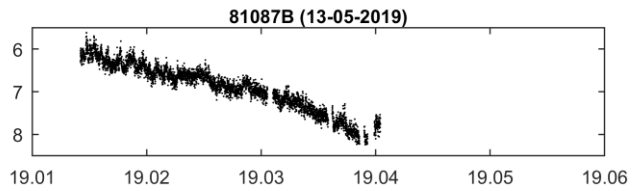






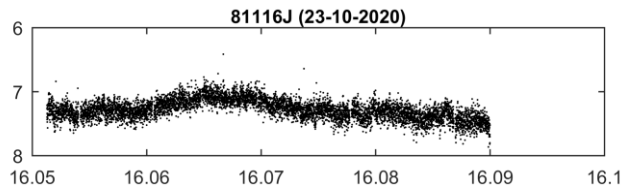
**SL-8 R/B (S3M) (11K65M)(2nd stage)
(COSMOS 1304 ROCKET)**

NORAD ID: 12804
Int'l Code: 1981-087B
Dimensions: cylinder 7.4m long, 2.4m dia
Initial orbit:
Perigee: 909 km
Apogee: 974 km
Inclination: 82.93°
Period: 103.89 min
Eccentricity: 0.004
Launch date: 1981-09-04
Source: Commonwealth of Independent States (former USSR) (CIS)



**SL-8 R/B (S3M) (11K65M)(2nd stage)
(COSMOS 1320-1327 ROCKET)**

NORAD ID: 12983
Int'l Code: 1981-116J
Dimensions: cylinder 7.4m long, 2.4m dia
Initial orbit:
Perigee: 1483 km
Apogee: 1670 km
Inclination: 73.98°
Period: 117.69 min
Eccentricity: 0.012
Launch date: 1981-11-28
Source: Commonwealth of Independent States (former USSR) (CIS)

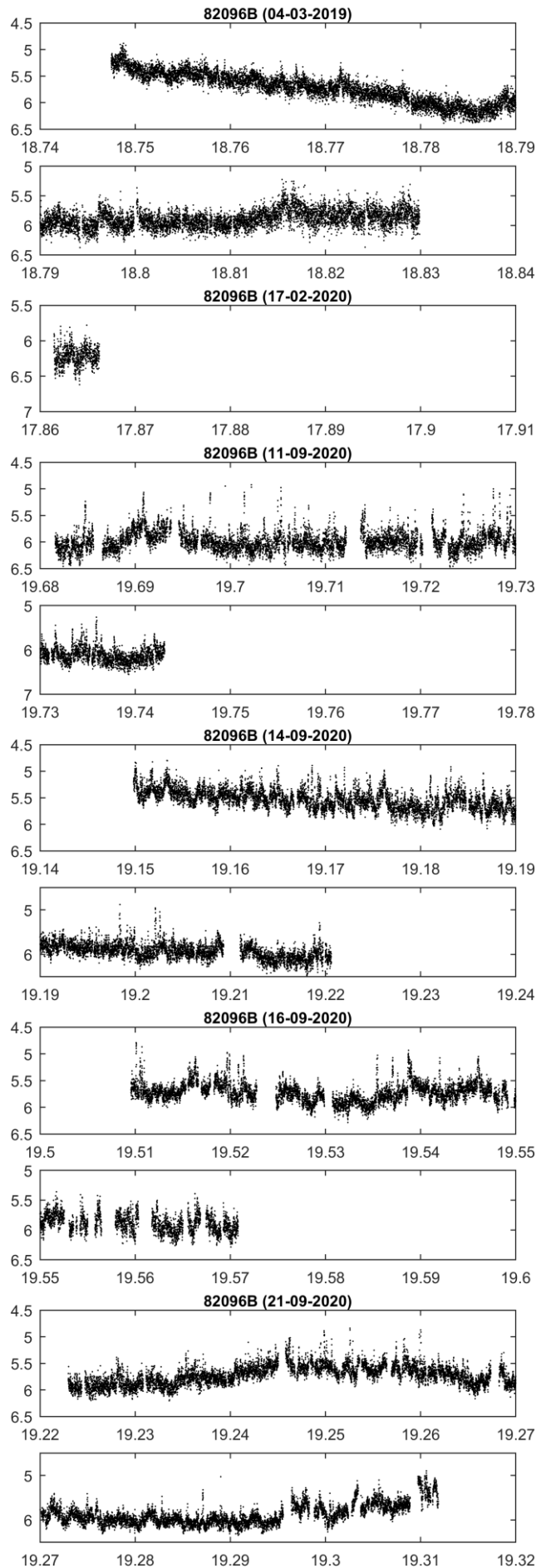
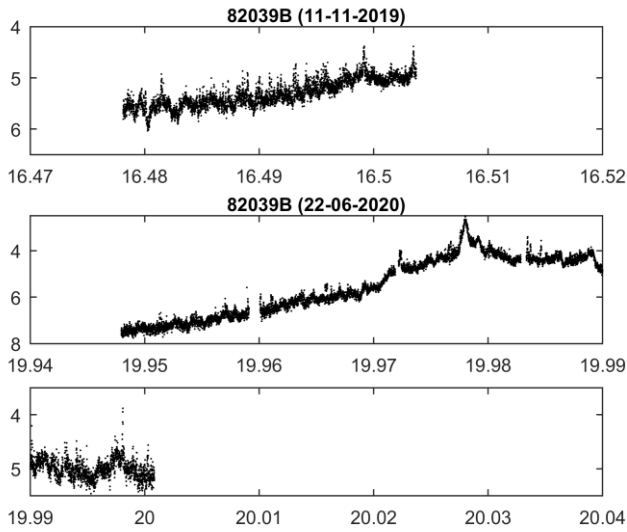


**SL-3 R/B (8A92ME)
Vostok-2M (Block E 3rd stage)
(COSMOS 1356 ROCKET)**

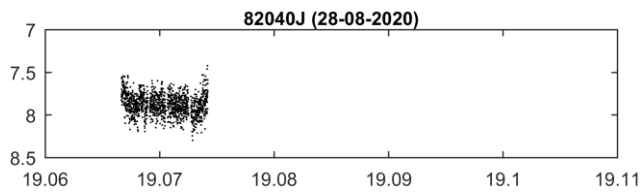
NORAD ID: 13154
Int'l Code: 1982-039B
Dimensions: cylinder 3.8m long, 2.6m dia
Initial orbit:
Perigee: 618 km



Apogee: 698 km
 Inclination: 81.21°
 Period: 97.92 min
 Eccentricity: 0.006
 Launch date: 1982-05-05
 Source: Commonwealth of Independent States (former USSR) (CIS)



SL-8 R/B (S3M) (2nd stage)
(COSMOS 1357-1364 ROCKET)
 NORAD ID: 13168
 Int'l Code: 1982-040J
 Dimensions: cylinder 7.4m long, 2.4m dia
 Initial orbit:
 Perigee: 1481 km
 Apogee: 1683 km
 Inclination: 74.05°
 Period: 117.81 min
 Eccentricity: 0.013
 Launch date: 1982-05-06
 Source: Commonwealth of Independent States (former USSR) (CIS)



SL-14 R/B (3rd stage)
 NORAD ID: 13590
 Int'l Code: 1982-096B
 Dimensions: cylinder 7.4m long, 2.4m dia
 Initial orbit:
 Perigee: 1493 km
 Apogee: 1501 km
 Inclination: 82.62°
 Period: 115.94 min
 Eccentricity: 0.001
 Launch date: 1982-09-24
 Source: Commonwealth of Independent States (former USSR) (CIS)



OPS 9845 (DMSP 5D-2 F6)

NORAD ID: 13736

Int'l Code: 1982-118A

Dimensions: irregular 6.40m long?

1.68m dia?

Initial orbit:

Perigee: 816 km

Apogee: 827 km

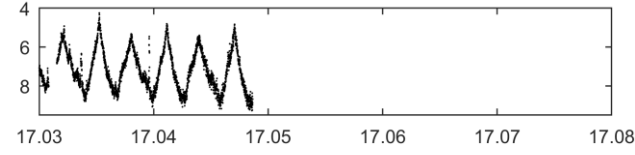
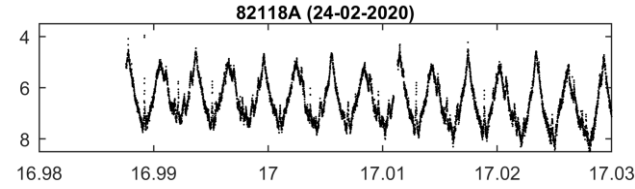
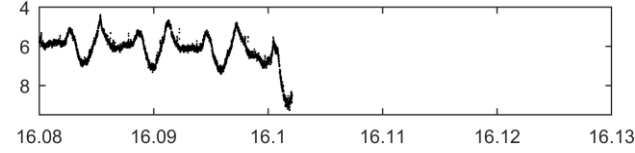
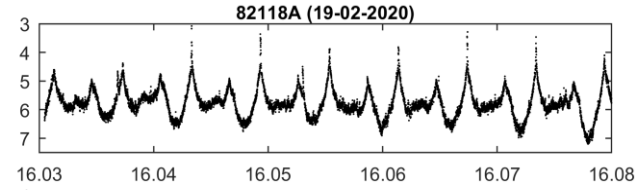
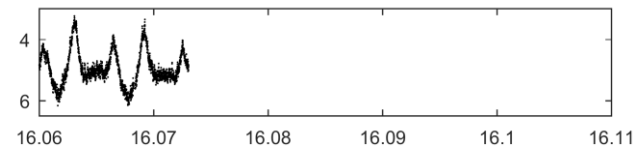
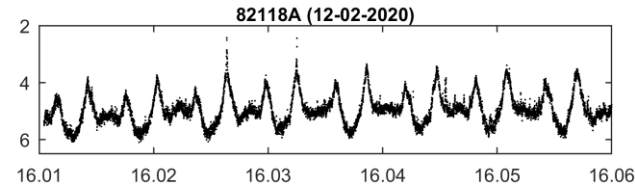
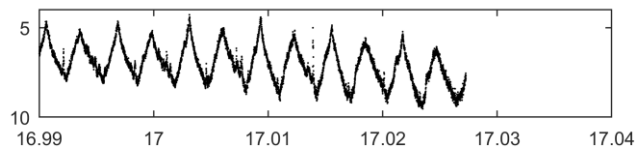
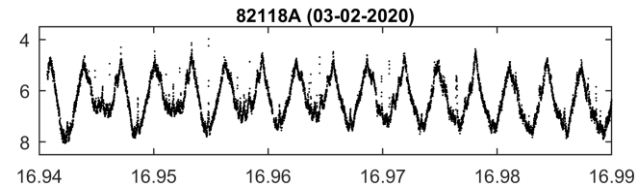
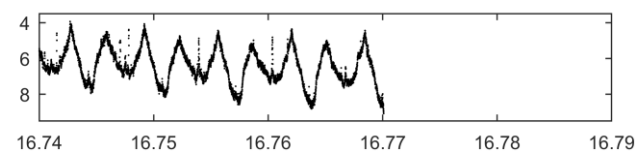
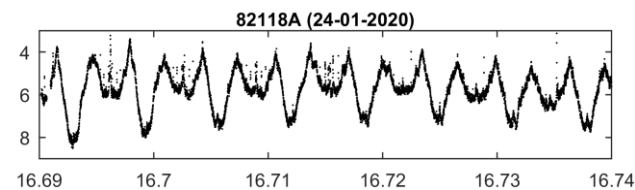
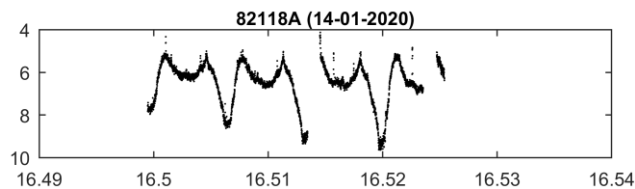
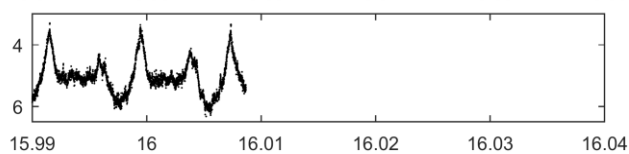
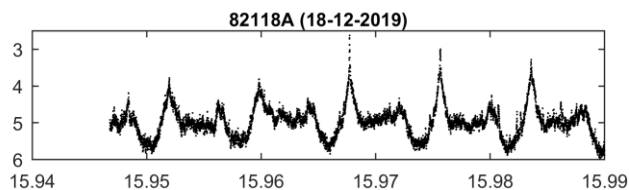
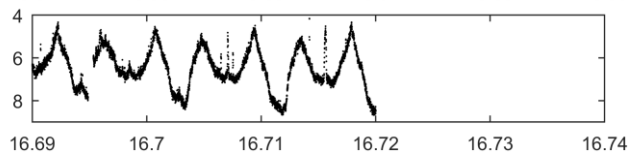
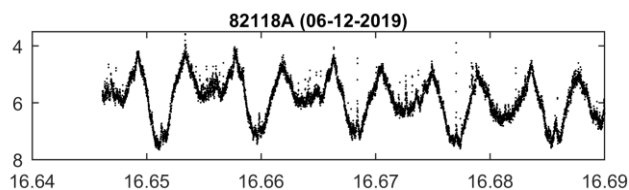
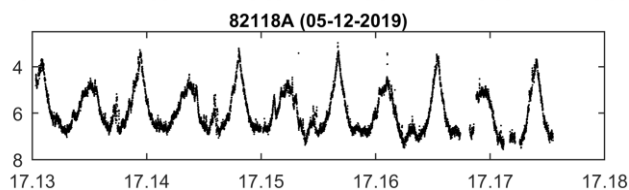
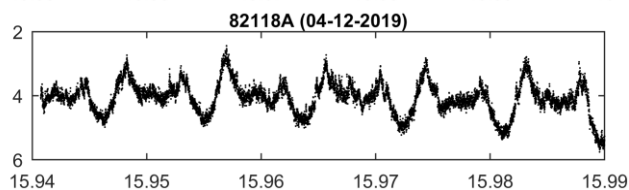
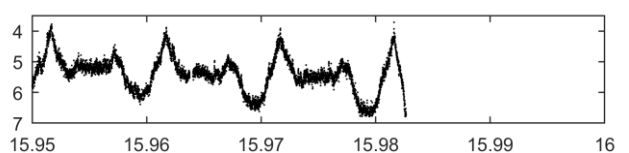
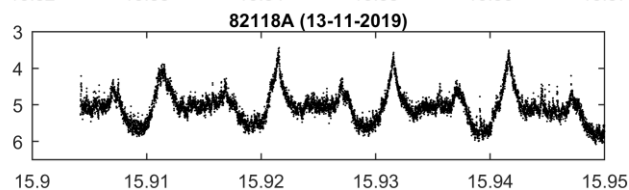
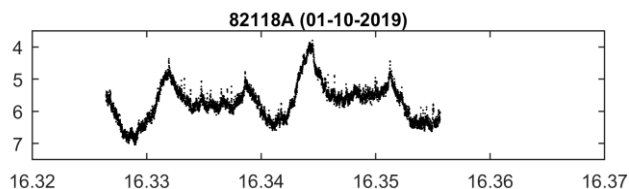
Inclination: 98.72°

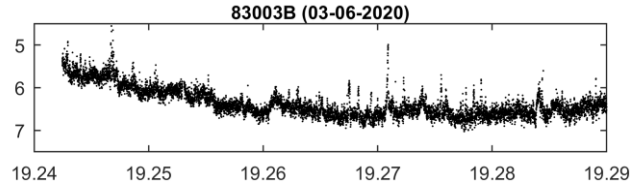
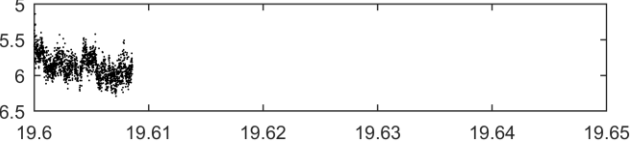
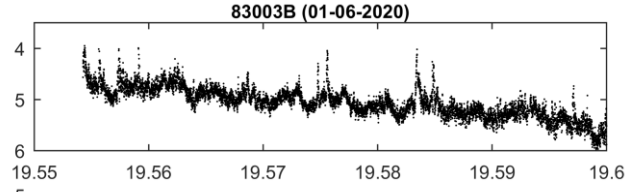
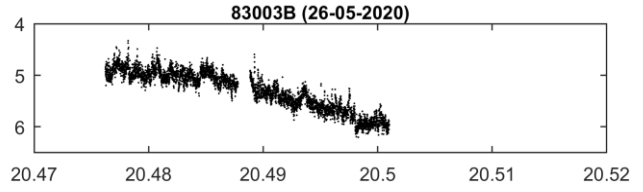
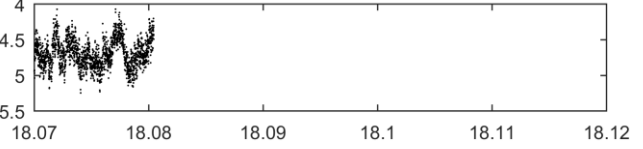
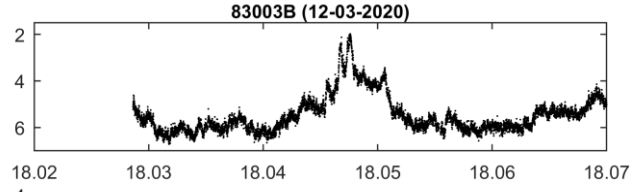
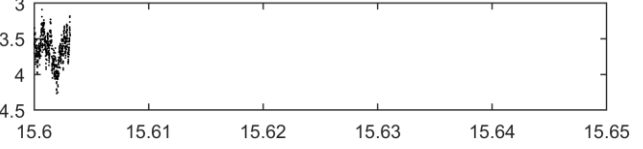
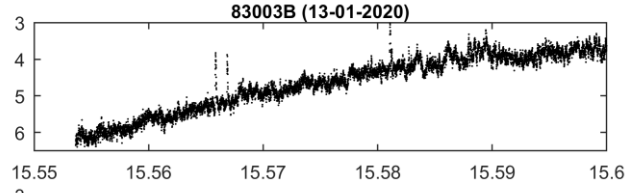
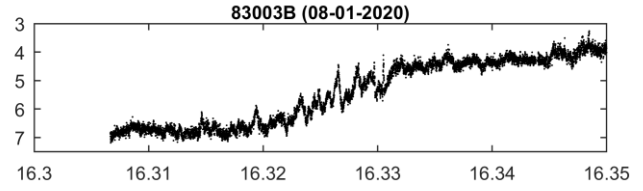
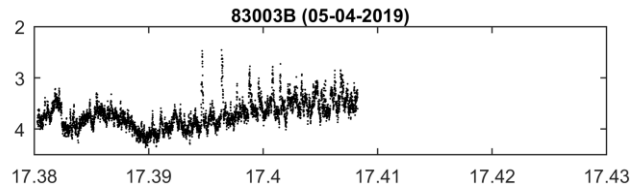
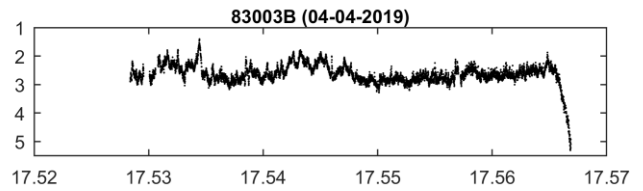
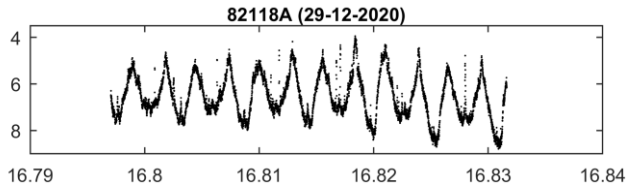
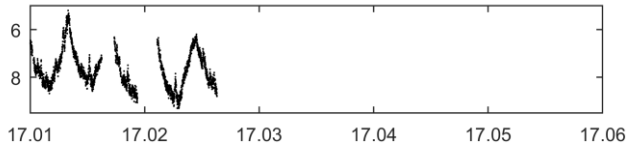
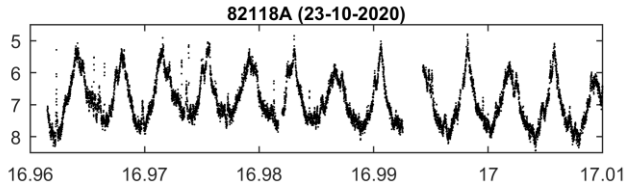
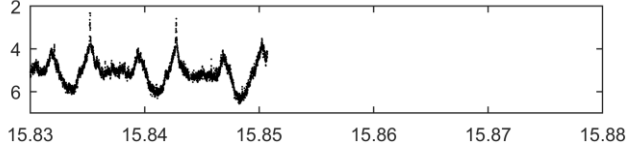
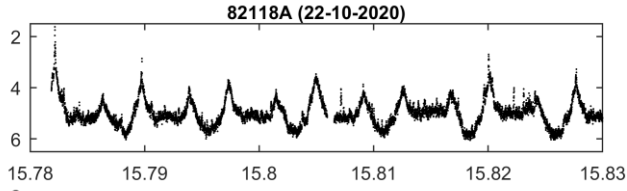
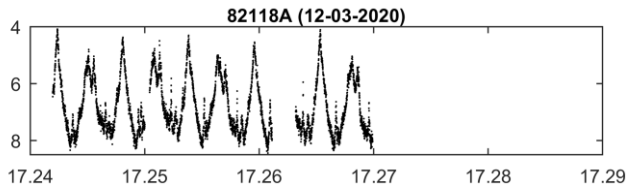
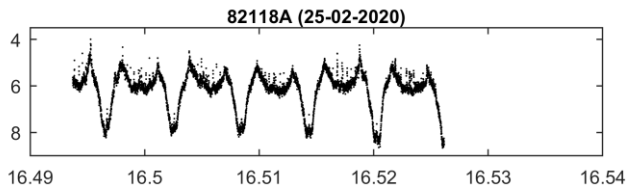
Period: 101.36 min

Eccentricity: 0.001

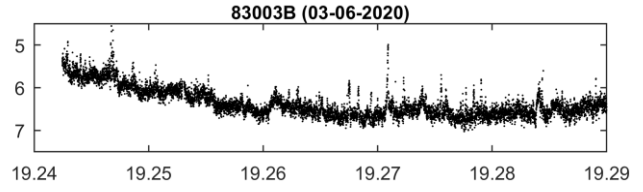
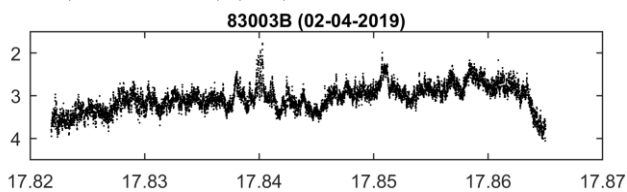
Launch date: 1982-12-21

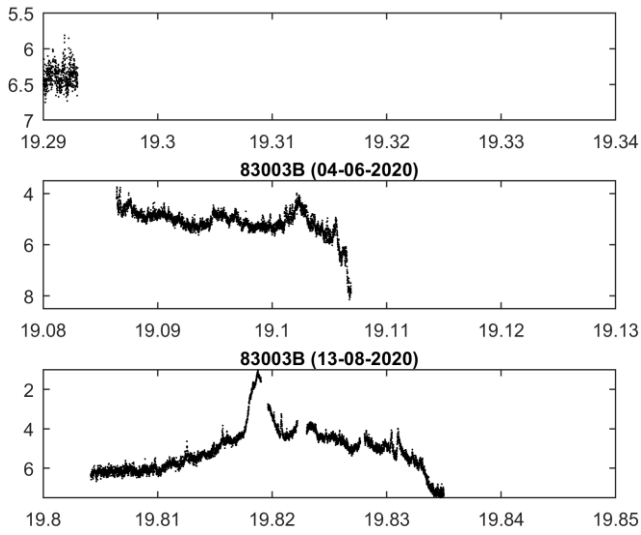
Source: United States (US)





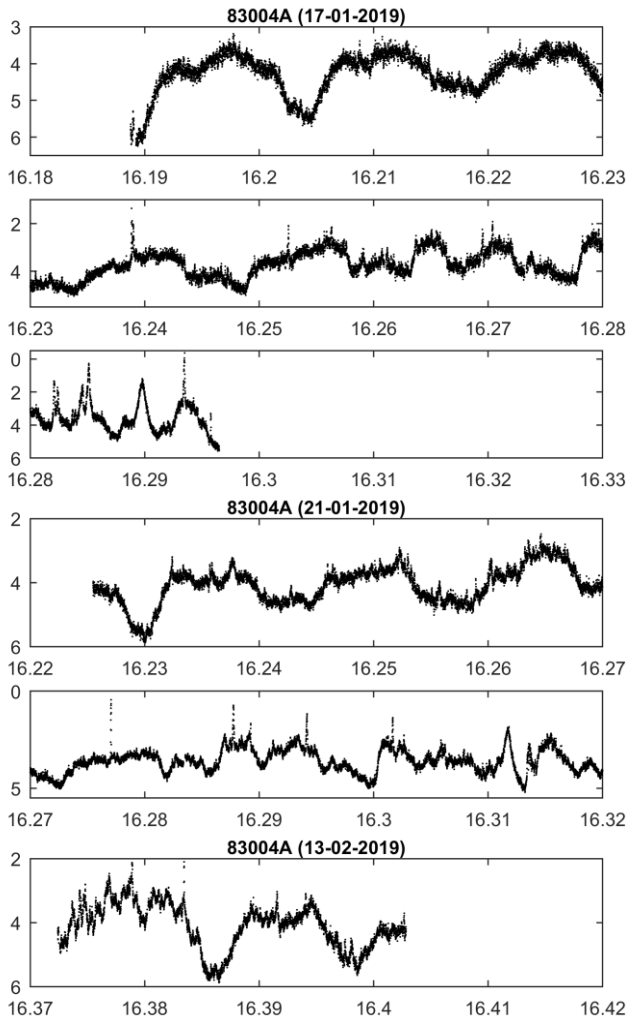
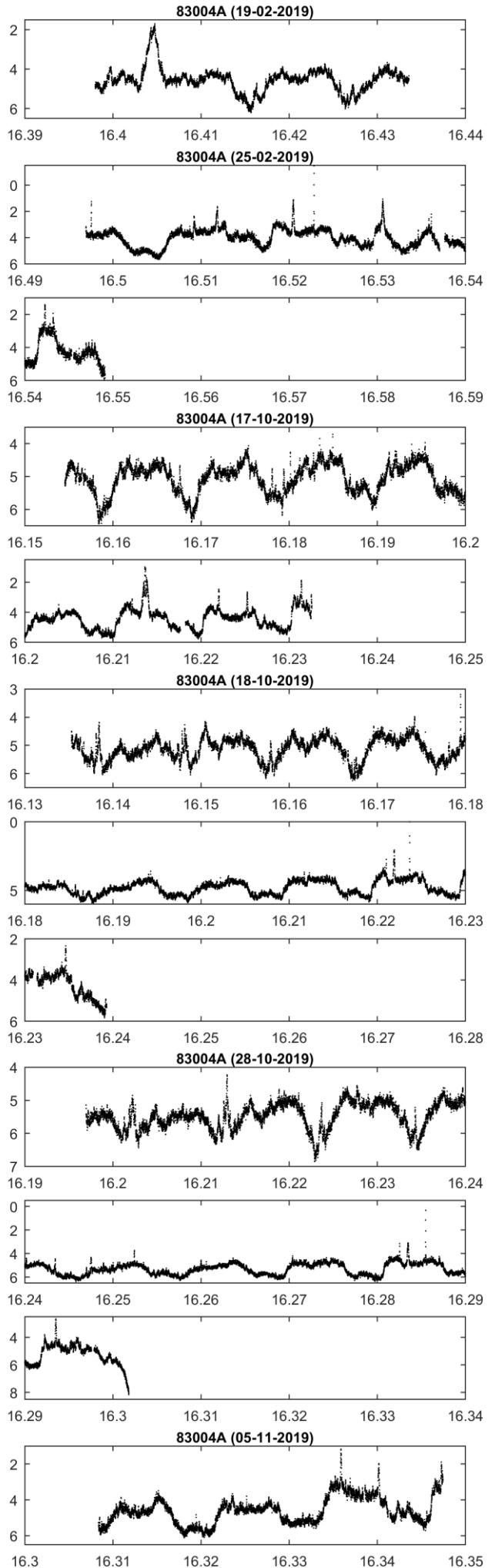
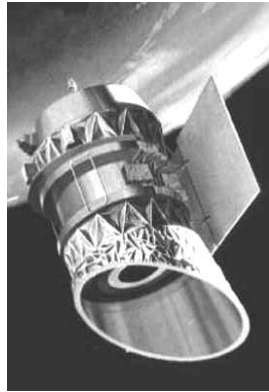
SL-3 R/B (8A92ME)
Vostok-2M (Block E 3rd stage)
(COSMOS 1437 ROCKET)
 NORAD ID: 13771
 Int'l Code: 1983-003B
 Dimensions: cylinder 3.8m long,
 2.6m dia
 Initial orbit:
 Perigee: 605 km
 Apogee: 685 km
 Inclination: 81.17°
 Period: 97.65 min
 Eccentricity: 0.006
 Launch date: 1983-01-20
 Source: Commonwealth of Independent
 States (former USSR) (CIS)

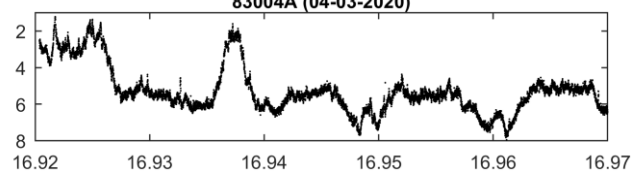
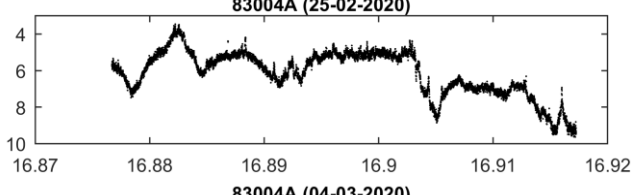
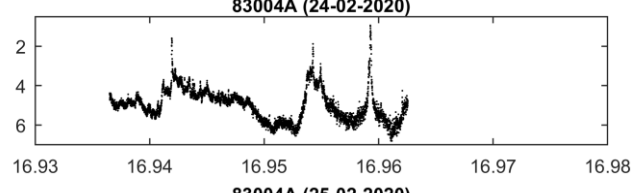
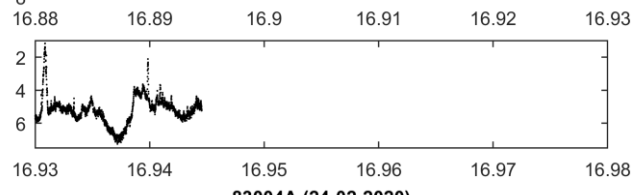
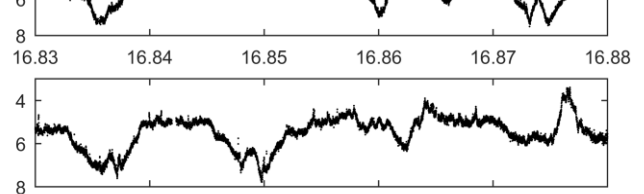
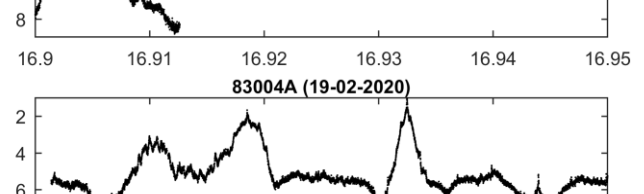
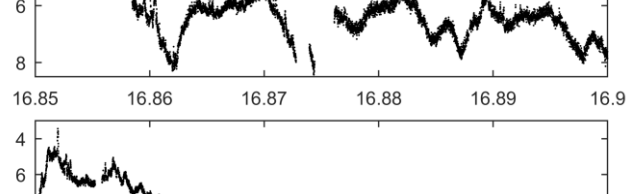
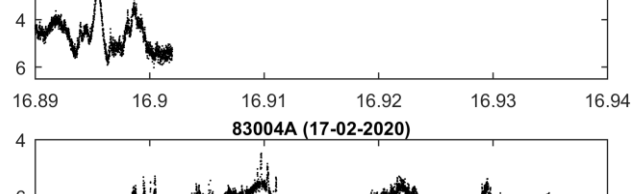
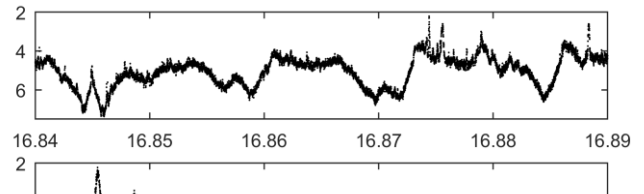
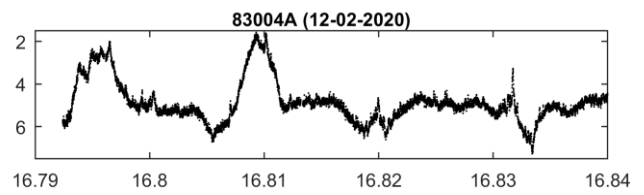
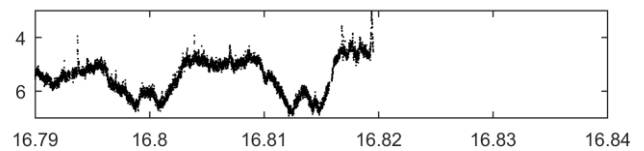
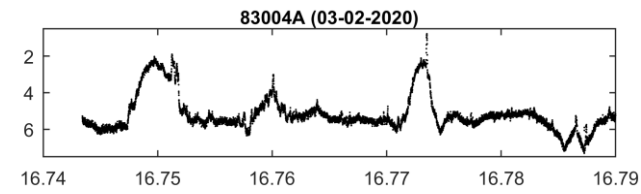
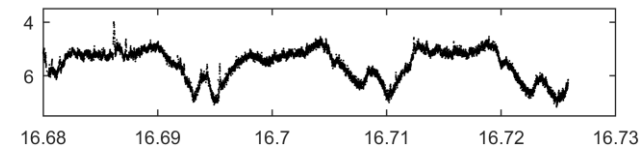
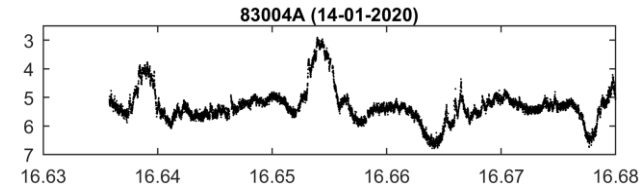
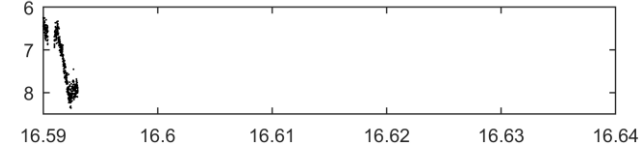
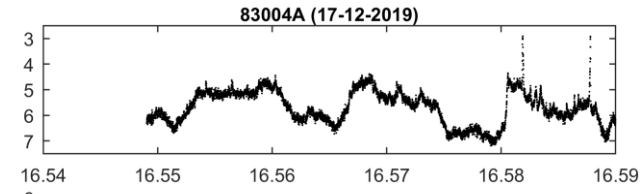
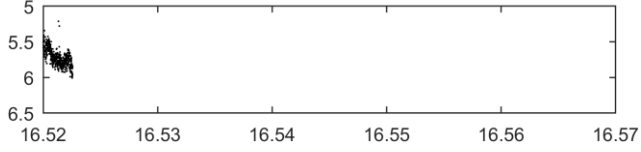
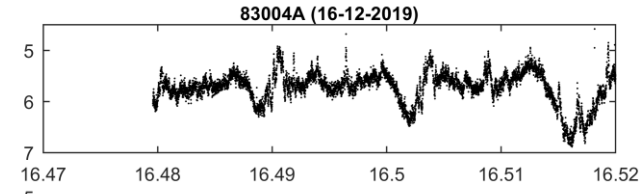
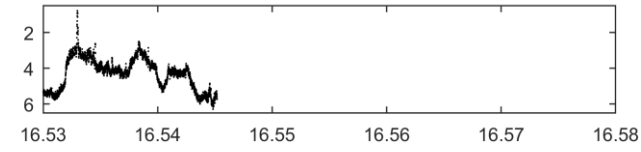
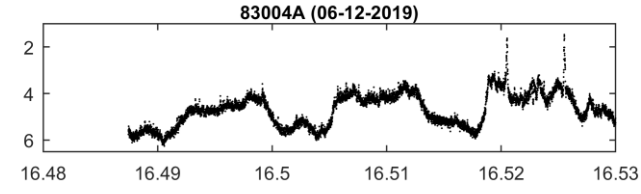
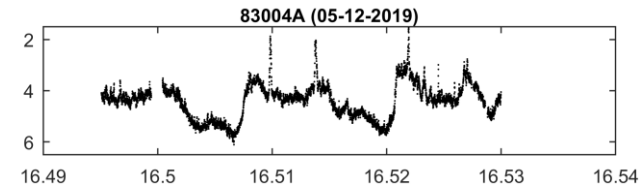
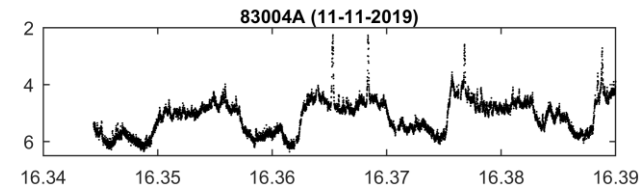


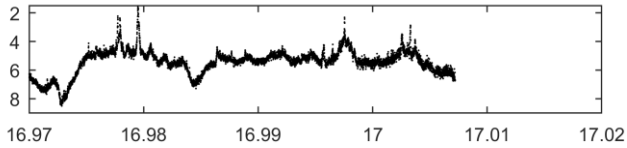


IRAS

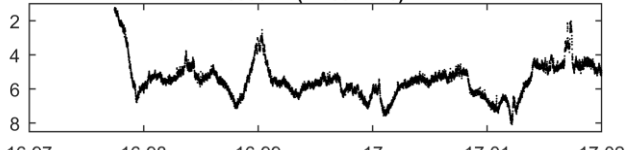
NORAD ID: 13777
 Int'l Code: 1983-004A
 Dimensions: cylinder + panel
 3.60m long, 2.05m dia
 Initial orbit:
 Perigee: 896 km
 Apogee: 913 km
 Inclination: 99.1°
 Period: 103.11 min
 Eccentricity: 0.001
 Launch date: 1983-01-26
 Source: United States (US)



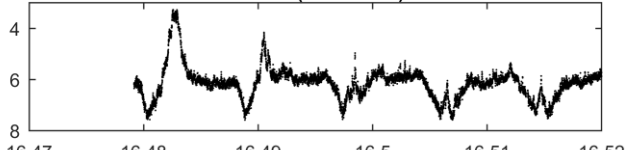




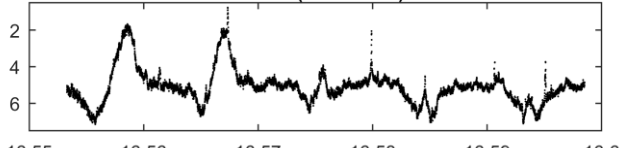
83004A (12-03-2020)



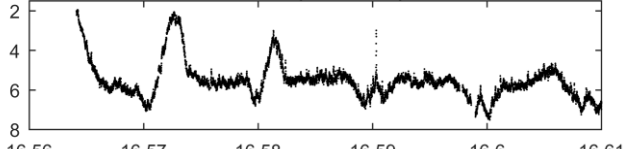
83004A (05-10-2020)



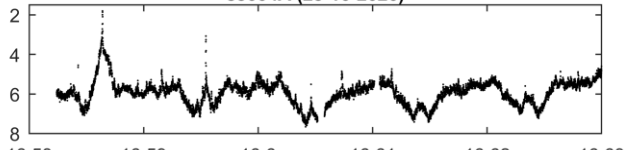
83004A (20-10-2020)



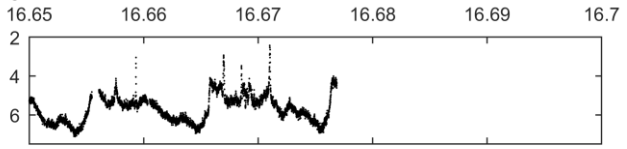
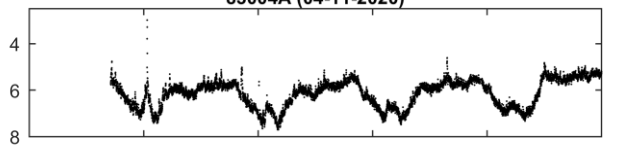
83004A (22-10-2020)



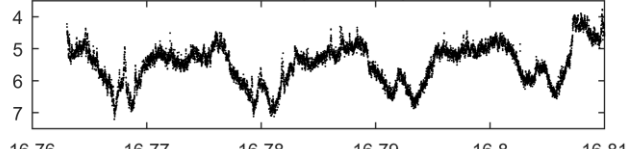
83004A (23-10-2020)



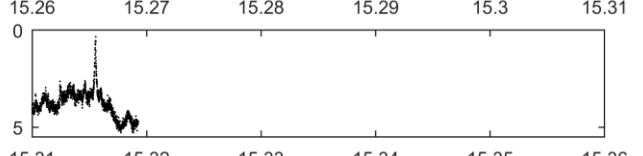
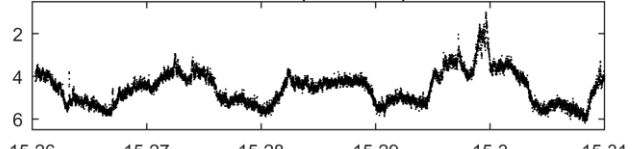
83004A (04-11-2020)



83004A (27-11-2020)



83004A (29-12-2020)



COSMOS 1510 (3rd stage)

SL-14 R/B

NORAD ID: 14522

Int'l Code: 1983-115B

Dimensions: cylinder

7.4m long, 2.4m dia

Initial orbit:

Perigee: 1480 km

Apogee: 1523 km

Inclination: 73.62°

Period: 116.03 min

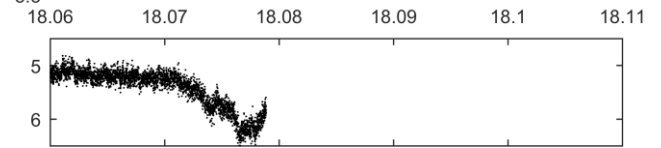
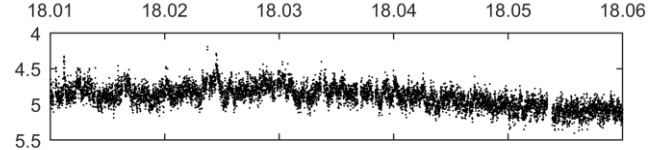
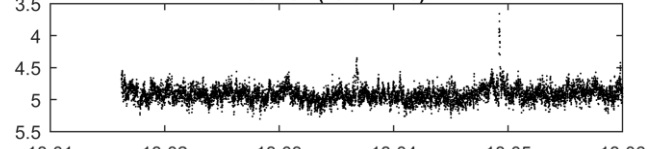
Eccentricity: 0.003

Launch date: 1983-11-24

Source: Commonwealth of Independent States (former USSR) (CIS)



83115B (19-02-2019)



SL-14 R/B

(Cosmos 1617 3rd stage)

NORAD ID: 15475

Int'l Code: 1985-003G

Dimensions: cylinder 7.4m long, 2.4m dia

Initial orbit:

Perigee: 1414 km

Apogee: 1473 km

Inclination: 82.61°

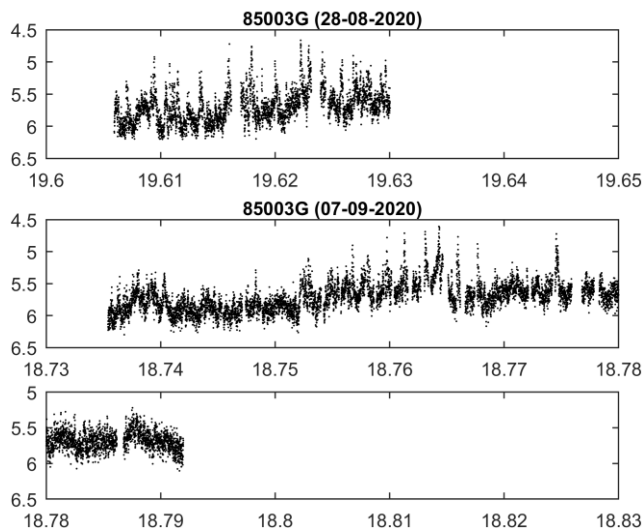
Period: 114.79 min

Eccentricity: 0.004



Launch date: 1985-01-15

Source: Commonwealth of Independent States (former USSR) (CIS)



**SL-14 R/B (S5M) (3rd stage)
(COSMOS 1633 ROCKET)**

NORAD ID: 15593

Int'l Code: 1985-020B

Dimensions: cylinder 7.4m long, 2.4m dia

Initial orbit:

Perigee: 635 km

Apogee: 656 km

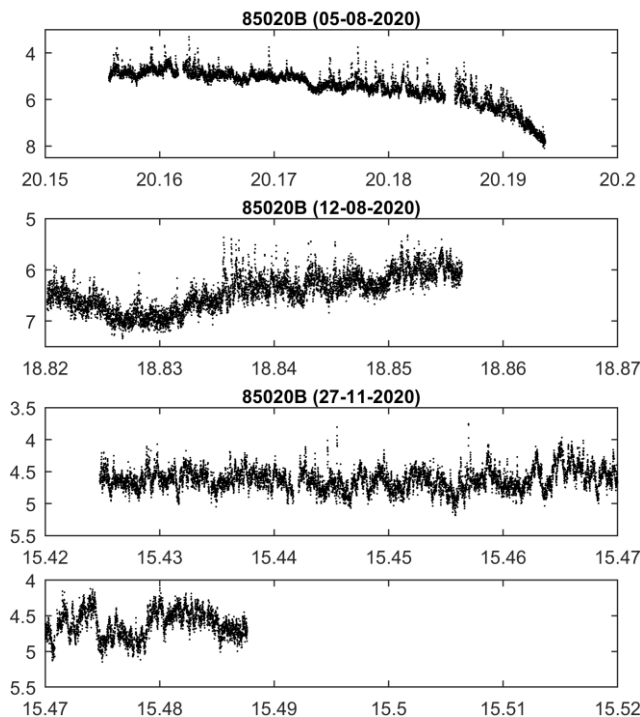
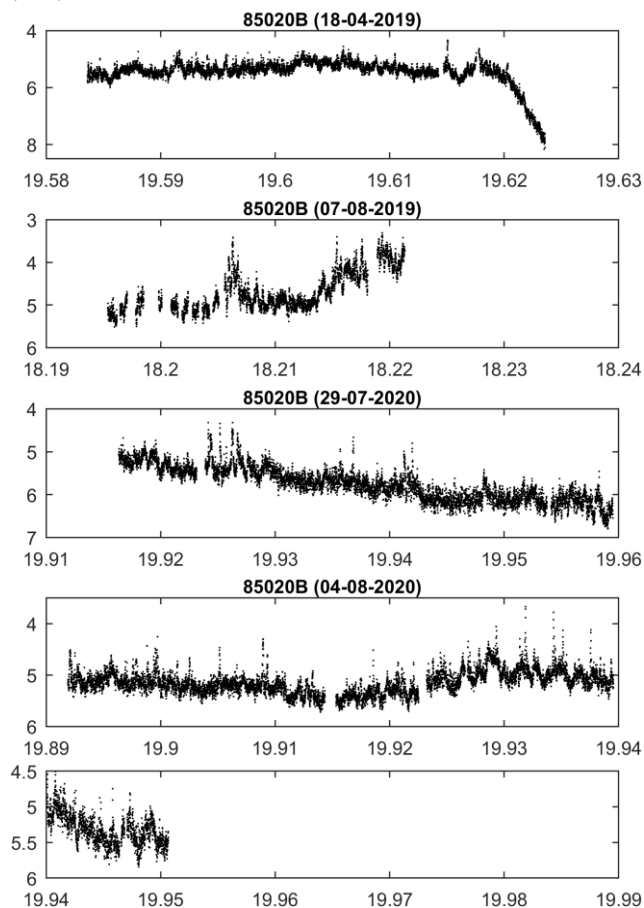
Inclination: 82.54°

Period: 97.7 min

Eccentricity: 0.001

Launch date: 1985-03-05

Source: Commonwealth of Independent States (former USSR) (CIS)



**COSMOS 1660
GEO-IK (MUSSON, 11F666)**

NORAD ID: 15821

Int'l Code: 1985-047A

Dimensions:

Initial orbit:

Perigee: 1482 km

Apogee: 1526 km

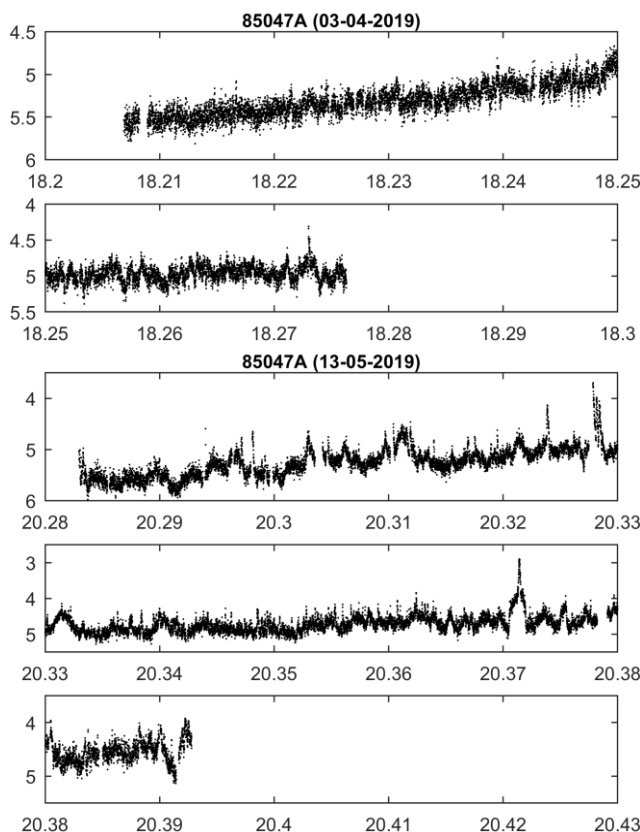
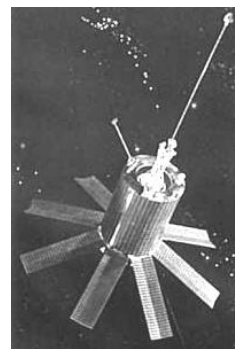
Inclination: 73.63°

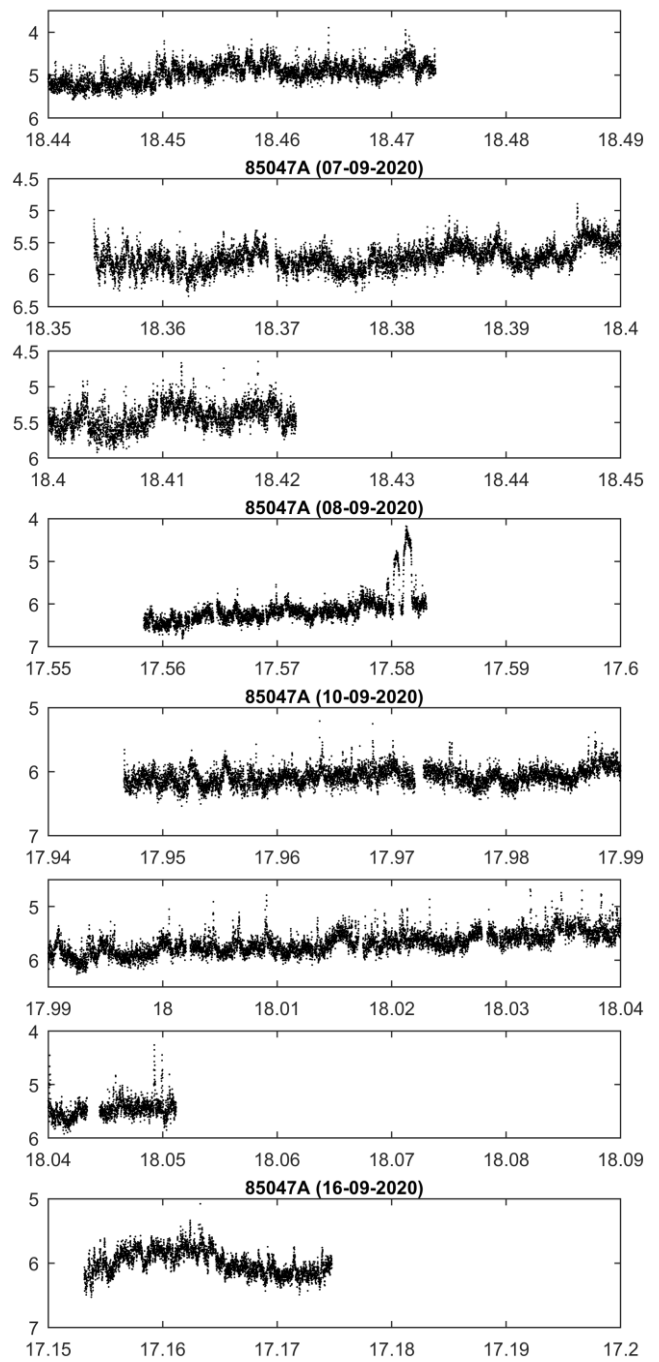
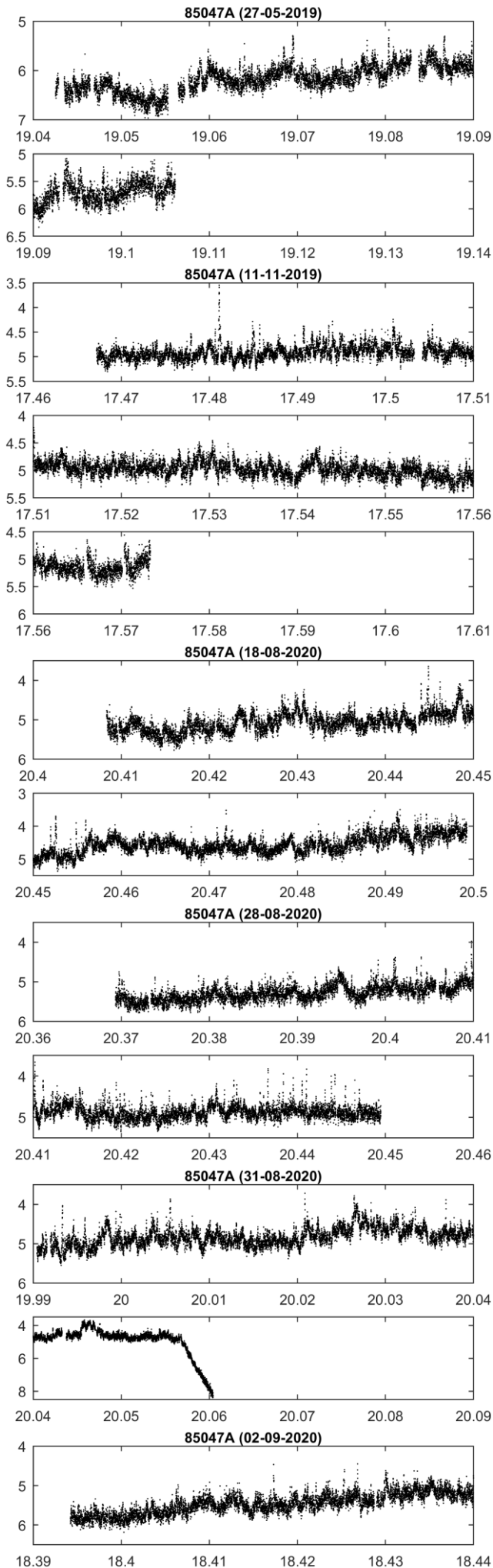
Period: 116.11 min

Eccentricity: 0.003

Launch date: 1985-06-14

Source: Commonwealth of Independent States (former USSR) (CIS)





SL-14 R/B

NORAD ID: 16144

Int'l Code: 1985-094G

Dimensions: cylinder 7.4m long, 2.4m dia

Initial orbit:

Perigee: 1417 km

Apogee: 1470 km

Inclination: 82.61°

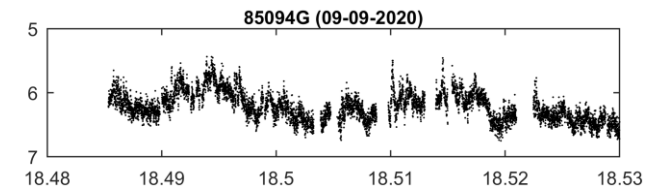
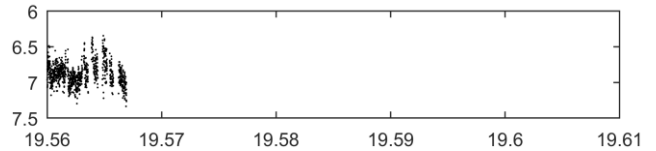
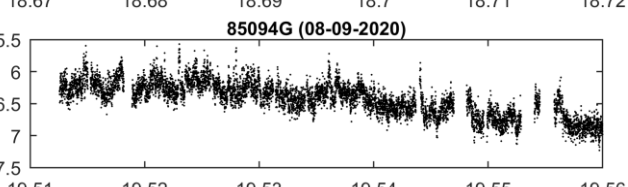
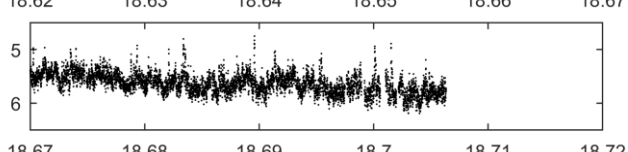
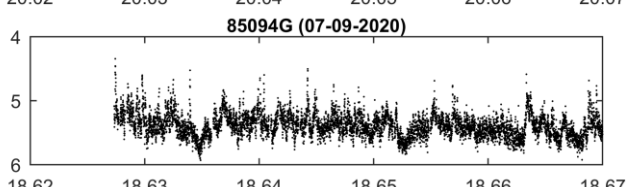
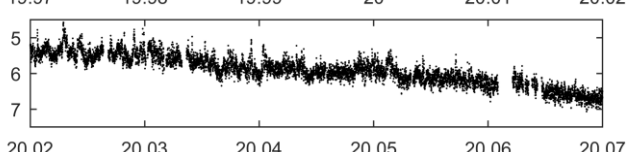
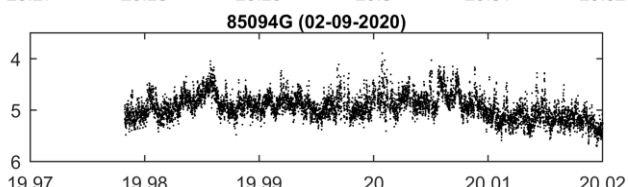
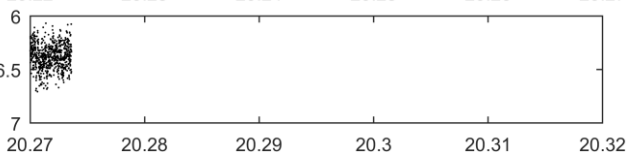
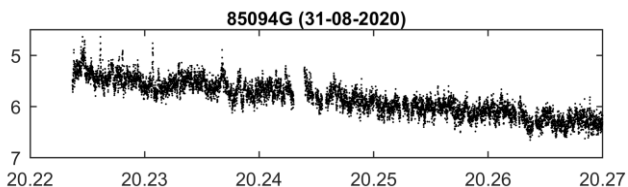
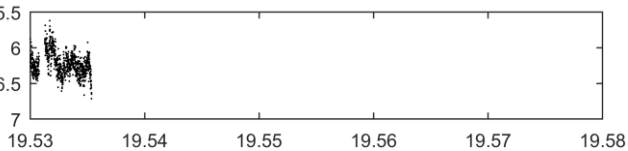
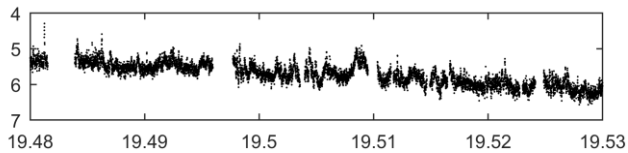
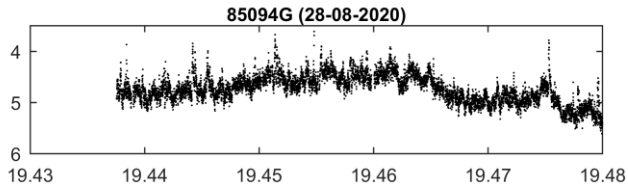
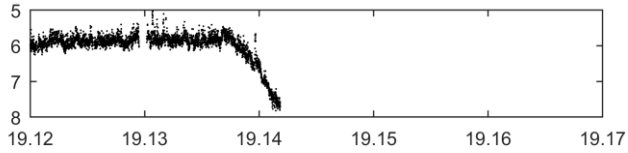
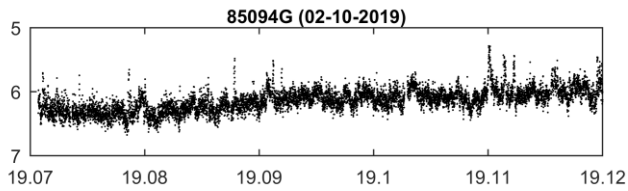
Period: 114.80 min

Eccentricity: 0.003

Launch date: 1985-10-09

Source: Commonwealth of Independent States (former USSR) (CIS)





SL-14 R/B (METEOR-3 01 3rd stage)

NORAD ID: 16194

Int'l Code: 1985-100B

Dimensions: cylinder 7.4m long, 2.4m dia

Initial orbit:

Perigee: 1227 km

Apogee: 1247 km

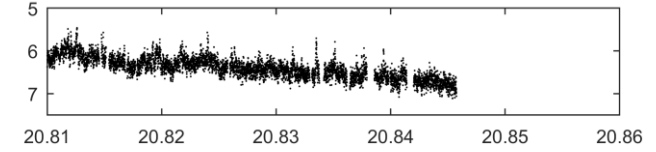
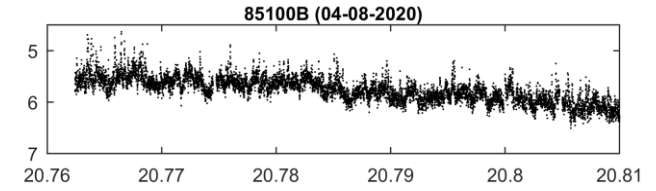
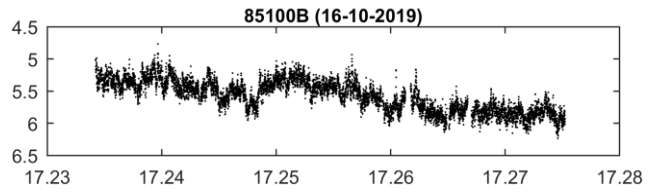
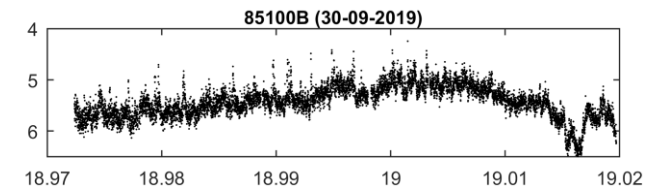
Inclination: 82.55°

Period: 110.29 min

Eccentricity: 0.001

Launch date: 1985-10-24

Source: Commonwealth of Independent States (former USSR) (CIS)



SL-14 R/B (S5M) (3rd stage)

(COSMOS 1732 ROCKET)

NORAD ID: 16594

Int'l Code: 1986-015B

Dimensions: cylinder 7.4m long, 2.4m dia

Initial orbit:

Perigee: 1479 km

Apogee: 1522 km

Inclination: 73.61°

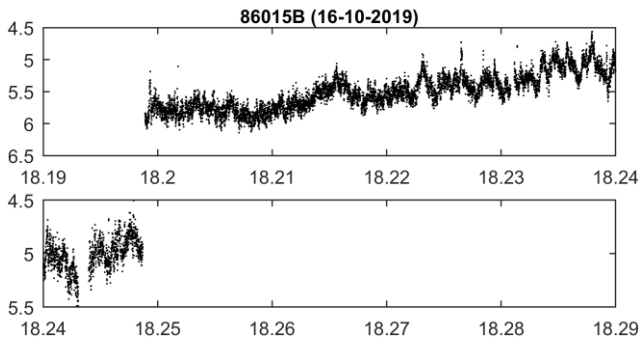
Period: 116.03 min

Eccentricity: 0.003

Launch date: 1986-02-11

Source: Commonwealth of Independent States (former USSR) (CIS)





**ARIANE 1 R/B (H8 third stage)
(SPOT 1, Viking ROCKET)**

NORAD ID: 16615

Int'l Code: 1986-019C

Dimensions: cylinder 8.6m long, 2.6m dia

Initial orbit:

Perigee: 799 km

Apogee: 833 km

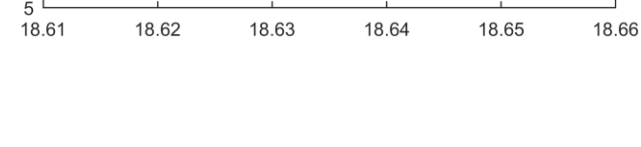
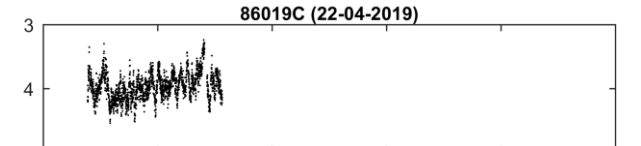
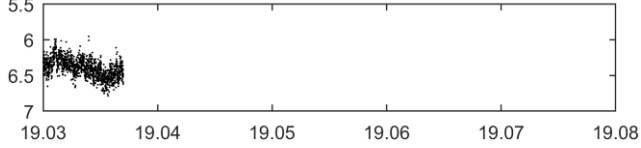
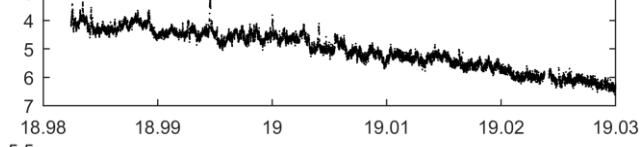
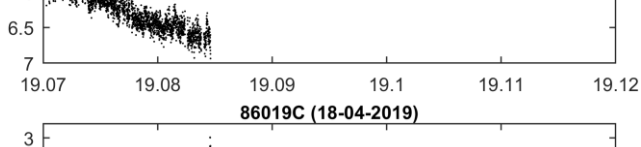
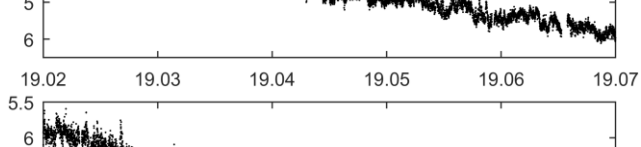
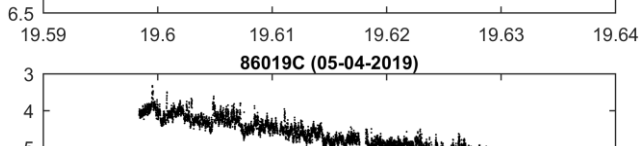
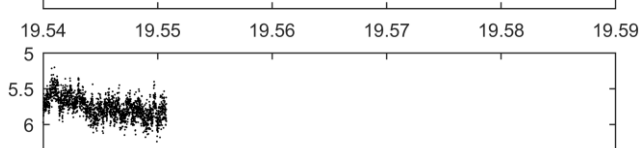
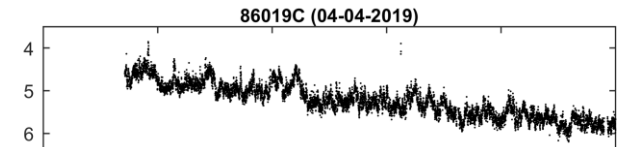
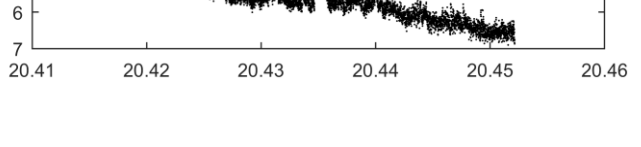
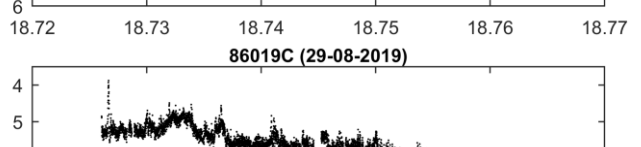
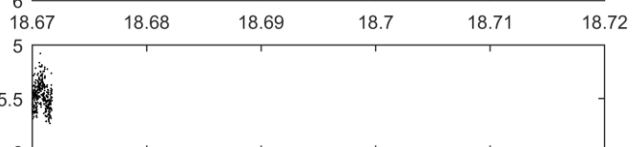
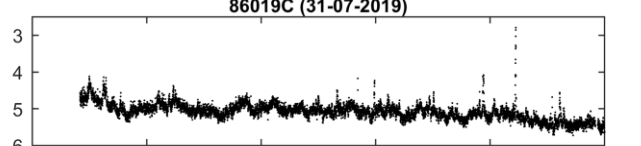
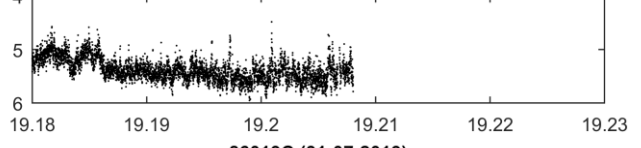
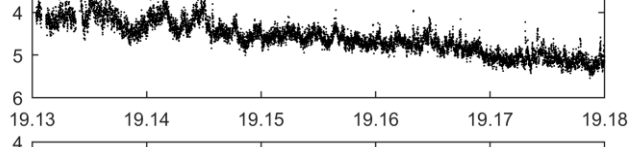
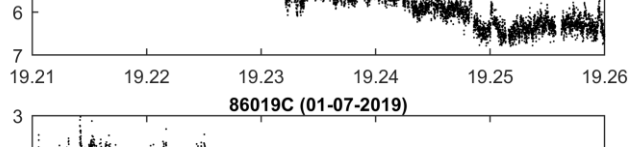
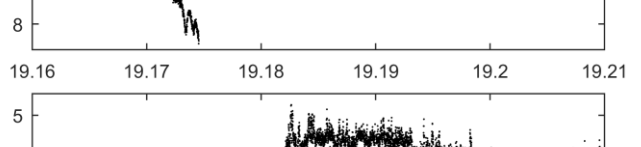
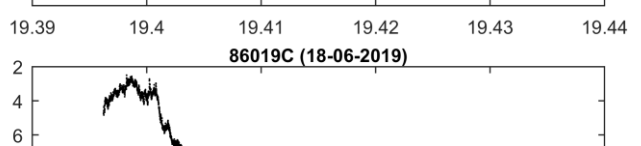
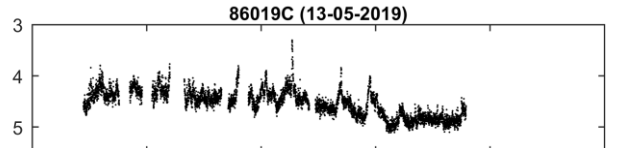
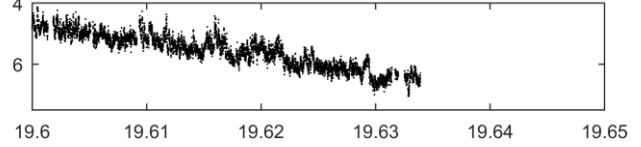
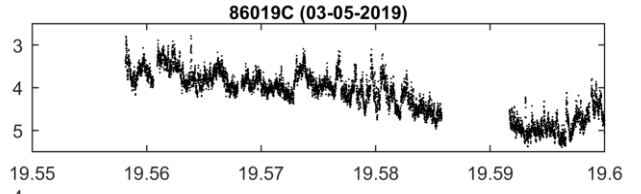
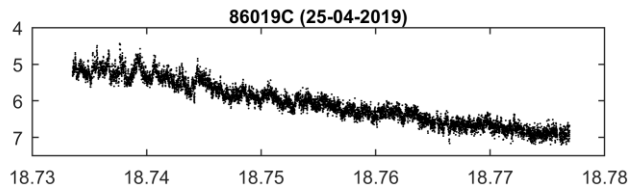
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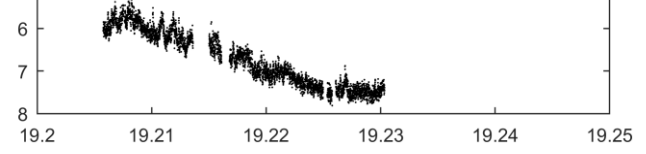
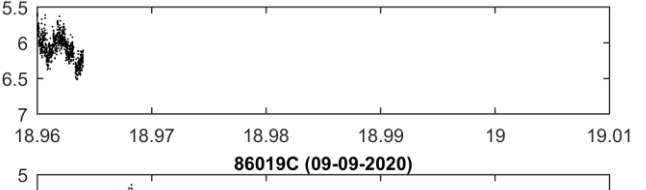
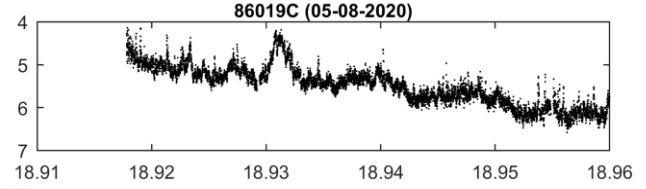
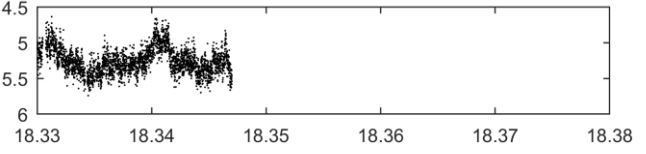
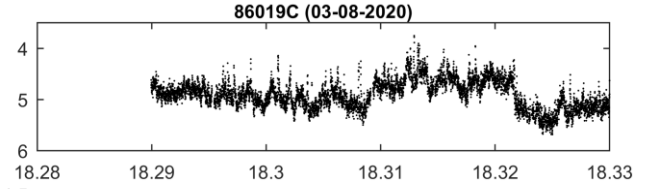
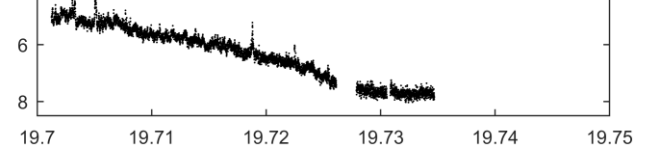
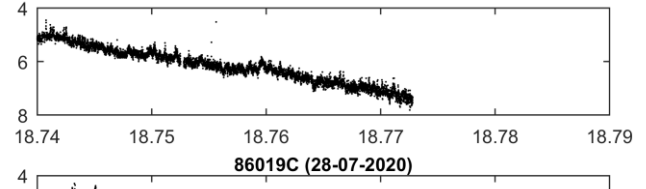
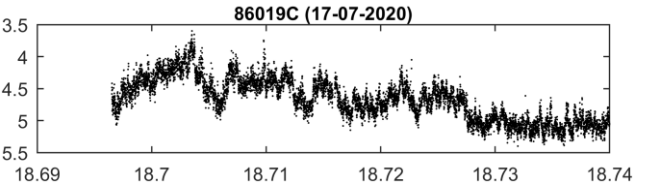
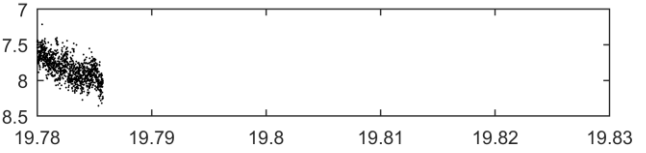
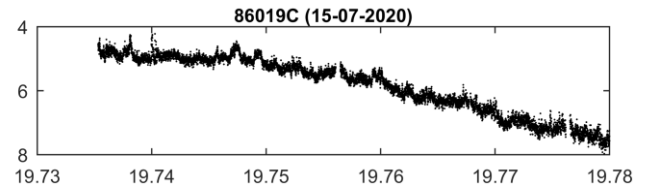
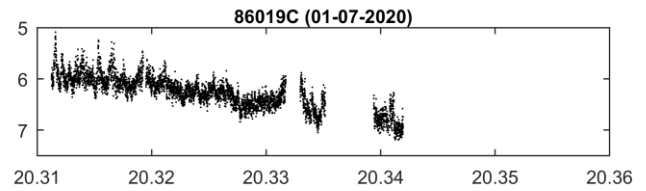
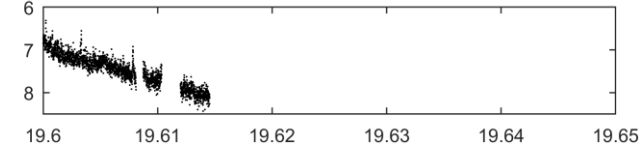
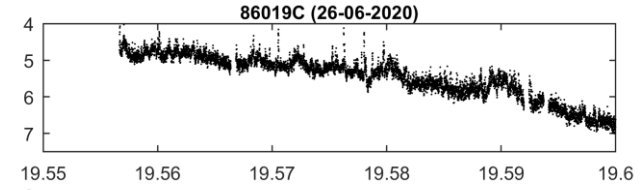
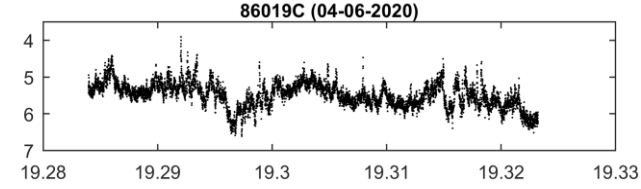
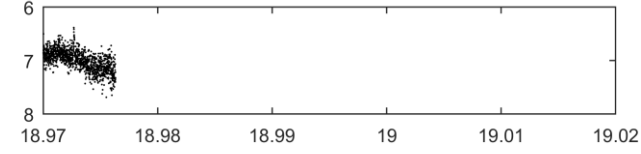
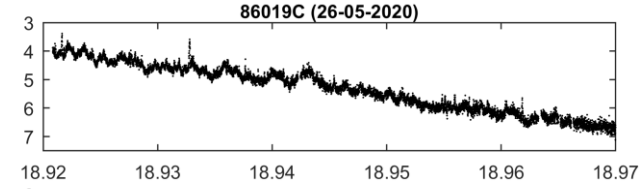
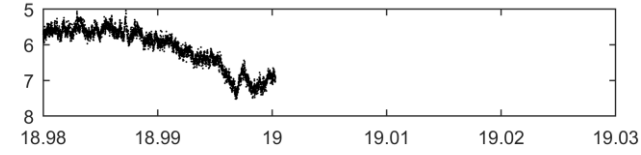
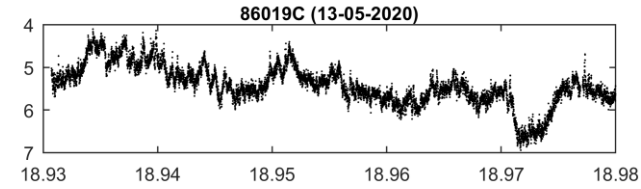
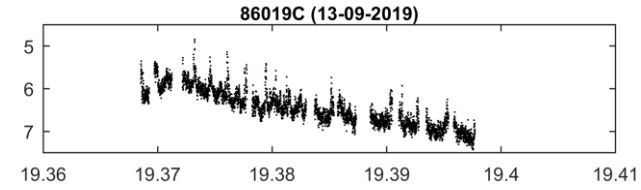
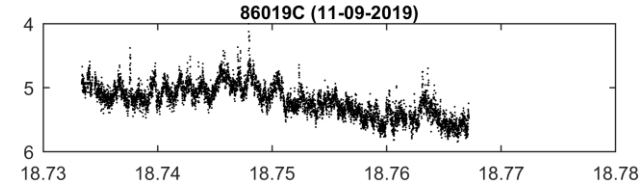
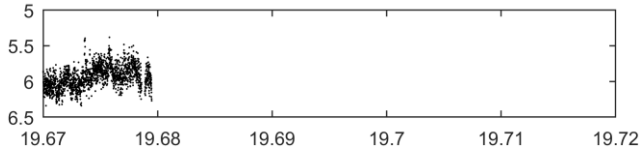
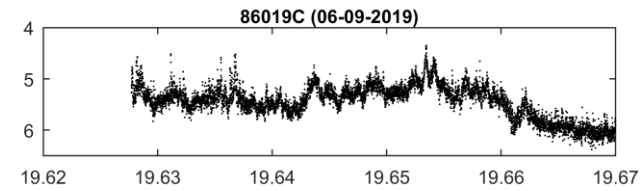
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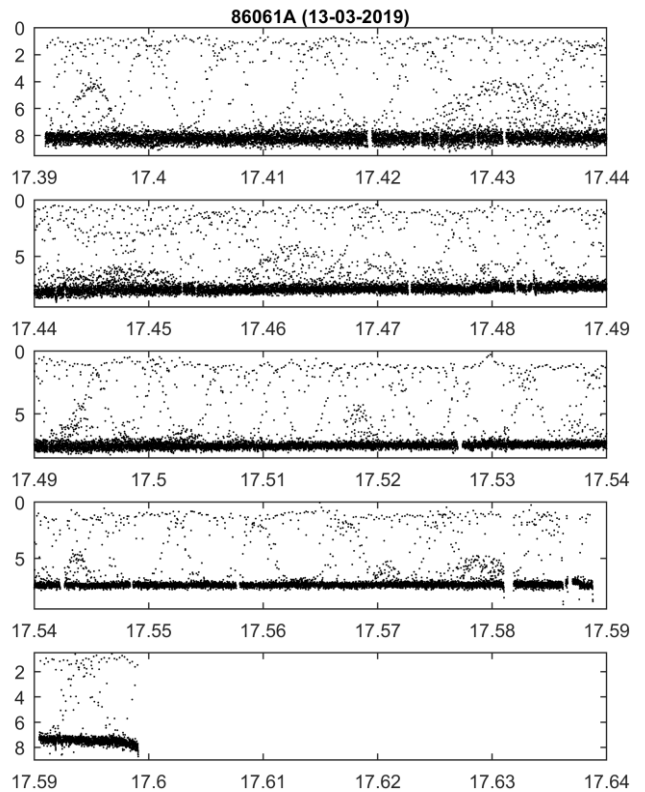
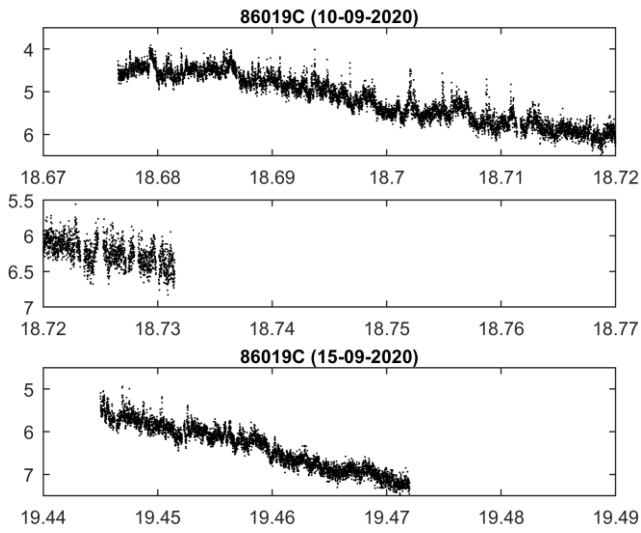
Eccentricity: 0.002

Launch date: 1986-02-22

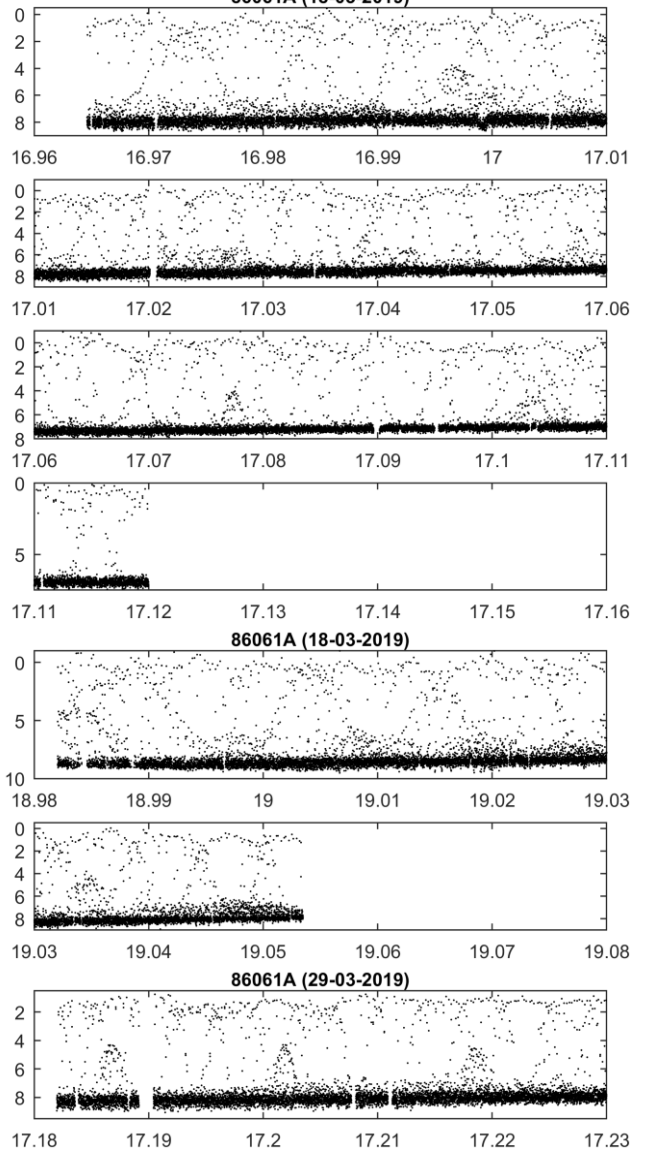
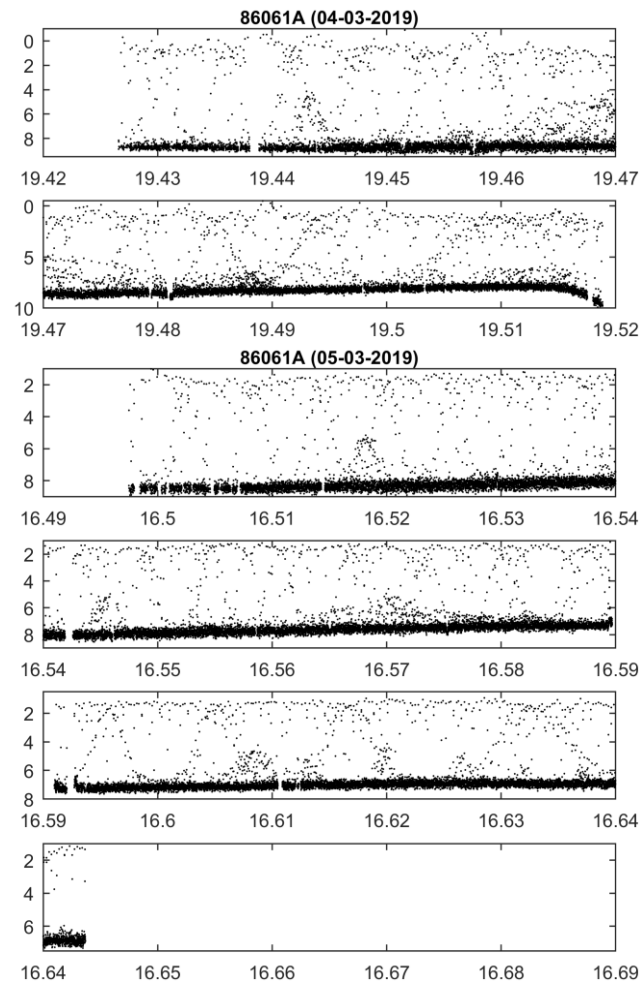
Source: France (FR)

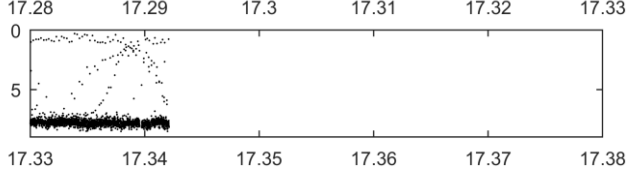
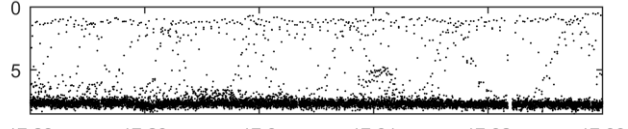
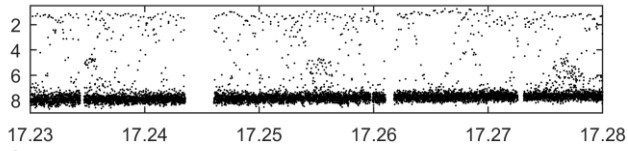




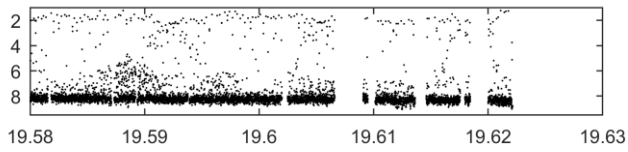
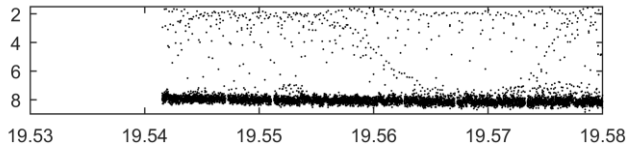
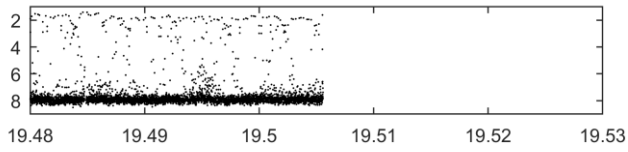
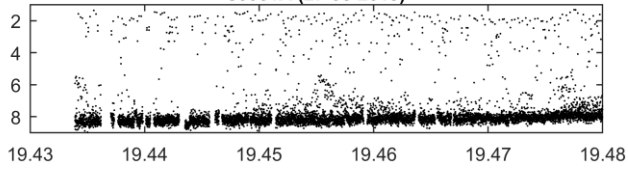


AJISAI (EGP) (EGS)
 NORAD ID: 16908
 Int'l Code: 1986-061A
 Dimensions: sphere 2.15m dia
 Initial orbit:
 Perigee: 1479 km
 Apogee: 1497 km
 Inclination: 50.01°
 Period: 115.66 min
 Eccentricity: 0.001
 Launch date: 1986-08-12
 Source: Japan (JPN)

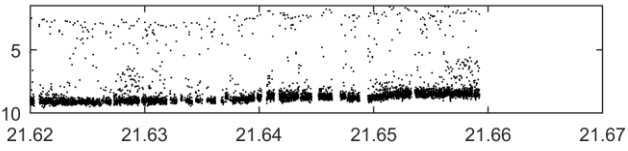
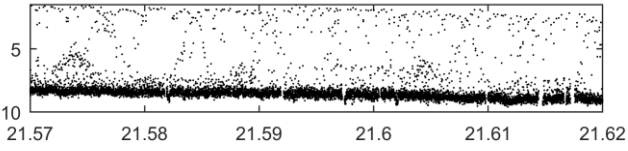
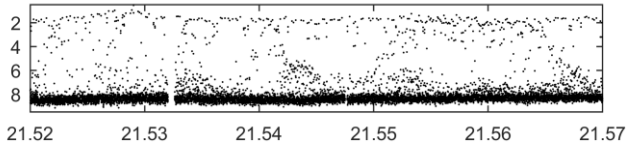
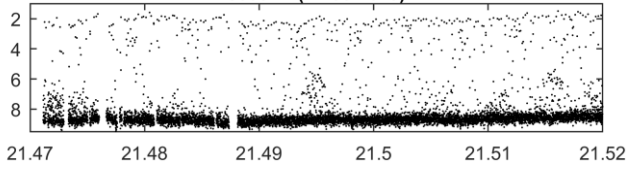




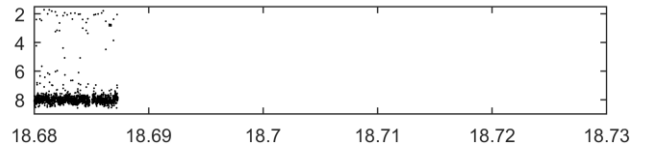
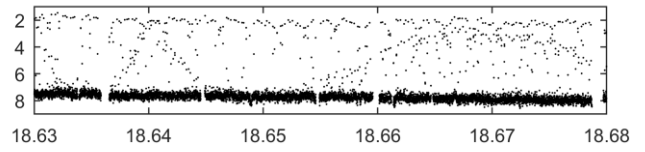
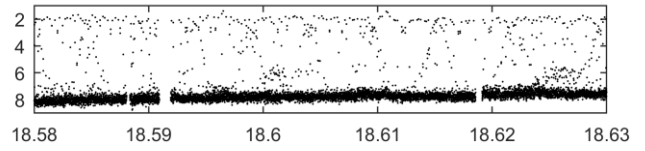
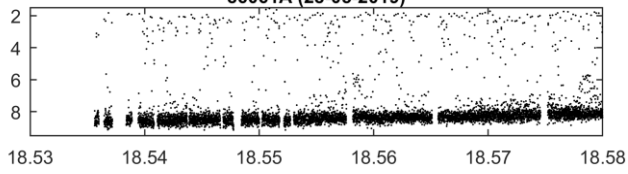
86061A (27-05-2019)



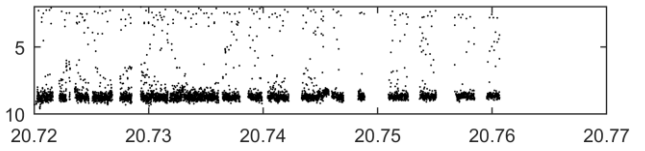
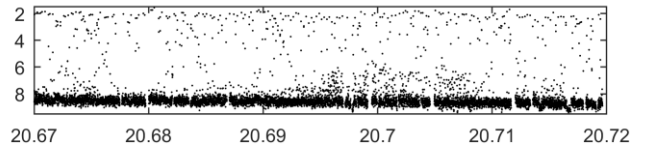
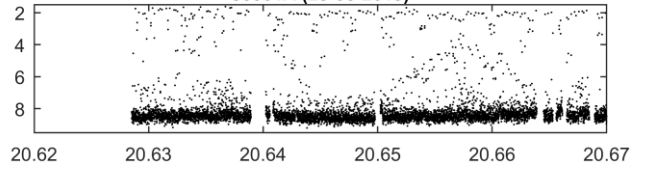
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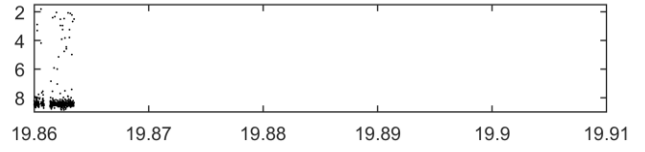
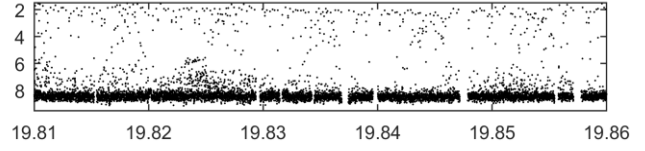
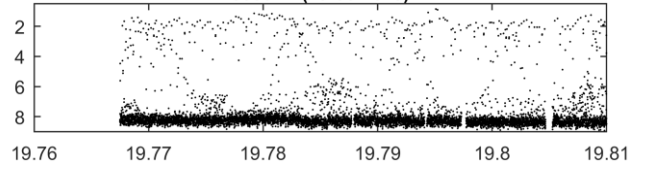
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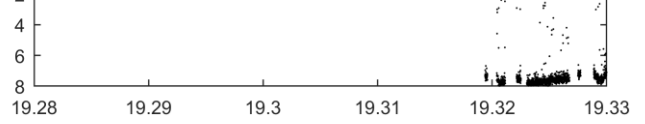
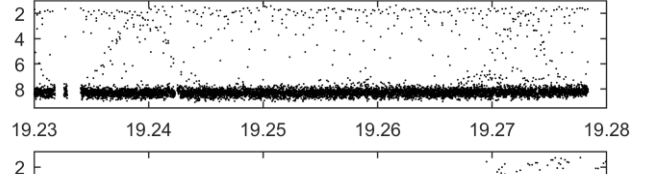
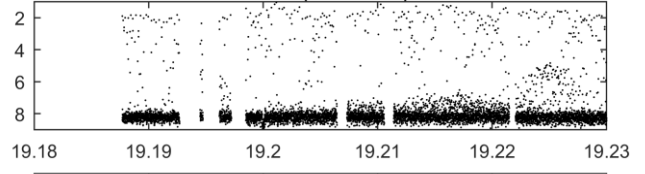
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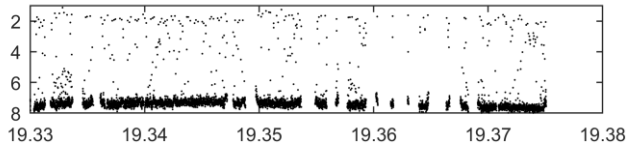


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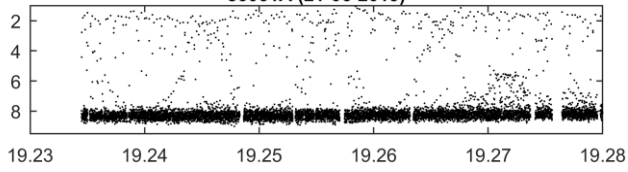


86061A (12-06-2019)

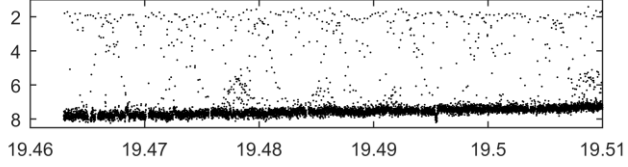




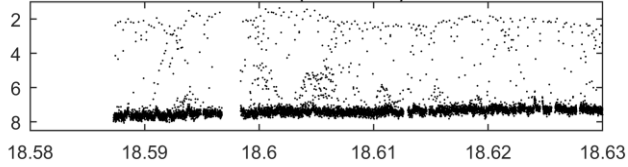
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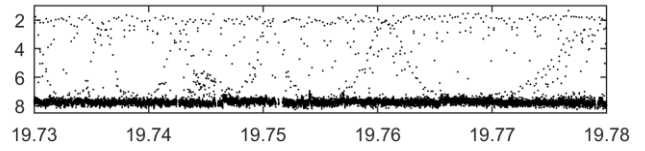
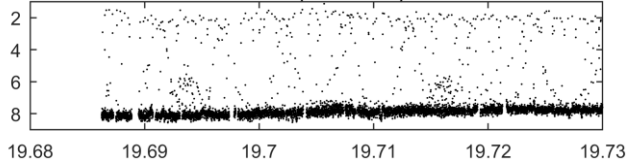
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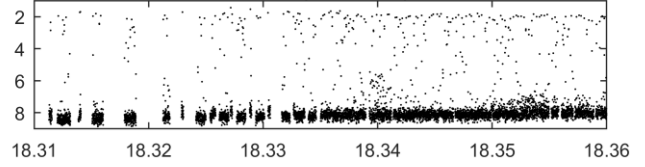
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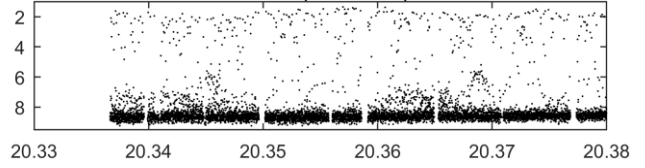
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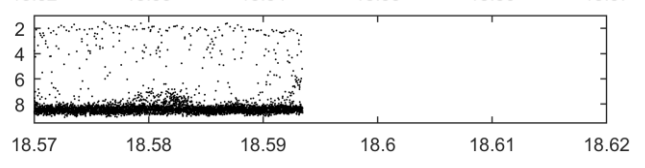
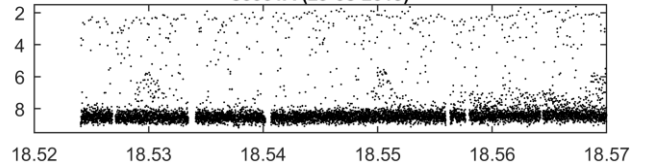
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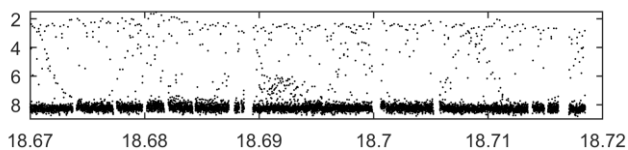
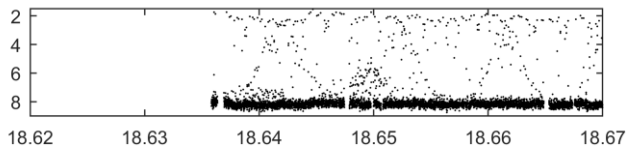


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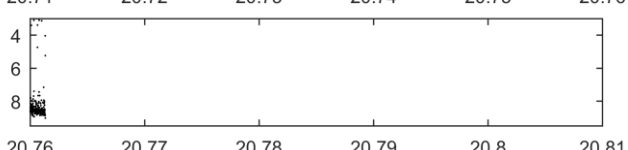
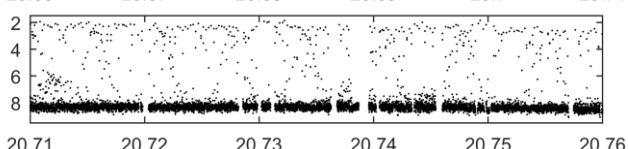
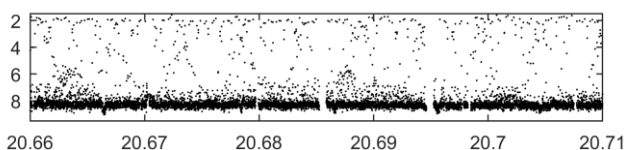
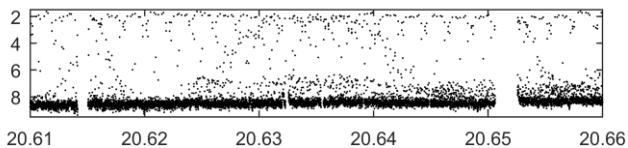
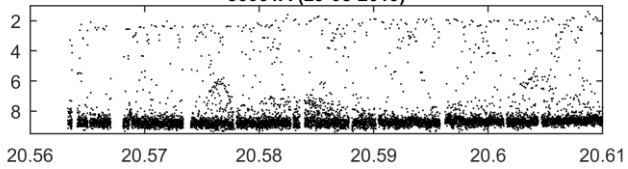


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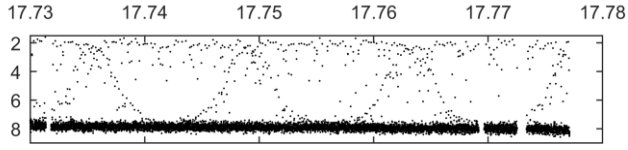
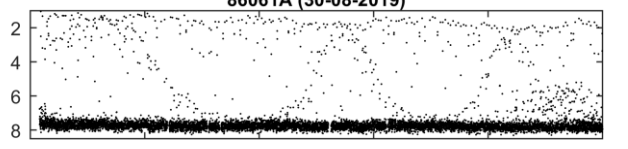




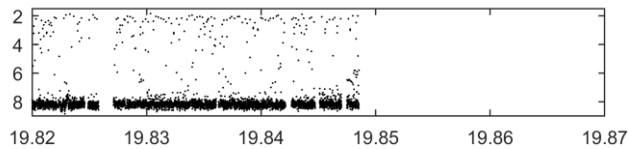
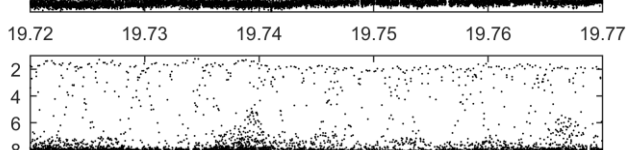
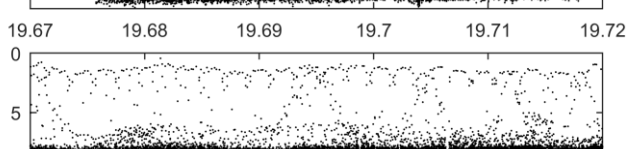
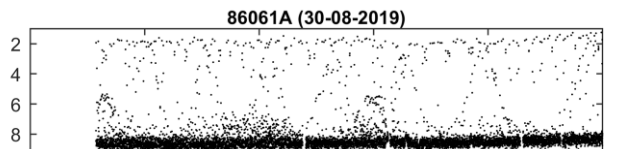
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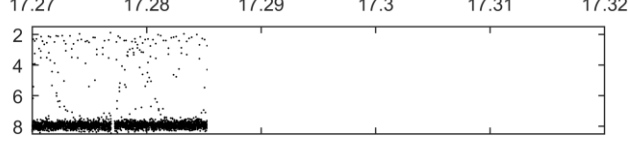
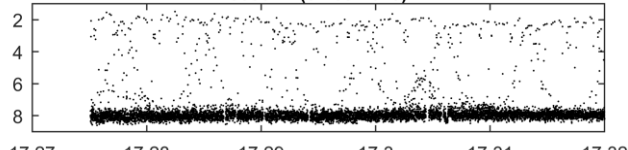
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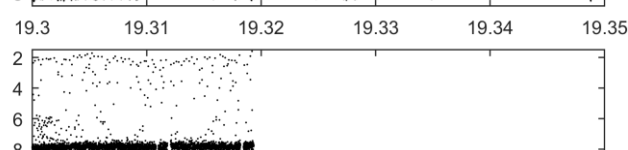
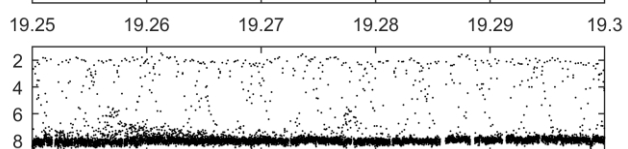
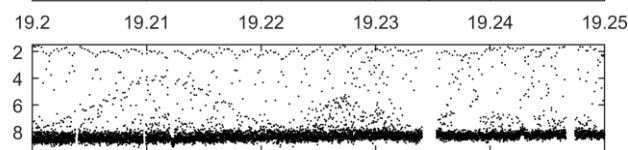
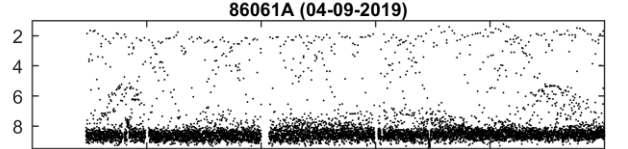
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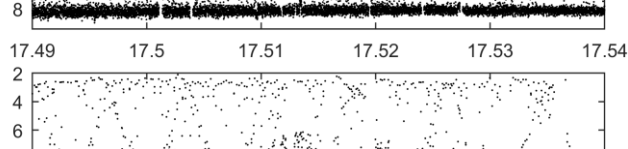
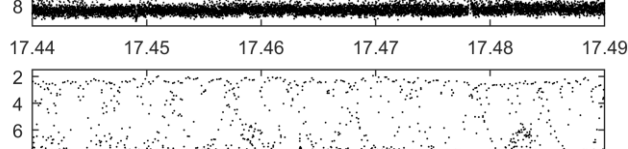
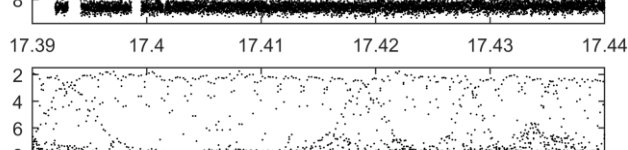
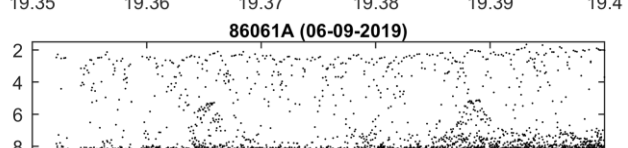
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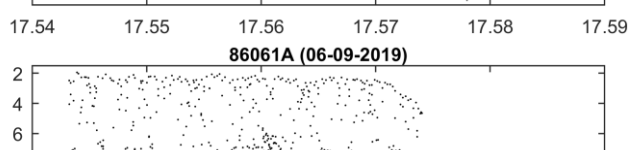
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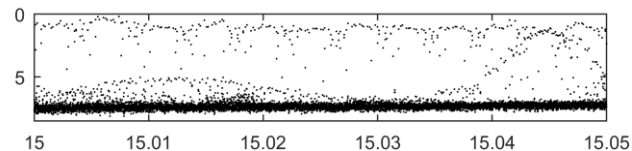
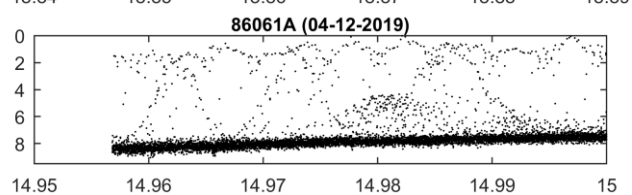
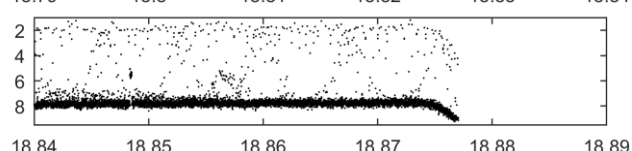
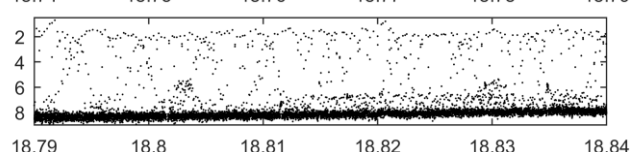
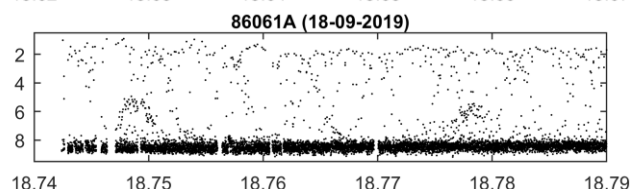
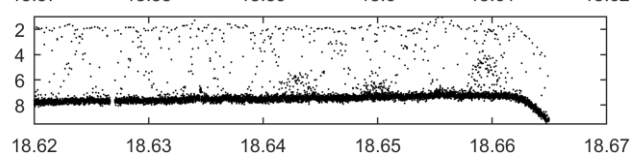
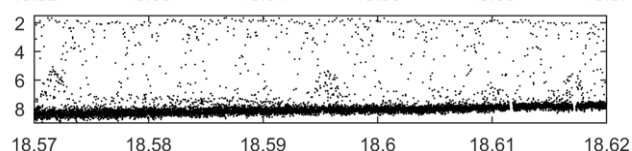
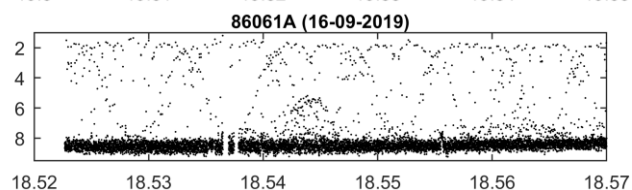
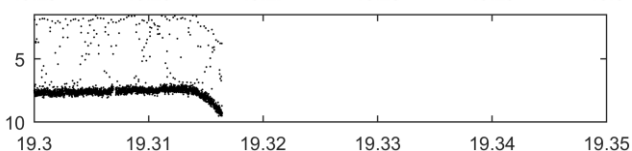
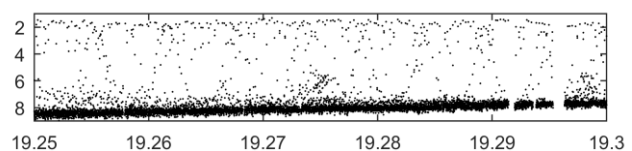
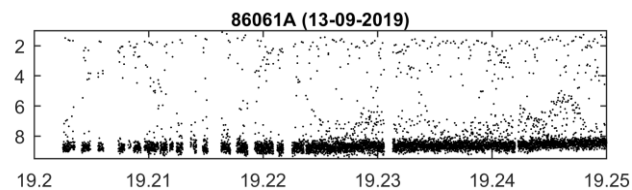
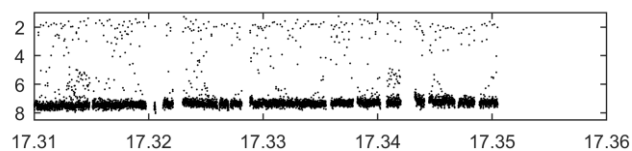
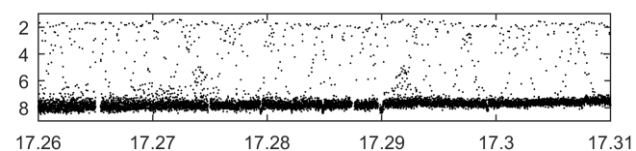
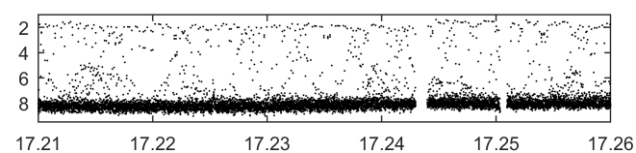
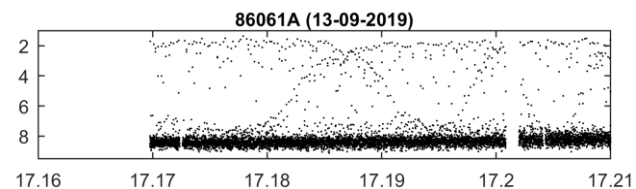
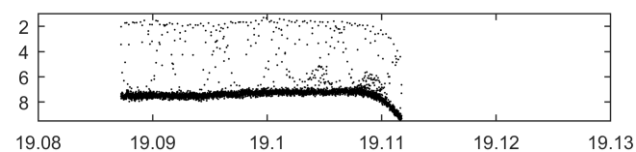
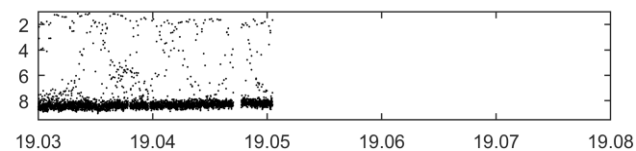
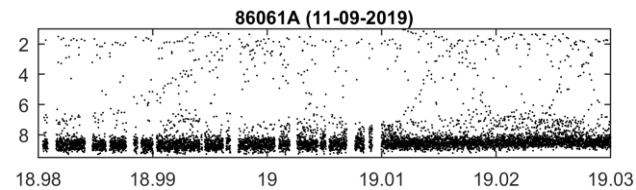
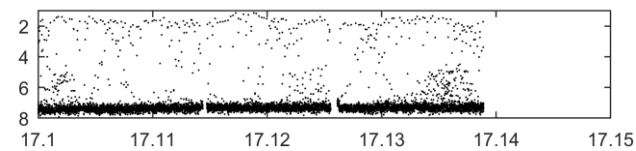
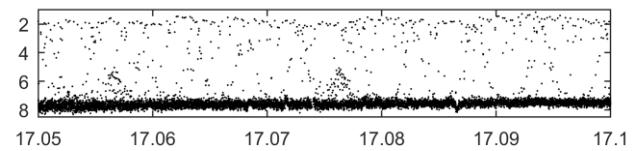
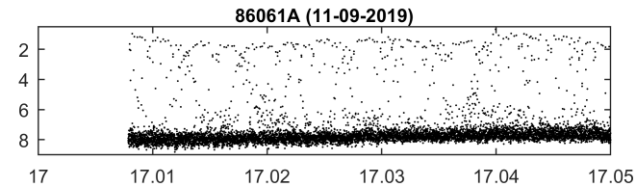
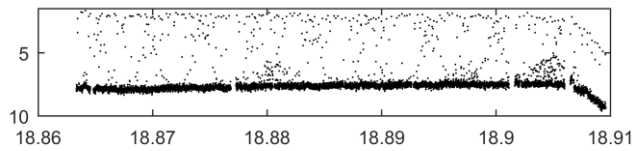
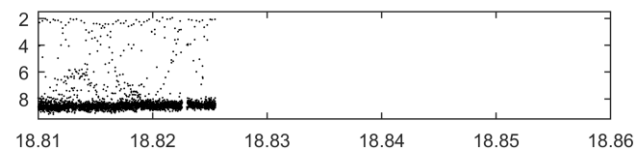
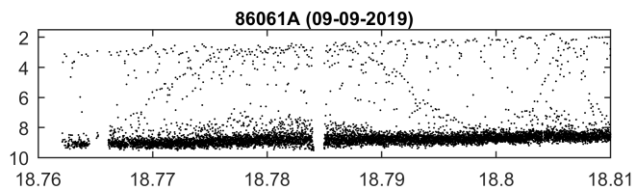


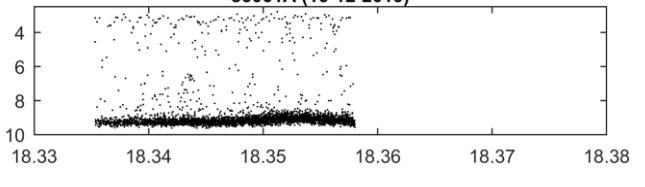
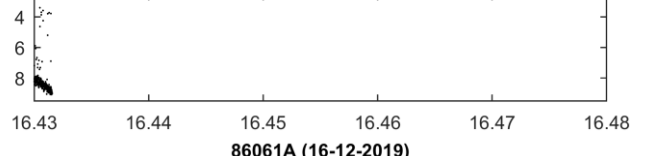
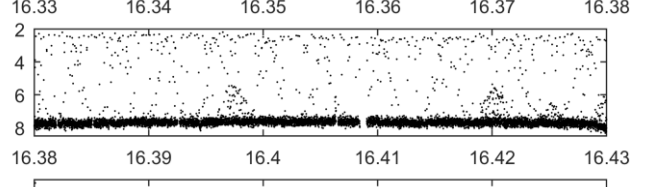
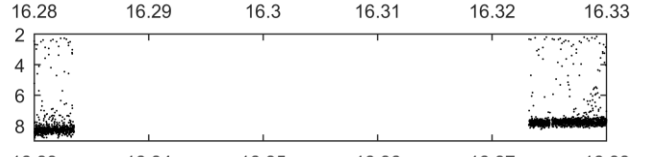
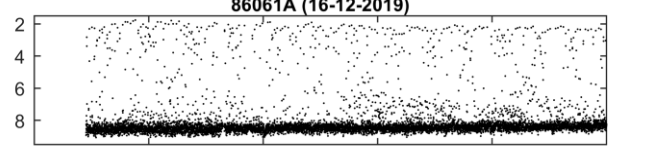
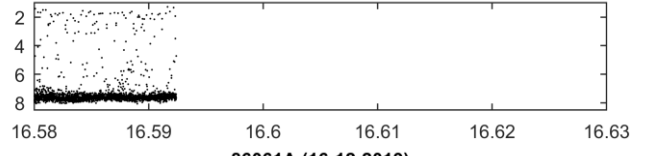
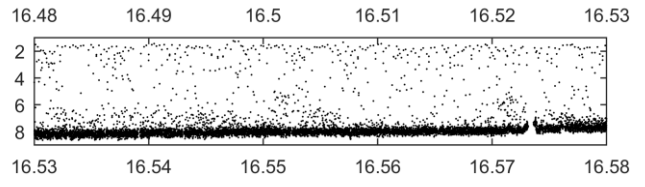
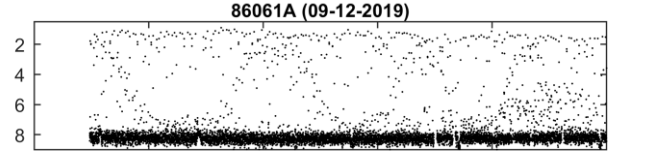
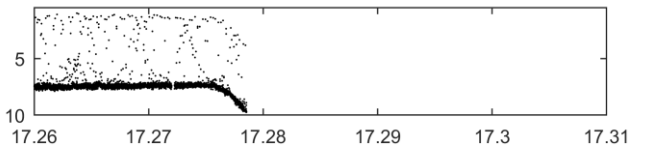
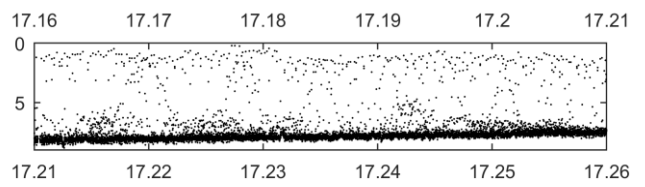
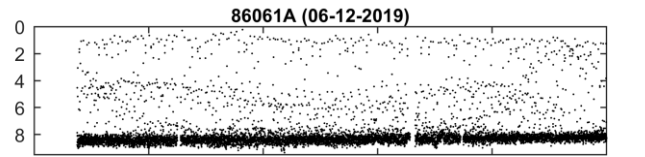
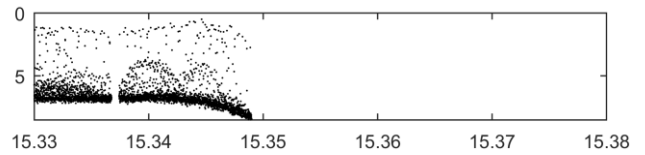
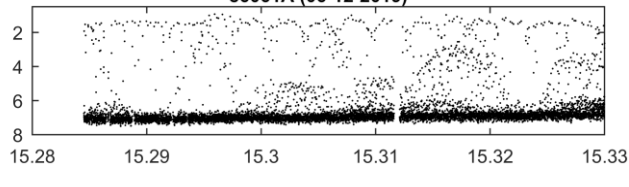
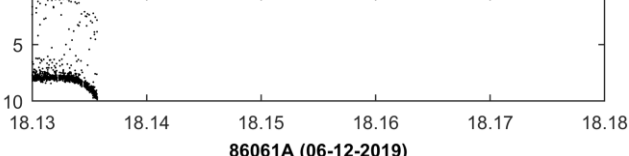
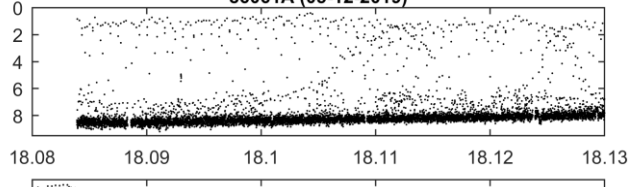
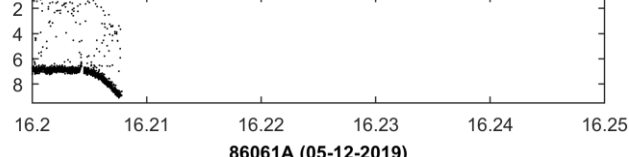
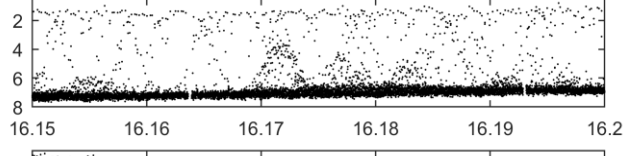
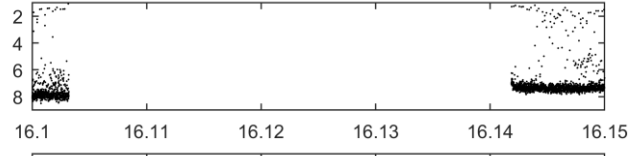
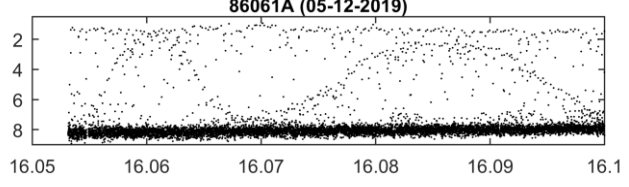
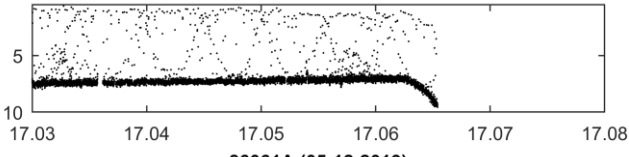
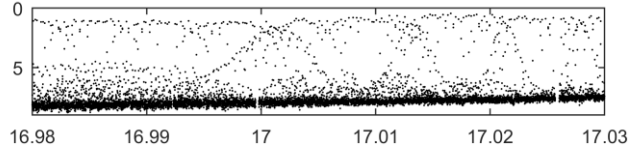
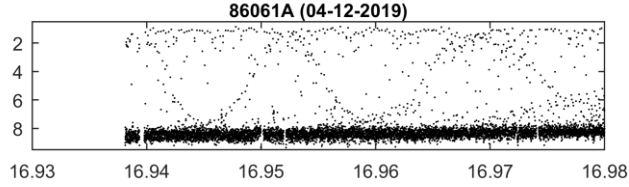
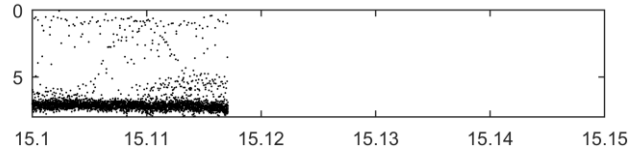
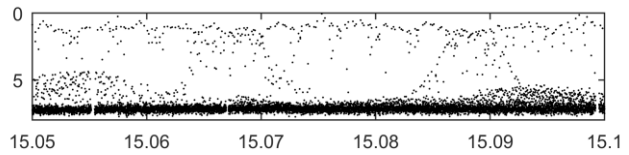
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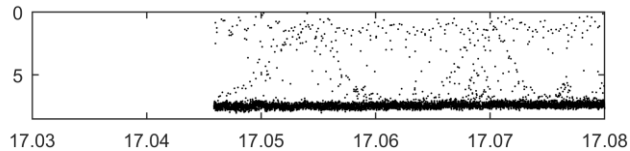
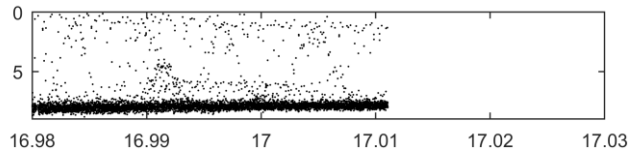
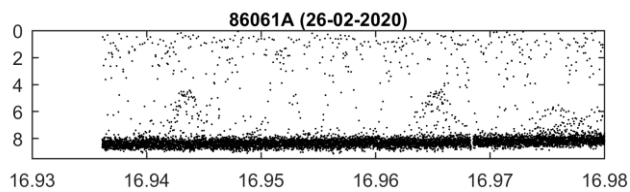
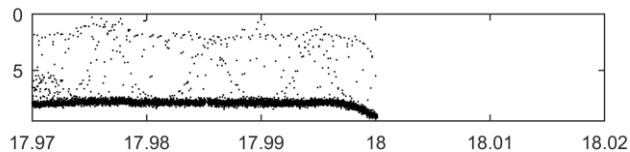
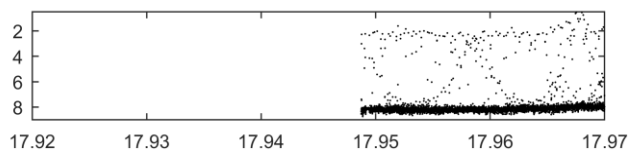
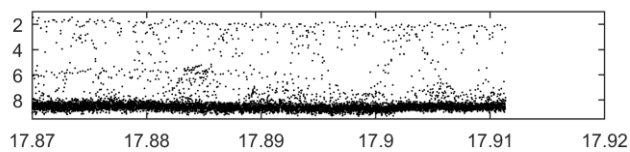
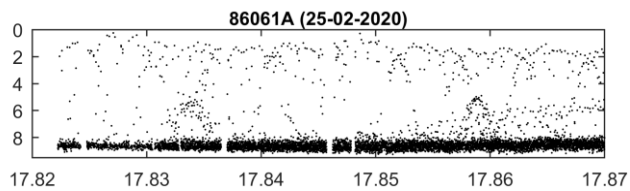
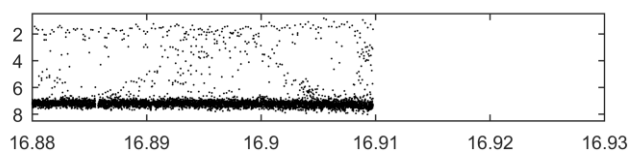
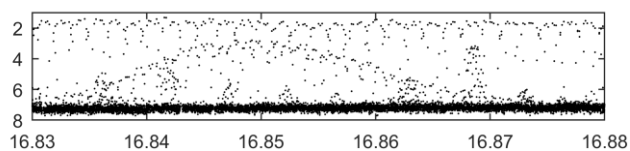
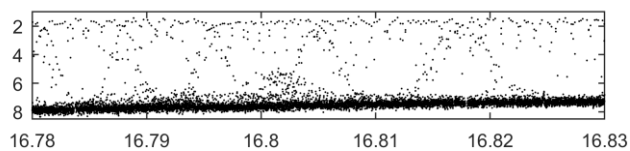
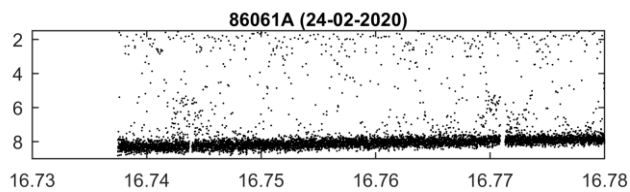
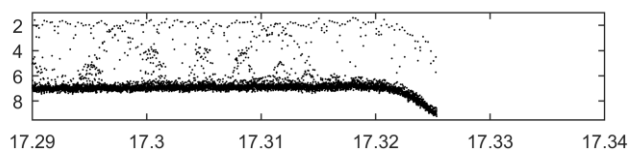
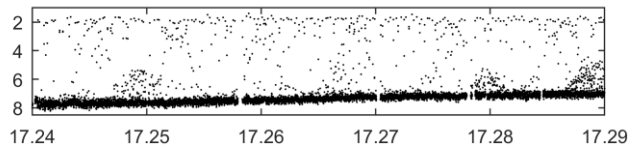
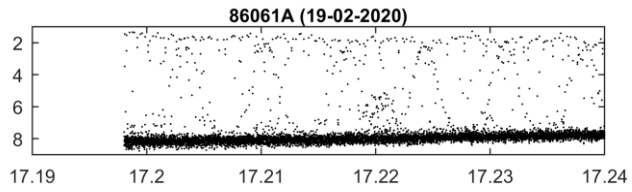
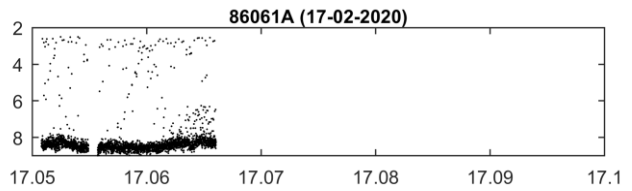
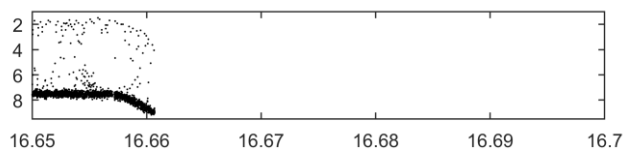
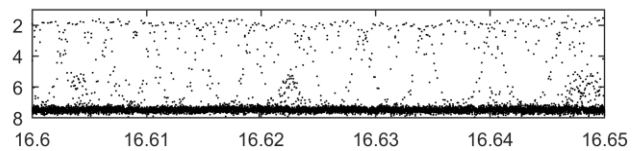
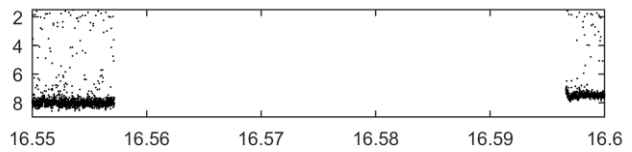
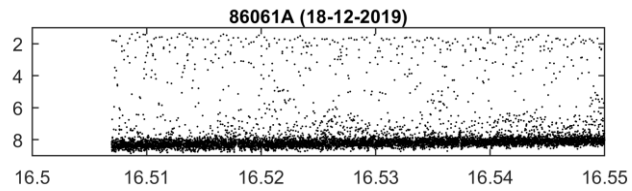
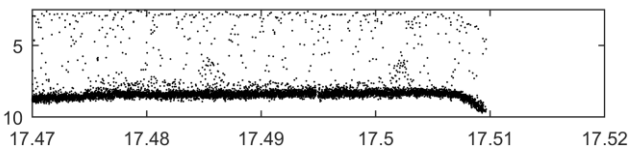
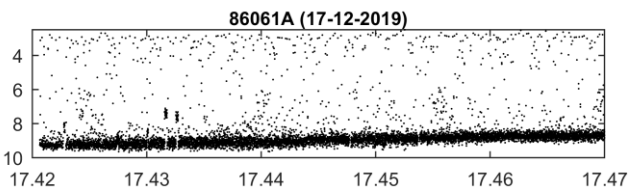
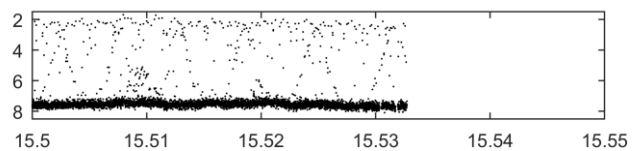
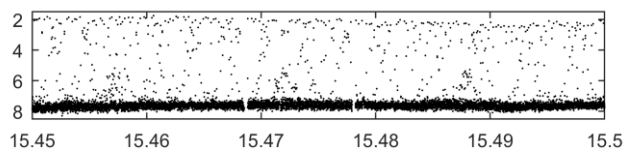
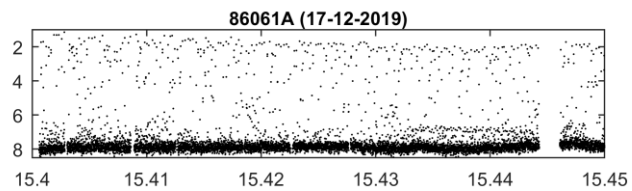


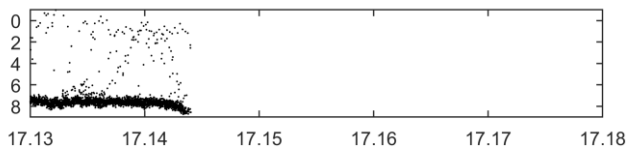
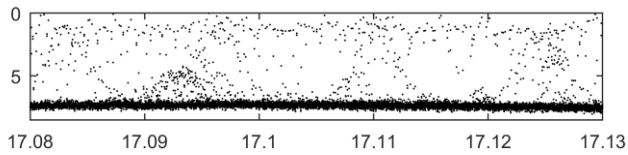
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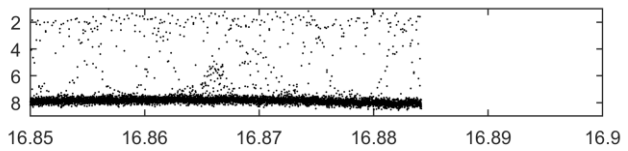
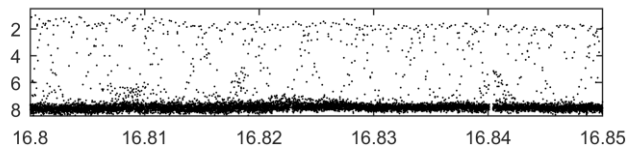
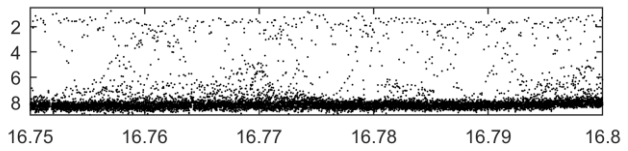
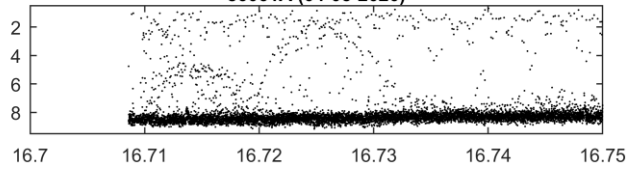




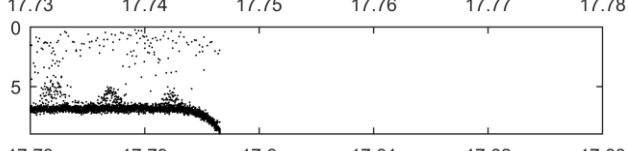
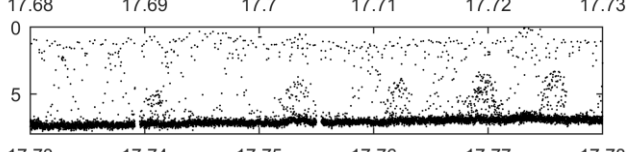
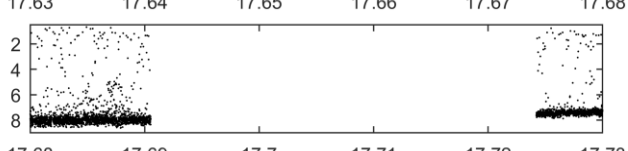
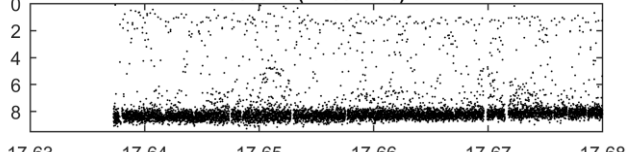




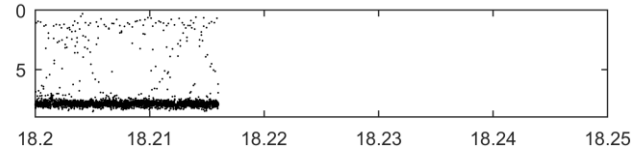
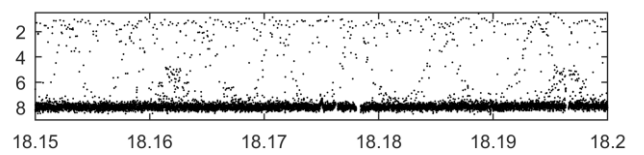
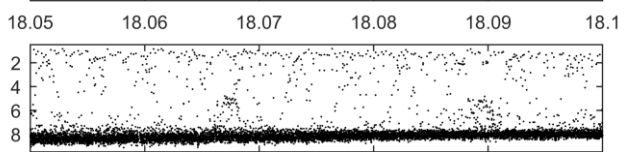
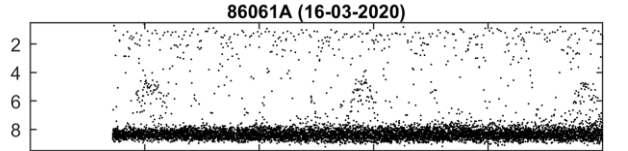
86061A (04-03-2020)



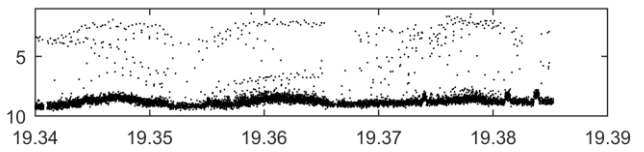
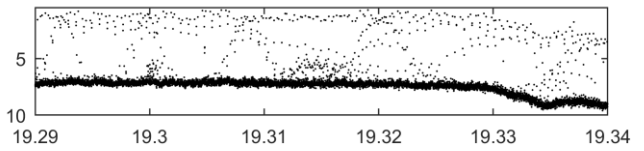
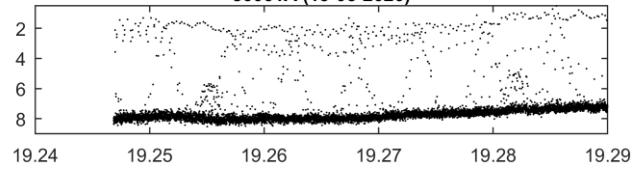
86061A (12-03-2020)



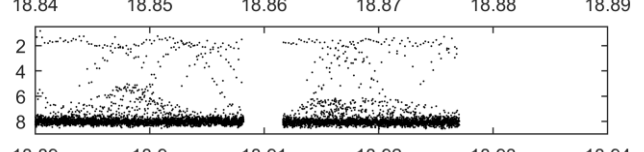
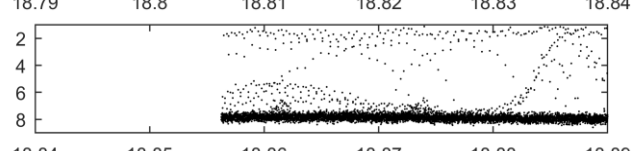
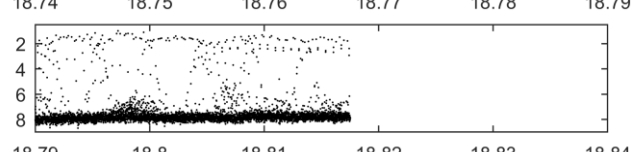
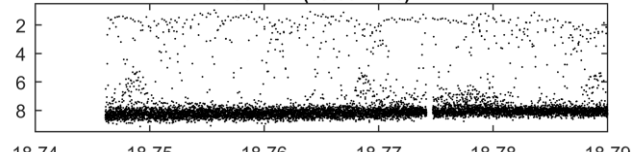
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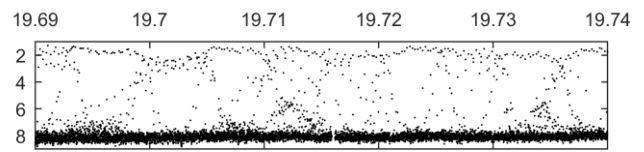
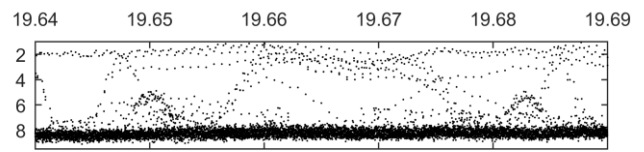
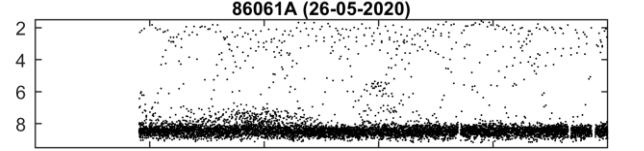
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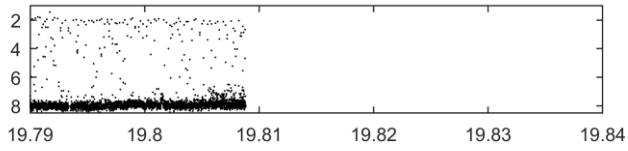


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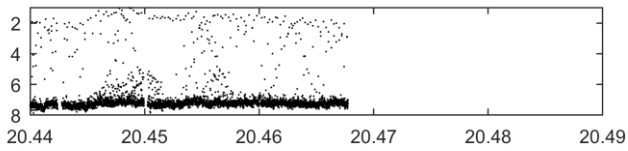
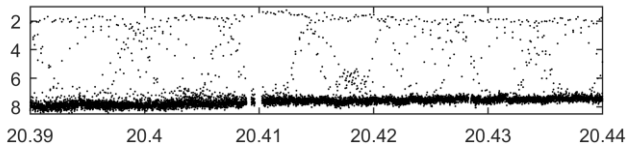
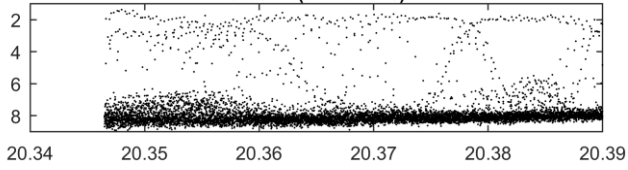


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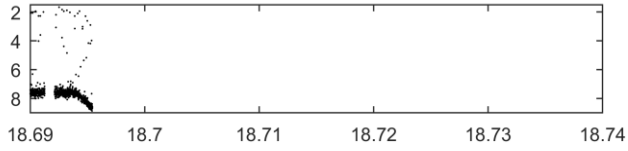
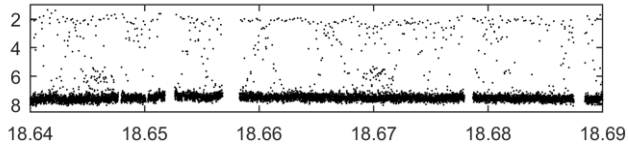
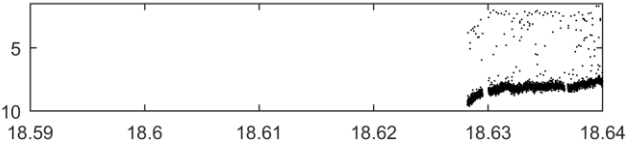
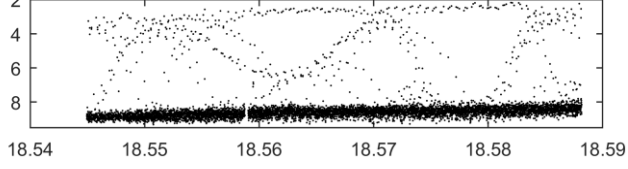




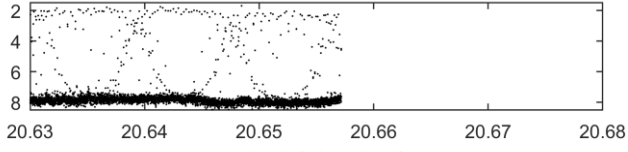
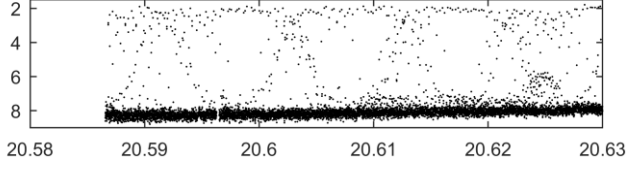
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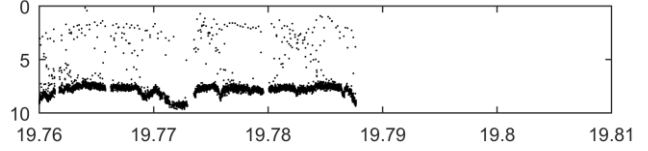
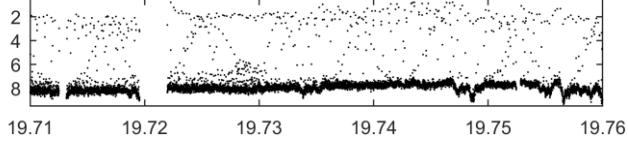
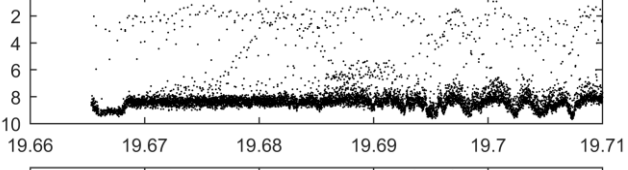
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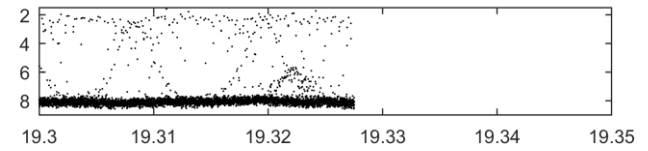
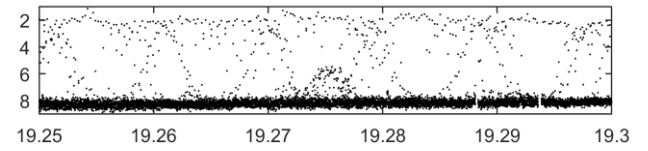
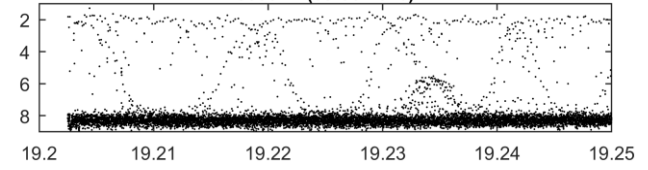
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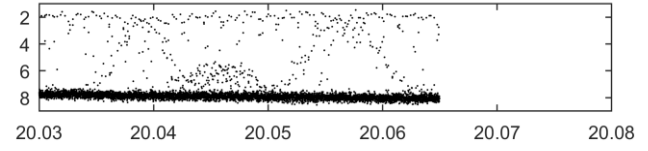
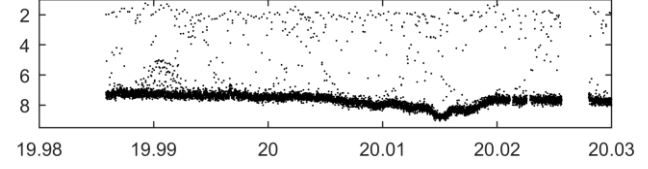
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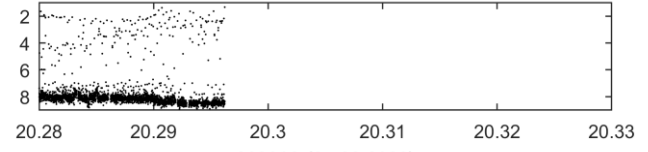
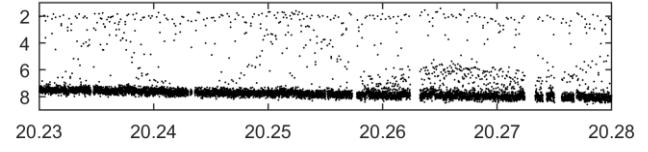
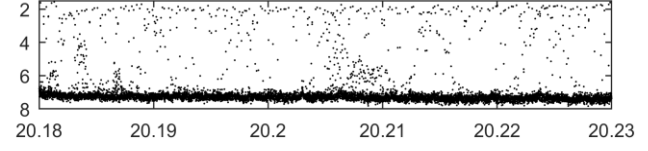
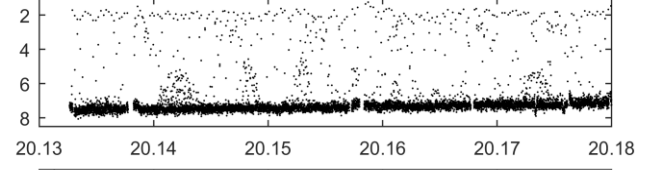
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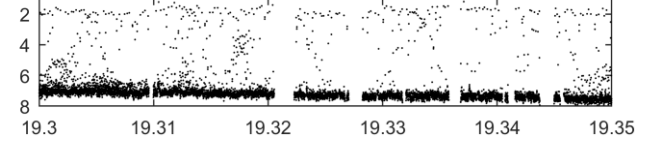
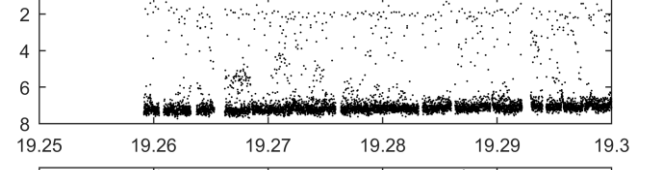
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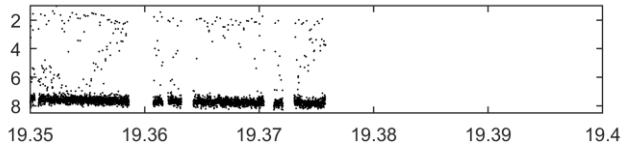


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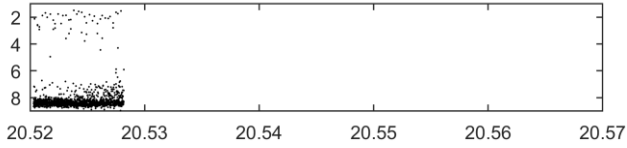
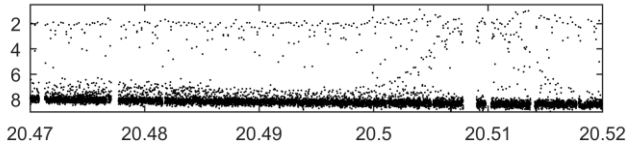
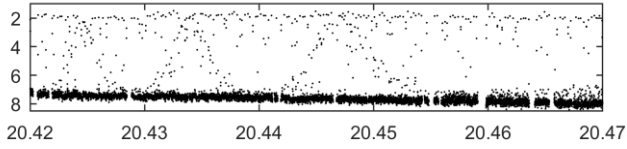
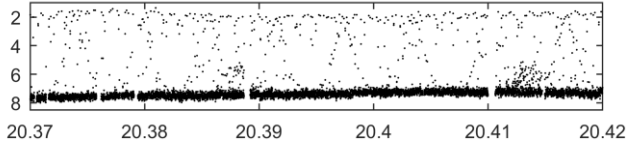
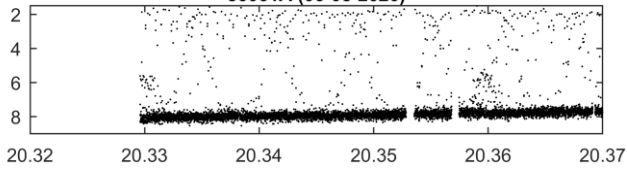


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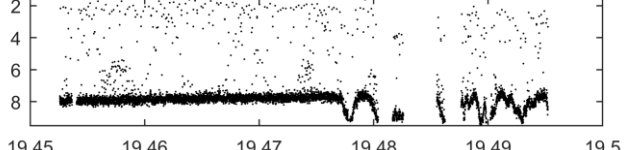




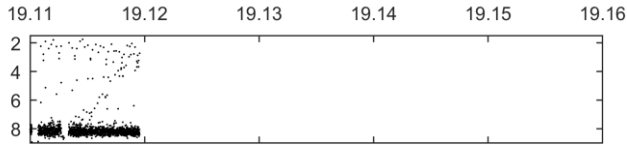
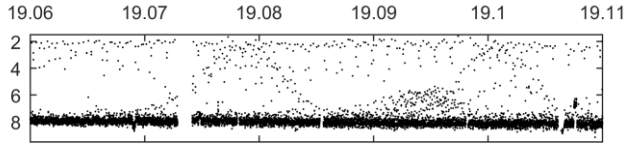
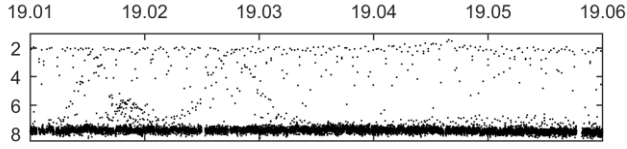
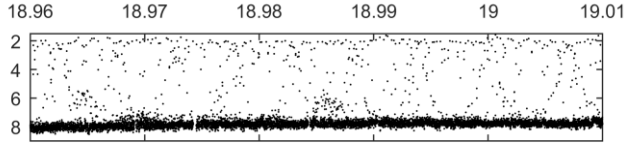
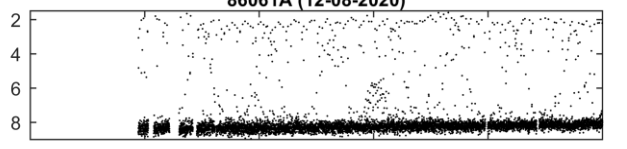
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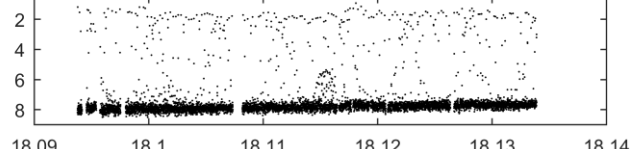
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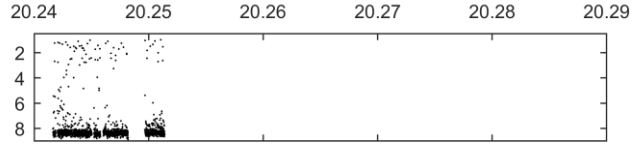
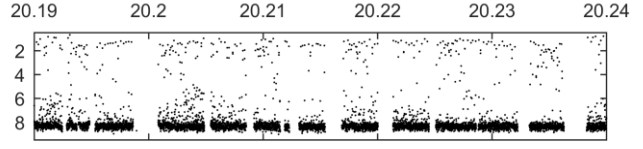
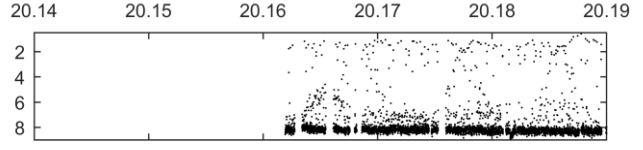
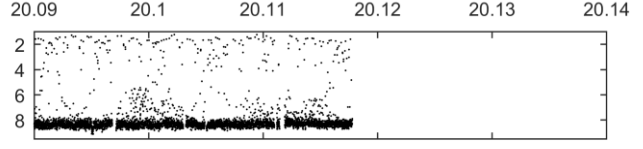
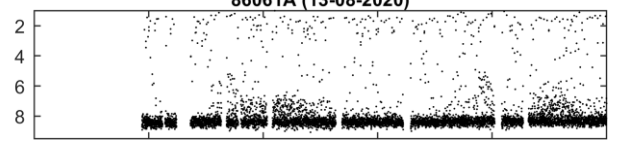
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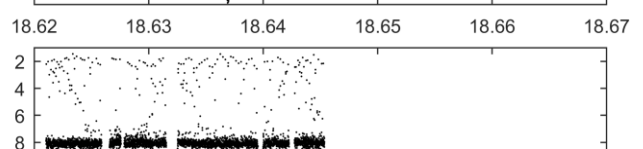
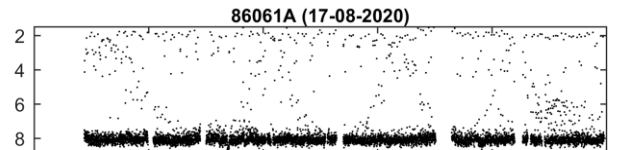
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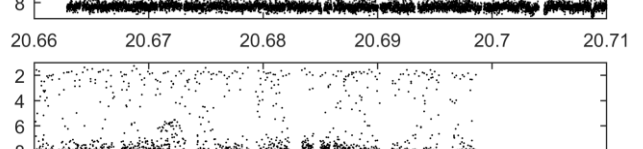
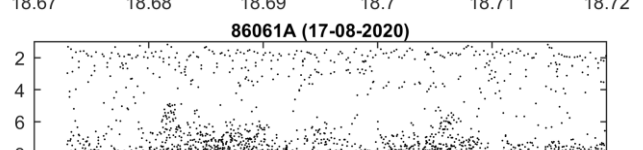
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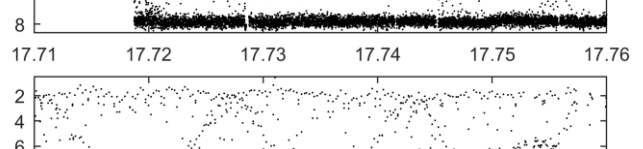
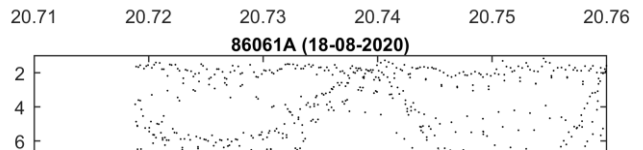
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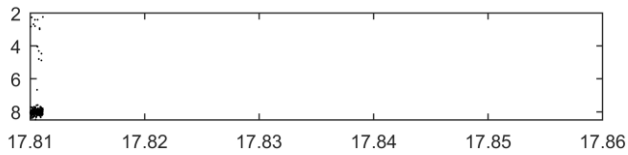


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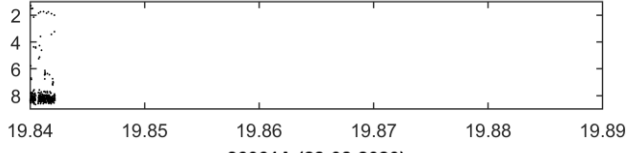
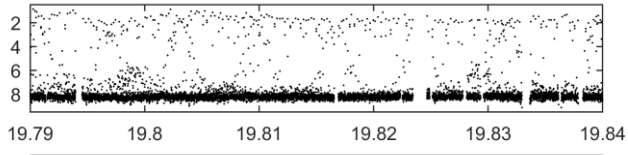
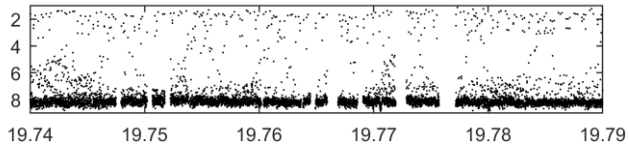
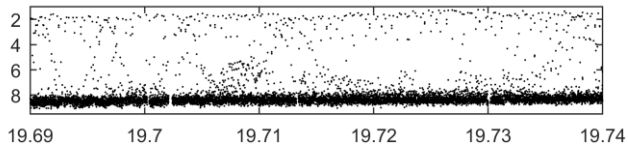
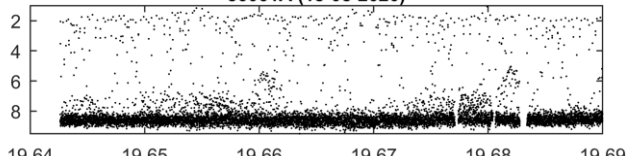


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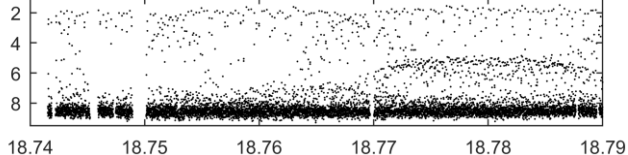




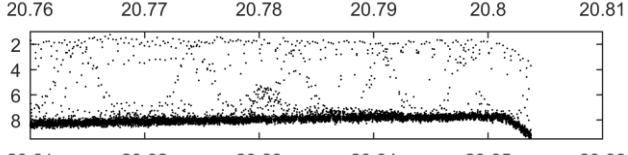
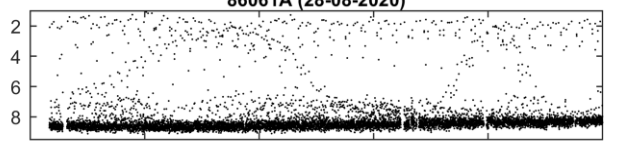
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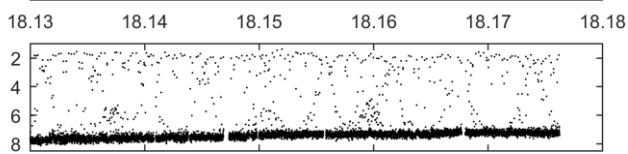
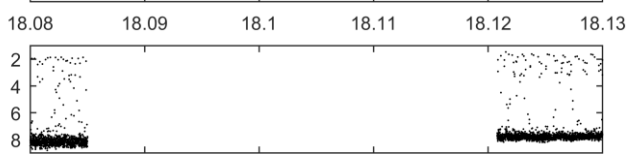
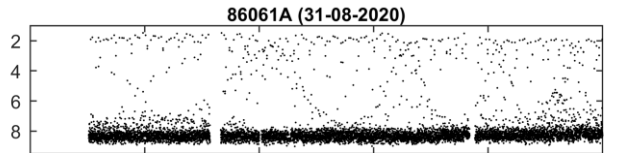
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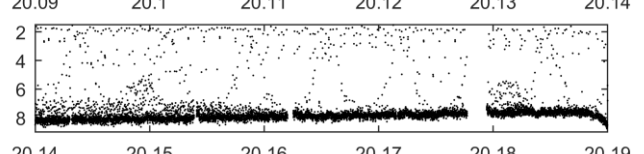
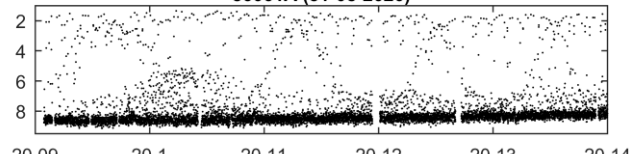
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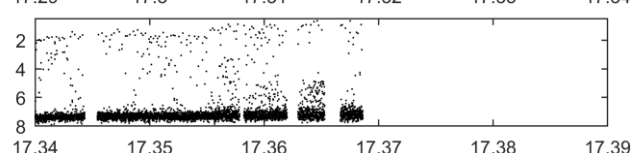
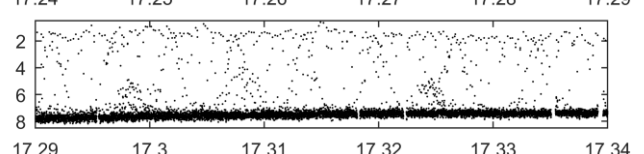
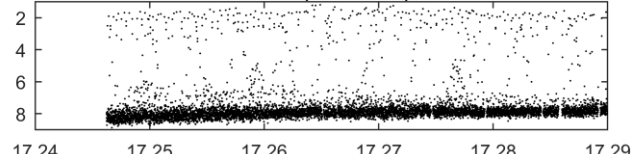
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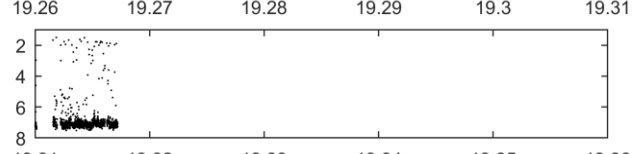
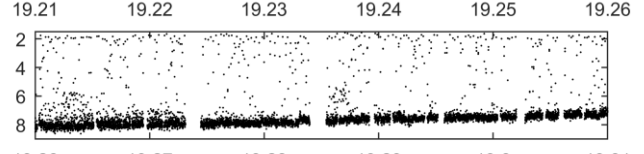
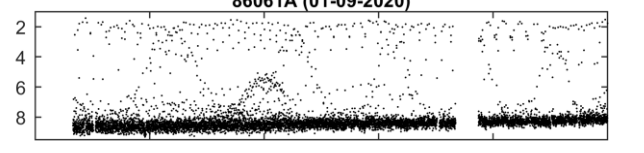
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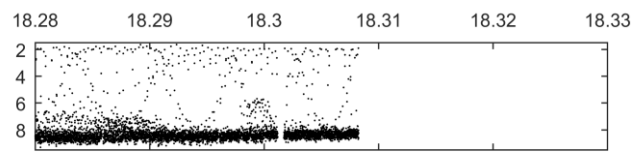
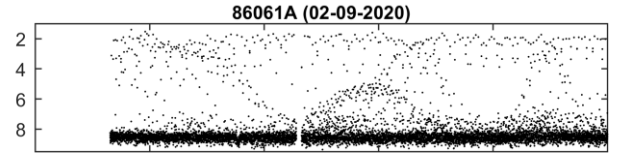
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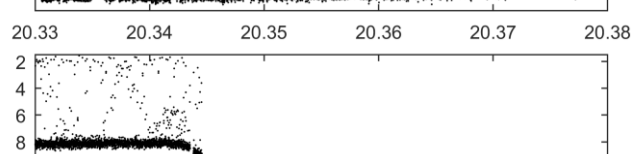
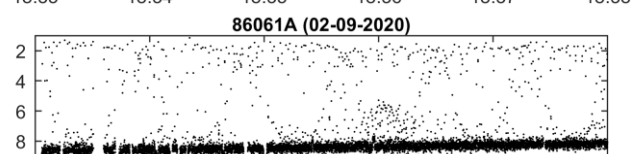
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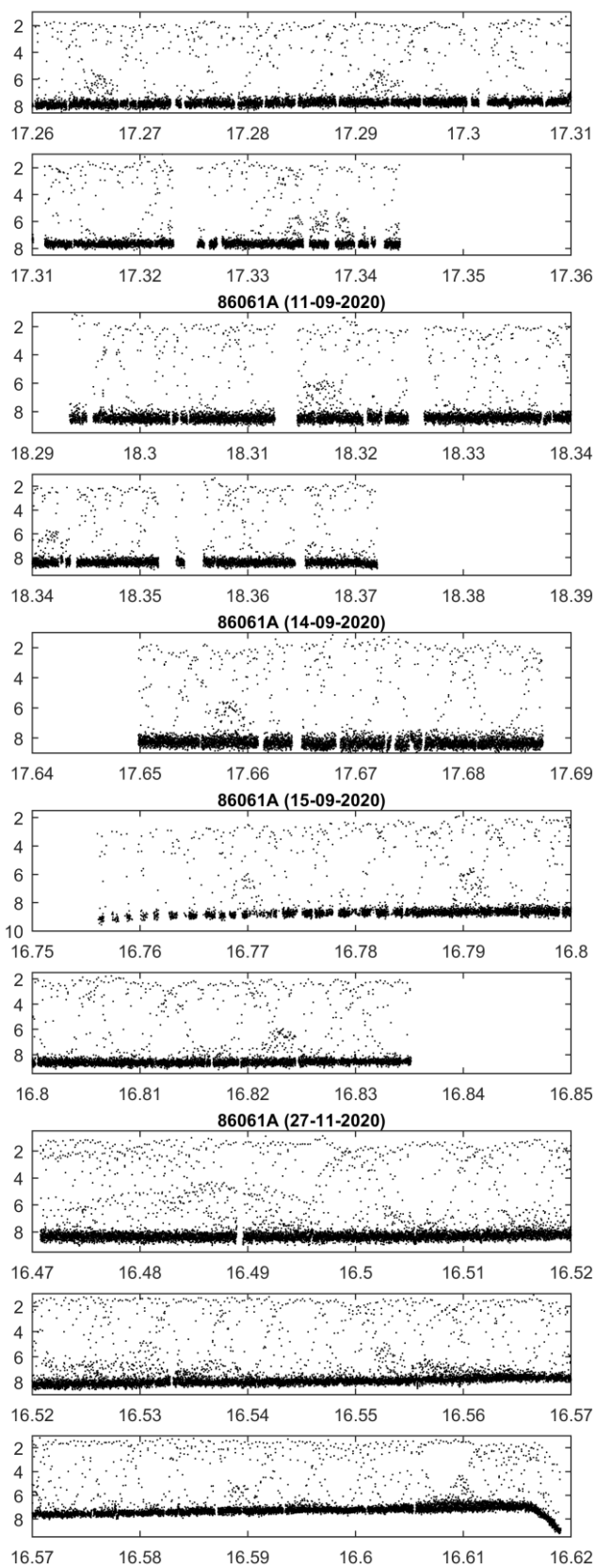
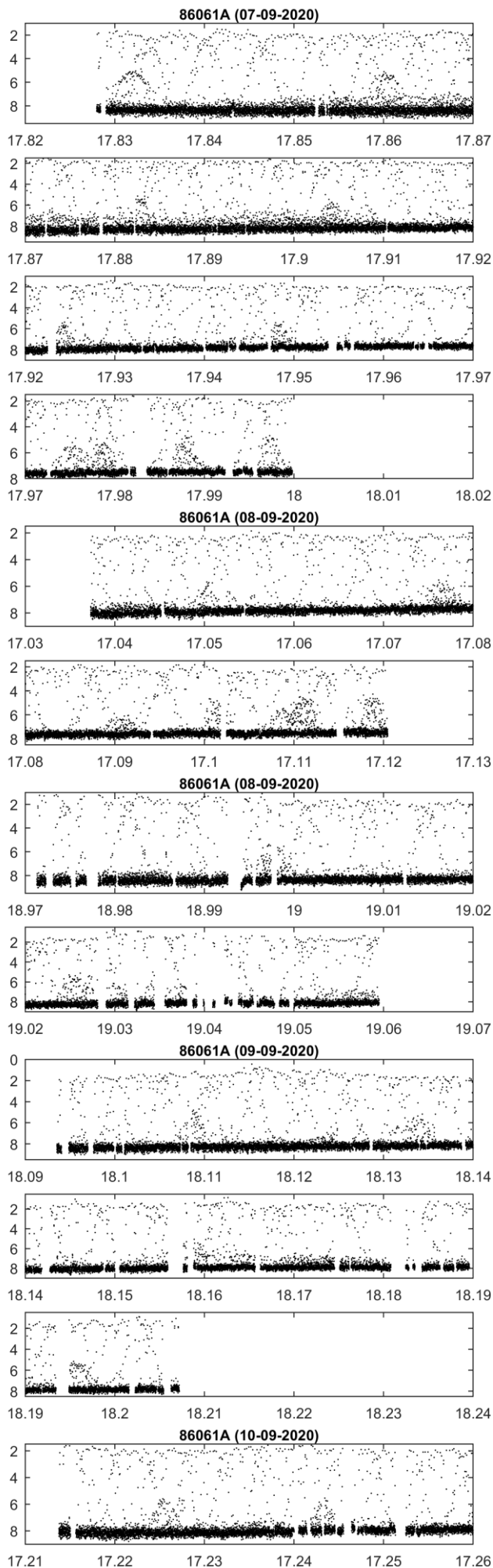


86061A (02-09-2020)



86061A (02-09-2020)





H-1 R/B (MABES (JINDAI))

2nd stage

NORAD ID: 16910

Int'l Code: 1986-061C

Dimensions: cylinder 13.54m long,

2.49m dia

Initial orbit:

Perigee: 1484 km

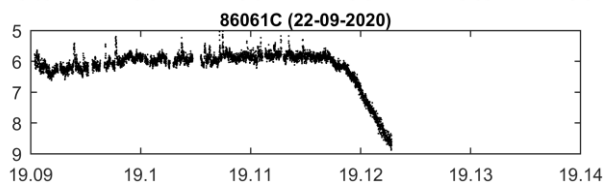
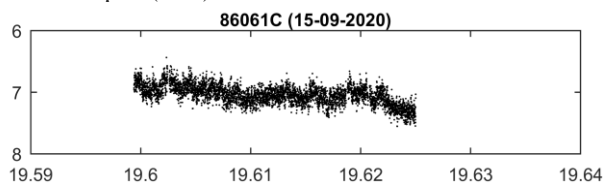
Apogee: 1594 km

Inclination: 50.00°

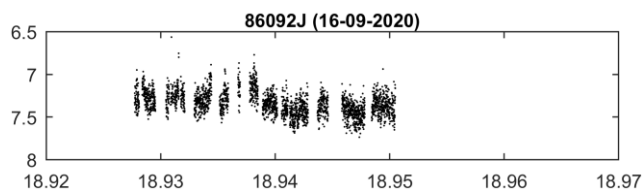
Period: 116.78 min



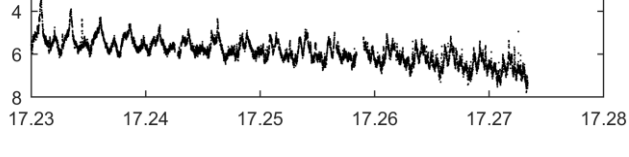
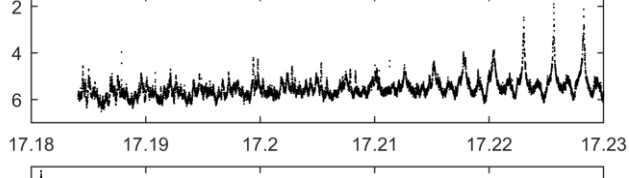
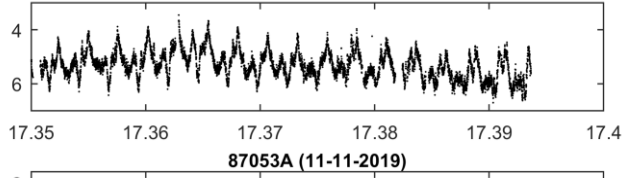
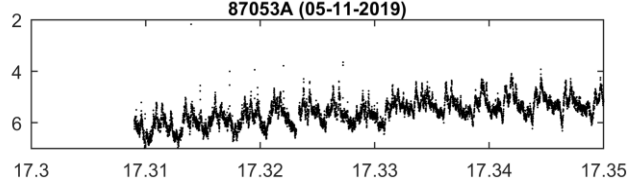
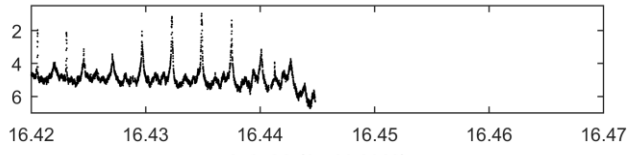
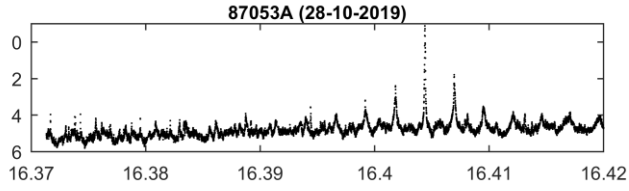
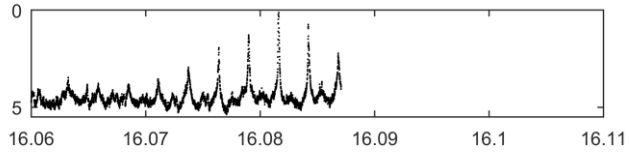
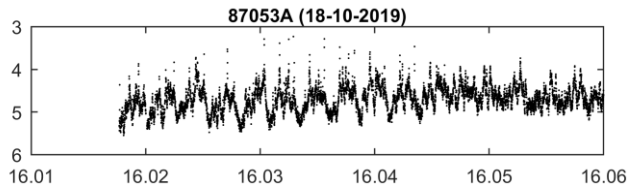
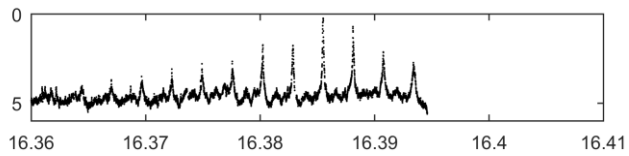
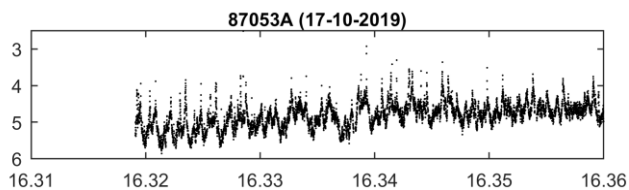
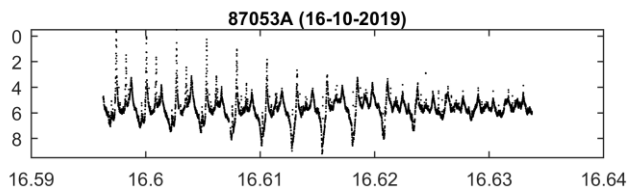
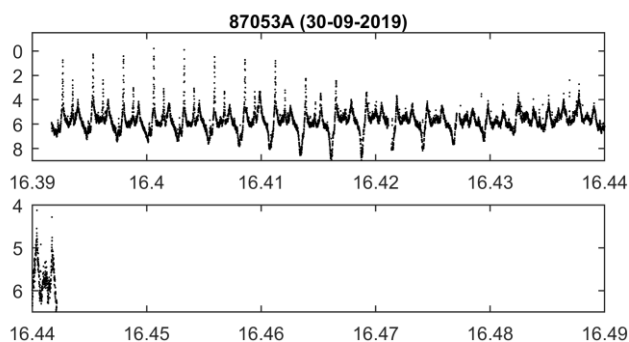
Eccentricity: 0.007
 Launch date: 1986-08-12
 Source: Japan (JPN)

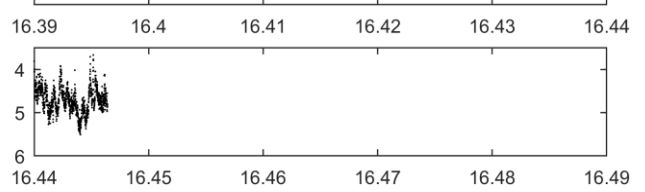
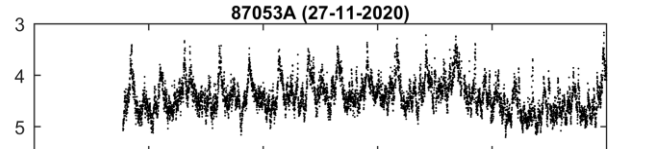
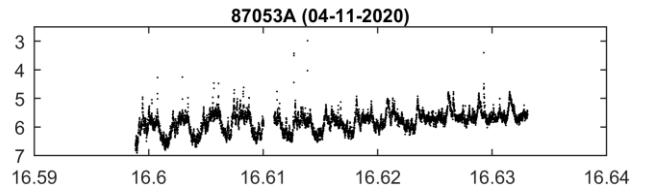
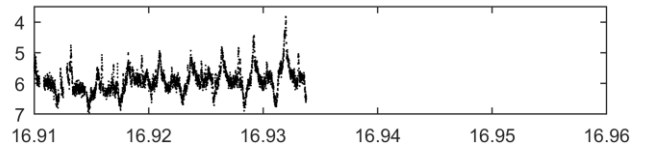
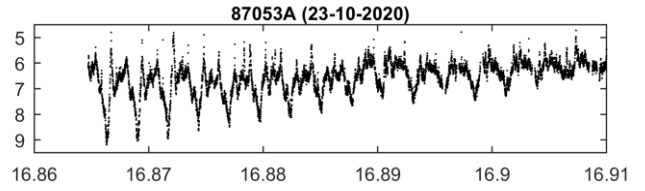
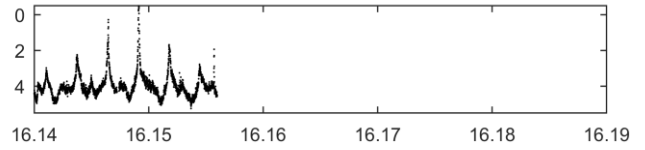
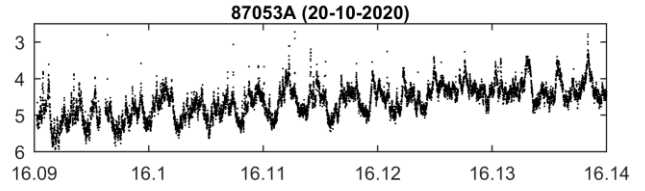
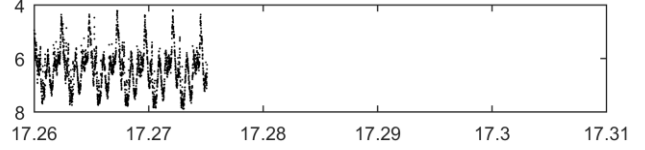
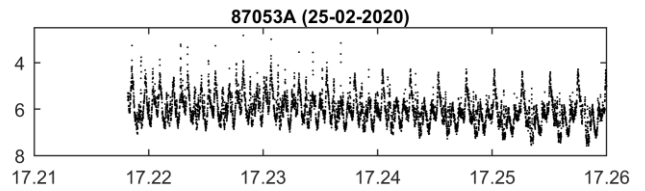
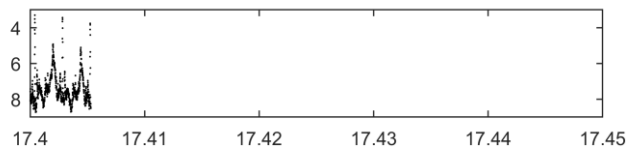
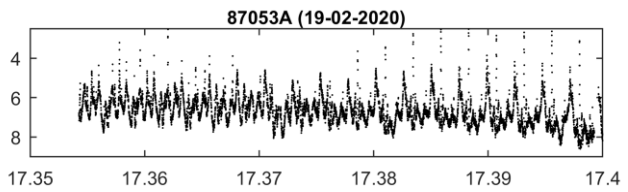
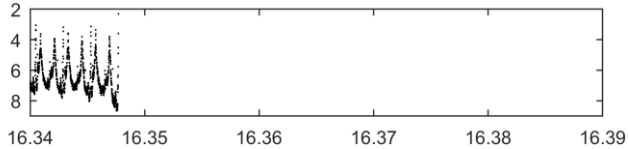
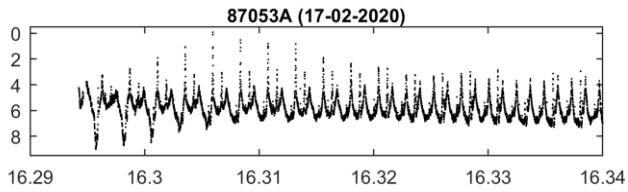
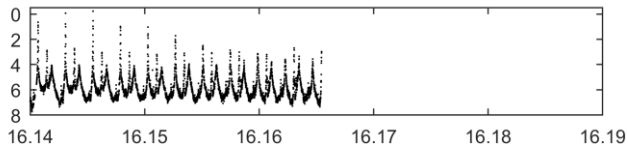
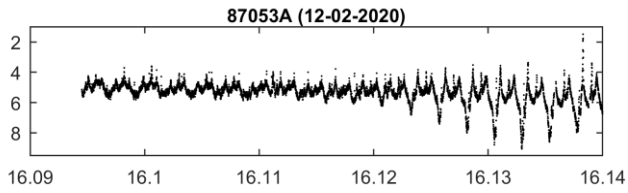
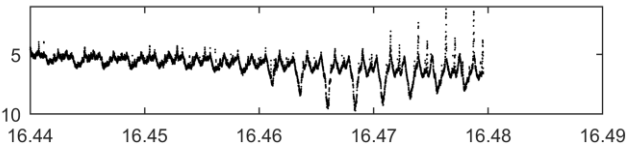
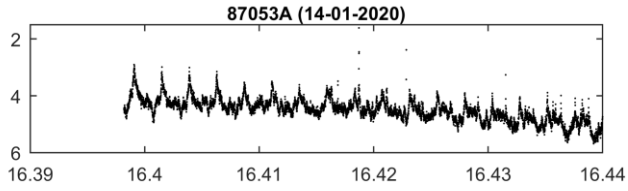
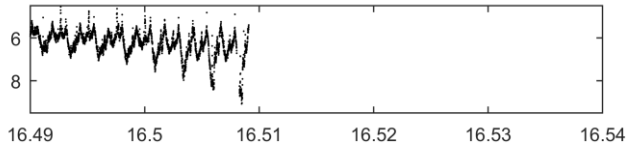
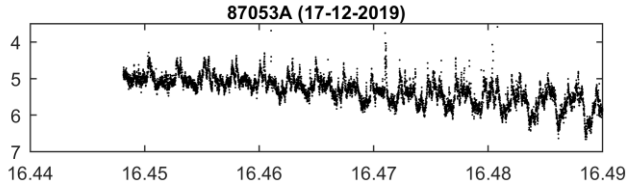
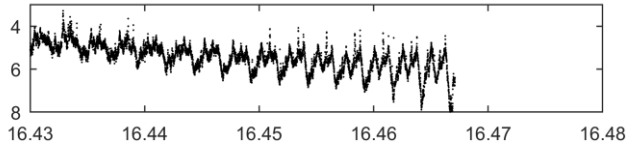
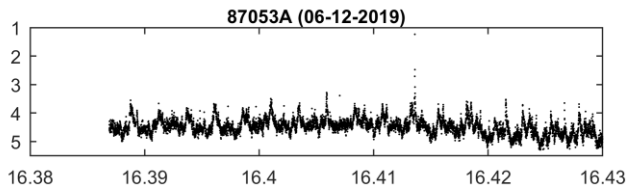


SL-8 R/B (S3M) (2nd stage)
(COSMOS 1794-1801 ROCKET)
 NORAD ID: 17146
 Int'l Code: 1986-092J
 Dimensions: cylinder 7.4m long, 2.4m dia
 Initial orbit:
 Perigee: 1471 km
 Apogee: 1685 km
 Inclination: 74.01°
 Period: 117.75 min
 Eccentricity: 0.013
 Launch date: 1986-11-21
 Source: Commonwealth of Independent States
 (former USSR) (CIS)



DMSP 5D-2 F8 (USA 26)
 NORAD ID: 18123
 Int'l Code: 1987-053A
 Dimensions: cylinder 6.4m span, 6.4m long, 1.68m dia?
 Initial orbit:
 Perigee: 840 km
 Apogee: 859 km
 Inclination: 98.84°
 Period: 101.98 min
 Eccentricity: 0.001
 Launch date: 1987-06-20
 Source: United States (US)





COSMOS 1867 ((PLASMA-A 2))

NORAD ID: 18187

Int'l Code: 1987-060A

Dimensions:

Initial orbit:

Perigee: 786 km

Apogee: 801 km

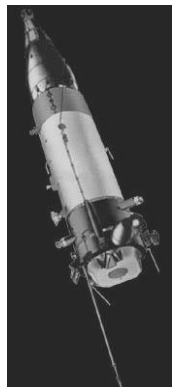
Inclination: 65.00°

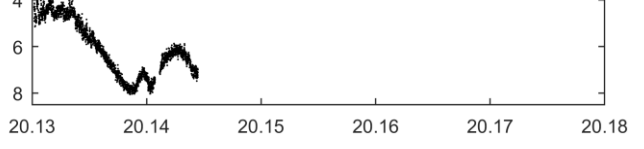
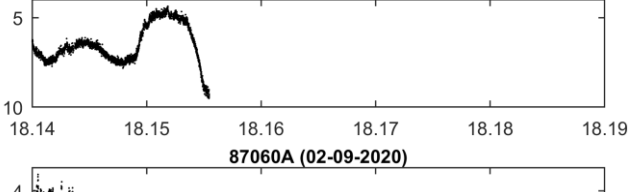
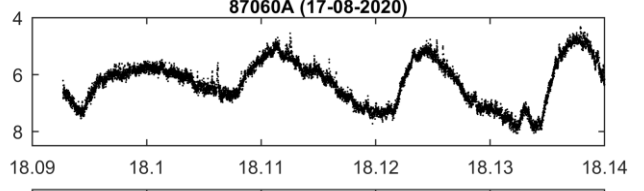
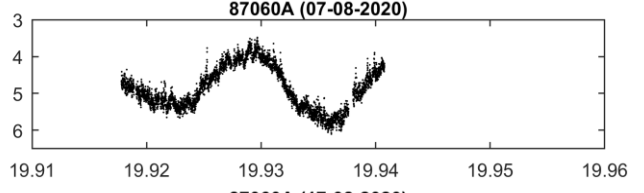
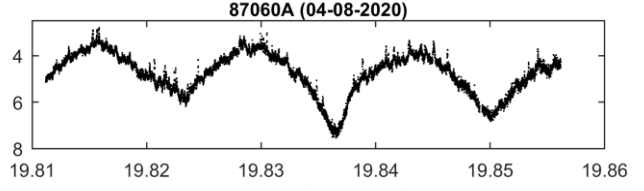
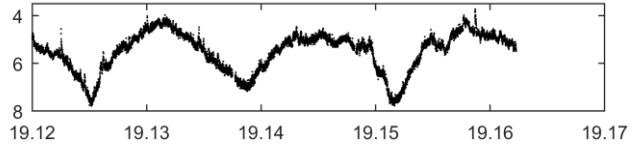
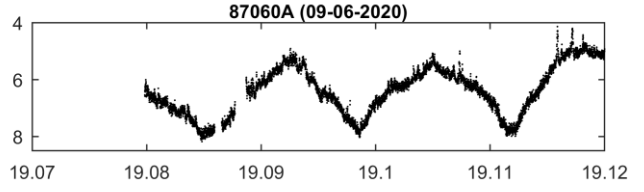
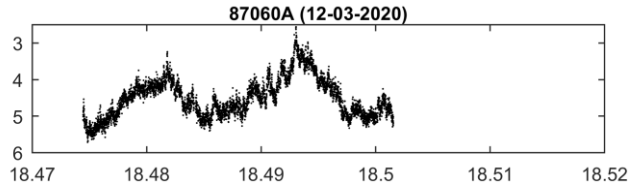
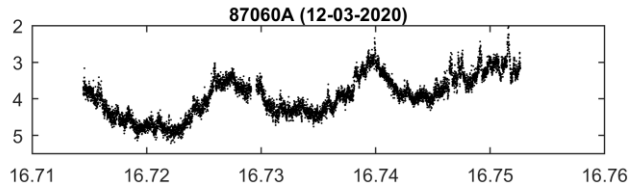
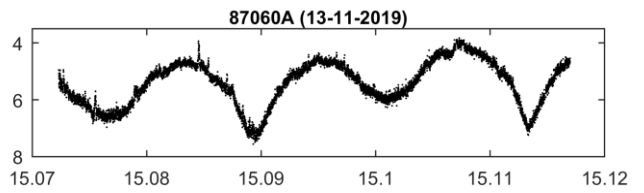
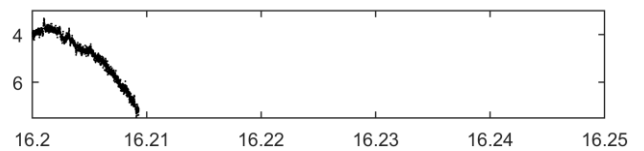
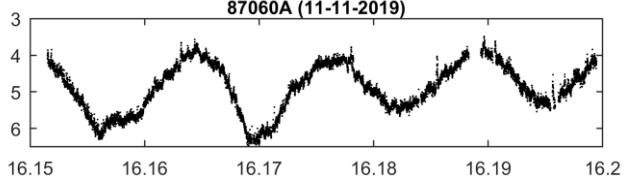
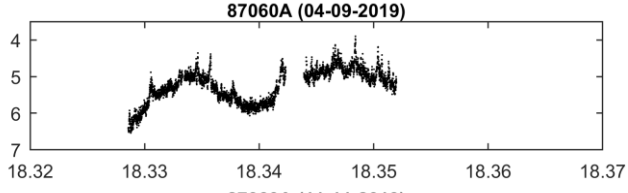
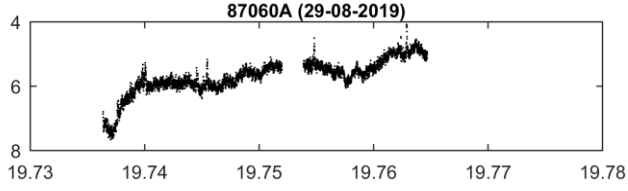
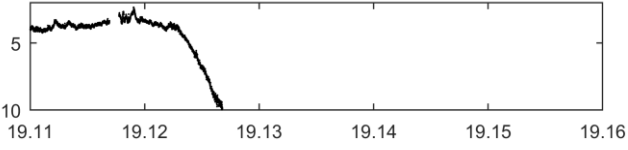
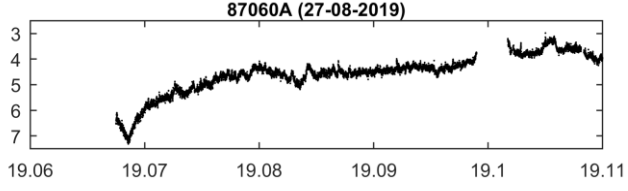
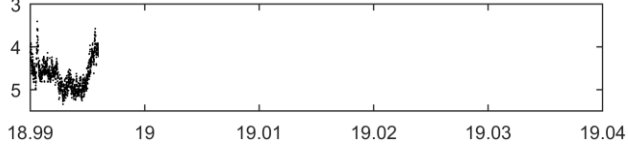
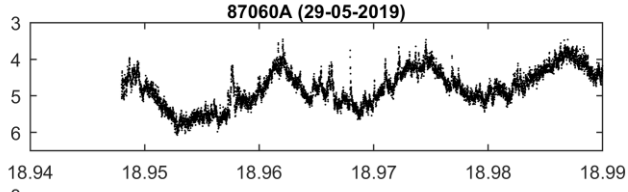
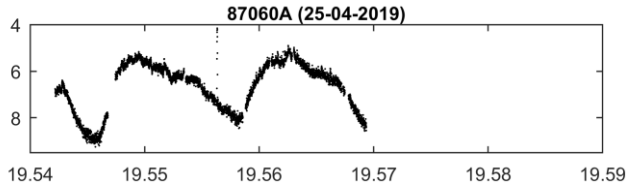
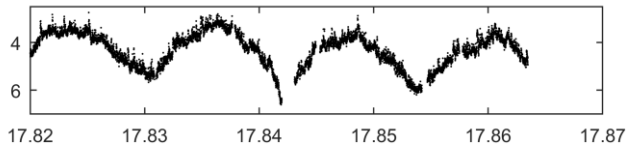
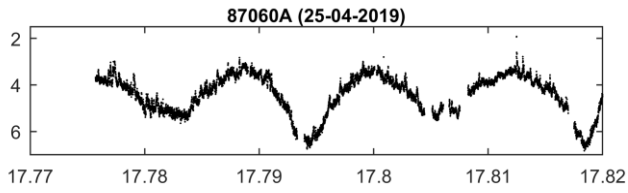
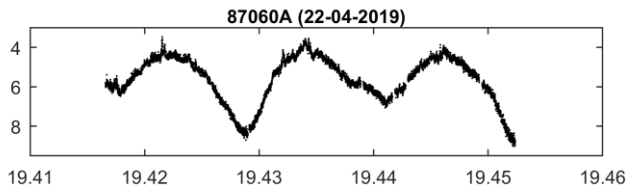
Period: 100.74 min

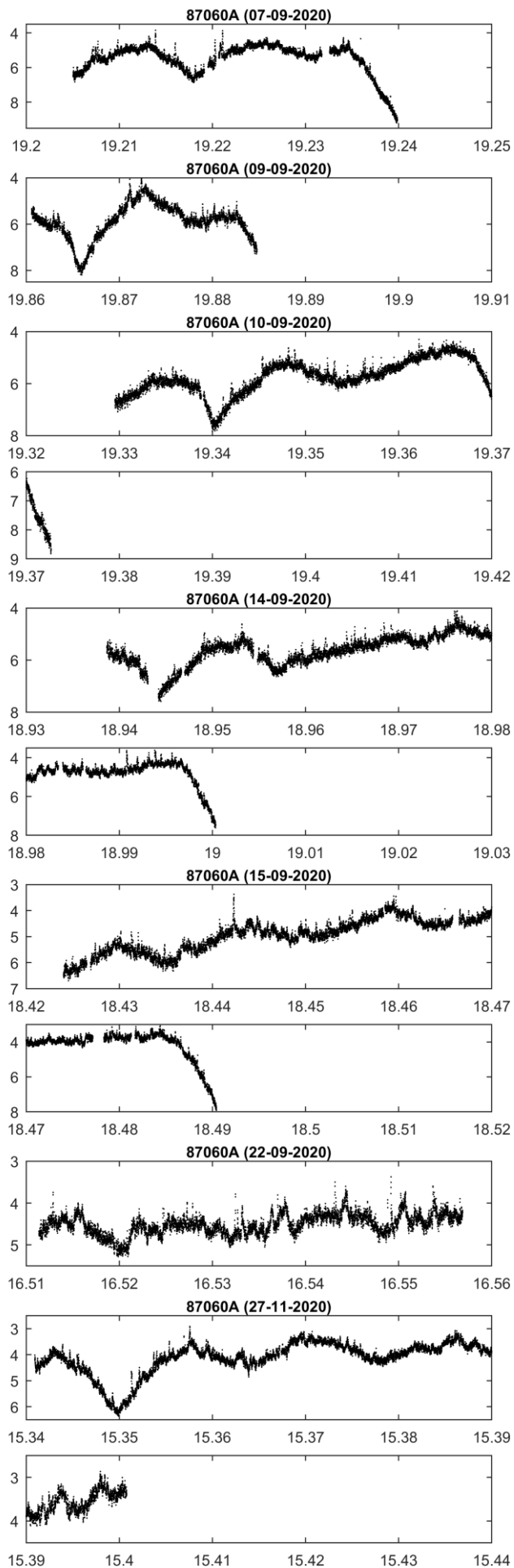
Eccentricity: 0.001

Launch date: 1987-07-10 manoeuvrable

Source: Commonwealth of Independent States (former USSR) (CIS)







**SL-14 R/B (S5M) (3rd stage)
(COSMOS 1875-1880 ROCKET)**

NORAD ID: 18340

Int'l Code: 1987-074G

Dimensions: cylinder 7.4m long, 2.4m dia

Initial orbit:

Perigee: 1410 km

Apogee: 1473 km

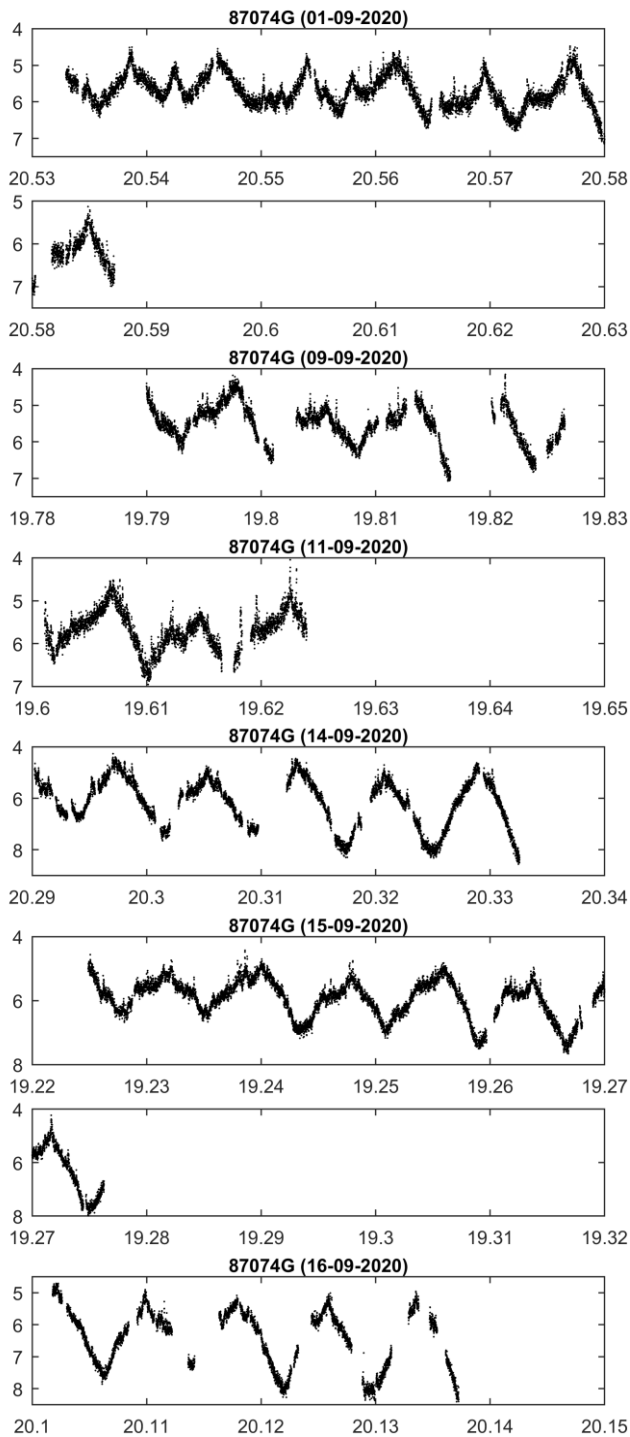
Inclination: 82.58°

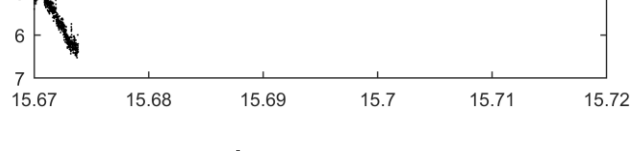
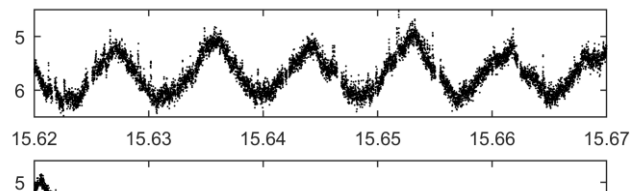
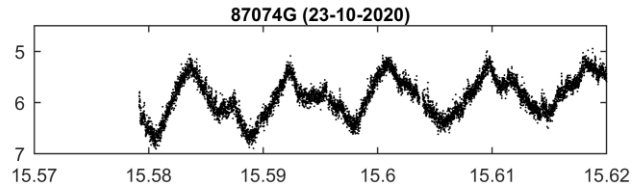
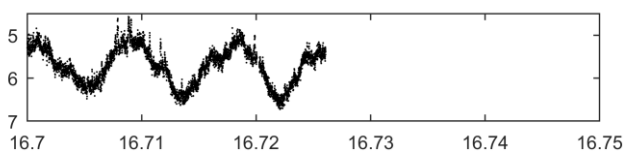
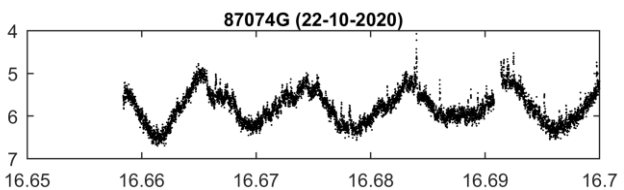
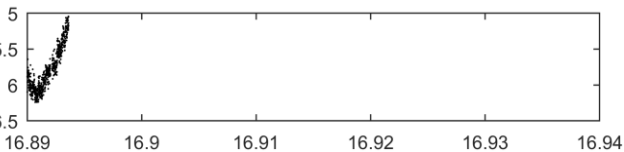
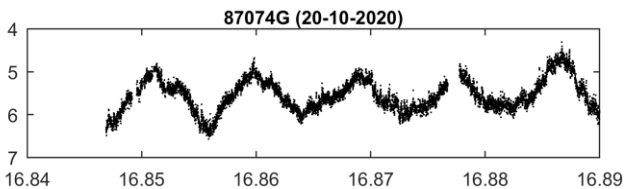
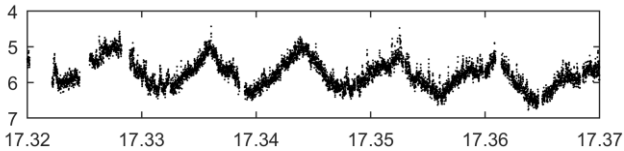
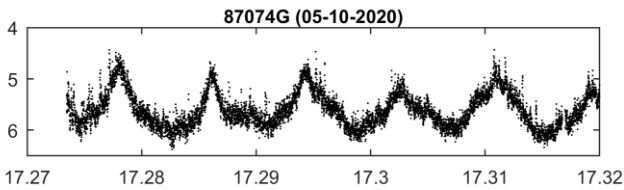
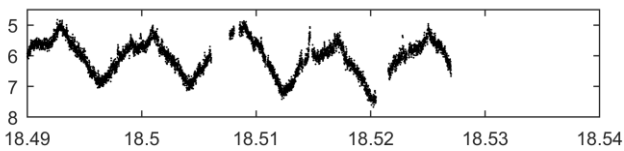
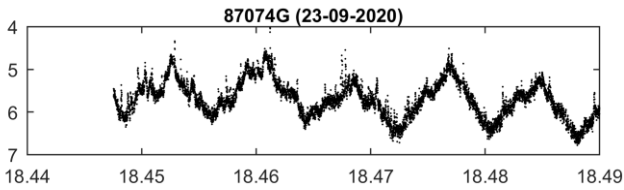
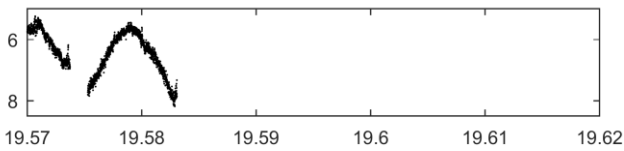
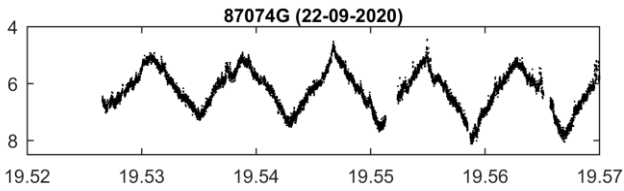
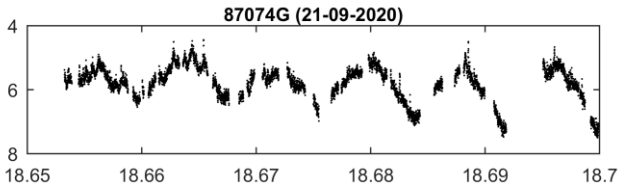
Period: 114.76 min

Eccentricity: 0.004

Launch date: 1987-09-07

Source: Commonwealth of Independent States (former USSR)
(CIS)





**SL-14 R/B (S5M) (2nd stage)
(METEOR-2 17 ROCKET)**

NORAD ID: 18821

Int'l Code: 1988-005B

Dimensions: cylinder 7.4m long, 2.4m dia

Initial orbit:

Perigee: 938 km

Apogee: 957 km

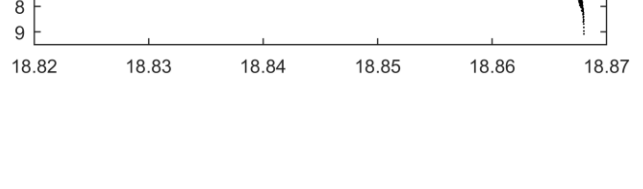
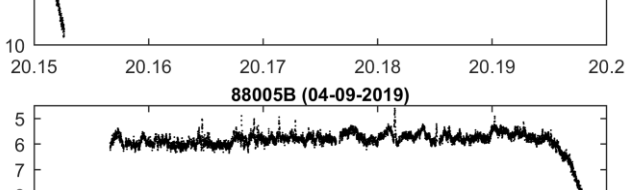
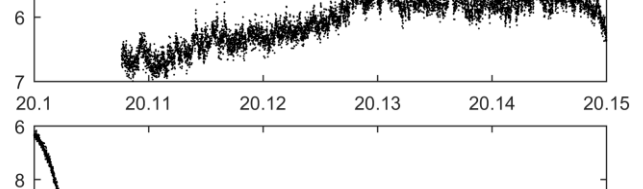
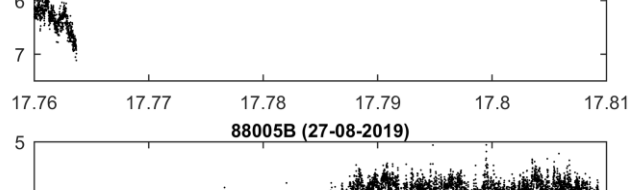
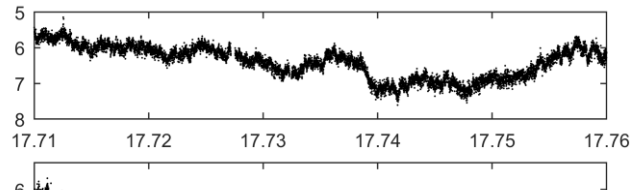
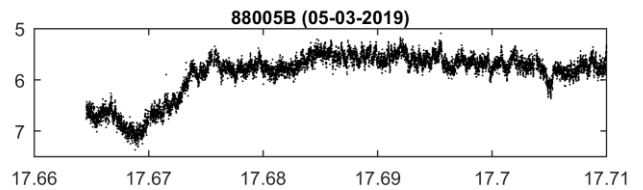
Inclination: 82.55°

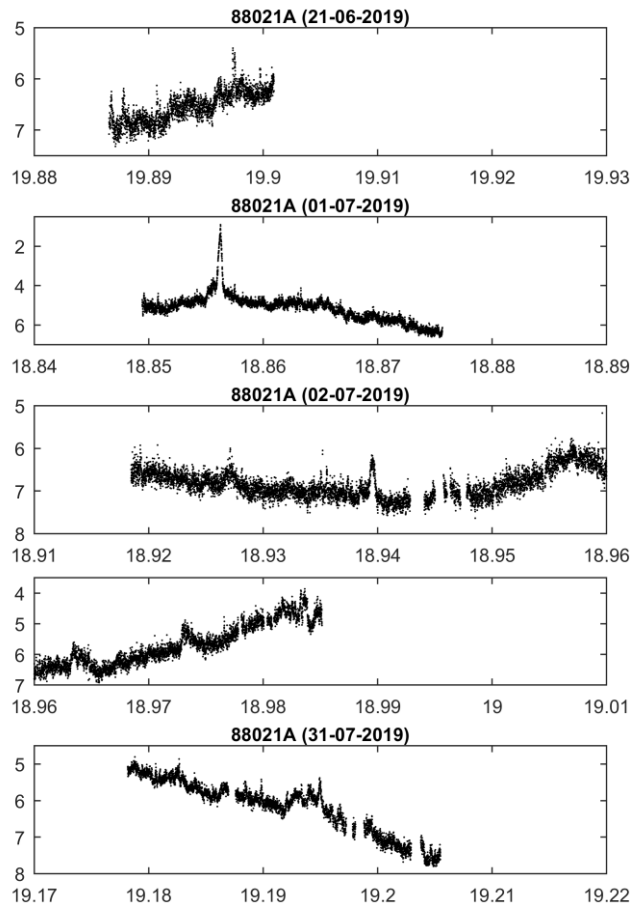
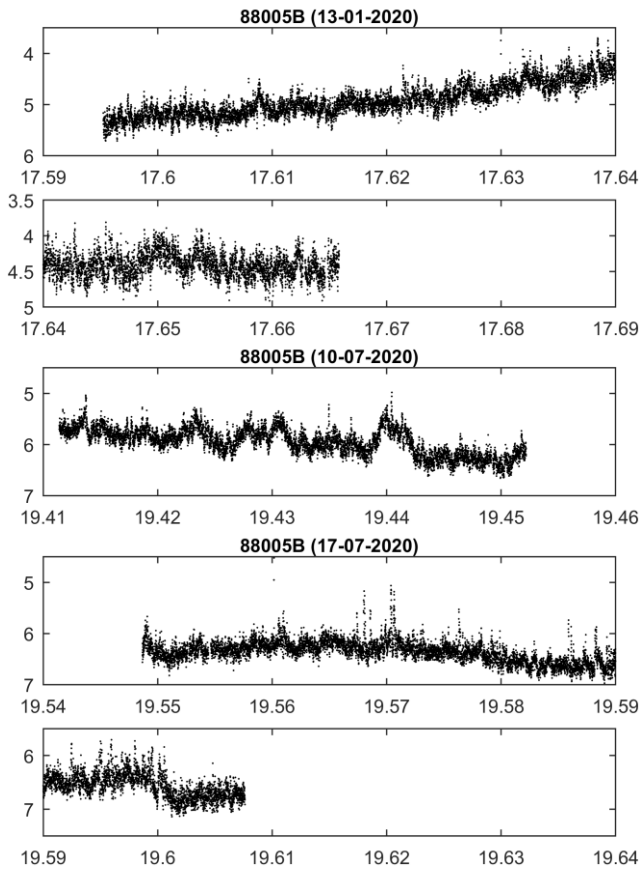
Period: 104.06 min

Eccentricity: 0.001

Launch date: 1988-01-30

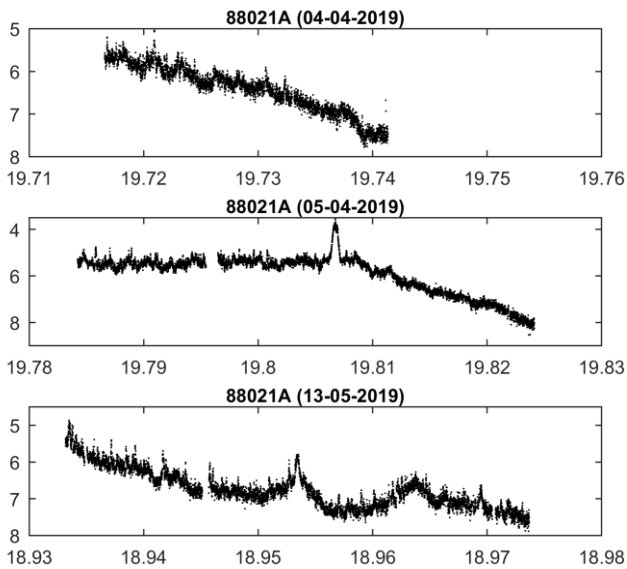
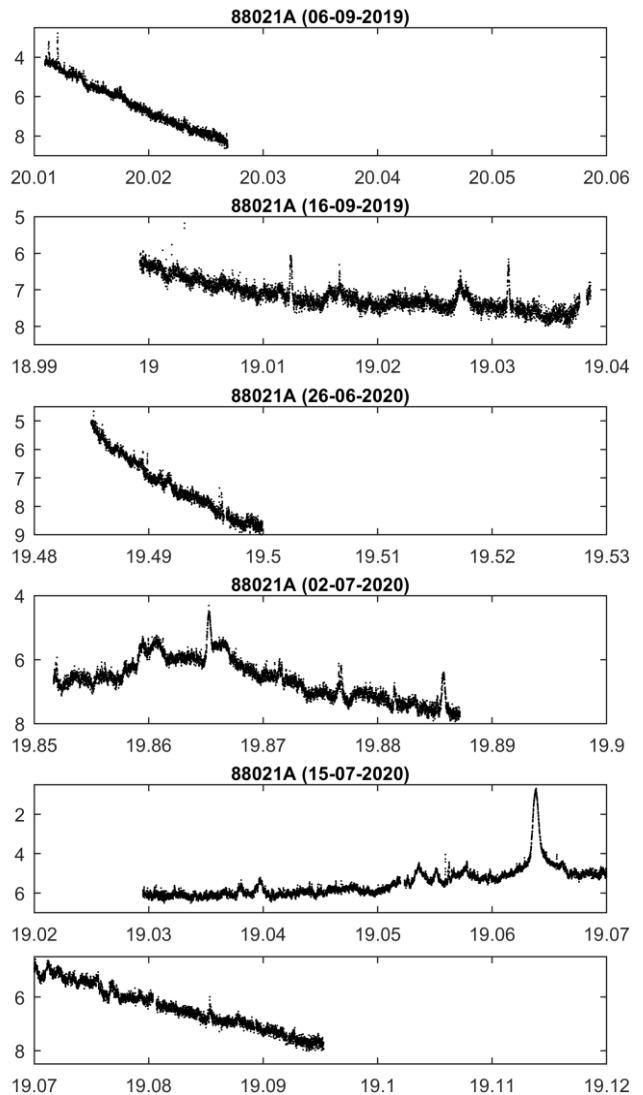
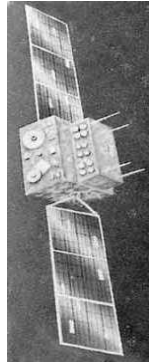
Source: Commonwealth of Independent States (former USSR) (CIS)

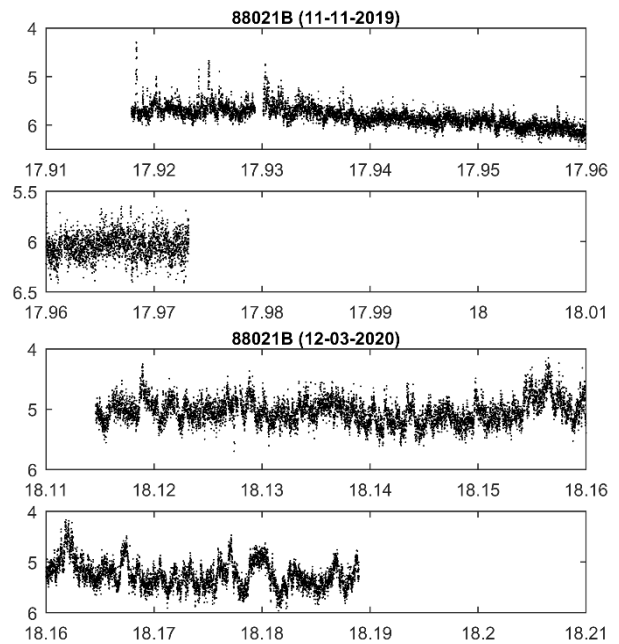
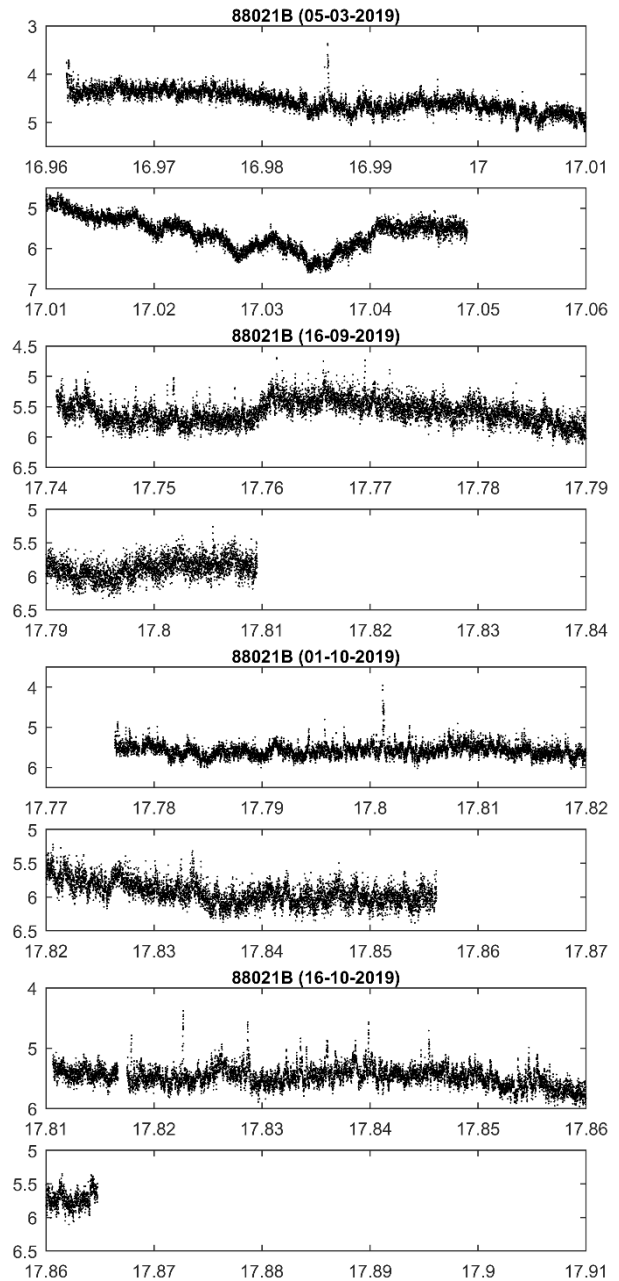
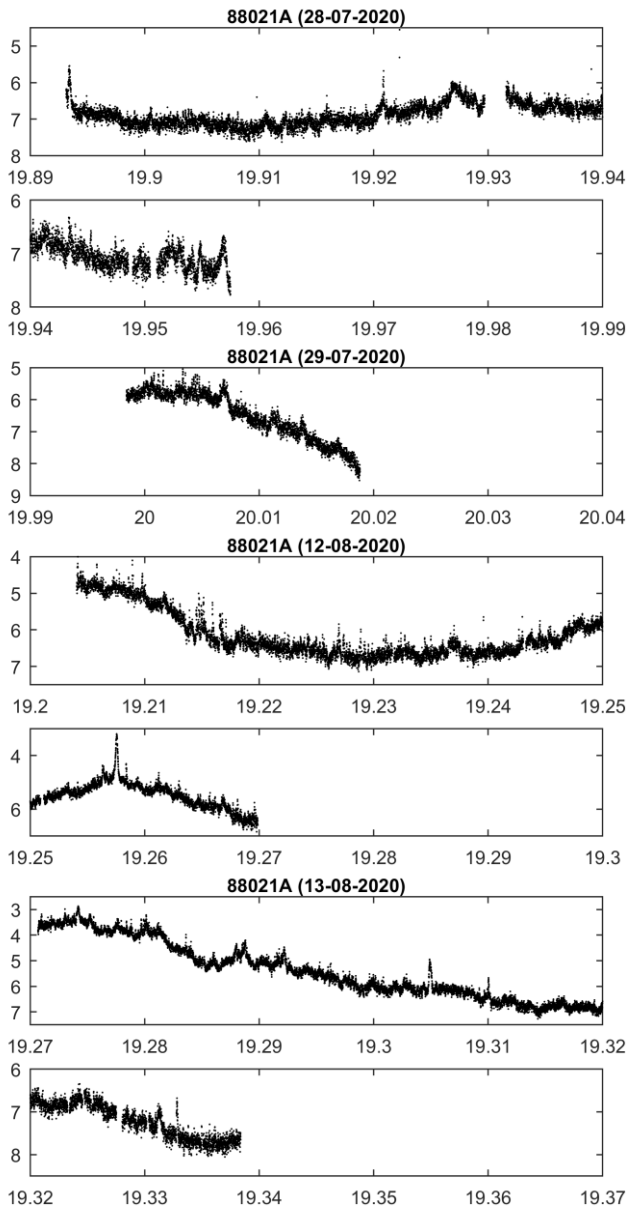




IRS 1A

NORAD ID: 18960
 Int'l Code: 1988-021A
 Dimensions: box + panels
 Initial orbit:
 Perigee: 871 km
 Apogee: 913 km
 Inclination: 99.02°
 Period: 102.87 min
 Eccentricity: 0.003
 Launch date: 1988-03-17
 Source: India (IND)





SL-3 R/B

IRS-1A (block E 3rd stage)

NORAD ID: 18961

Int'l Code: 1988-021B

Dimensions: cylinder 3.8m long?

2.6m dia?

Initial orbit:

Perigee: 868 km

Apogee: 922 km

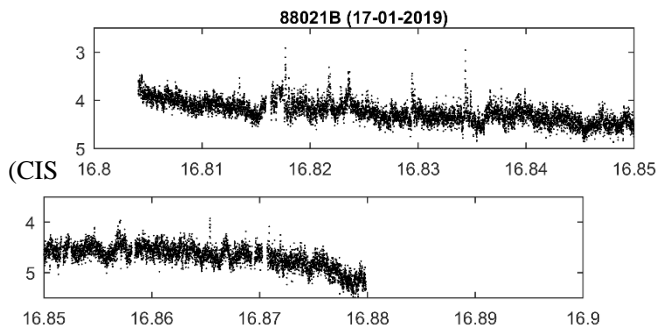
Inclination: 99.04°

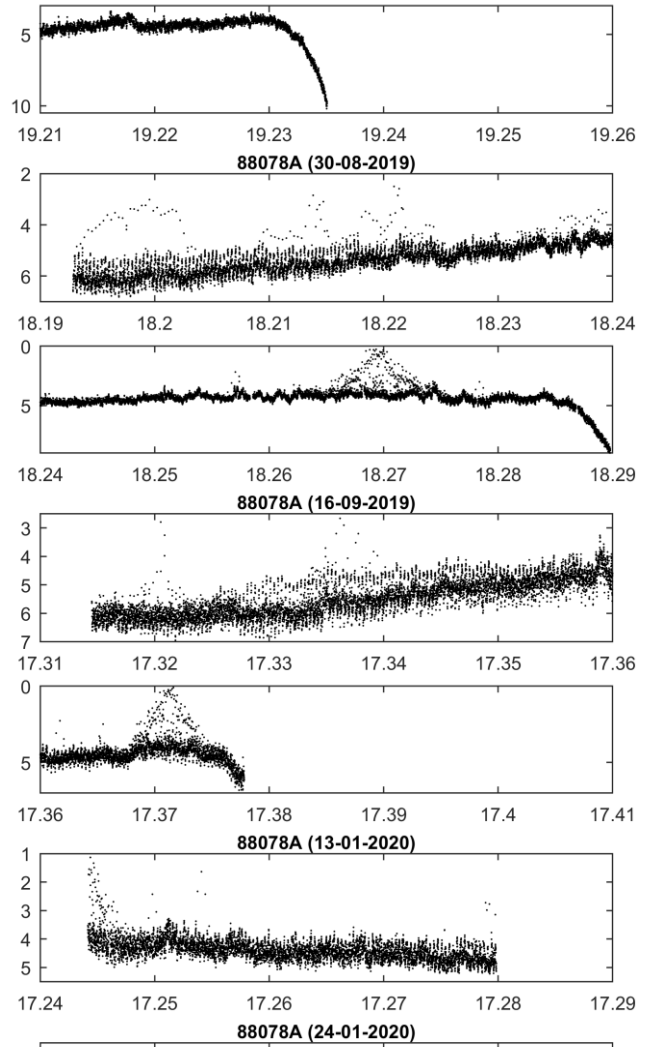
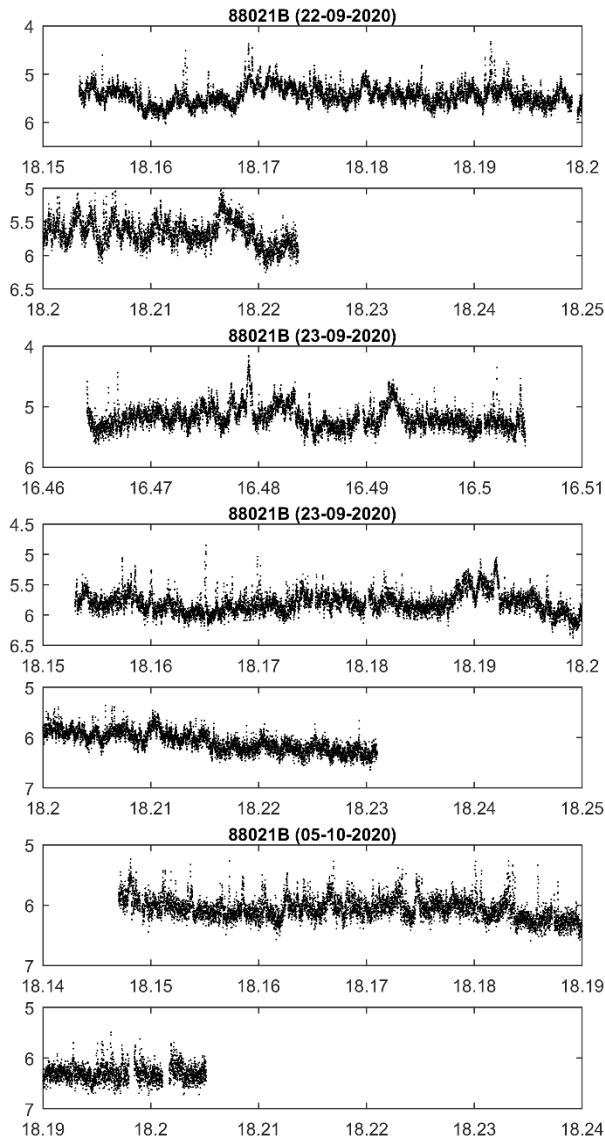
Period: 102.94 min

Eccentricity: 0.004

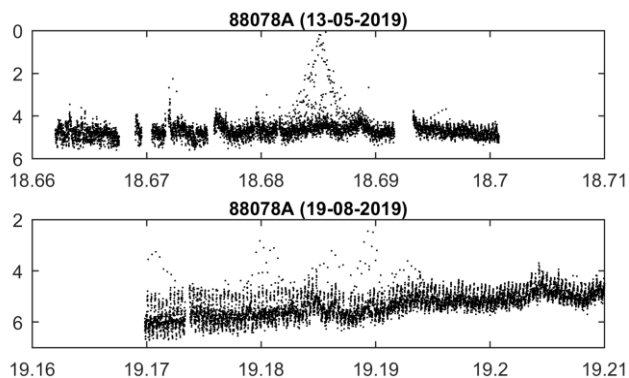
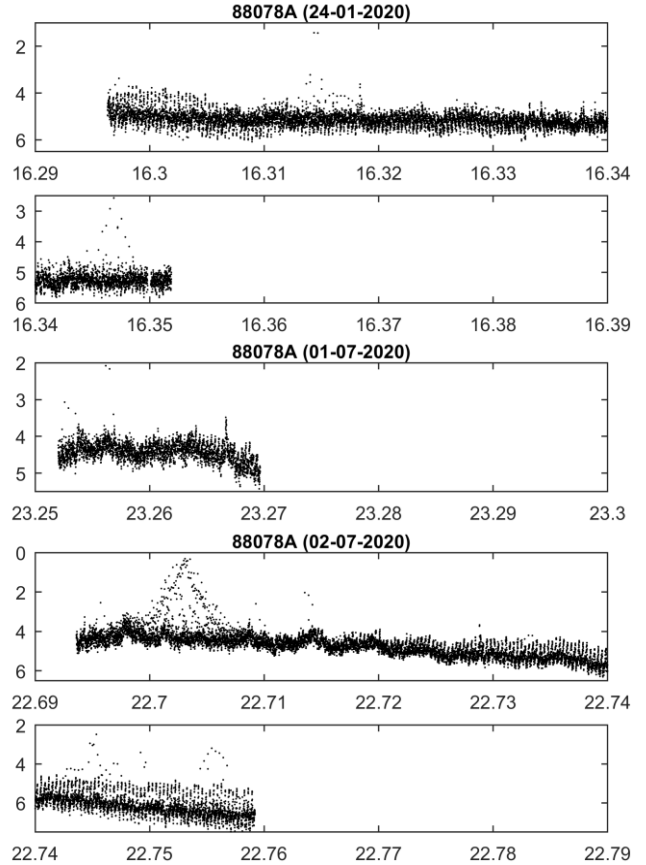
Launch date: 1988-03-17

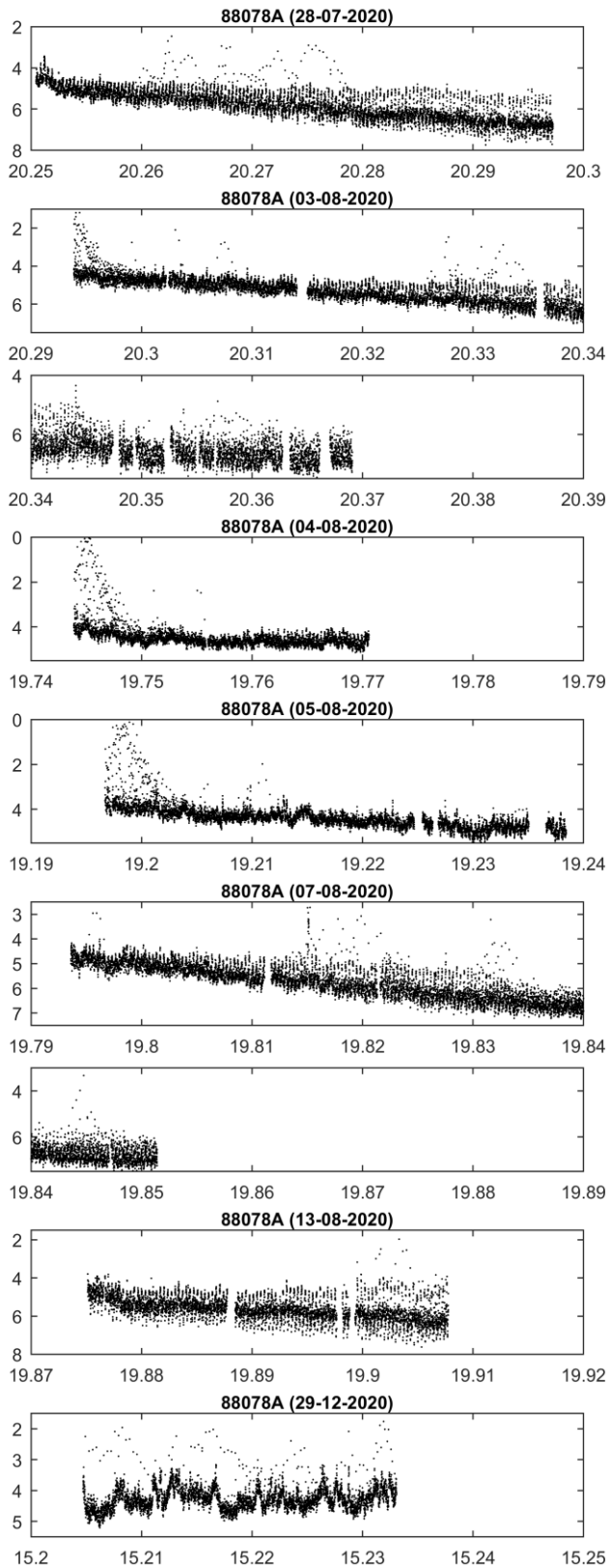
Source: Commonwealth of Independent States (former USSR)



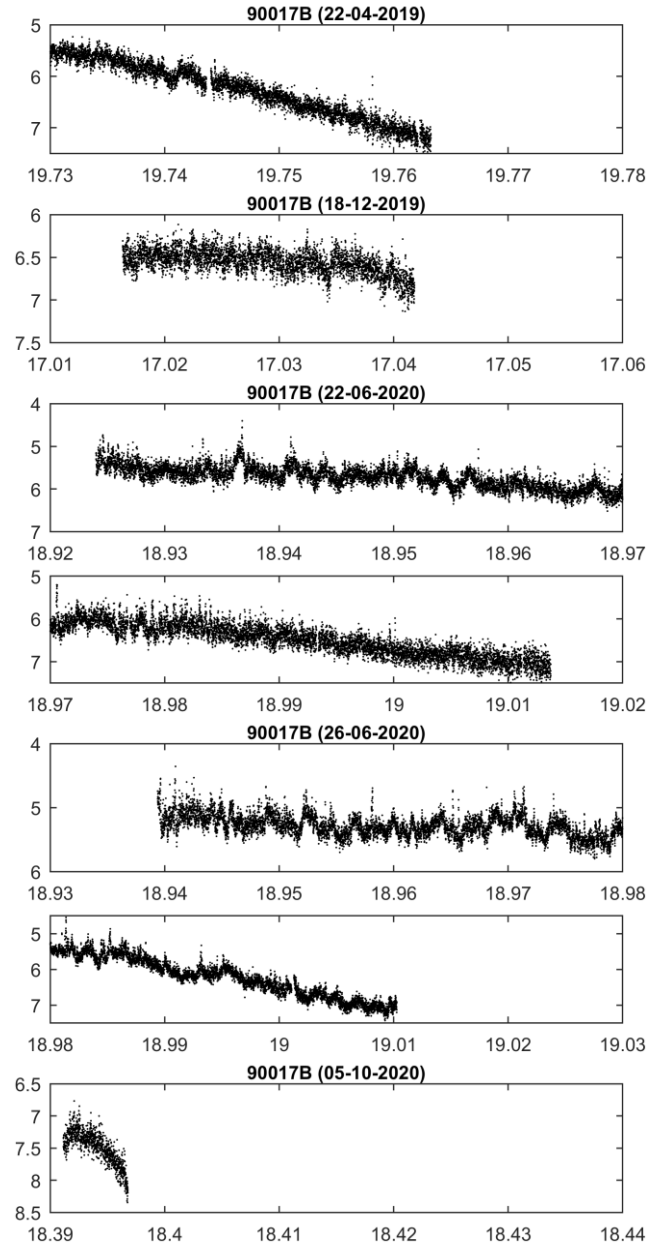


USA 32
 NORAD ID: 19460
 Int'l Code: 1988-078A
 Dimensions:
 Initial orbit:
 Perigee: 185 km
 Apogee: 292 km
 Inclination: 85.0°
 Period: 89.3 min
 Eccentricity: 0.008
 Launch date: 1988-09-05
 Source: United States (US)

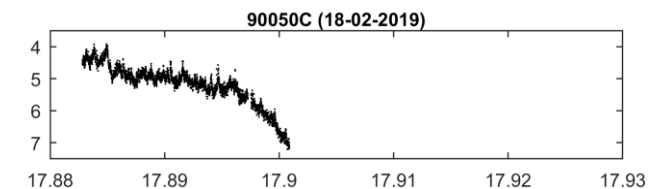




Launch date: 1990-02-27
 Source: Commonwealth of Independent States (former USSR) (CIS)



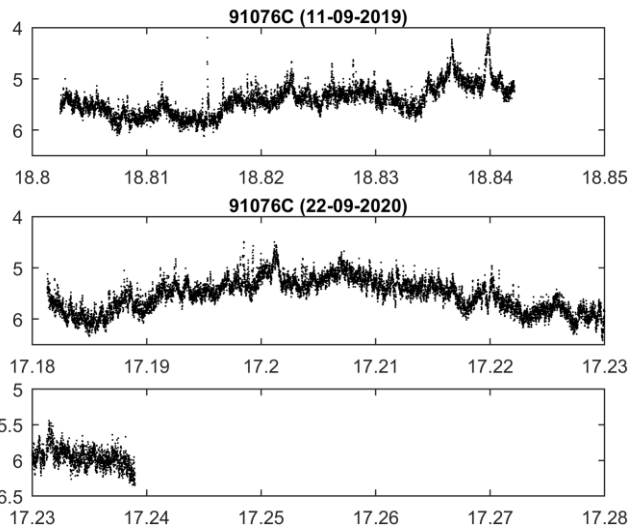
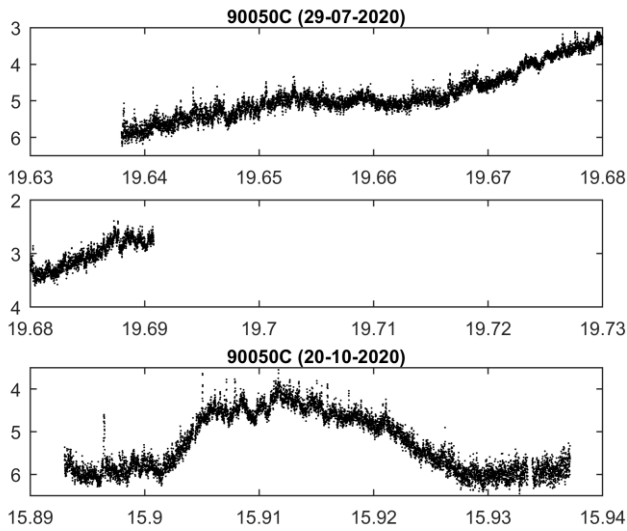
NOSS 2-1B (USA 61)
 NORAD ID: 20691
 Int'l Code: 1990-050C
 Dimensions:
 Initial orbit: 1990-12-05
 Perigee: 1071 km
 Apogee: 1146 km
 Inclination: 63.4°
 Period: 107.44 min
 Eccentricity: 0.005
 Launch date: 1990-06-08
 Source: United States (US)



**SL-8 R/B (S3M) (2nd stage)
 (NADEZHDA 2 ROCKET)**

NORAD ID: 20509
 Int'l Code: 1990-017B
 Dimensions: cylinder 7.4m long, 2.4m dia
 Initial orbit:
 Perigee: 956 km
 Apogee: 1010 km
 Inclination: 82.95°
 Period: 104.81 min
 Eccentricity: 0.004



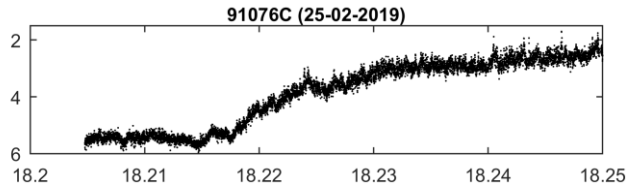
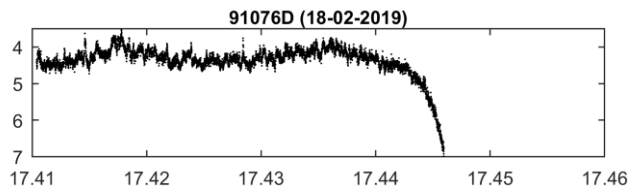
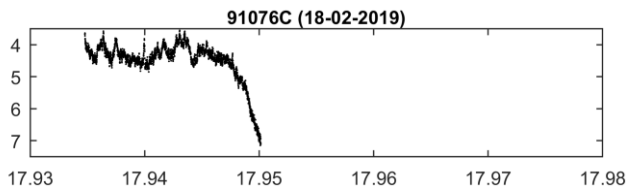


NOSS-2 2A (USA 74)

NORAD ID: 21799
 Int'l Code: 1991-076C
 Dimensions:
 Initial orbit:
 Perigee: 1053 km
 Apogee: 1165 km
 Inclination: 63.42°
 Period: 107.45 min
 Eccentricity: 0.007
 Launch date: 1991-11-08
 Source: United States (US)

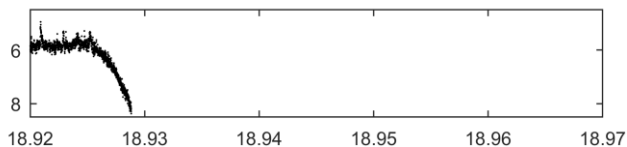
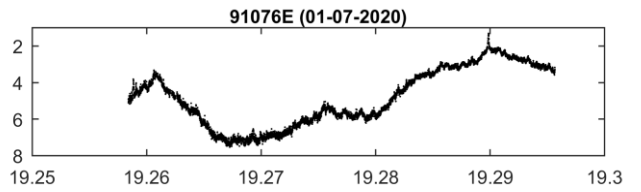
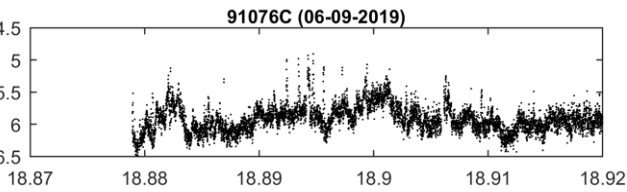
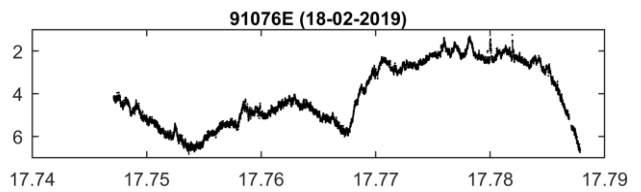
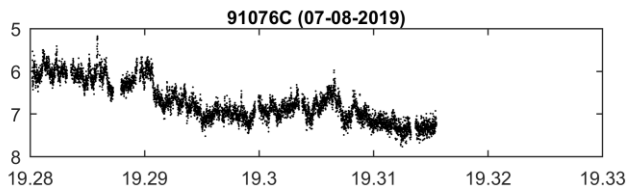
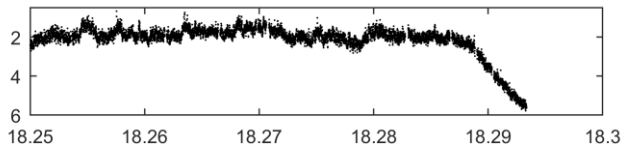
NOSS-2 2B (USA 76)

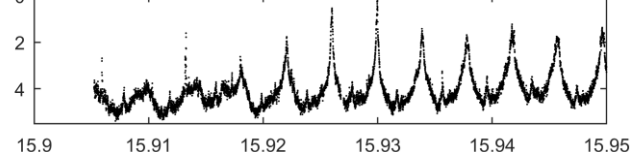
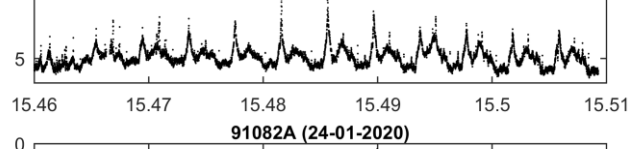
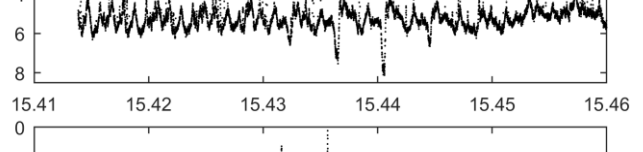
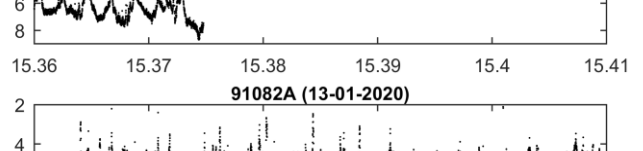
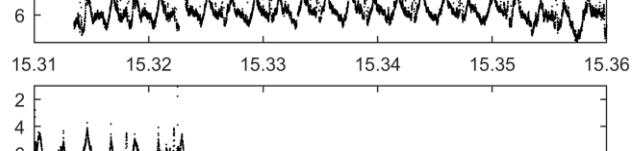
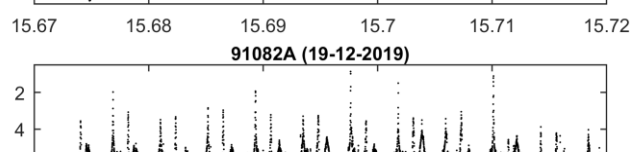
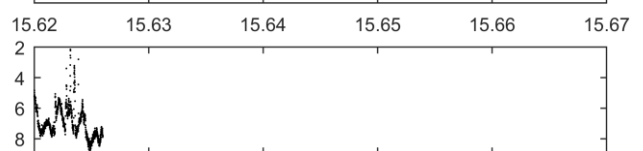
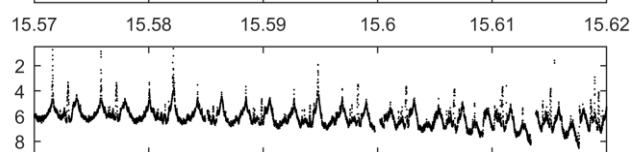
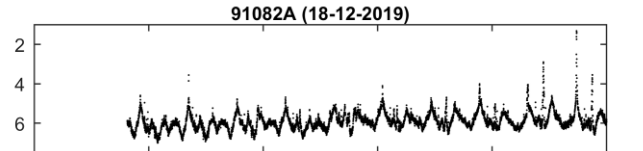
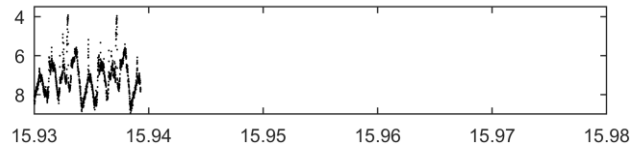
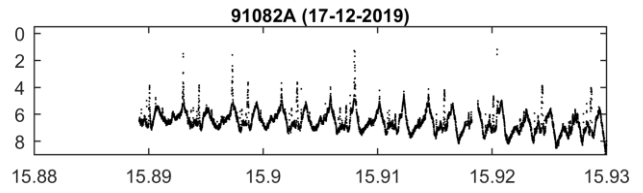
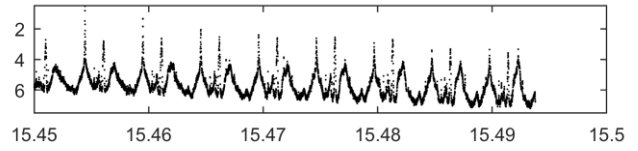
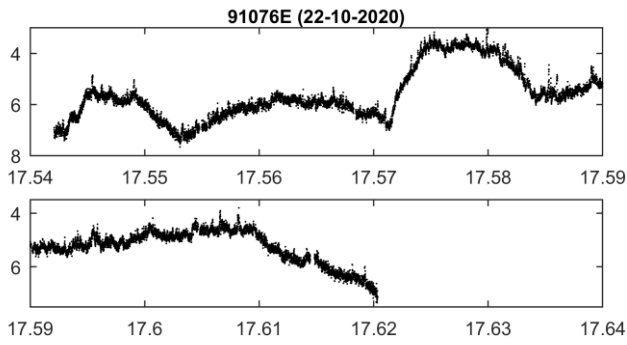
NORAD ID: 21808
 Int'l Code: 1991-076D
 Dimensions:
 Initial orbit:
 Perigee: 1053 km
 Apogee: 1165 km
 Inclination: 63.42°
 Period: 107.45 min
 Eccentricity: 0.007
 Launch date: 1991-11-08
 Source: United States (US)



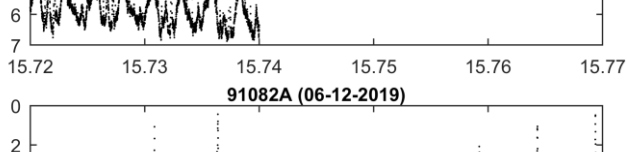
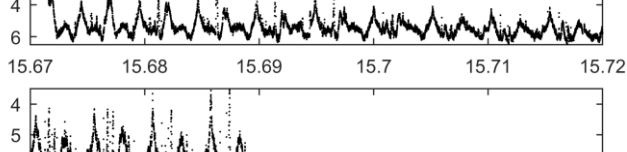
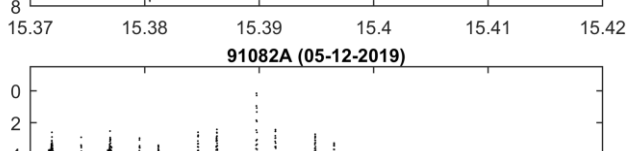
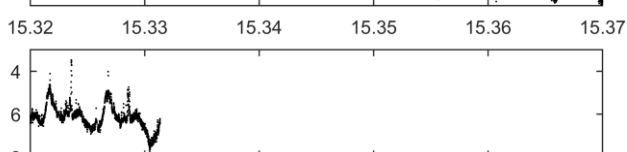
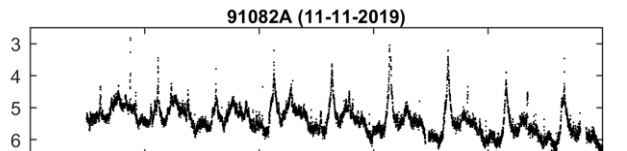
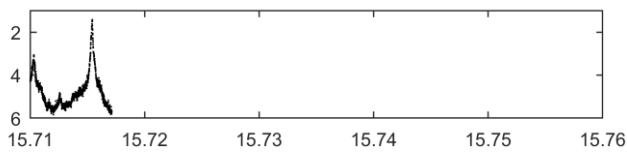
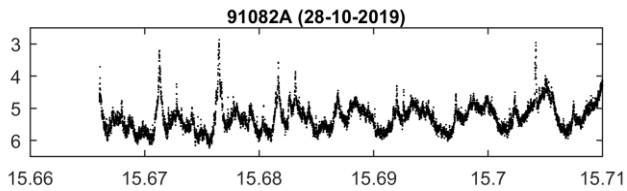
NOSS-2 2C (USA 77)

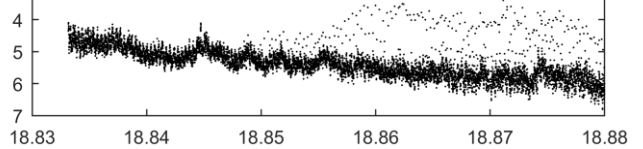
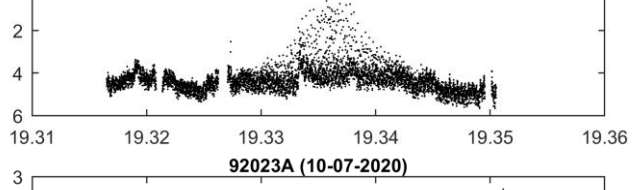
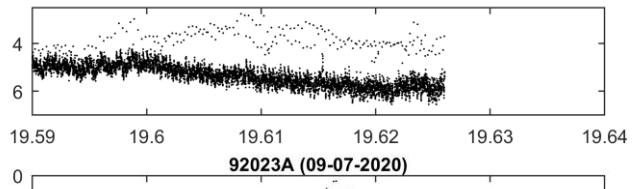
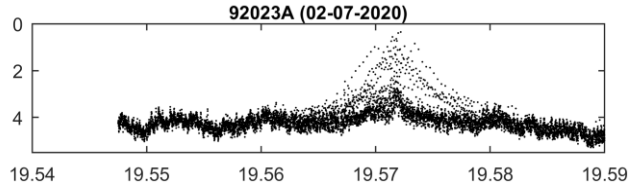
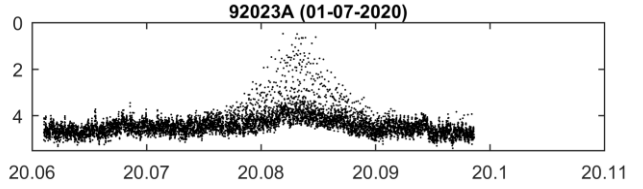
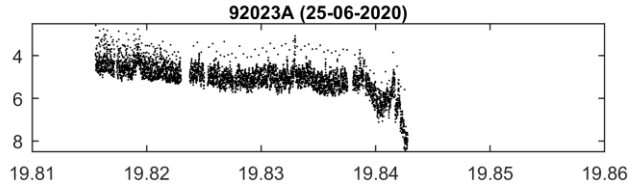
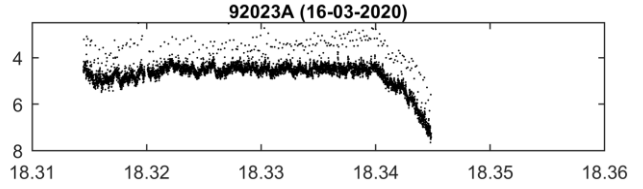
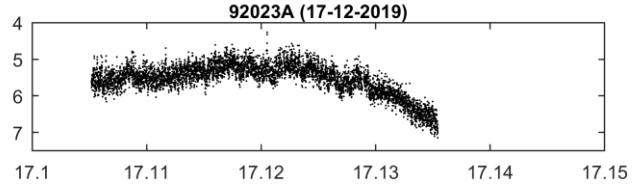
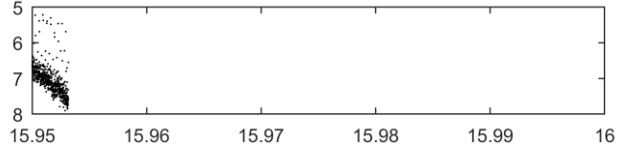
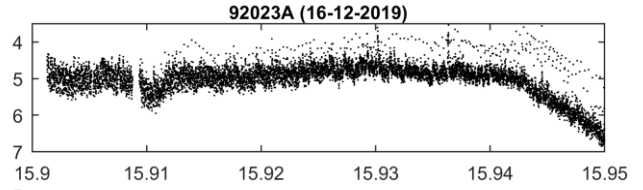
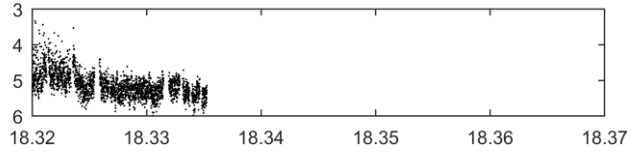
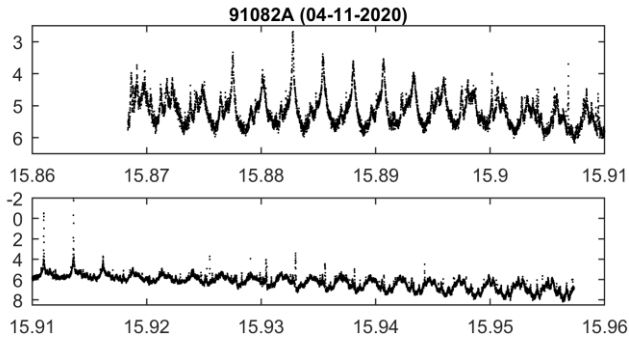
NORAD ID: 21809
 Int'l Code: 1991-076E
 Dimensions:
 Initial orbit:
 Perigee: 1053 km
 Apogee: 1165 km
 Inclination: 63.42°
 Period: 107.45 min
 Eccentricity: 0.007
 Launch date: 1991-11-08
 Source: United States (US)





DMSP 5D-2 F11 (USA 73)
 NORAD ID: 21798
 Int'l Code: 1991-082A
 Dimensions: cylinder 6.4m long,
 1.68m dia? 6.4m span
 Initial orbit:
 Perigee: 840 km
 Apogee: 857 km
 Inclination: 98.92°
 Period: 101.97 min
 Eccentricity: 0.001
 Launch date: 1991-11-28
 Source: United States (US)





USA 81

NORAD ID: 21949

Int'l Code: 1992-023A

Dimensions:

Initial orbit:

Perigee: 784 km

Apogee: 805 km

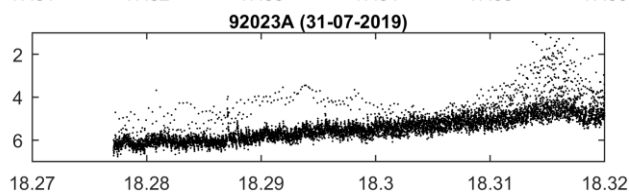
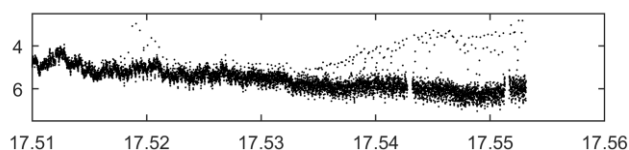
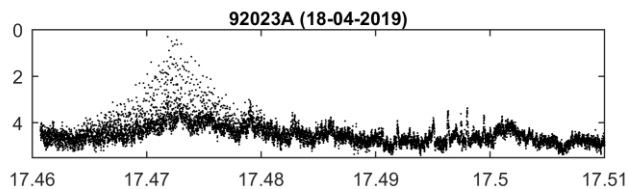
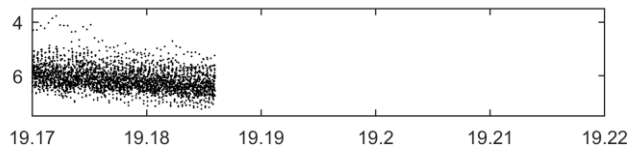
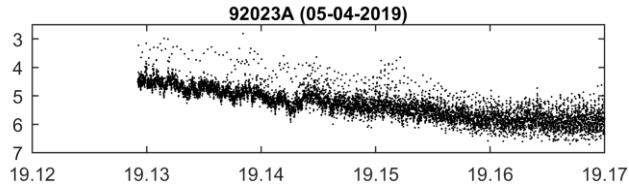
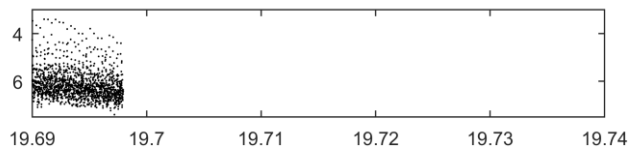
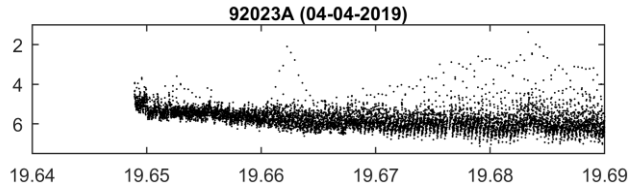
Inclination: 85.14°

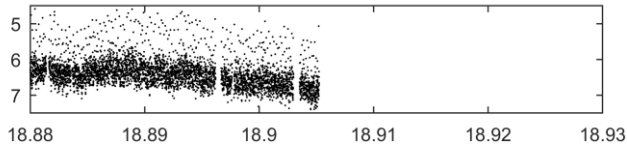
Period: 100.82 min

Eccentricity: 0.002

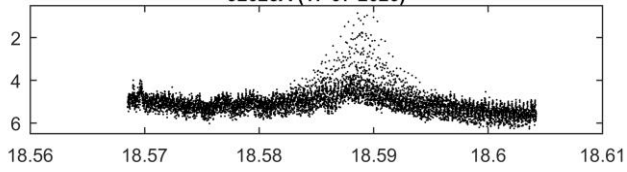
Launch date: 1992-04-25

Source: United States (US)

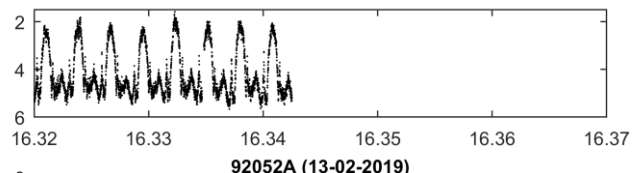
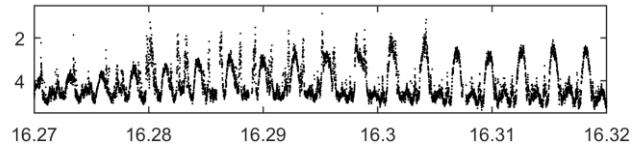
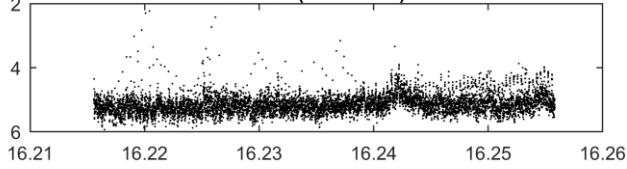




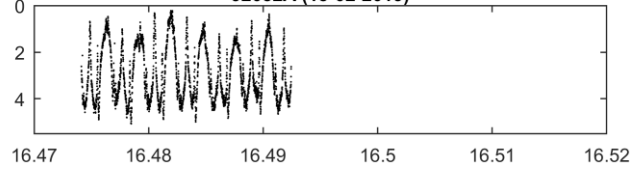
92023A (17-07-2020)



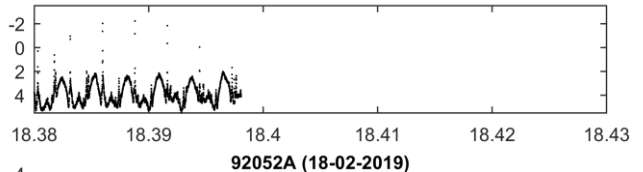
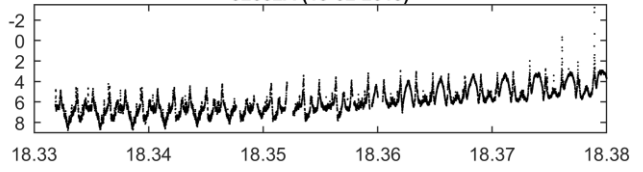
92023A (27-11-2020)



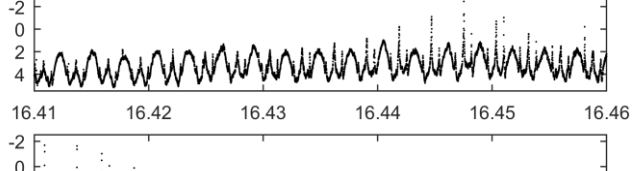
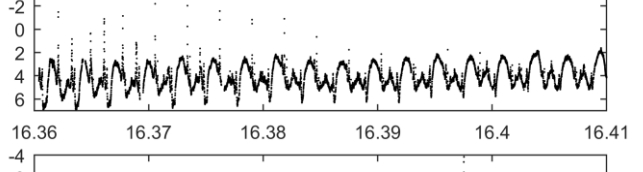
92052A (13-02-2019)



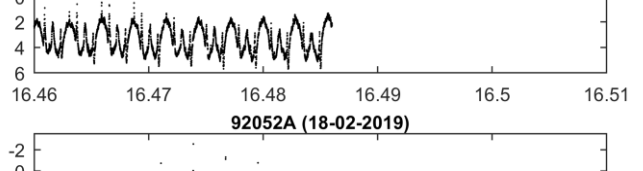
92052A (13-02-2019)



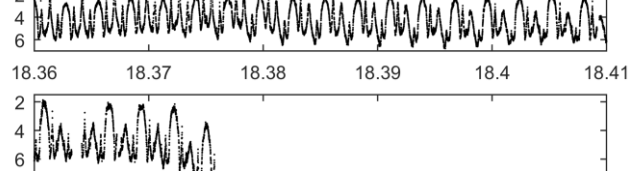
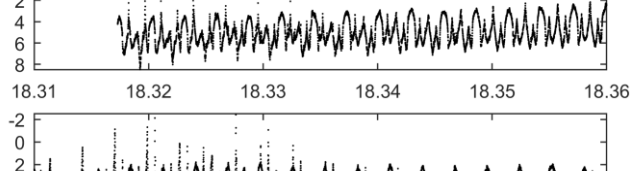
92052A (18-02-2019)



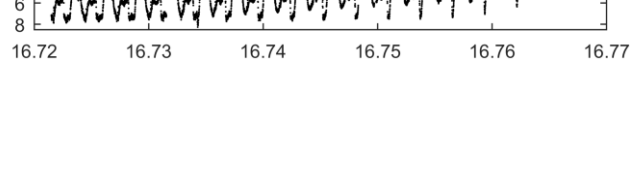
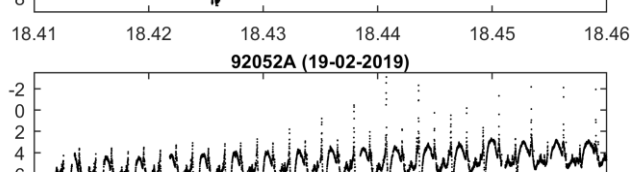
92052A (18-02-2019)



92052A (18-02-2019)

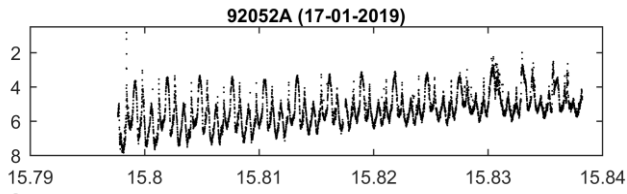
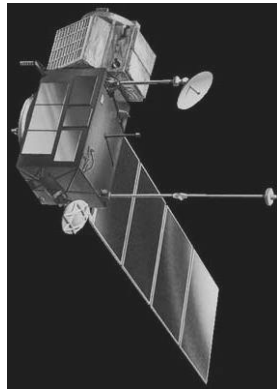


92052A (19-02-2019)

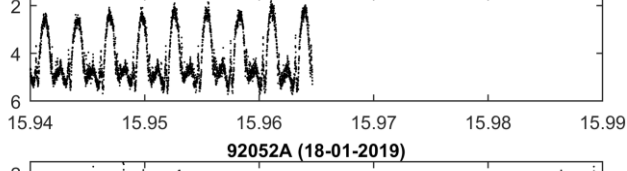
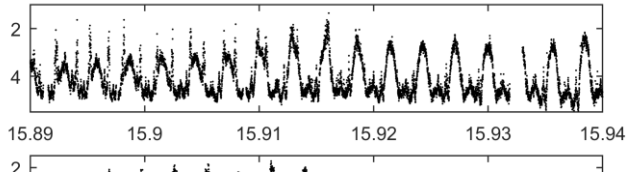
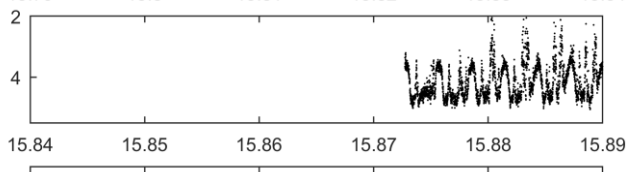


TOPEX/POSEIDON

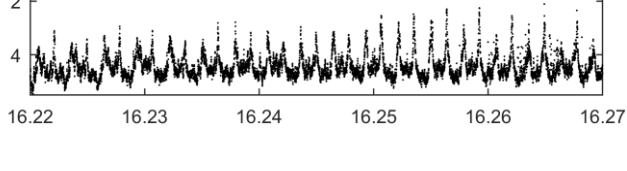
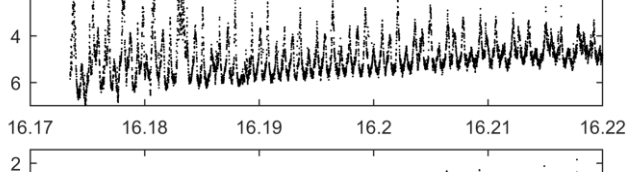
NORAD ID: 22076
 Int'l Code: 1992-052A
 Dimensions: box 4.15m x 2.19m x 1.45m, 8.7m span
 Initial orbit:
 Perigee: 1317 km
 Apogee: 1331 km
 Inclination: 66.08°
 Period: 112.13 min
 Eccentricity: 0.001
 Launch date: 1992-08-10
 Source: United States (US)

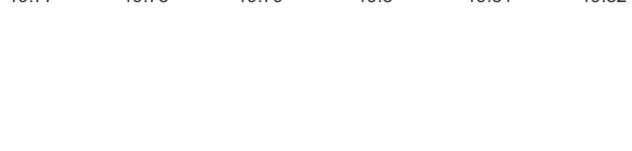
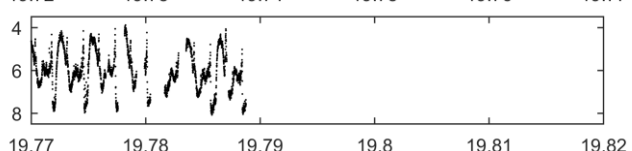
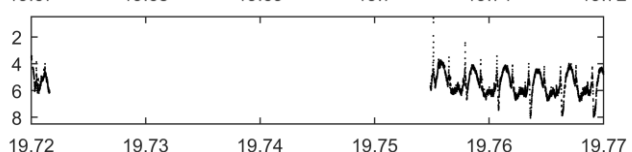
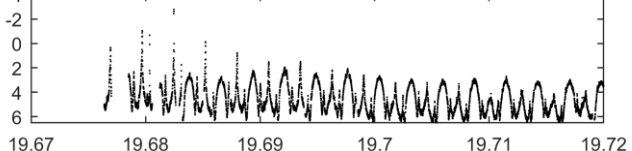
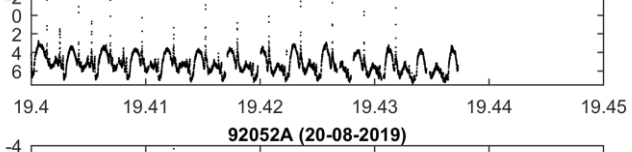
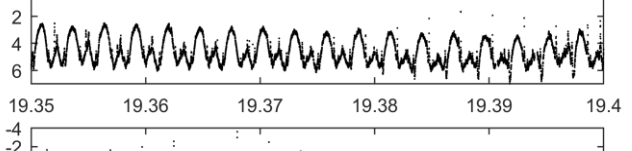
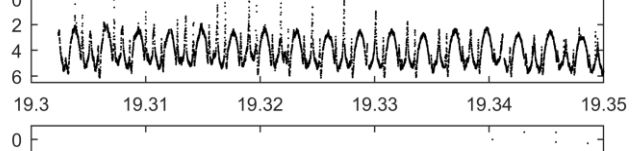
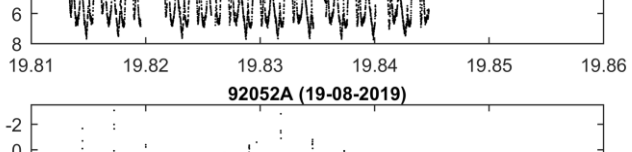
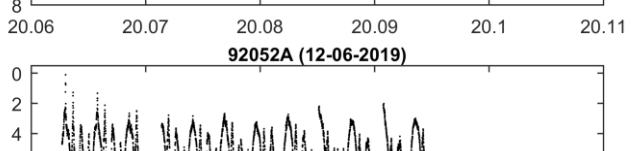
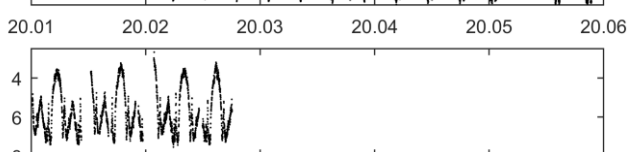
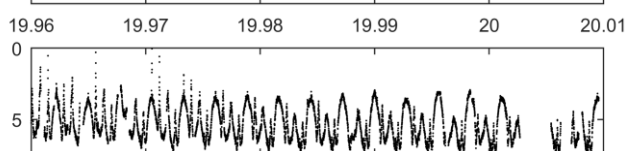
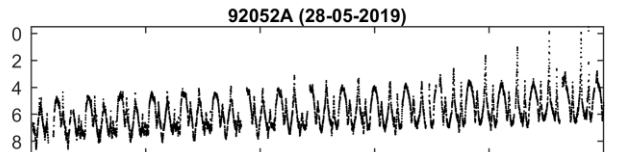
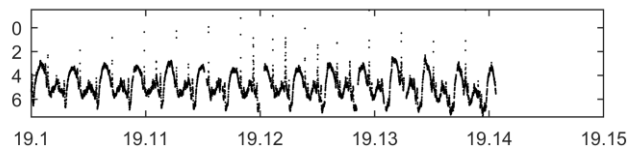
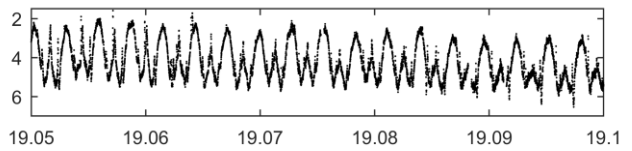
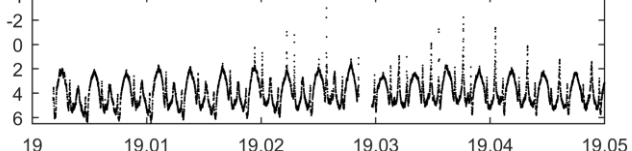
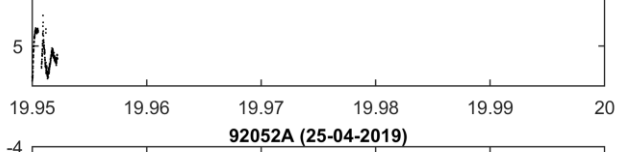
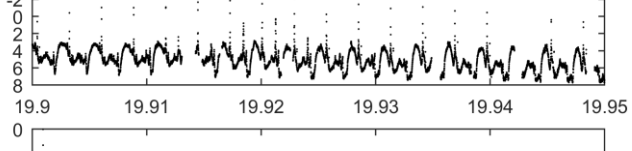
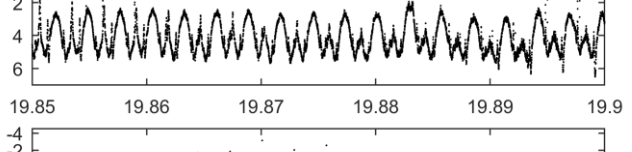
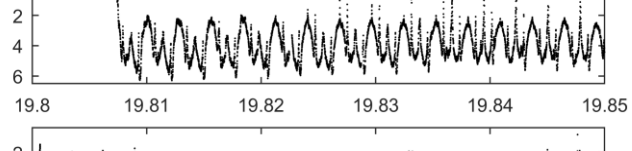
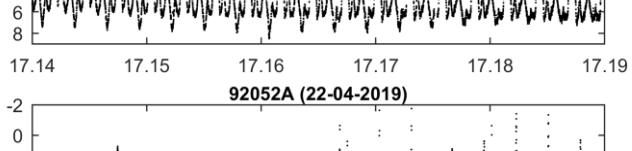
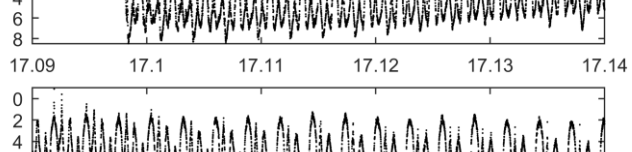
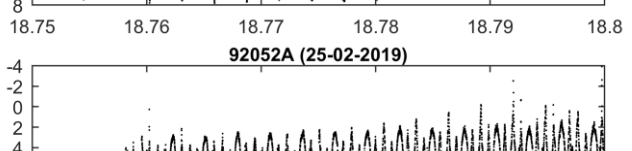
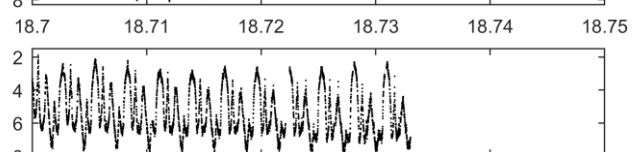
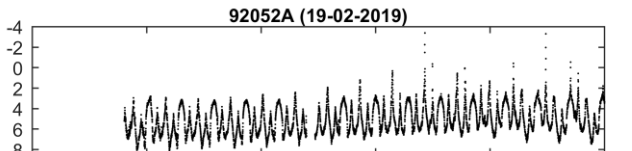
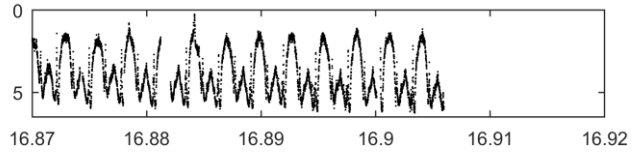
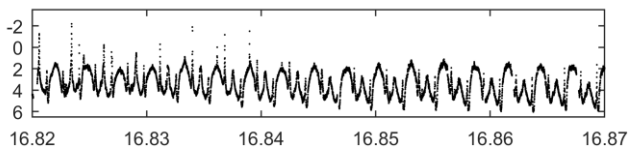
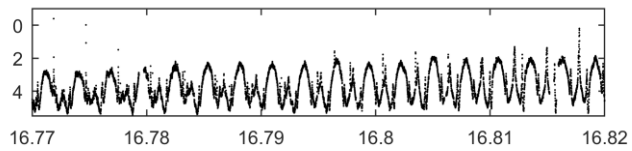


92052A (17-01-2019)



92052A (18-01-2019)





92052A (28-05-2019)

92052A (12-06-2019)

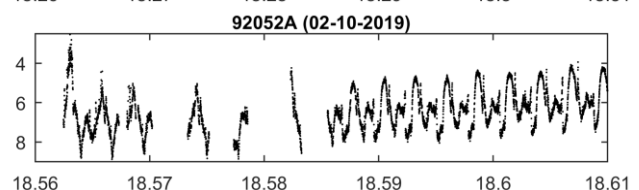
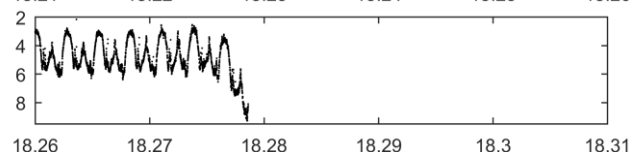
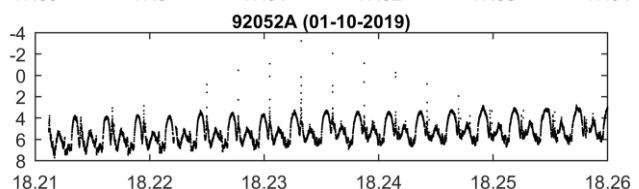
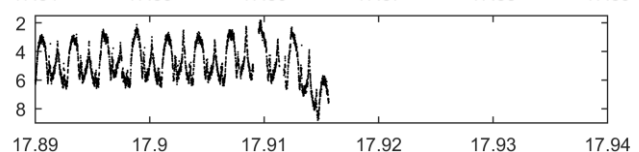
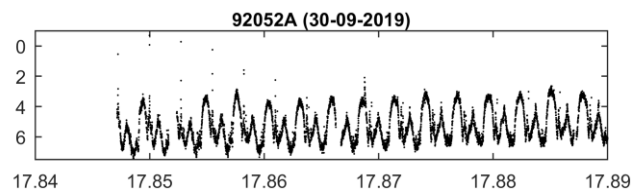
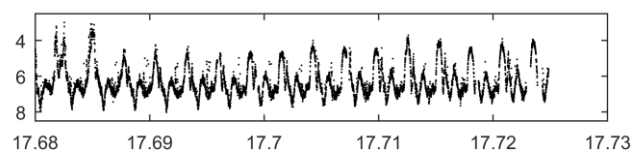
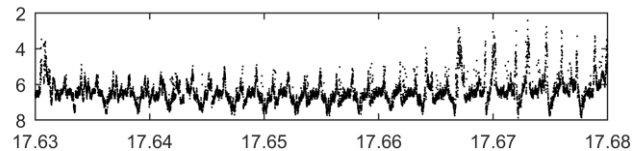
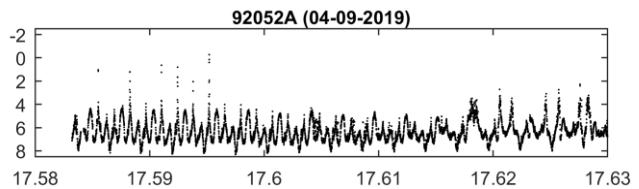
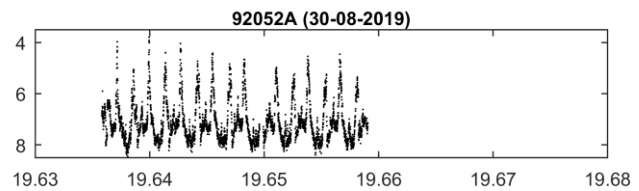
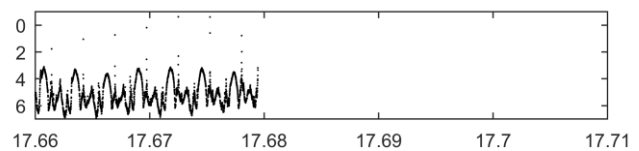
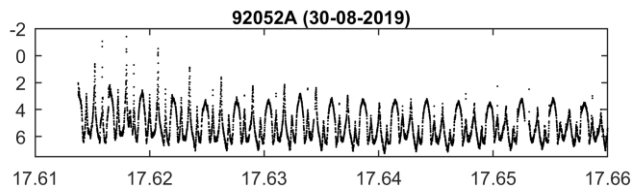
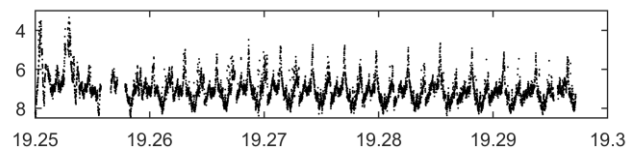
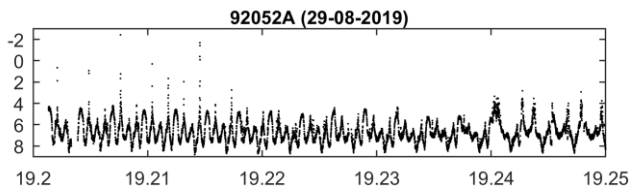
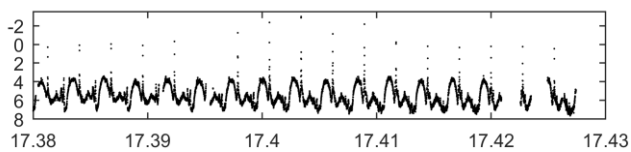
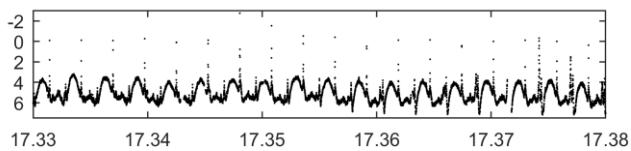
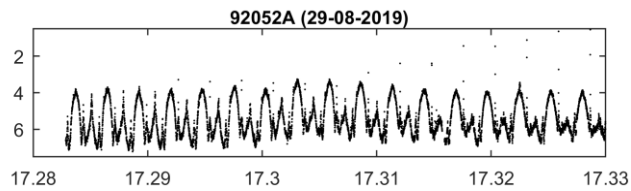
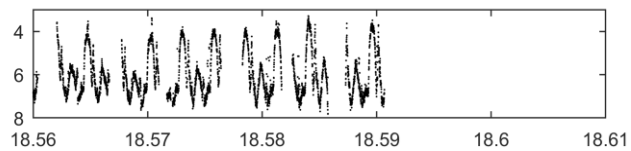
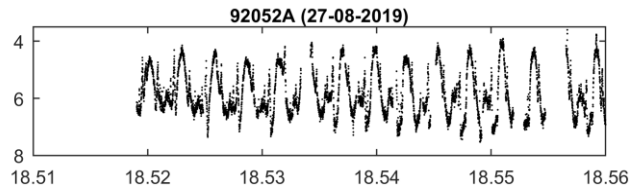
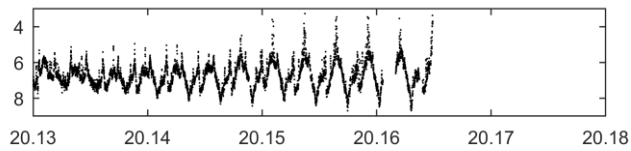
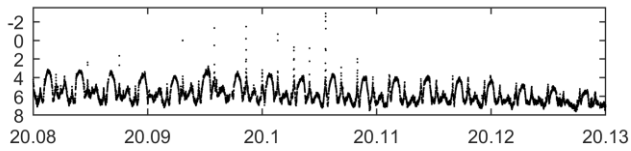
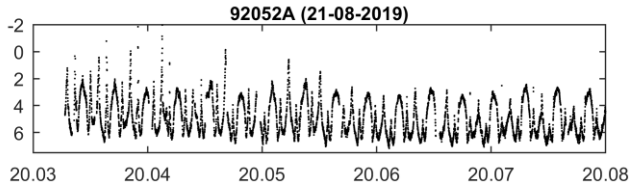
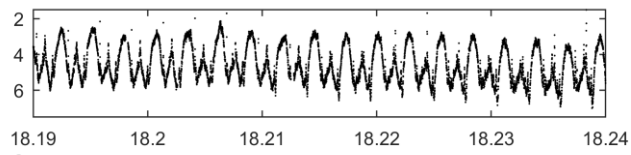
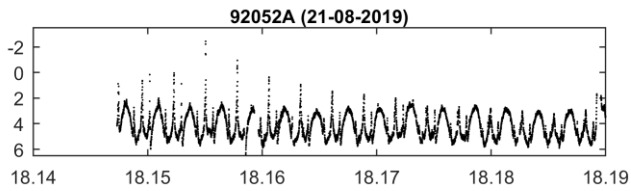
92052A (19-08-2019)

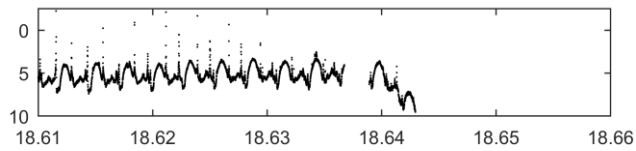
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92052A (25-02-2019)

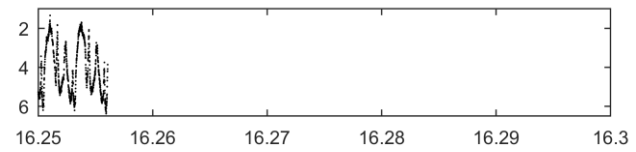
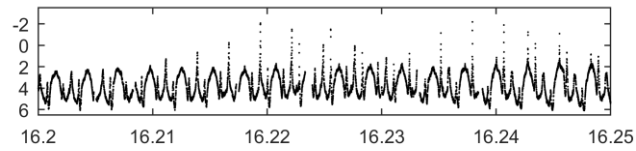
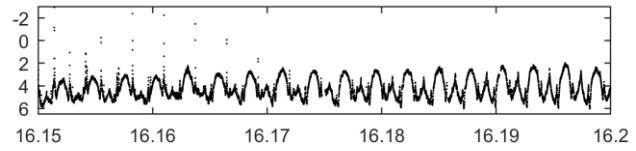
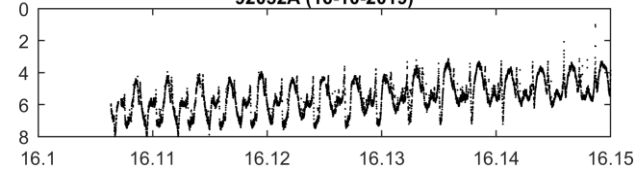
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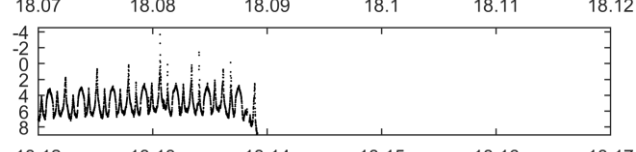
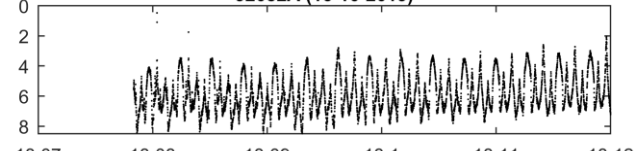




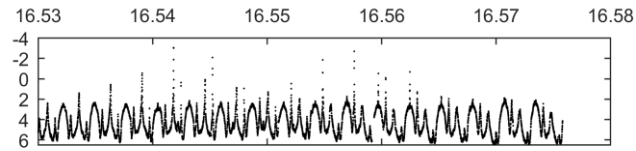
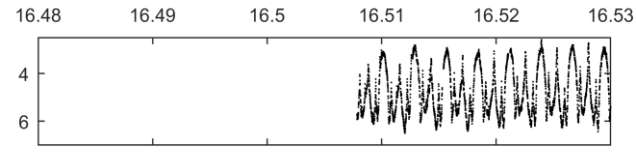
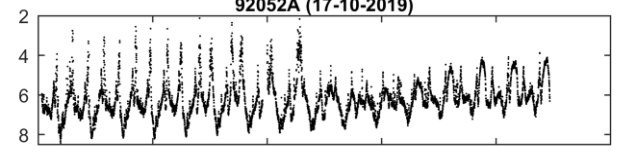
92052A (16-10-2019)



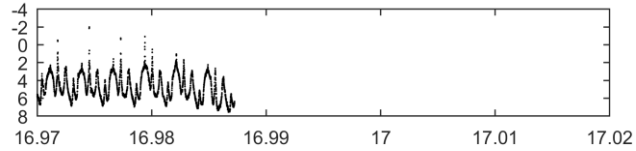
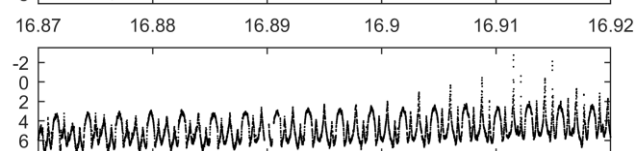
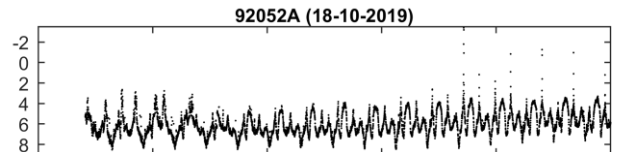
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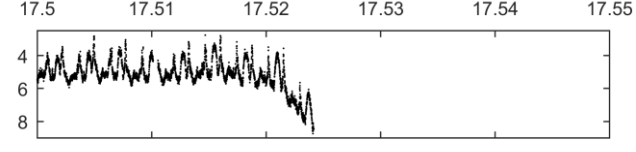
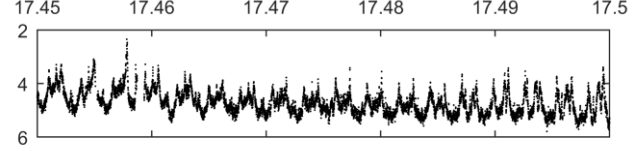
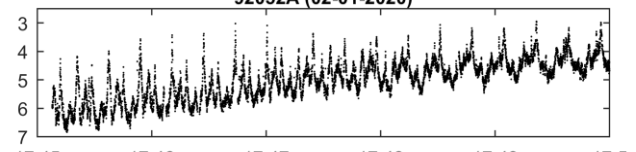
92052A (17-10-2019)



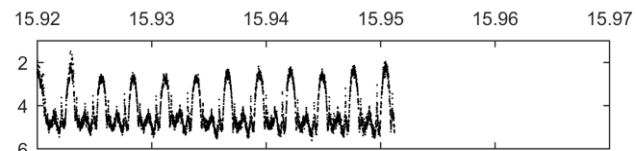
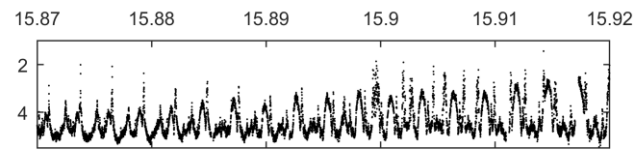
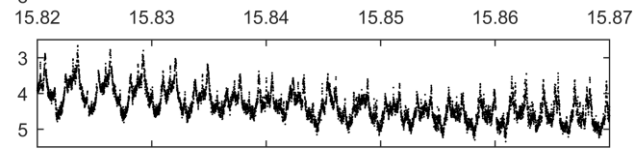
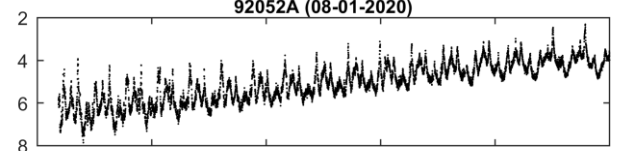
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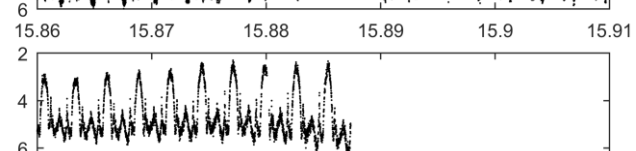
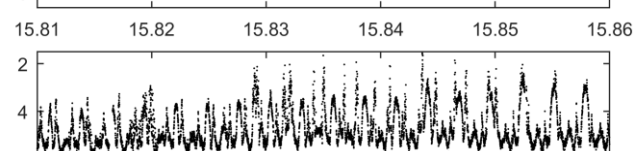
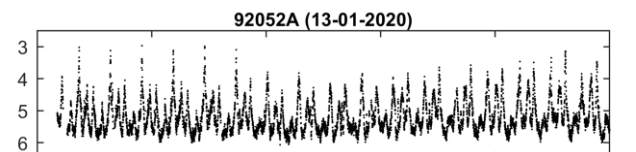
92052A (02-01-2020)



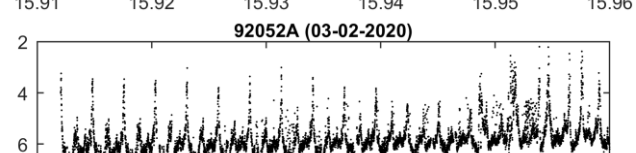
92052A (08-01-2020)

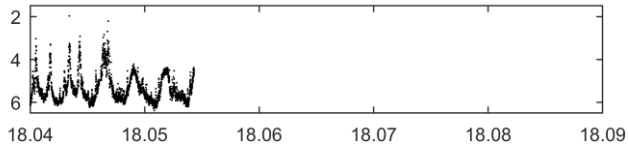


92052A (13-01-2020)

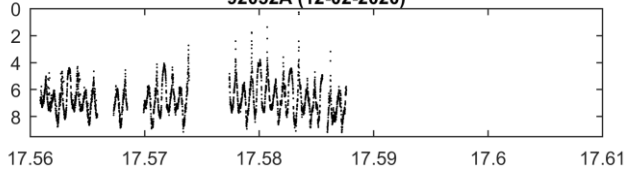


92052A (03-02-2020)

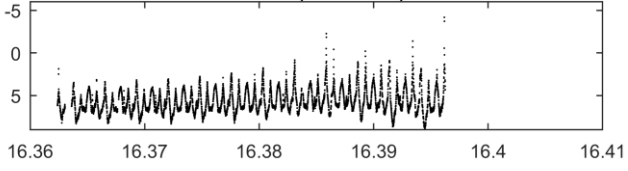




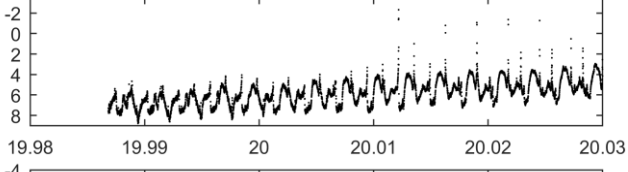
92052A (12-02-2020)



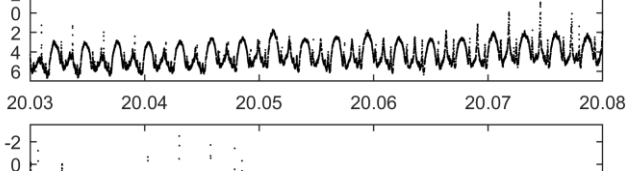
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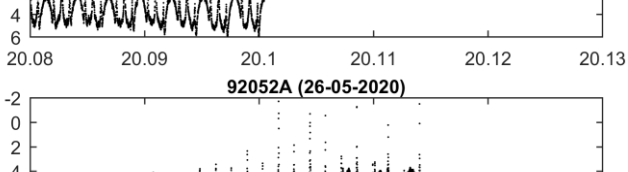
92052A (18-05-2020)



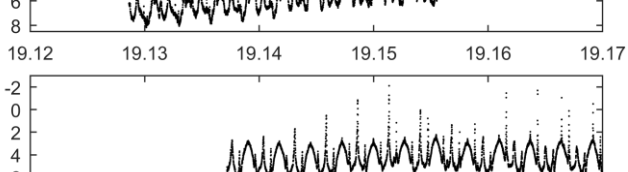
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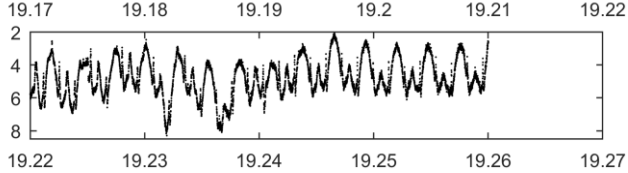
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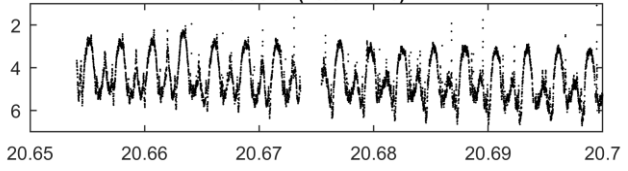
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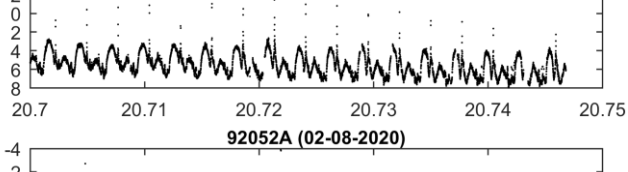
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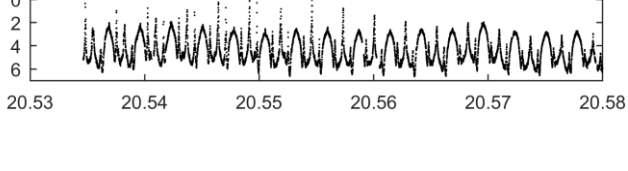
92052A (10-08-2020)



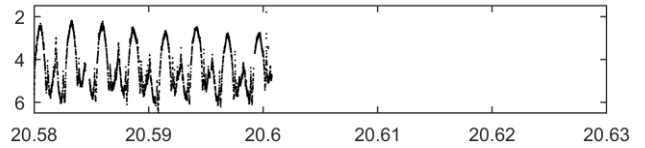
92052A (16-08-2020)



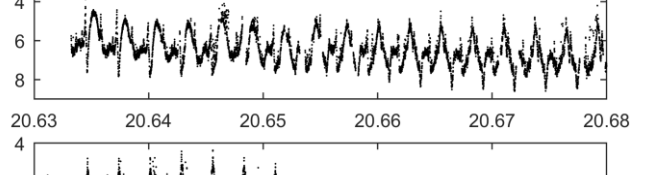
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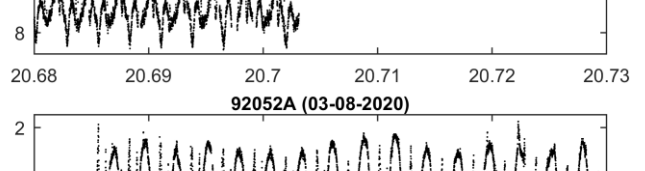
92052A (28-08-2020)



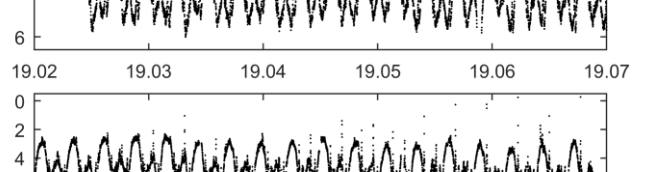
92052A (03-08-2020)



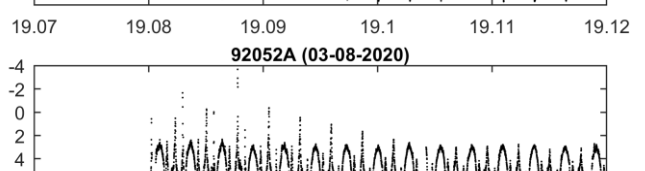
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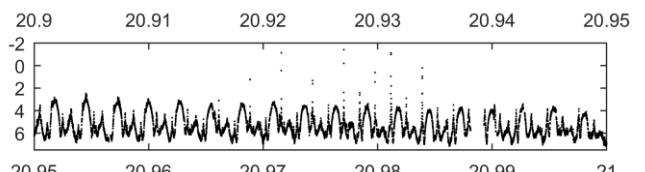
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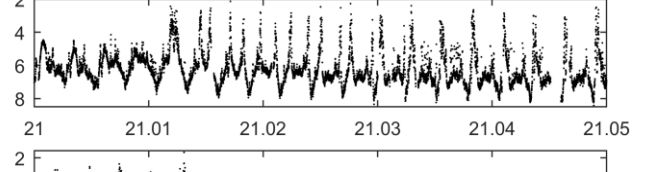
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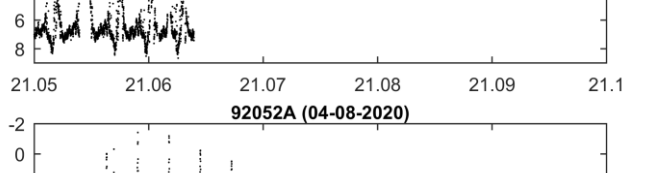
92052A (27-08-2020)



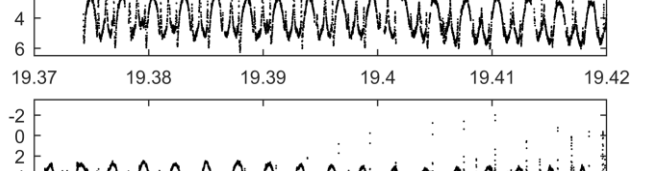
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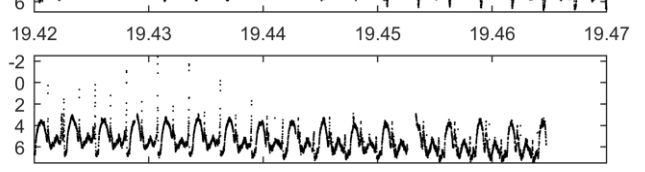
92052A (08-09-2020)



92052A (14-09-2020)



92052A (20-09-2020)



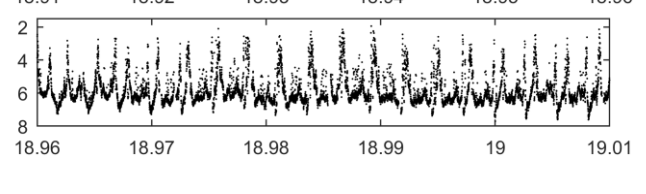
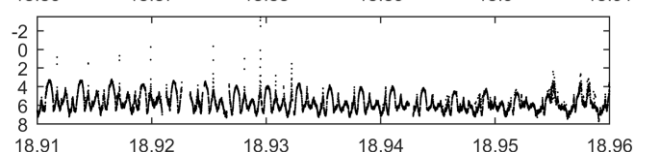
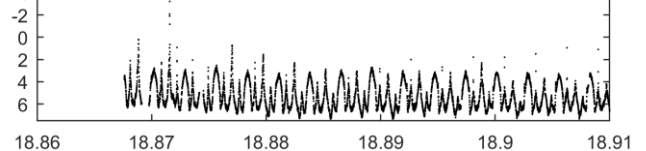
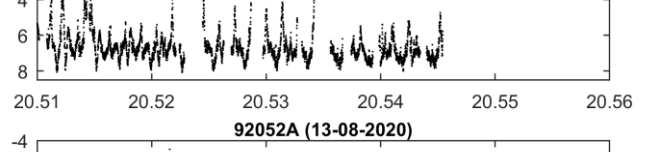
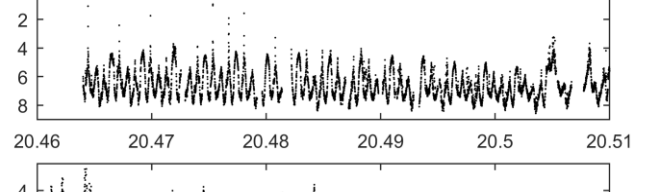
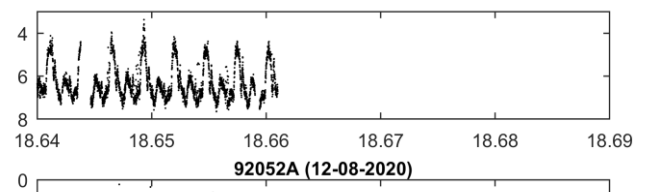
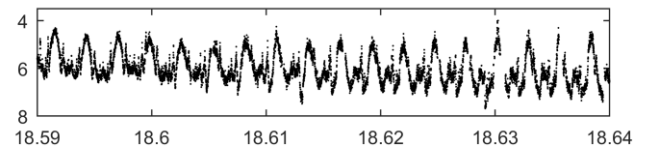
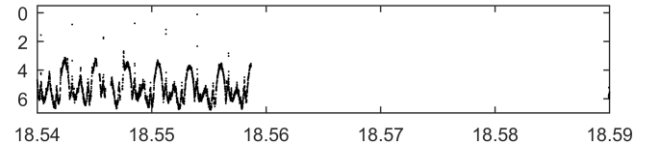
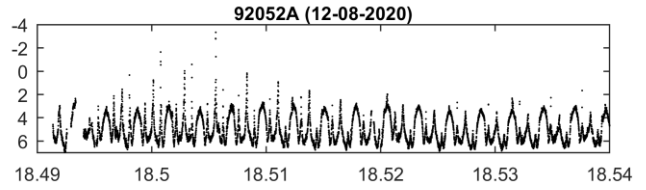
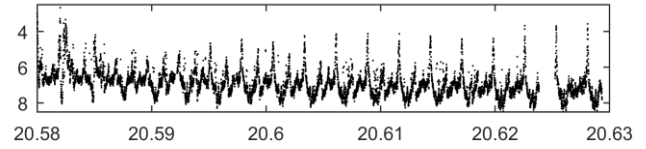
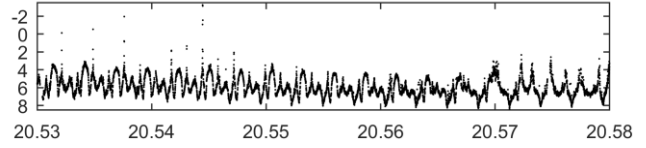
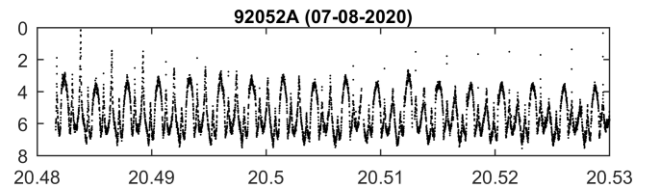
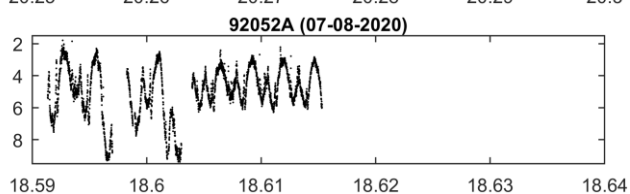
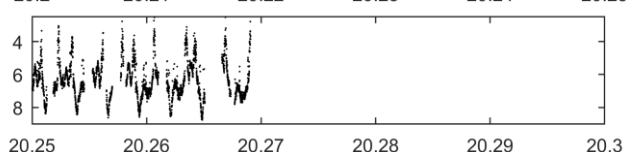
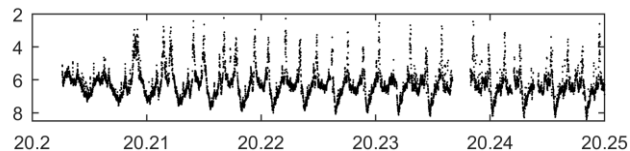
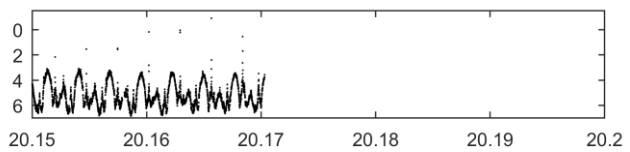
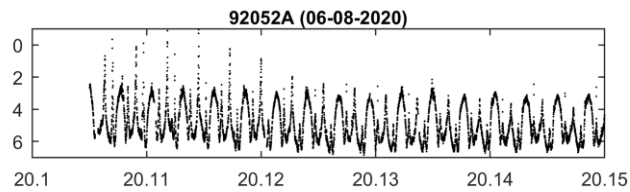
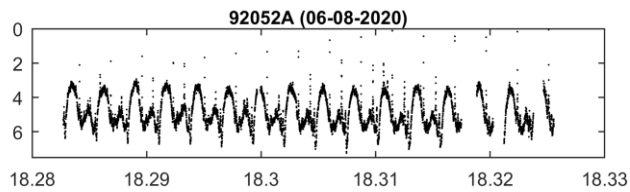
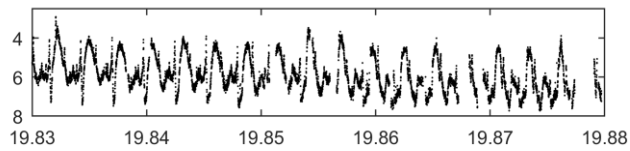
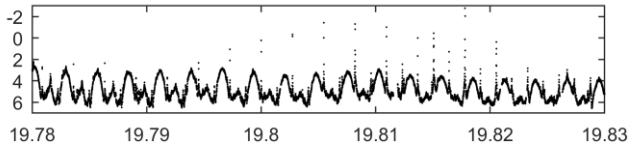
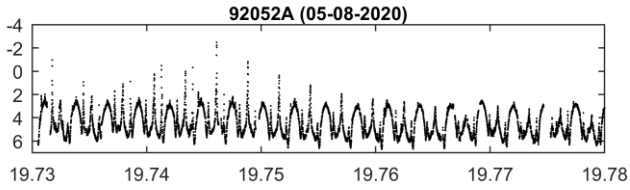
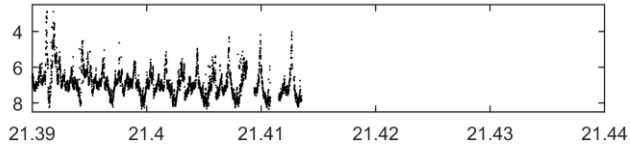
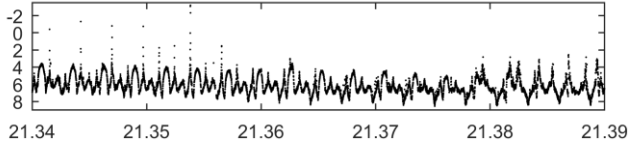
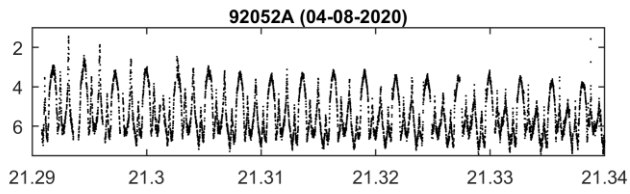
92052A (26-09-2020)

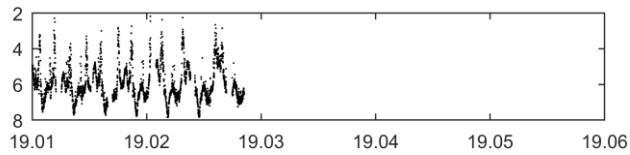


92052A (02-10-2020)

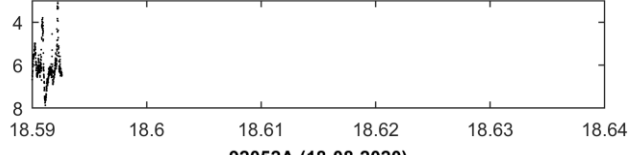
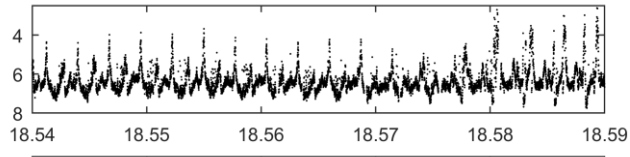
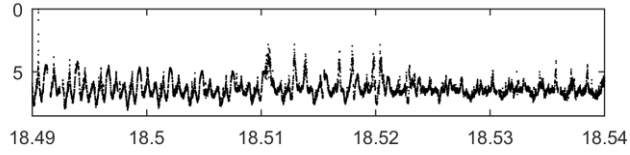
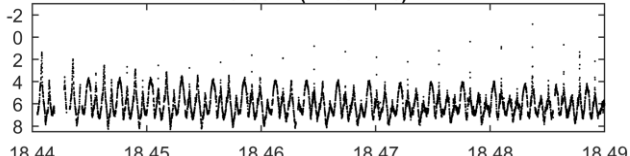


92052A (08-10-2020)

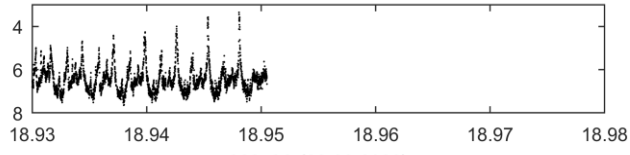
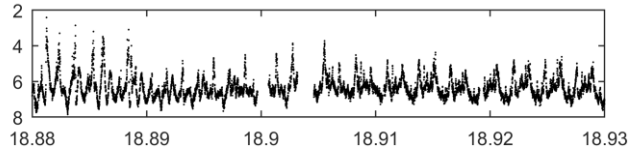
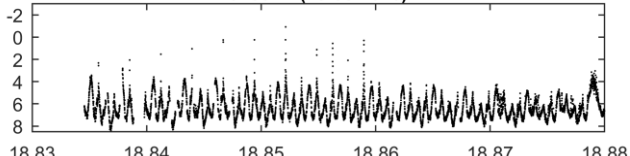




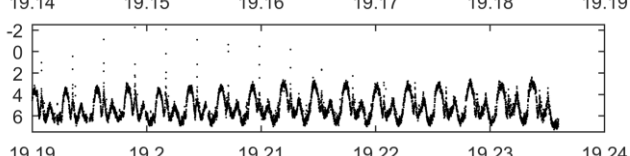
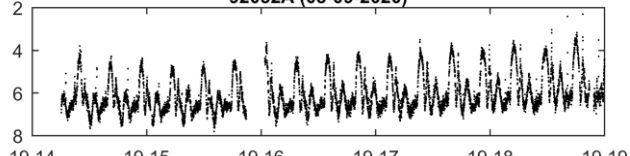
92052A (17-08-2020)



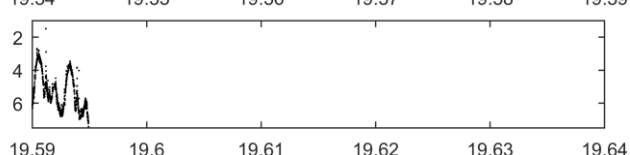
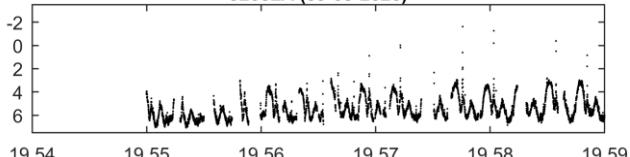
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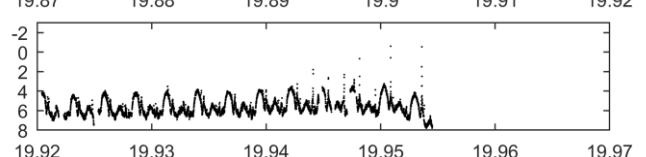
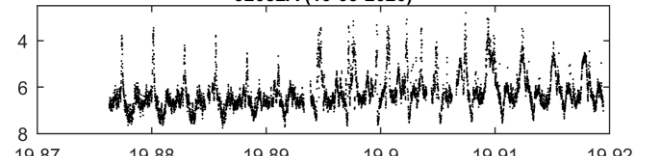
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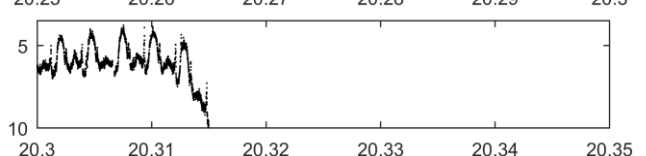
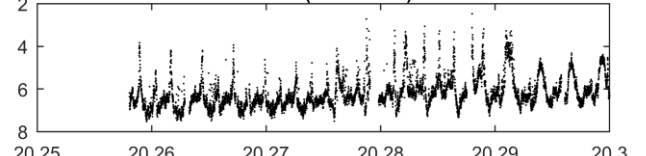
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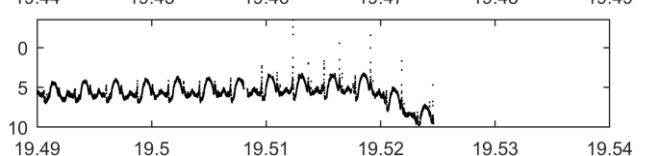
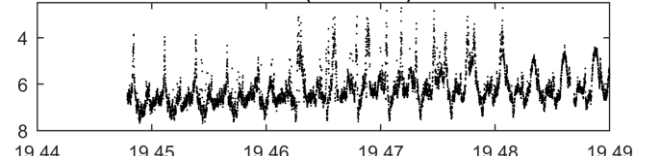
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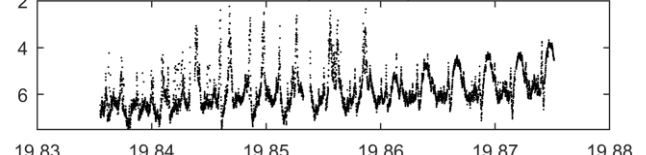
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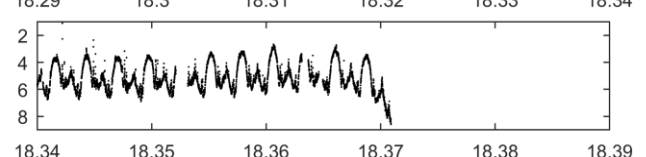
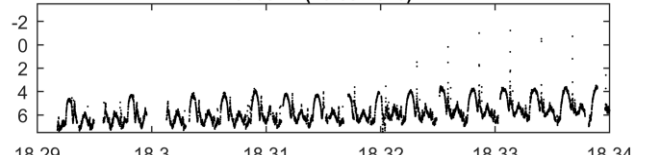
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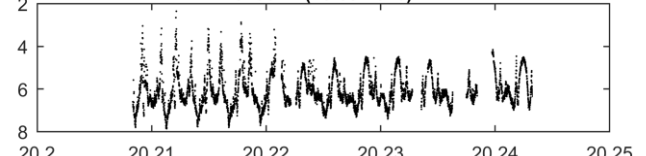
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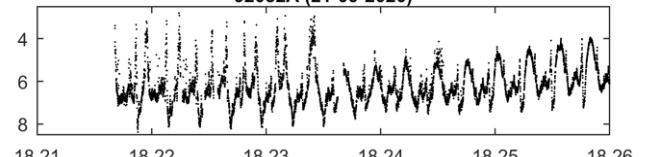
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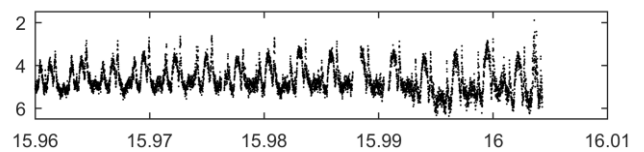
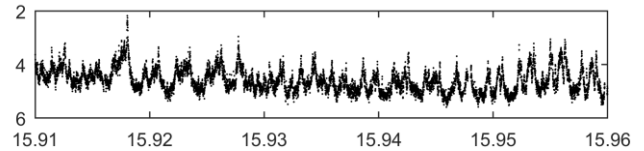
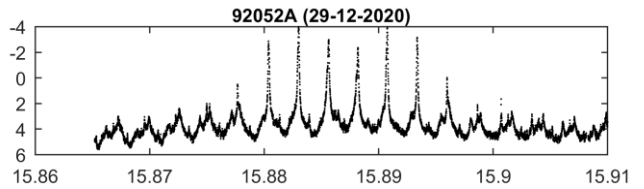
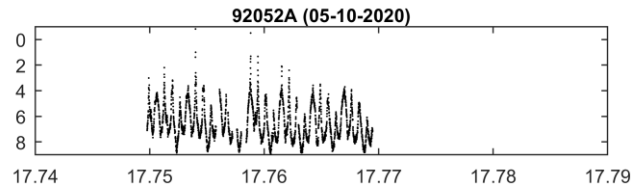
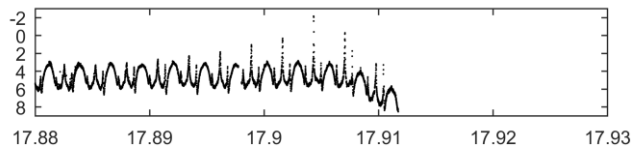
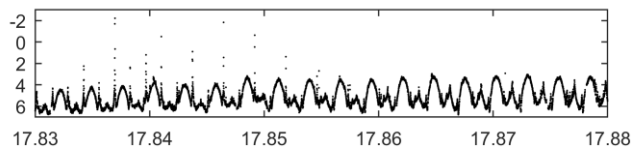
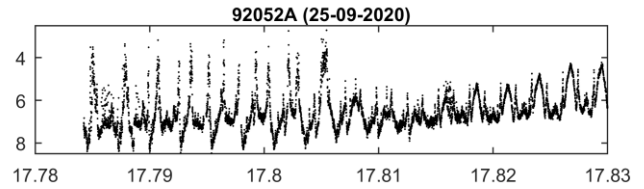
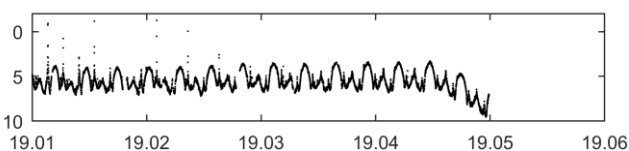
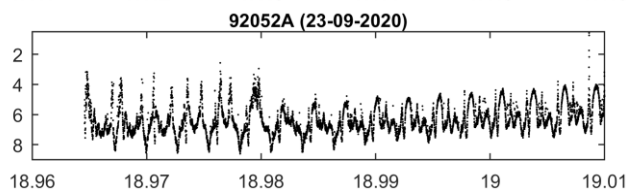
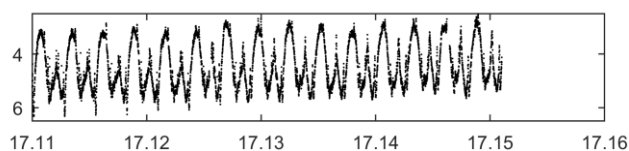
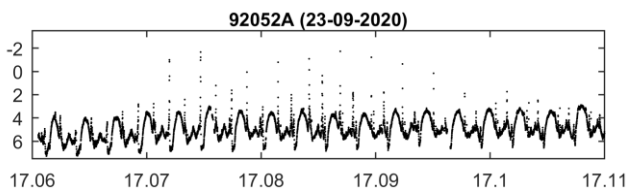
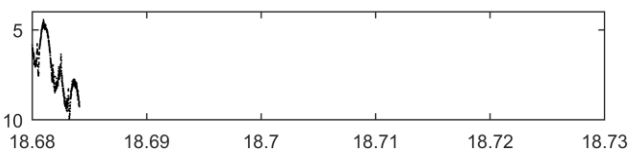
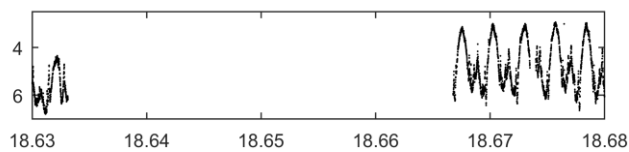
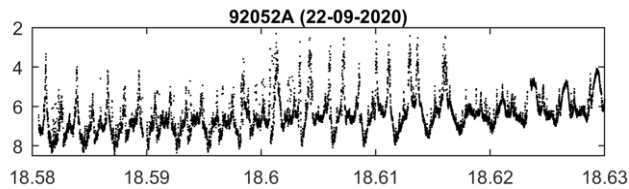
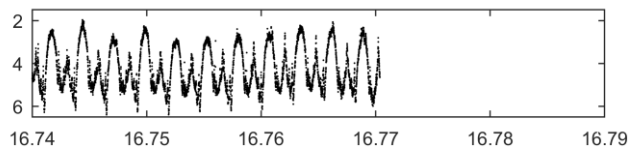
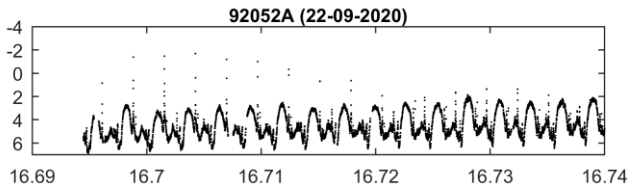
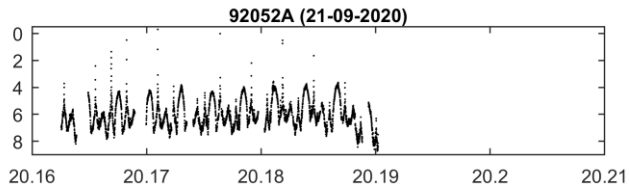
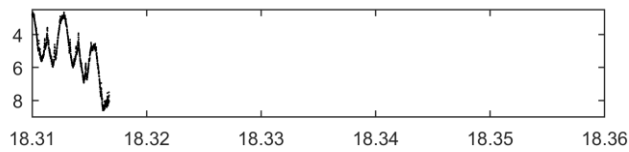
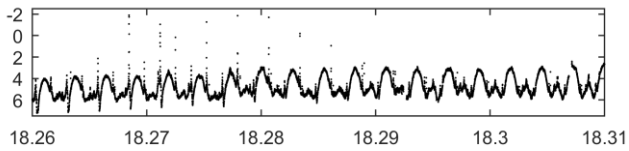


92052A (16-09-2020)



92052A (21-09-2020)





**ARIANE 42P H10 R/B (3rd stage)
(TOPEX/POSEIDON ROCKET)**

NORAD ID: 22079

Int'l Code: 1992-052D

Dimensions: cylinder 11.4m long, 2.6m dia

Initial orbit:

Perigee: 1301 km

Apogee: 1401 km

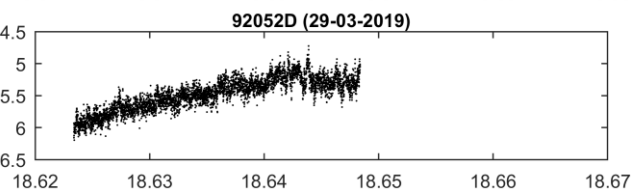
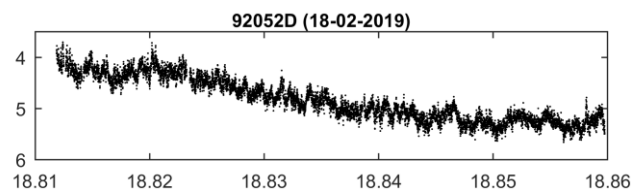
Inclination: 66.07°

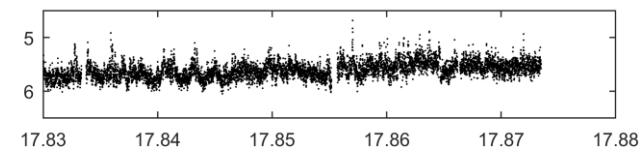
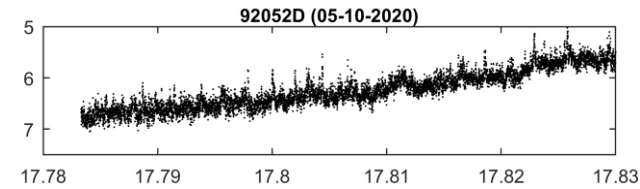
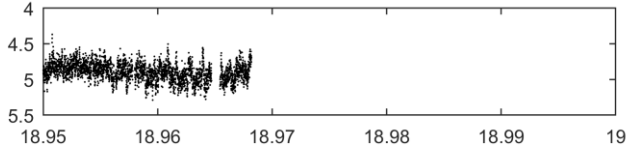
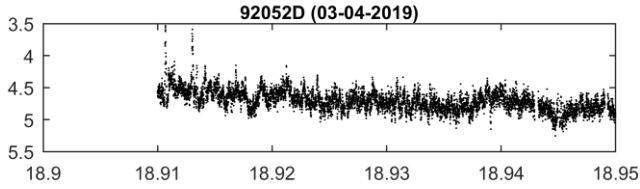
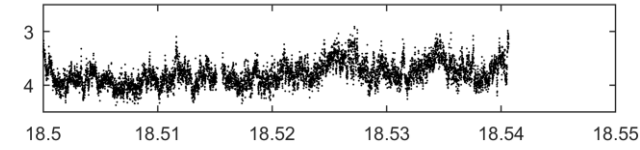
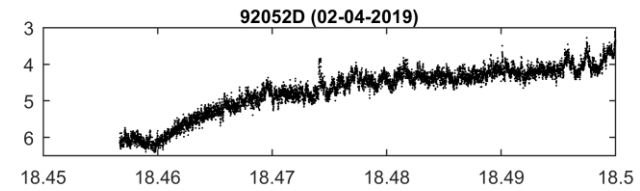
Period: 112.72 min

Eccentricity: 0.006

Launch date: 1992-08-10

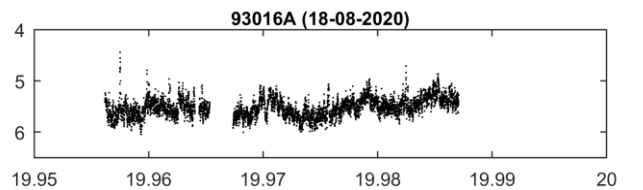
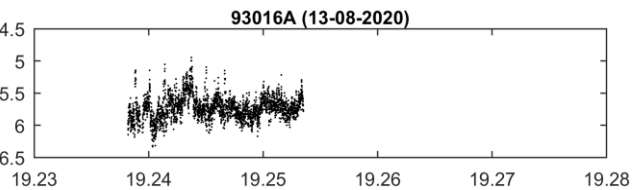
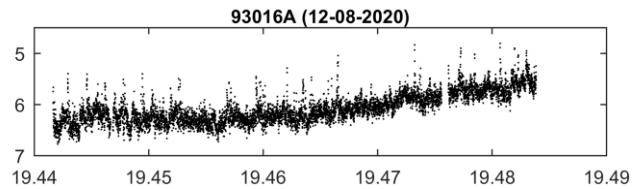
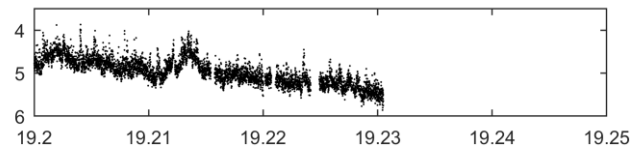
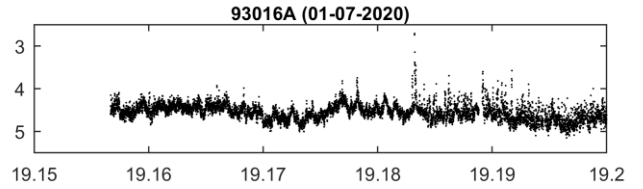
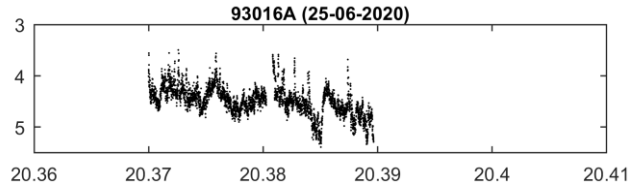
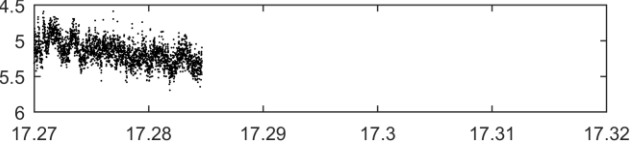
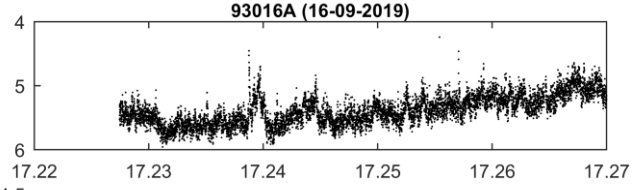
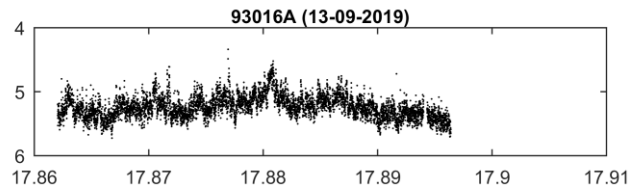
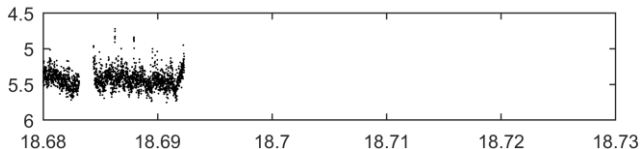
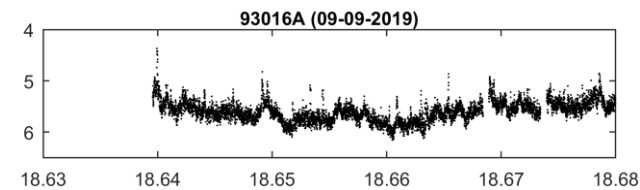
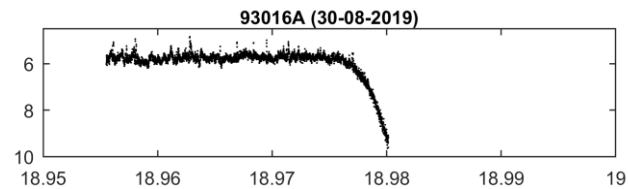
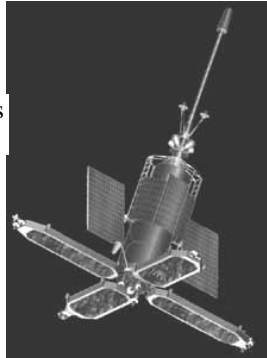
Source: France (FR)





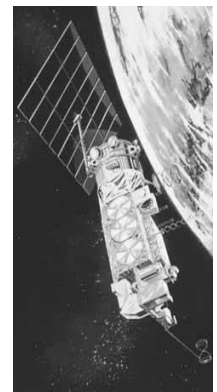
COSMOS 2237 (TSELINA-2)

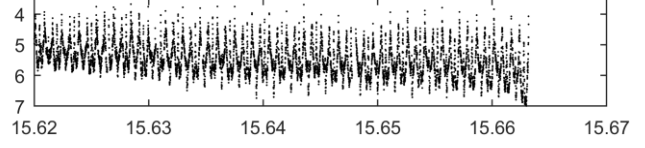
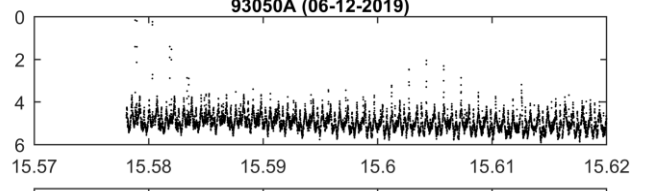
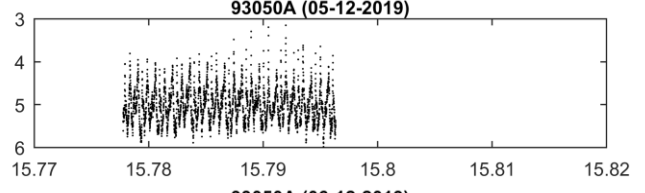
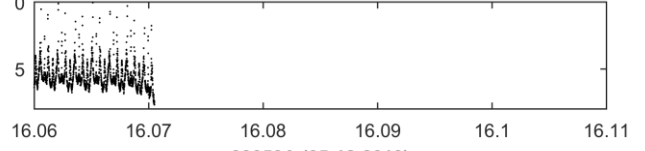
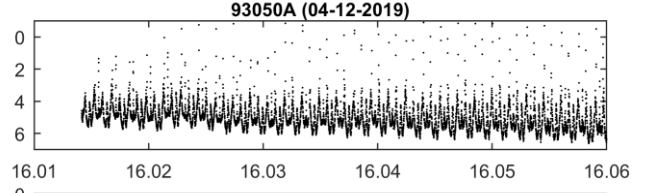
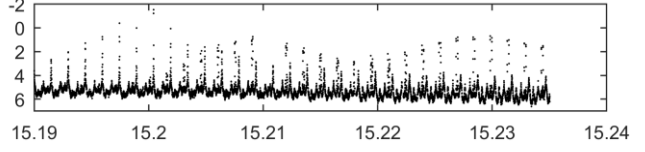
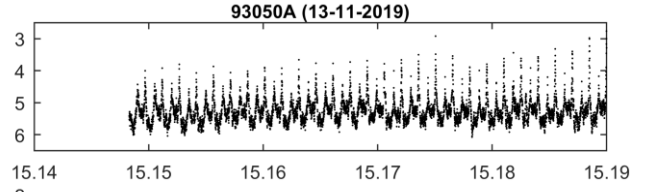
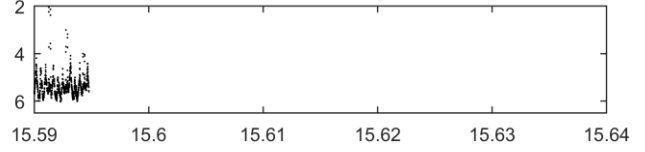
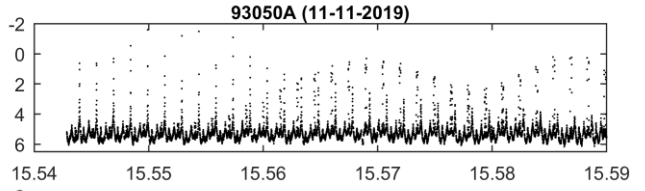
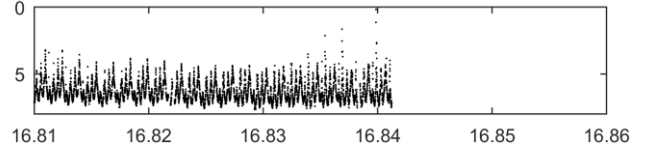
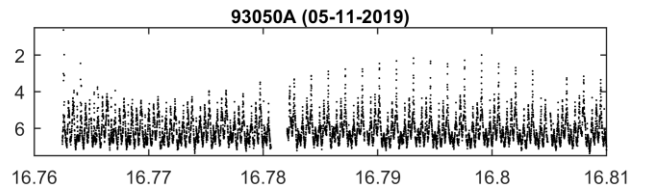
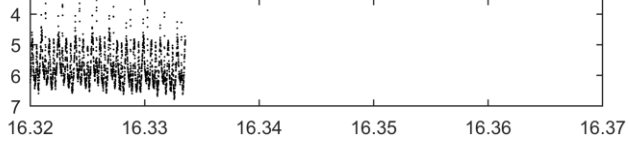
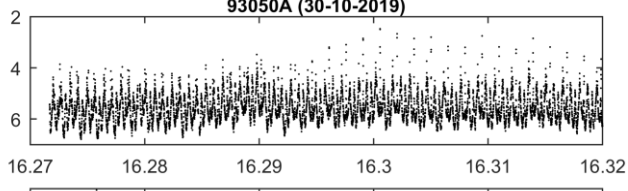
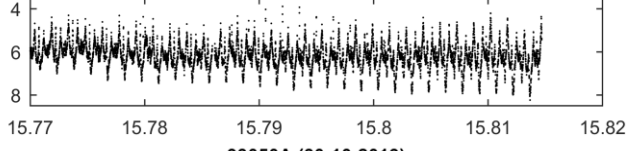
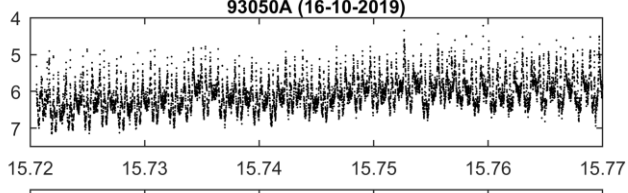
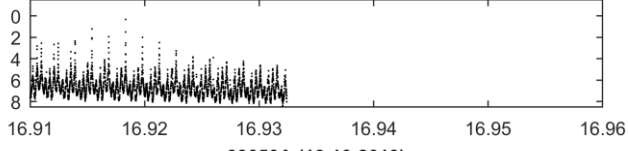
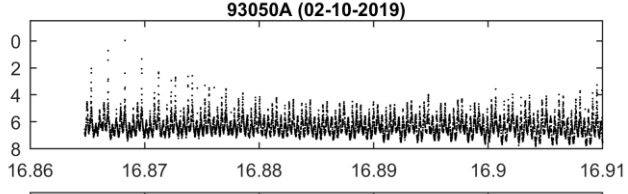
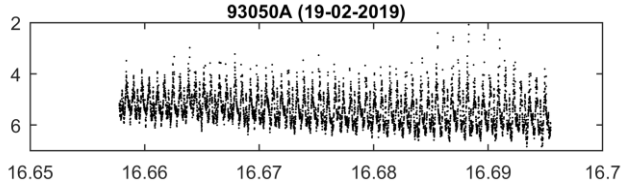
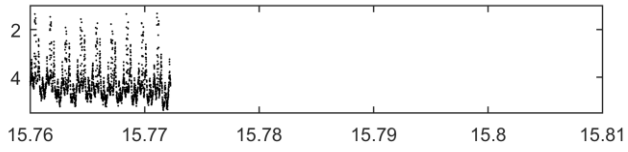
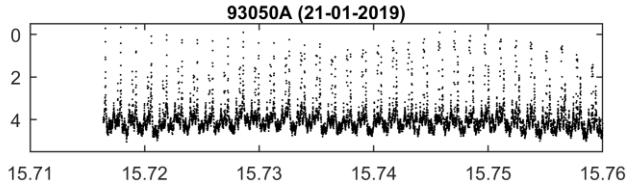
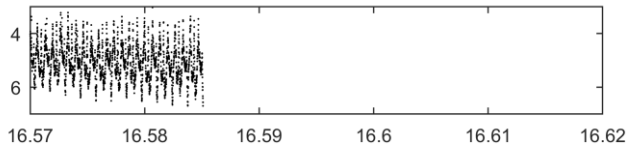
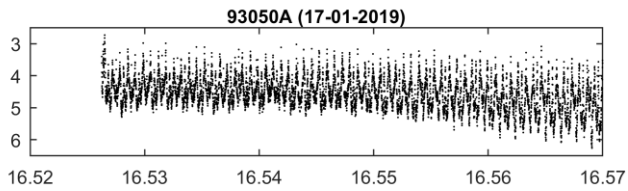
NORAD ID: 22565
 Int'l Code: 1993-016A
 Dimensions: cylindrical + 6 vanes
 Initial orbit:
 Perigee: 804 km
 Apogee: 852 km
 Inclination: 71.05°
 Period: 101.47 min
 Eccentricity: 0.003
 Launch date: 1993-03-26
 Source: Commonwealth of Independent States (former USSR) (CIS)

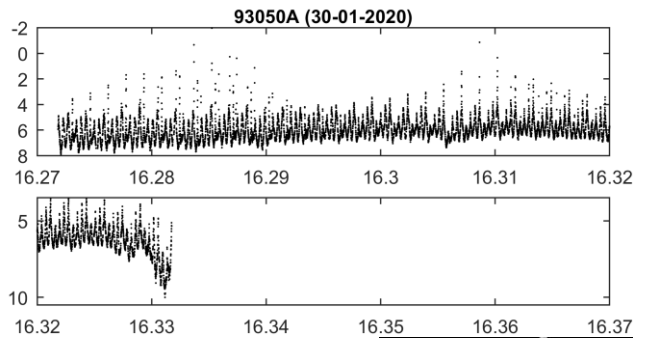
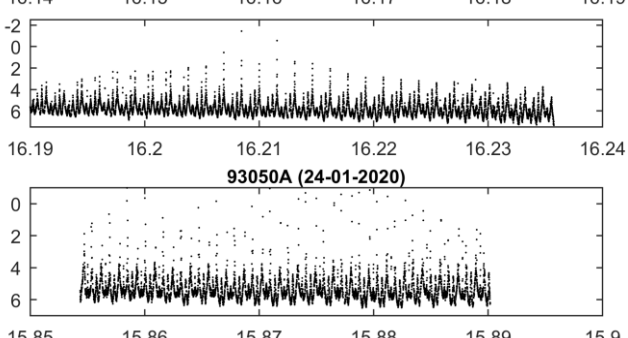
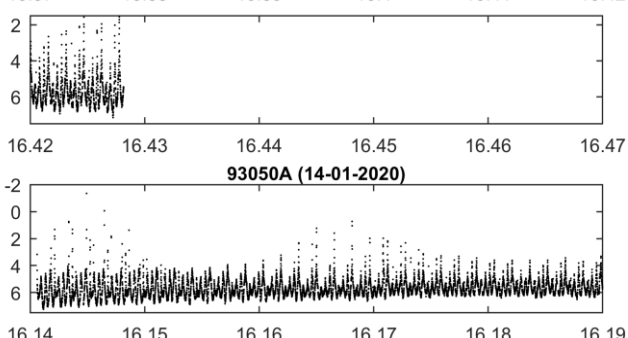
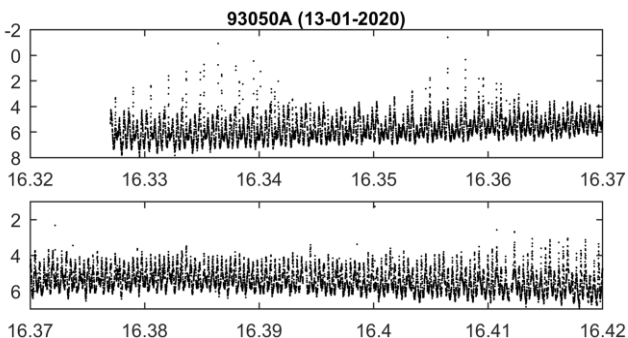
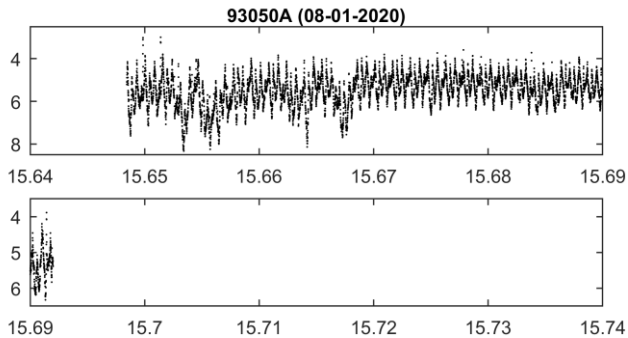
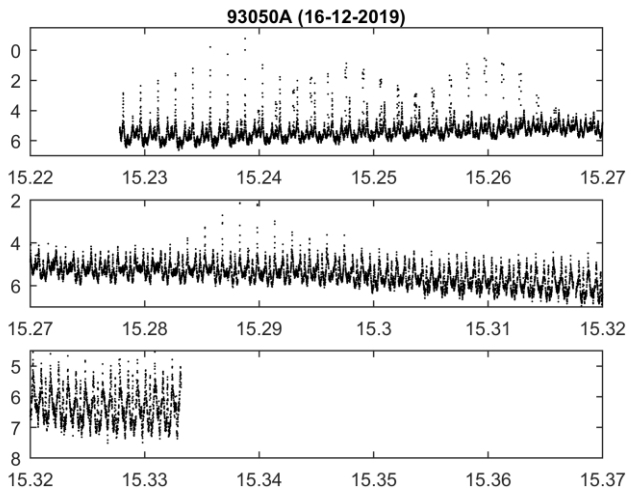


NOAA 13

NORAD ID: 22739
 Int'l Code: 1993-050A
 Dimensions: box + panel 4.18m long 1.8m dia
 Initial orbit:
 Perigee: 850 km
 Apogee: 863 km
 Inclination: 98.91°
 Period: 102.07 min
 Eccentricity: 0.0008
 Launch date: 1993-08-09
 Source: United States (US)

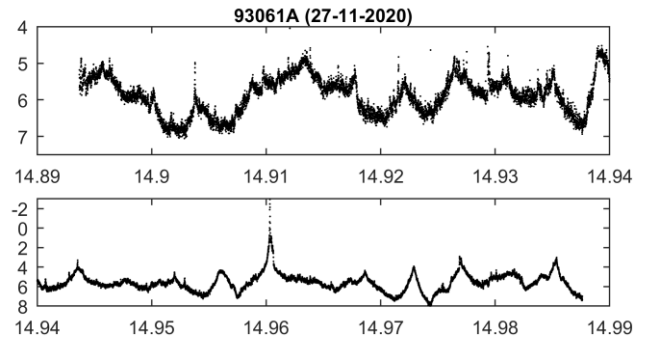
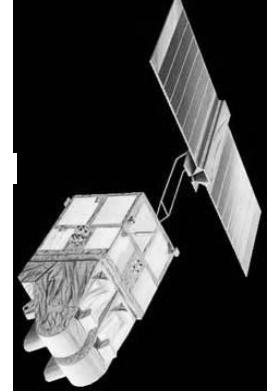






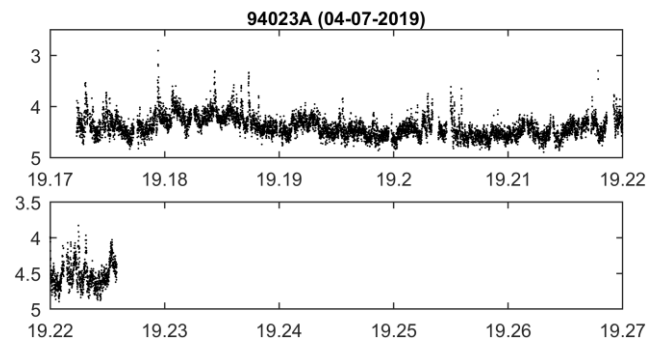
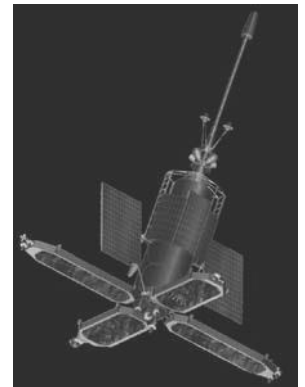
SPOT 3

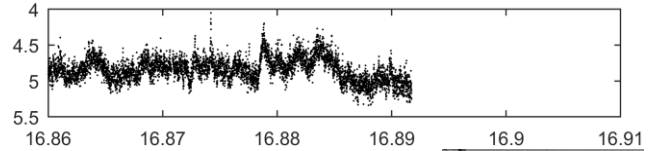
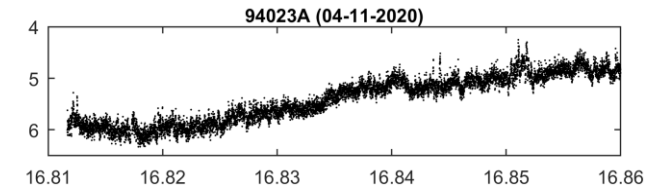
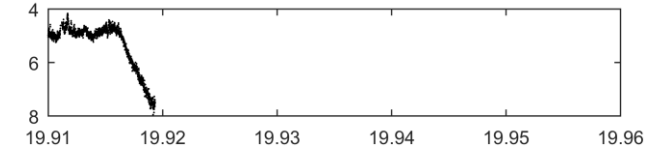
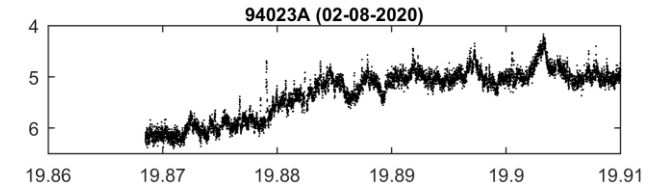
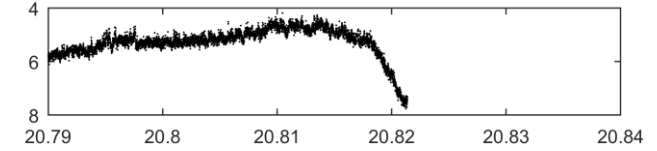
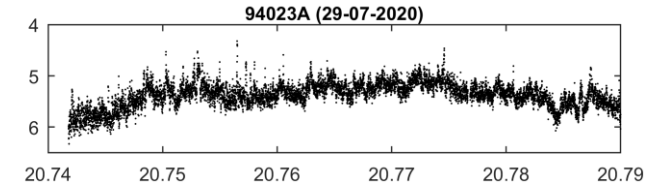
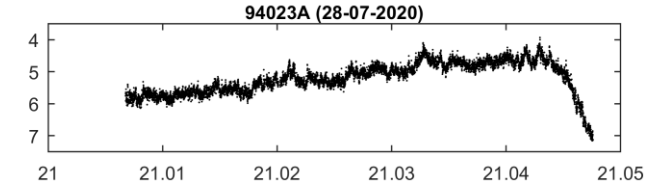
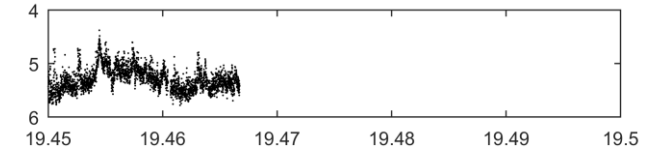
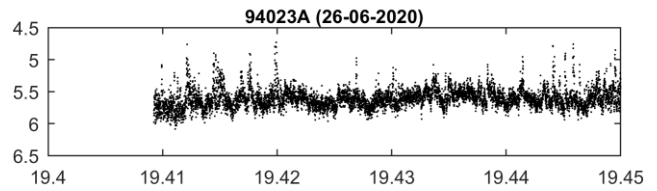
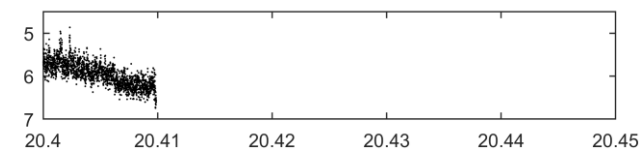
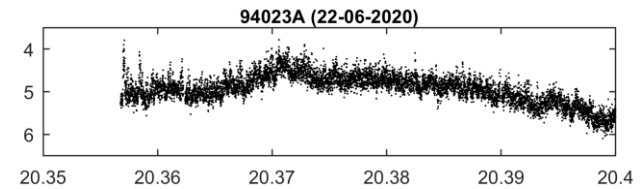
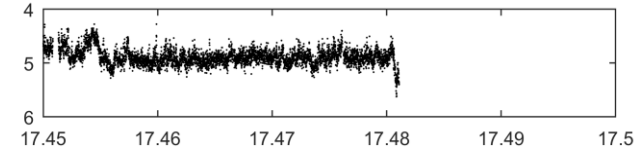
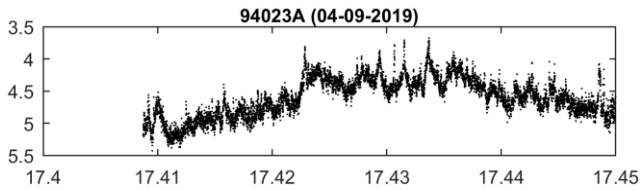
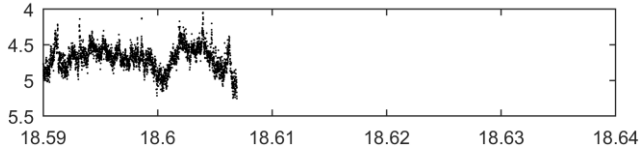
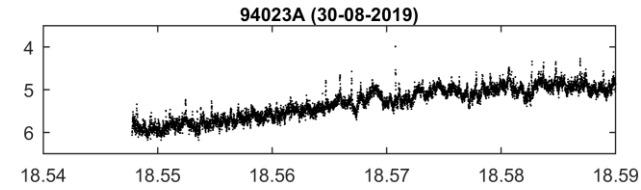
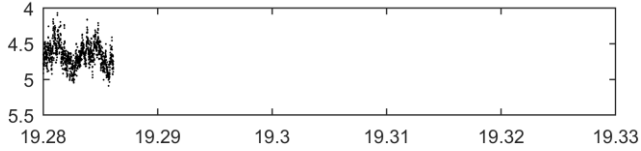
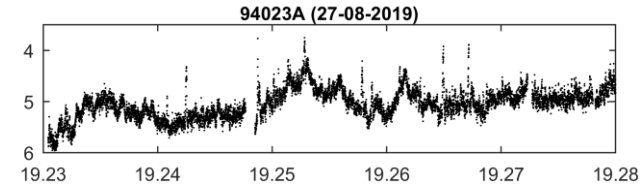
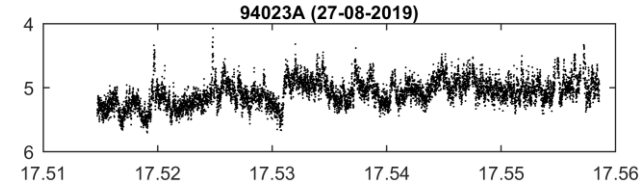
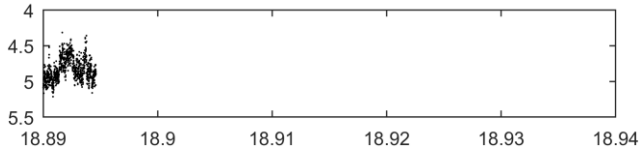
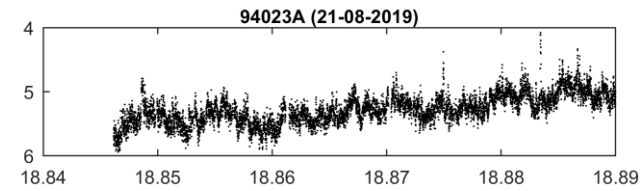
NORAD ID: 22823
 Int'l Code: 1993-061A
 Dimensions: box + 2 panels
 1.9m x 1.9m x 4.7m, 8.1m span
 Initial orbit:
 Perigee: 803 km
 Apogee: 805 km
 Inclination: 98.68°
 Period: 100.95 min
 Eccentricity: 0.0001
 Launch date: 1993-09-26
 Source: France (FR)



COSMOS 2278

(TSELINA-2 15)
 NORAD ID: 23087
 Int'l Code: 1994-023A
 Dimensions:
 Initial orbit:
 Perigee: 849 km
 Apogee: 855 km
 Inclination: 71.01°
 Period: 101.97 min
 Eccentricity: 0.004
 Launch date: 1994-04-23
 Source: Commonwealth of Independent States (former USSR) (CIS)





ZENIT-2 (2nd stage)

SL-16 R/B

NORAD ID: 23088

Int'l Code: 1994-023B

Dimensions: cylinder

10.41m long, 3.9m dia

Initial orbit:

Perigee: 843 km

Apogee: 849 km

Inclination: 71.00°

Period: 101.85 min

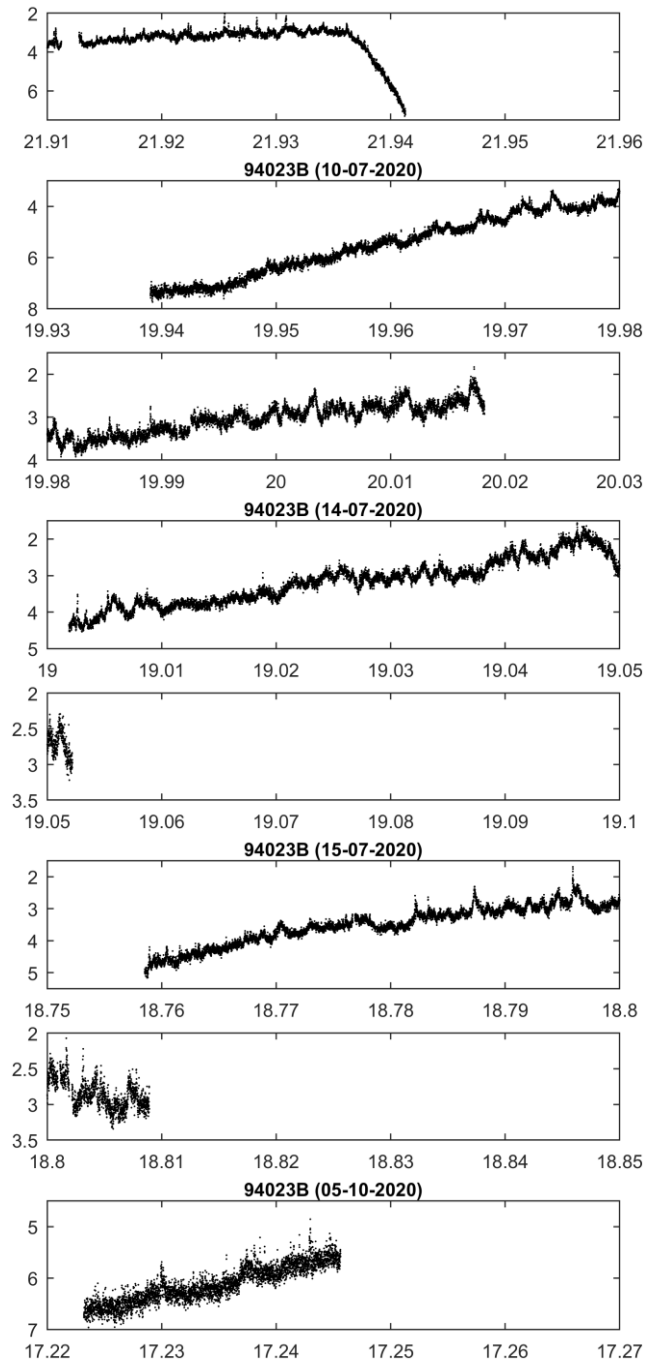
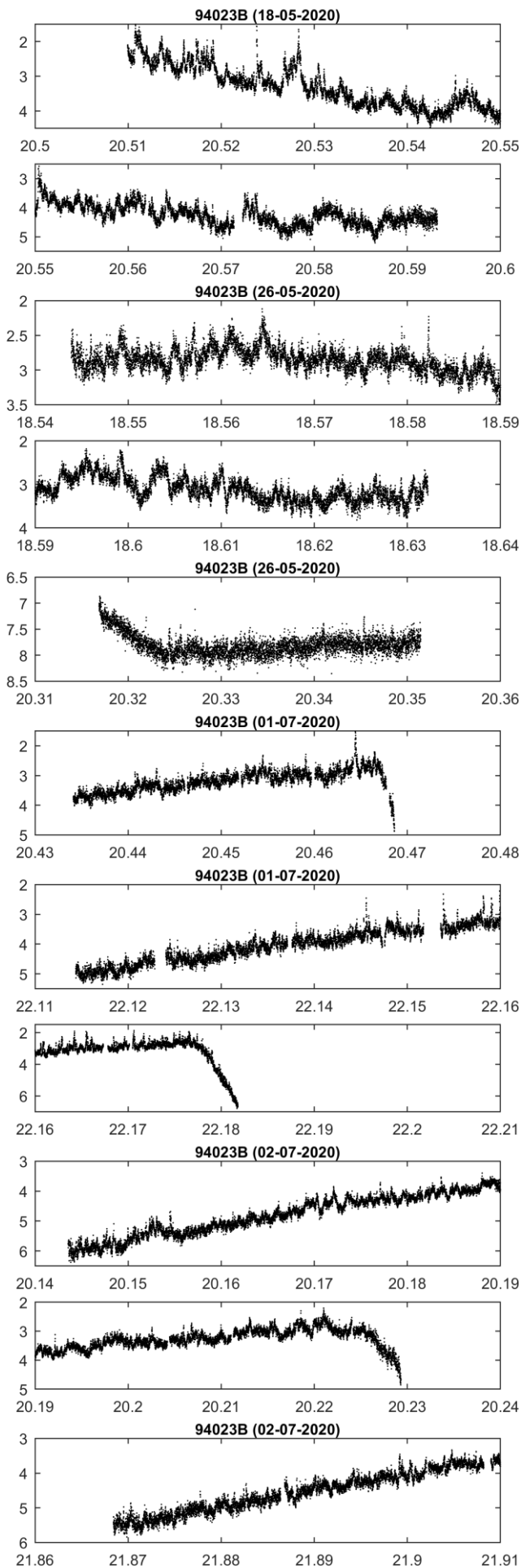
Eccentricity: 0.0005

Launch date: 1994-04-23

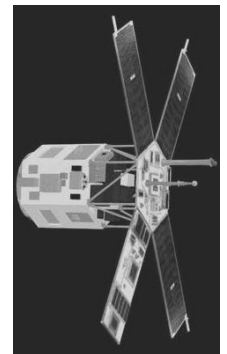
Source: Commonwealth of

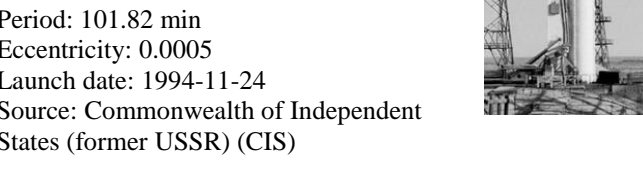
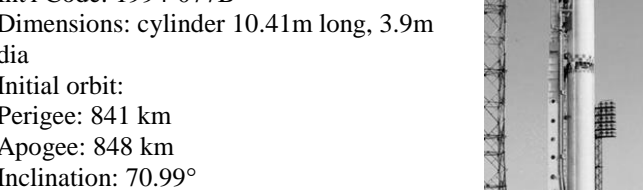
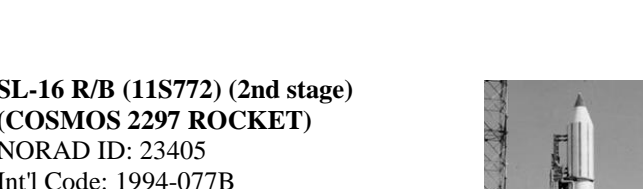
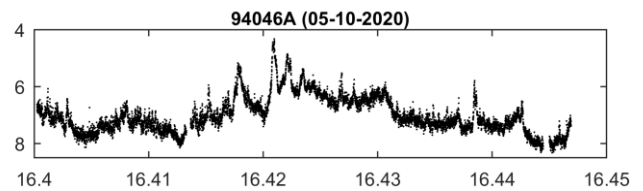
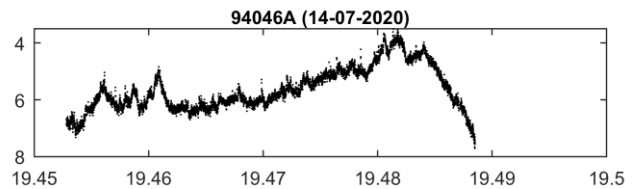
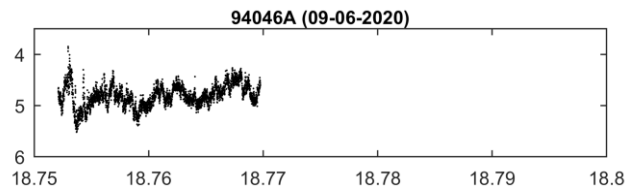
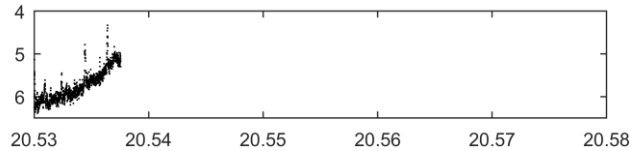
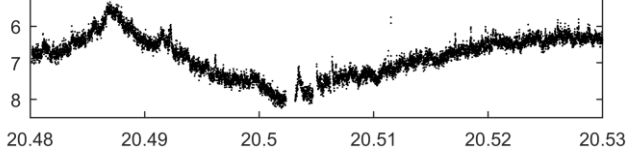
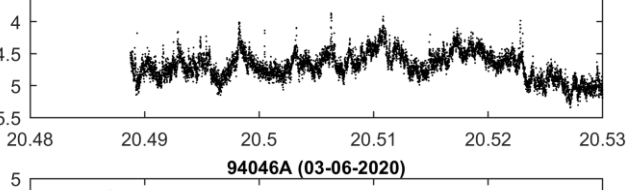
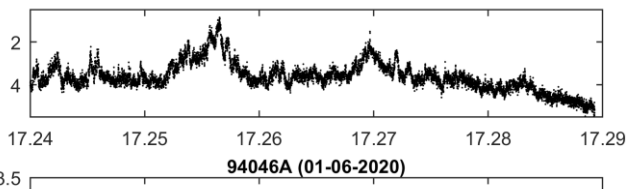
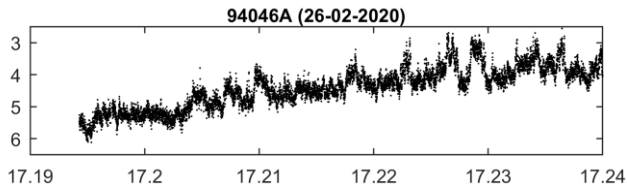
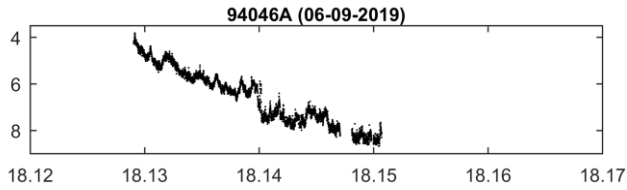
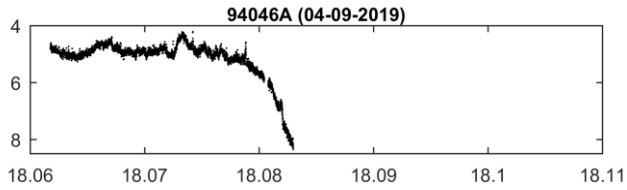
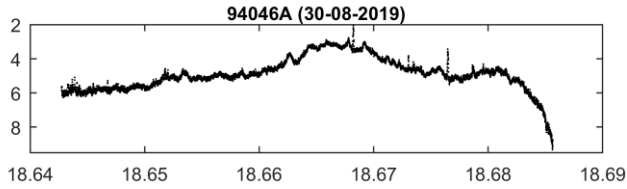
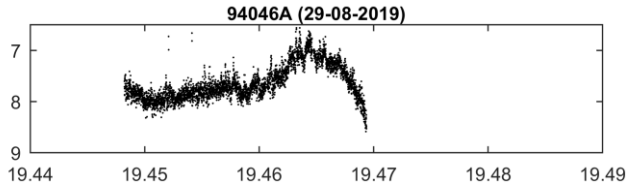
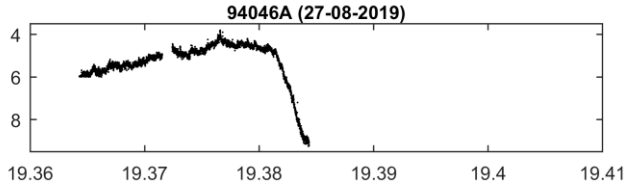
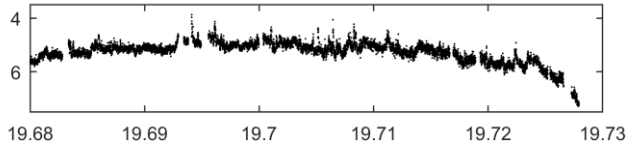
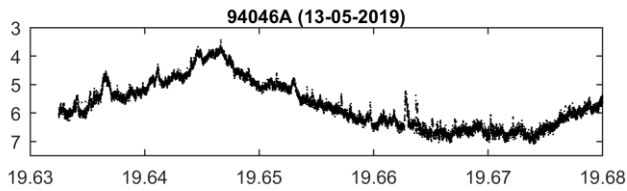
Independent States (former USSR) (CIS)





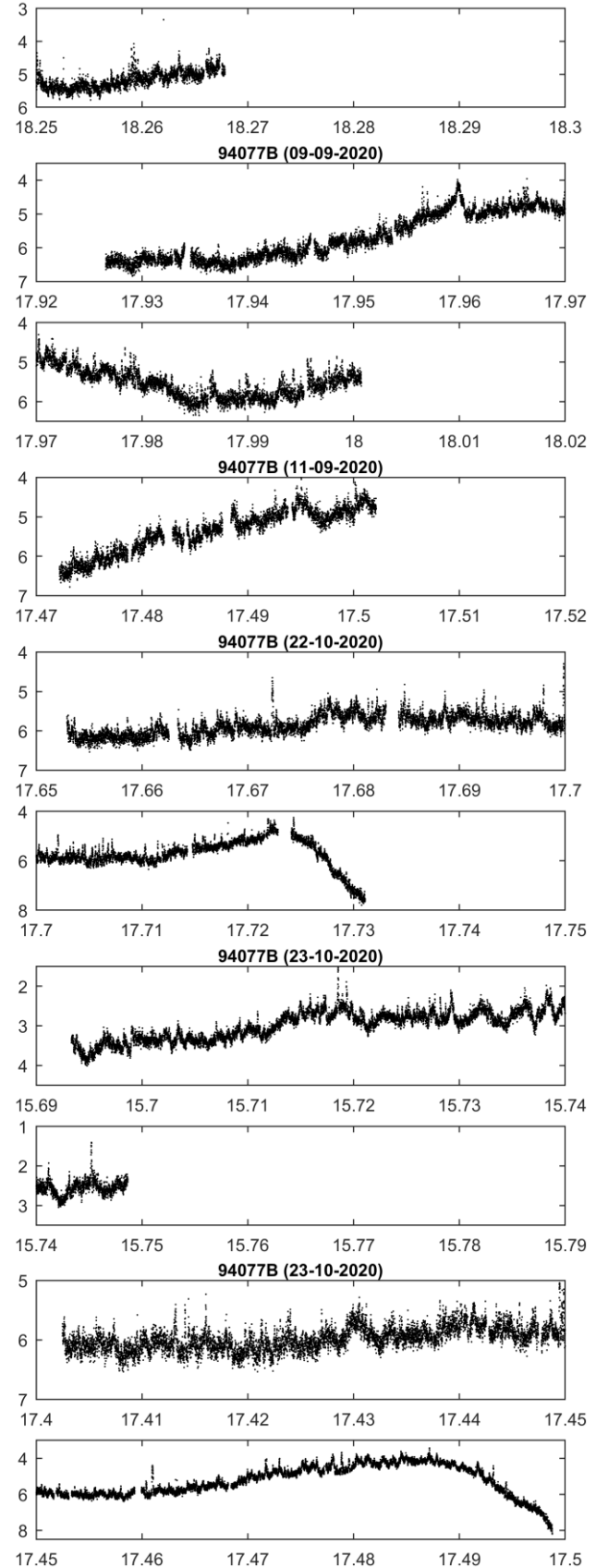
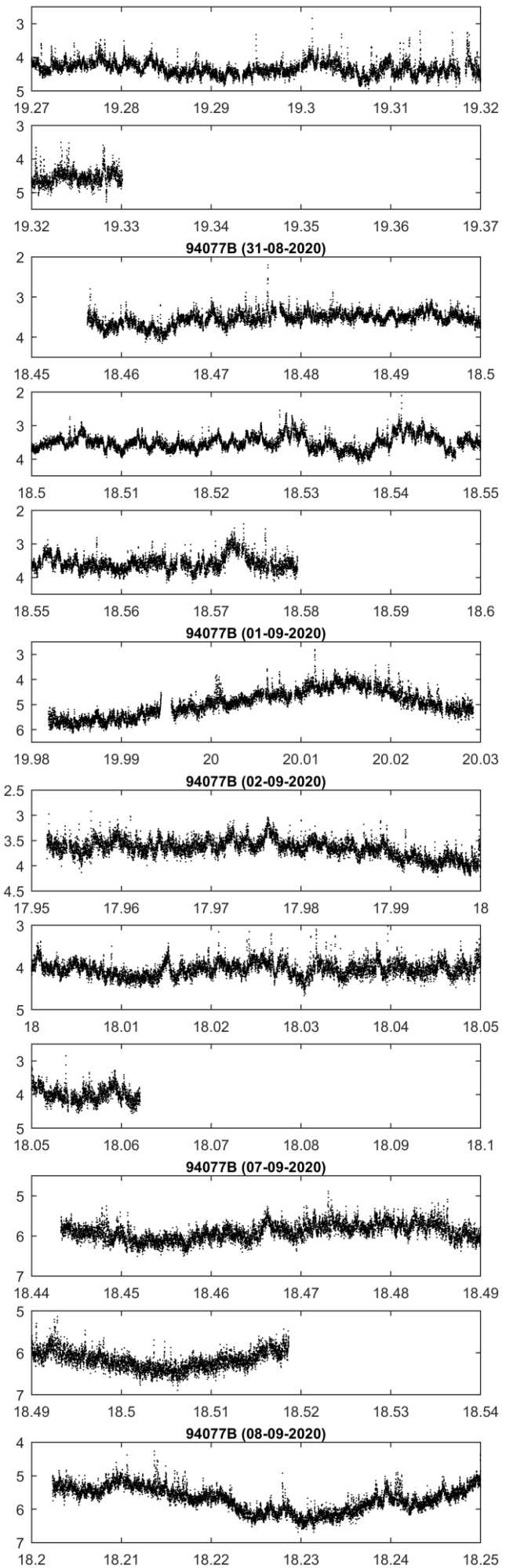
APEX (P90-6)
 NORAD ID: 23191
 Int'l Code: 1994-046A
 Dimensions:
 Initial orbit:
 Perigee: 379 km
 Apogee: 2551 km
 Inclination: 69.93°
 Period: 115.22 min
 Eccentricity: 0.138
 Launch date: 1994-08-03
 Source: United States (US)



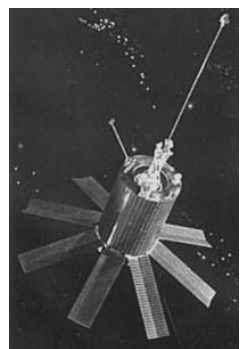


SL-16 R/B (11S772) (2nd stage)
(COSMOS 2297 ROCKET)
 NORAD ID: 23405
 Int'l Code: 1994-077B
 Dimensions: cylinder 10.41m long, 3.9m dia
 Initial orbit:
 Perigee: 841 km
 Apogee: 848 km
 Inclination: 70.99°
 Period: 101.82 min
 Eccentricity: 0.0005
 Launch date: 1994-11-24
 Source: Commonwealth of Independent States (former USSR) (CIS)



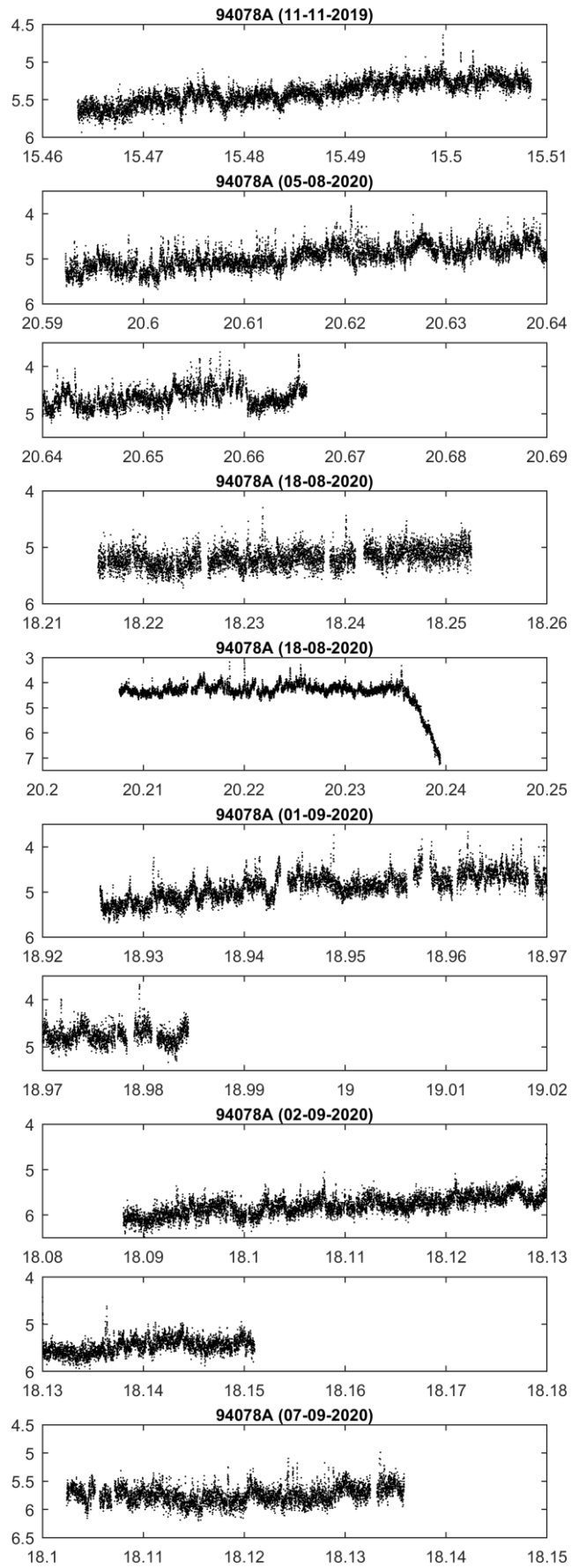
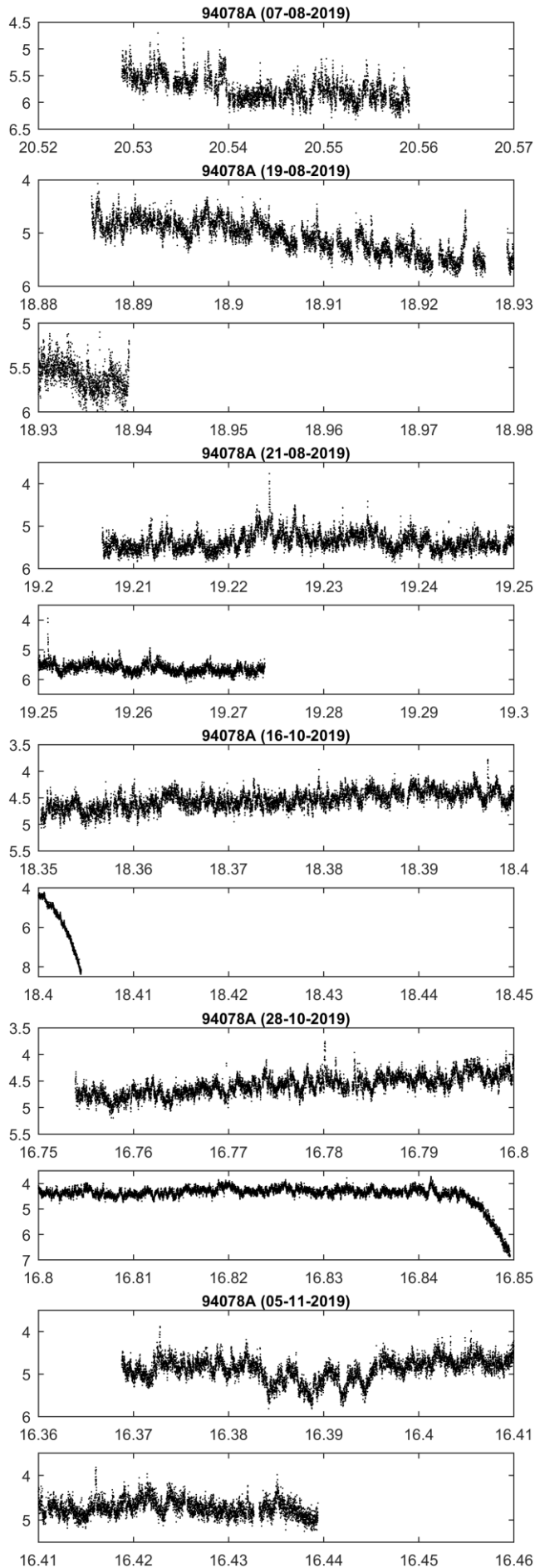


Geo-IK 1
 (Geo-IK #14, Musson #14, 11F666)
 NORAD ID: 23411
 Int'l Code: 1994-078A
 Dimensions:
 Initial orbit:
 Perigee: 1479 km
 Apogee: 1526 km
 Inclination: 73.6°
 Period: 116.04 min
 Eccentricity: 0.003



Launch date: 1994-11-29

Source: Commonwealth of Independent States (former USSR) (CIS)



SL-19 R/B (Rokot 3rd stage)

NORAD ID: 23440

Int'l Code: 1994-085B

Dimensions:

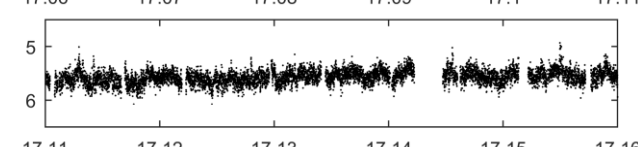
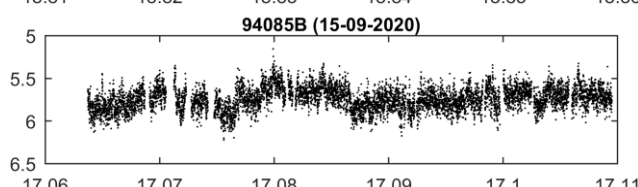
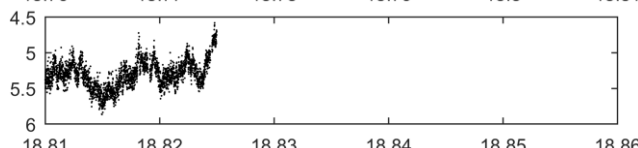
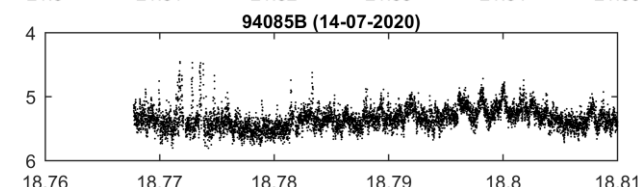
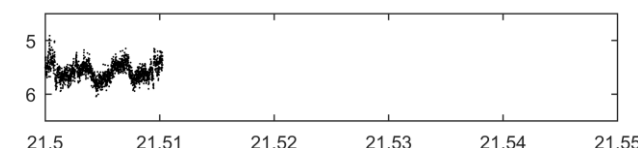
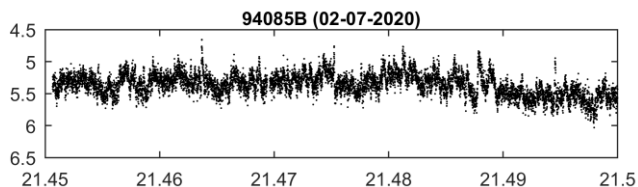
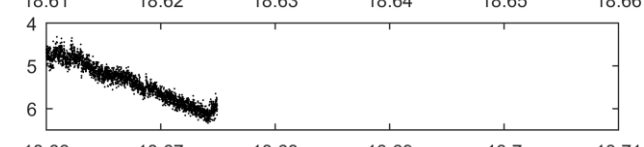
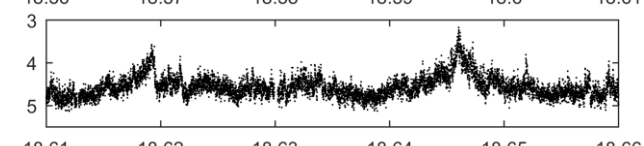
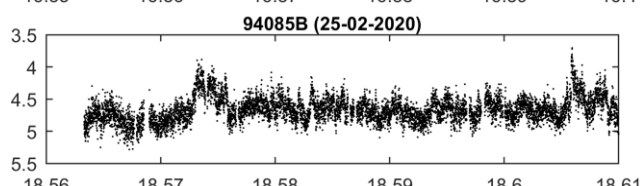
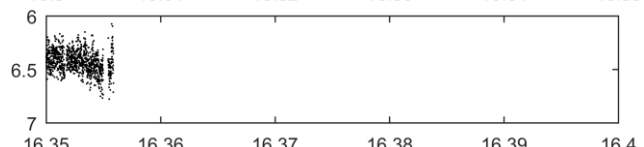
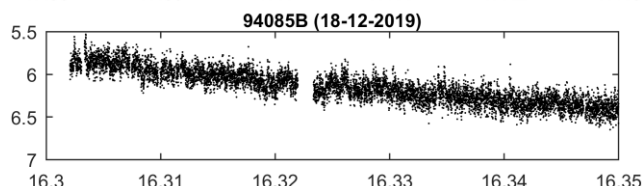
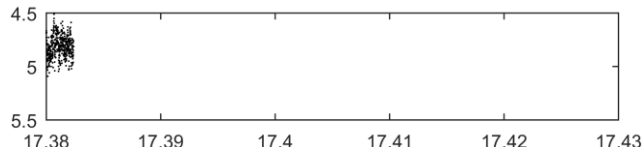
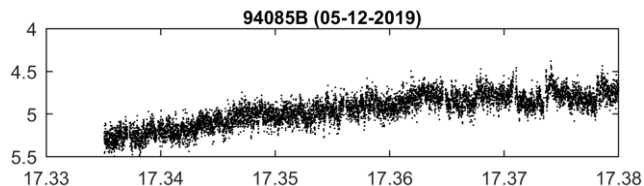
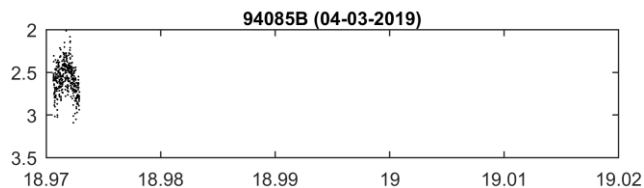
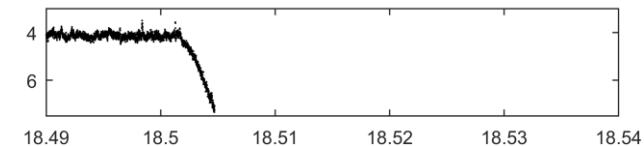
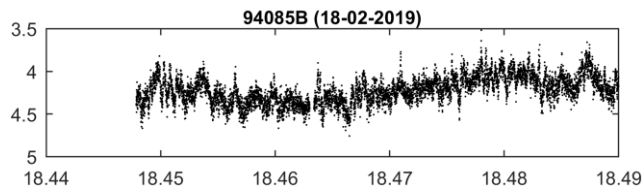
Initial orbit:

Perigee: 1866 km

Apogee: 2183 km

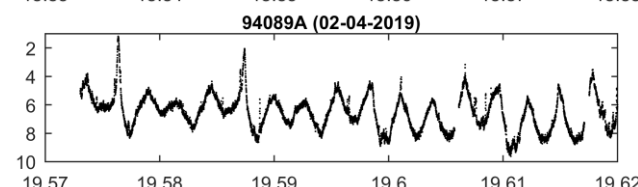
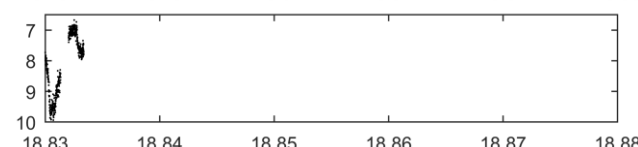
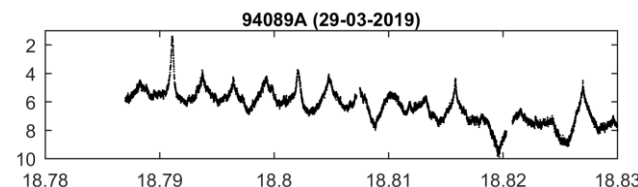


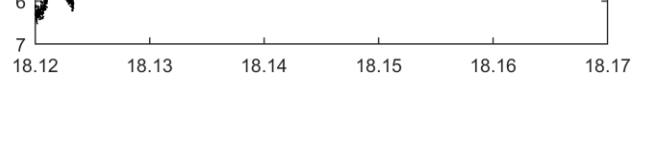
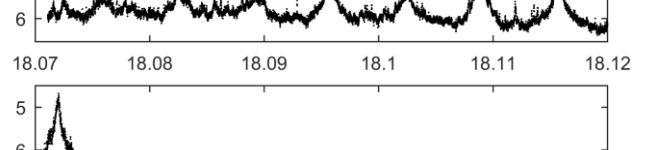
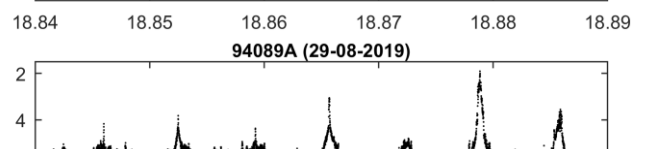
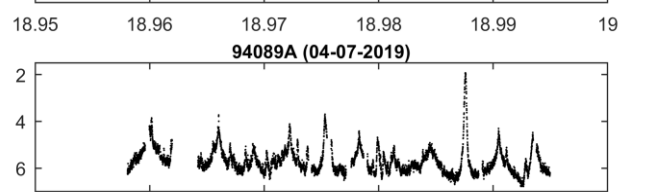
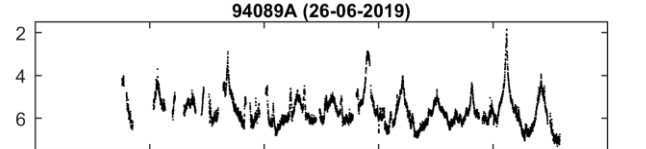
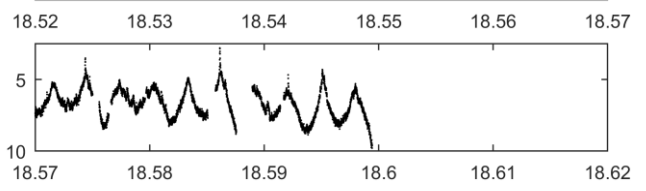
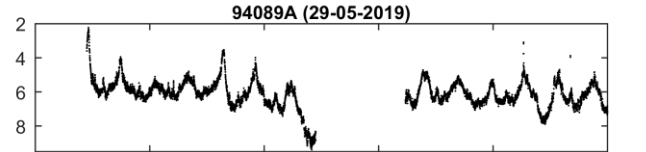
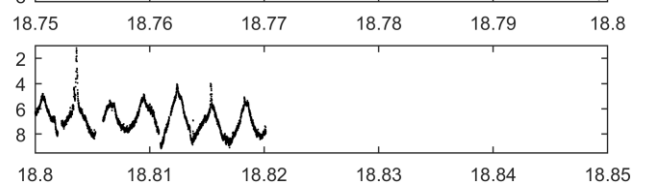
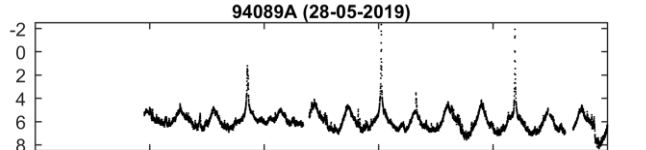
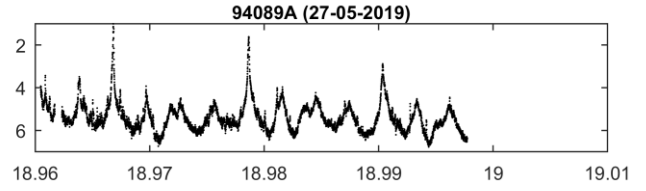
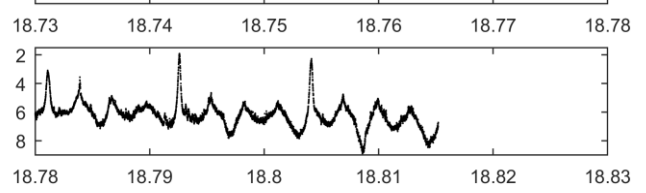
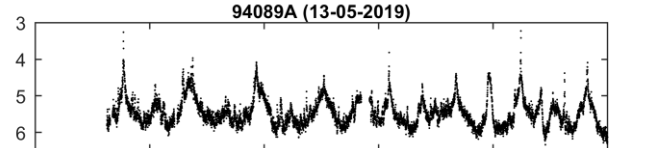
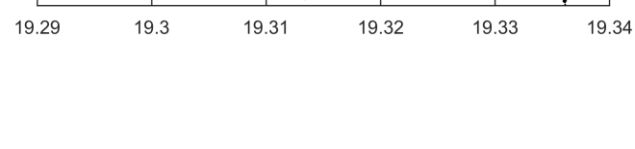
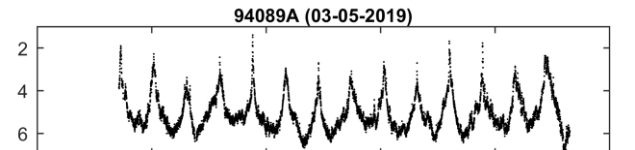
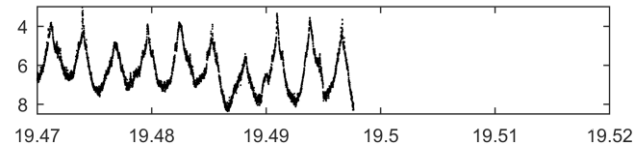
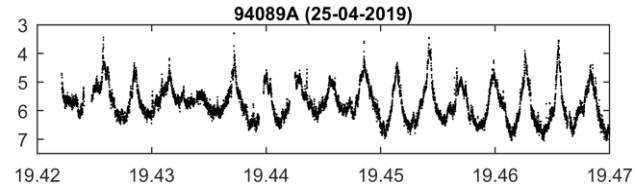
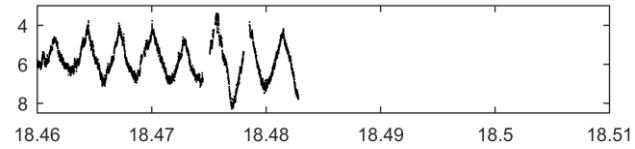
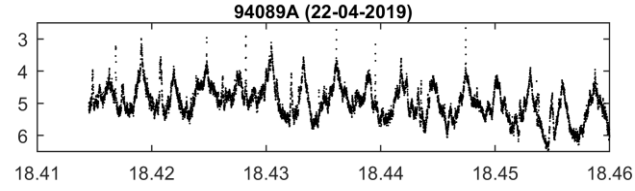
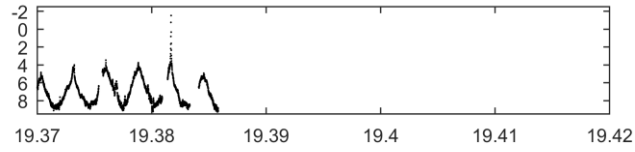
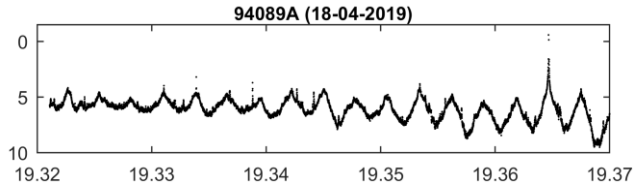
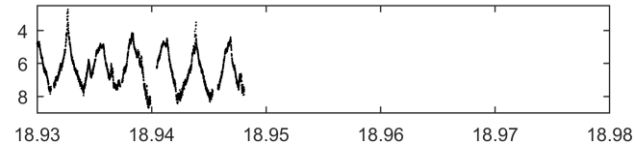
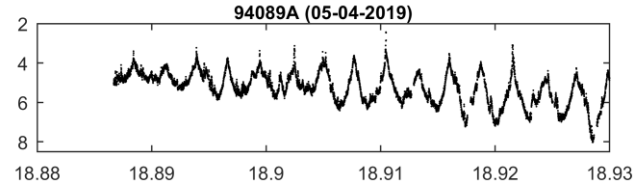
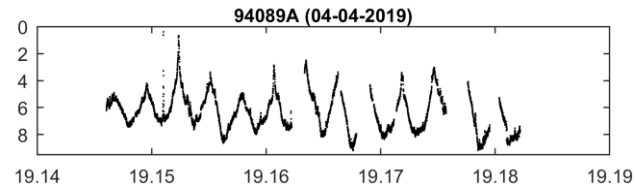
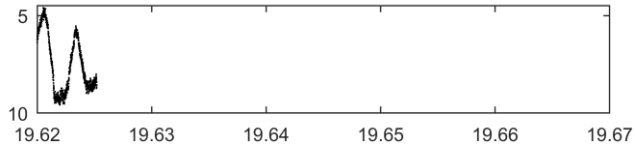
Inclination: 64.83°
 Period: 127.75 min
 Eccentricity: 0.019
 Launch date: 1994-12-26
 Source: Commonwealth of Independent States (former USSR)
 (CIS)

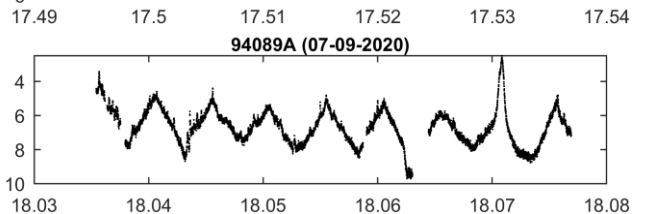
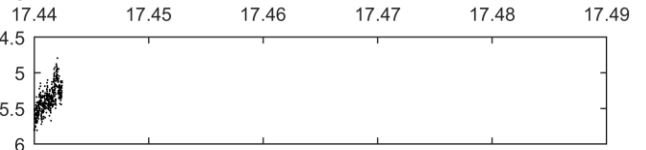
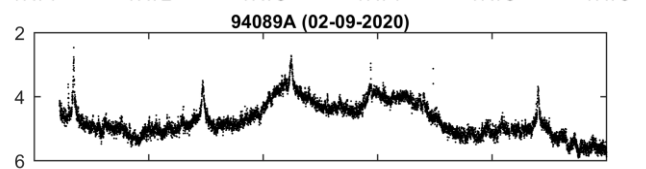
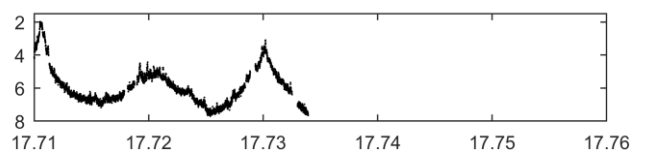
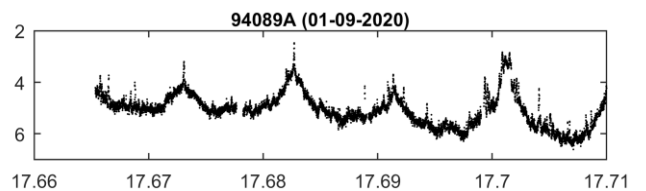
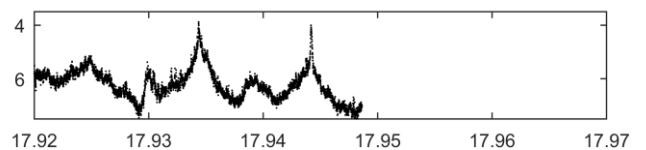
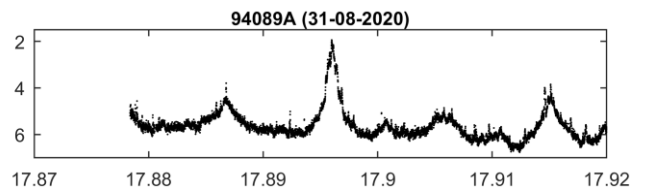
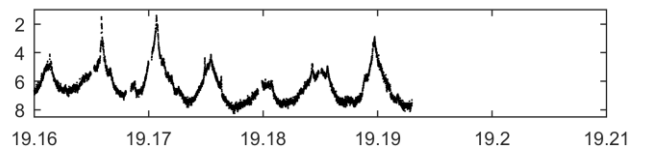
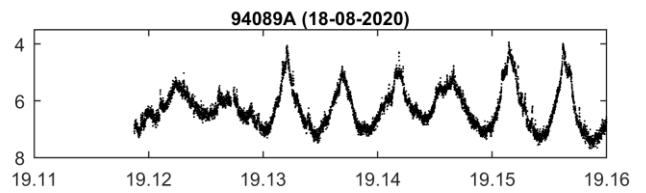
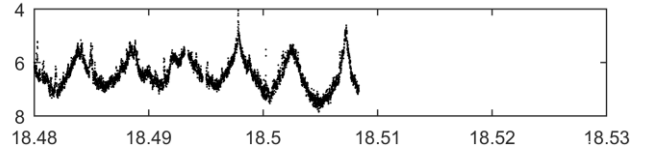
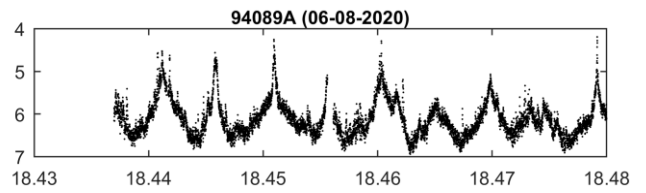
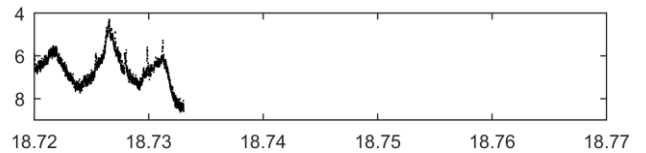
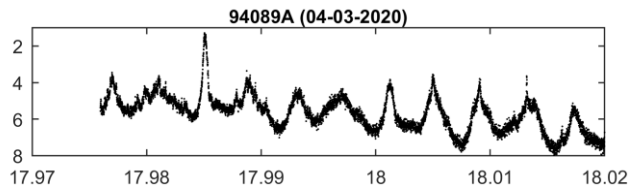
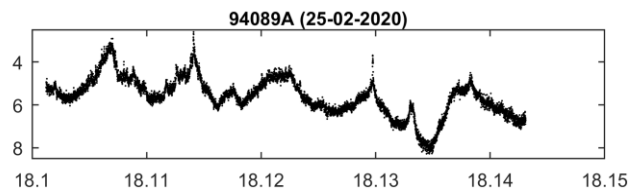
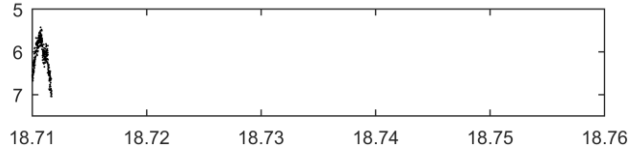
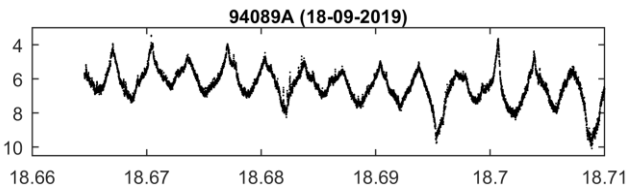
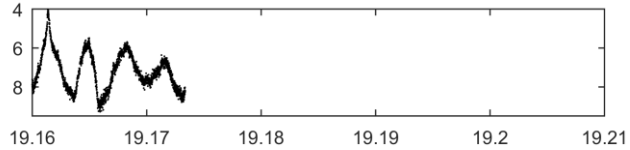
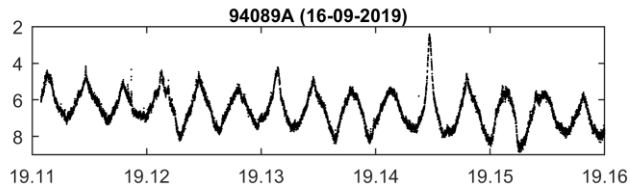
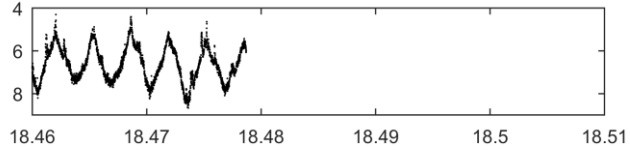
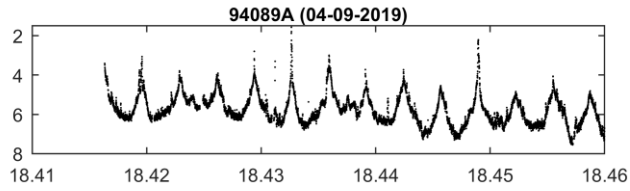
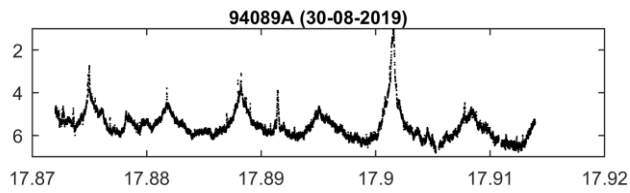
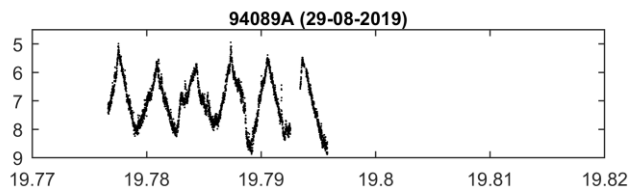


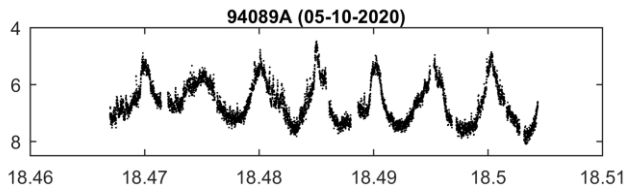
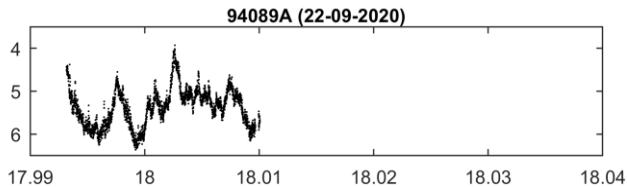
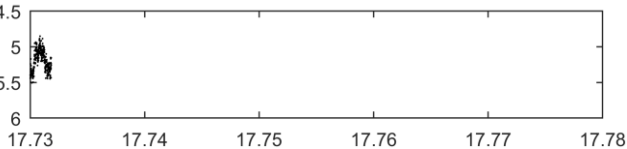
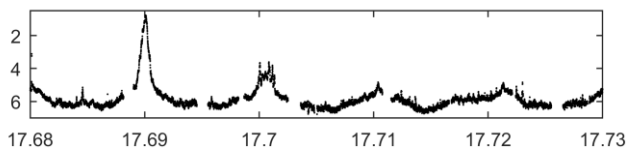
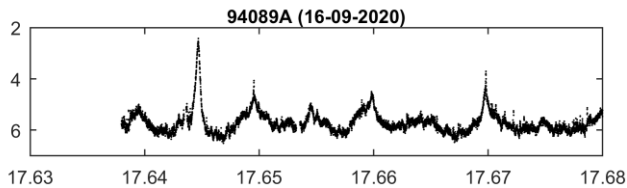
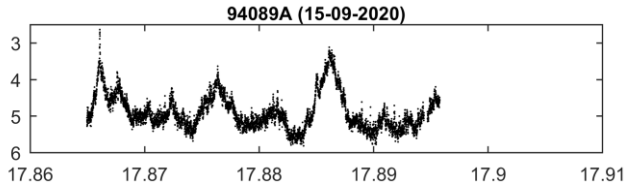
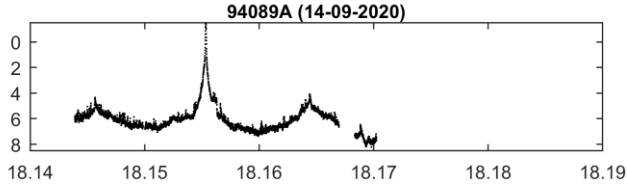
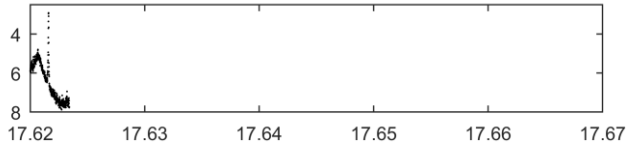
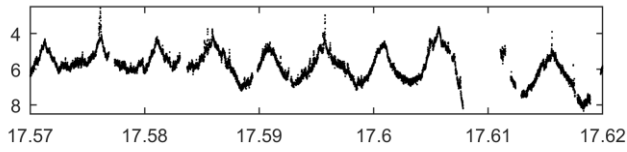
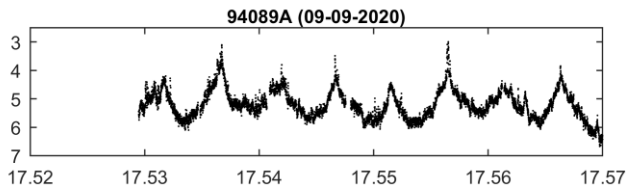
NOAA 14 (J)

NORAD ID: 23455
 Int'l Code: 1994-089A
 Dimensions: cylindrical 4.18m long,
 1.88m dia
 Initial orbit:
 Perigee: 847 km
 Apogee: 860 km
 Inclination: 98.89°
 Period: 102.02 min
 Eccentricity: 0.0009
 Launch date: 1994-12-30
 Source: United States (US)

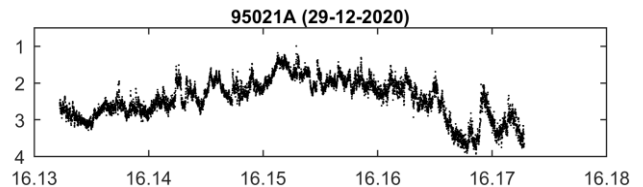
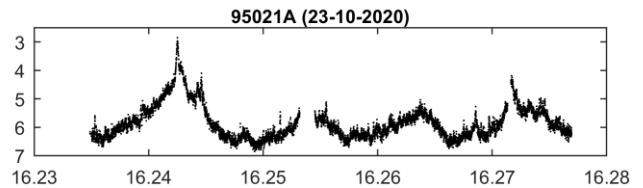
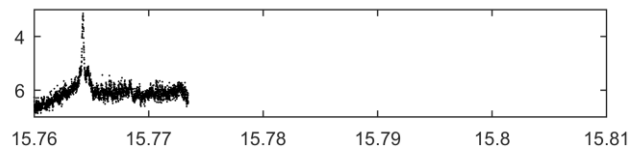
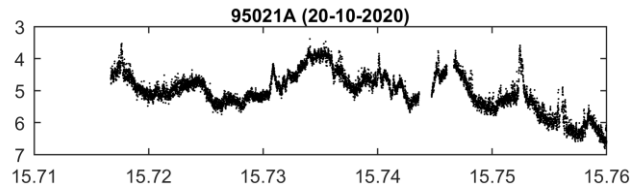




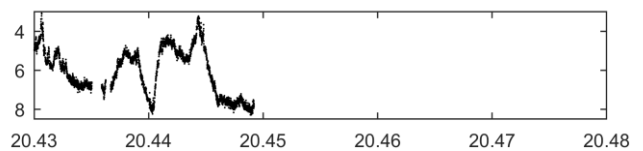
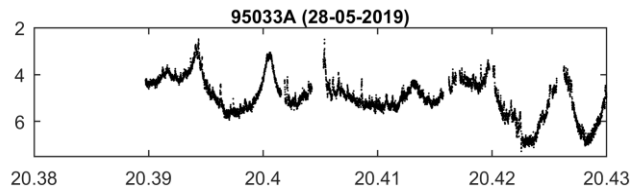
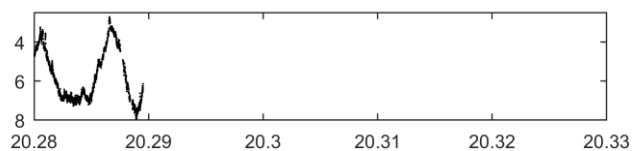
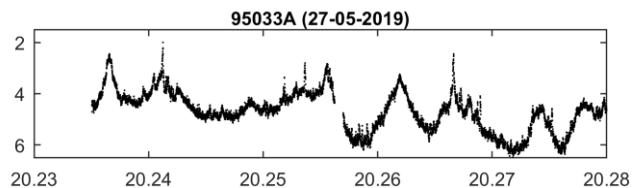
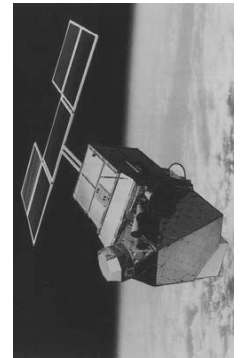




Inclination: 98.5°
 Period: 100.53 min
 Eccentricity: 0.00014
 Launch date: 1995-04-21
 Source: European Space Agency (ESA)

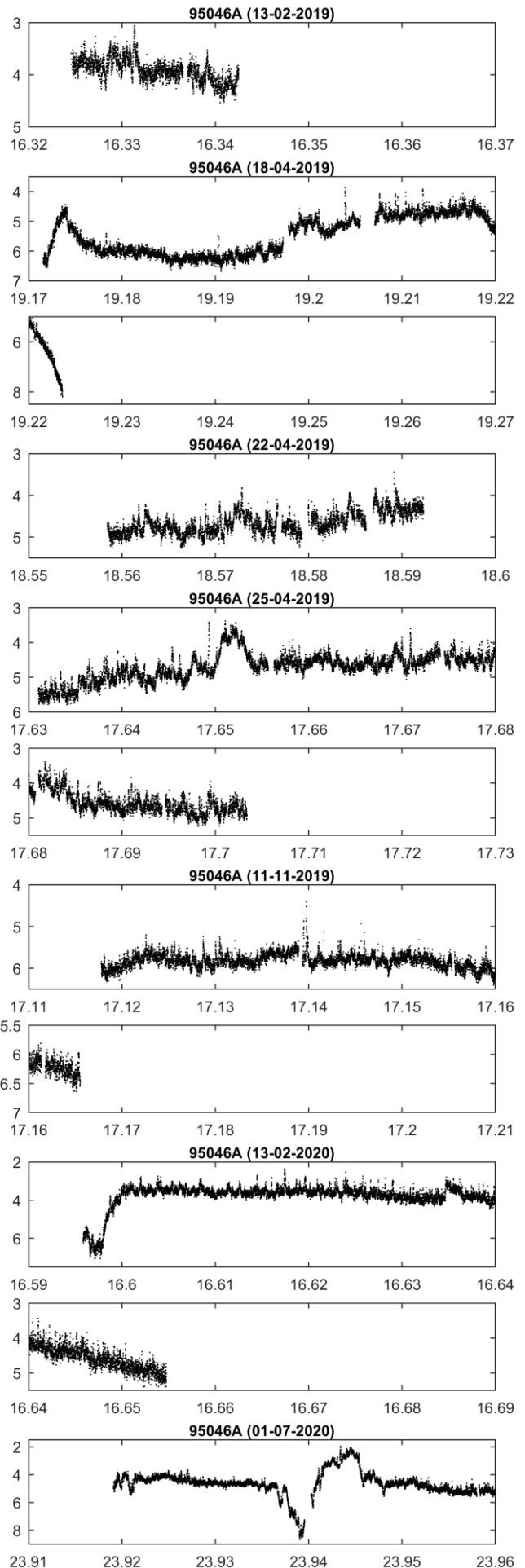
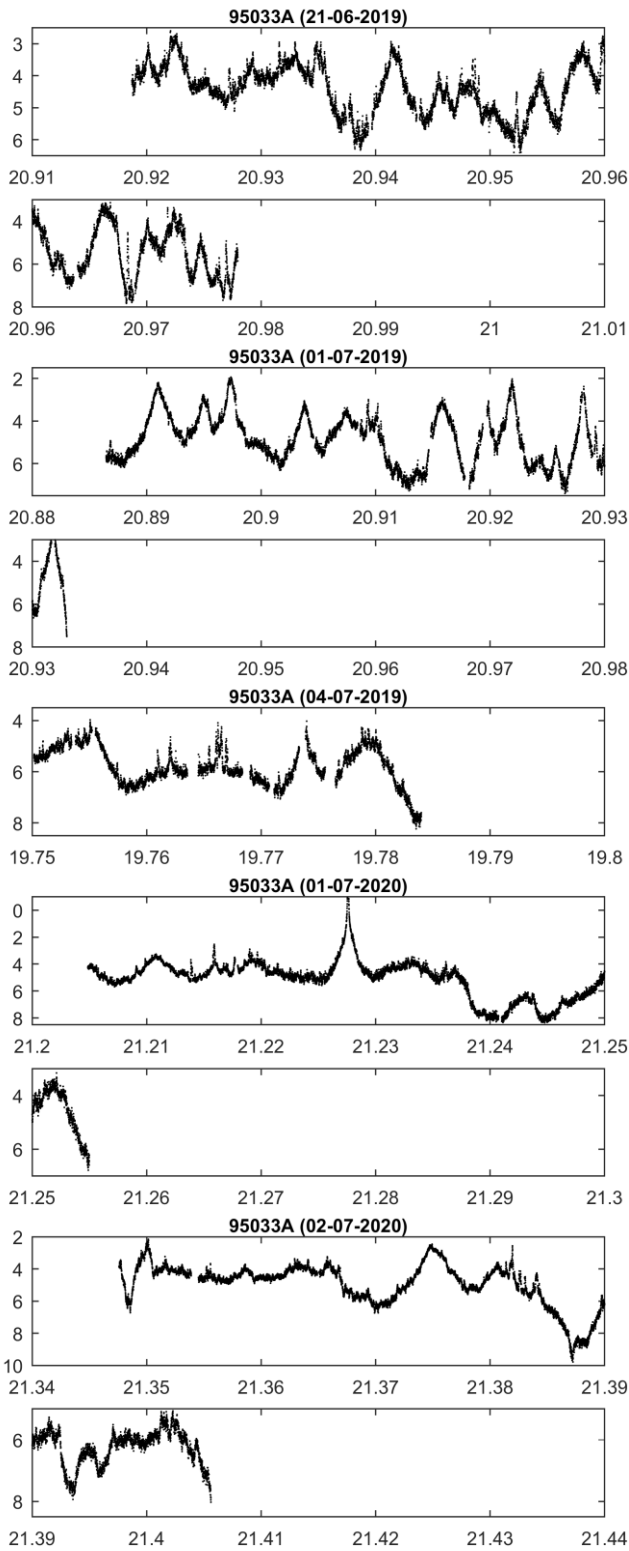


HELIOS 1A
 NORAD ID: 23605
 Int'l Code: 1995-033A
 Dimensions:
 Initial orbit:
 Perigee: 679 km
 Apogee: 681 km
 Inclination: 98.0°
 Period: 98.35 min
 Eccentricity: 0.00014
 Launch date: 1995-07-07
 Source: France (FR)



ERS 2
 NORAD ID: 23560
 Int'l Code: 1995-021A
 Dimensions: box 11.8m high +
 panel 2.4m x 11.7m
 + SAR antenna 1m x 10m
 Initial orbit:
 Perigee: 783 km
 Apogee: 785 km





SICH 1 (OKEAN-O1 8)

NORAD ID: 23657

Int'l Code: 1995-046A

Dimensions: conical 3m high,
1.4m max dia

Initial orbit:

Perigee: 630 km

Apogee: 669 km

Inclination: 82.5°

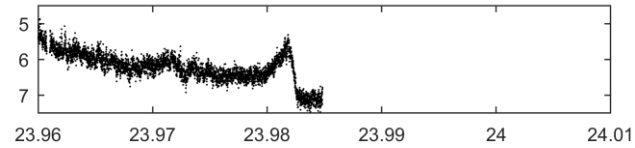
Period: 97.71 min

Eccentricity: 0.00278

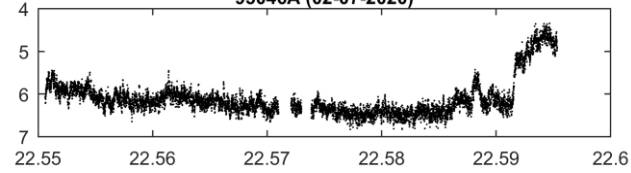
Launch date: 1995-08-31

Source: Commonwealth of Independent States (former USSR)
(CIS)

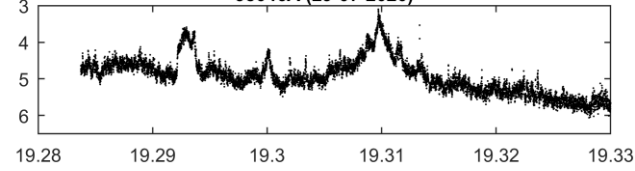




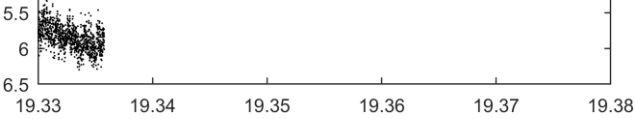
95046A (02-07-2020)



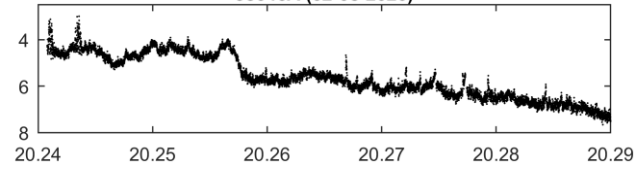
95046A (29-07-2020)



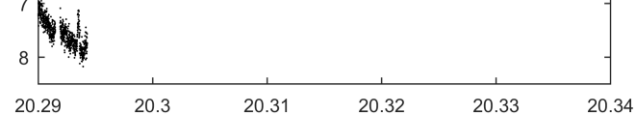
95046A (02-08-2020)



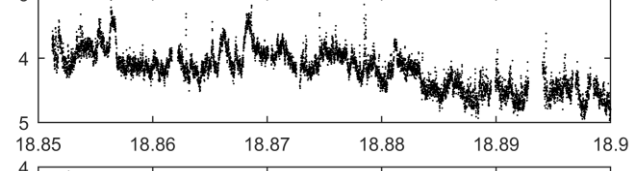
95046A (03-08-2020)



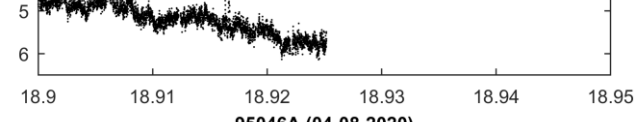
95046A (04-08-2020)



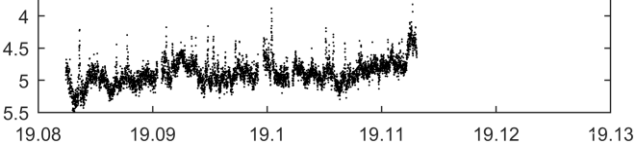
95046A (06-08-2020)



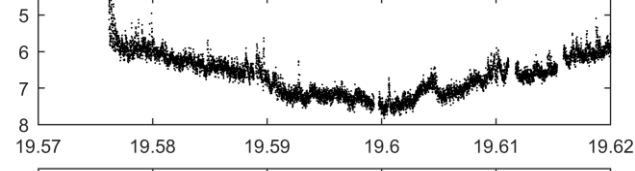
95046A (02-08-2020)



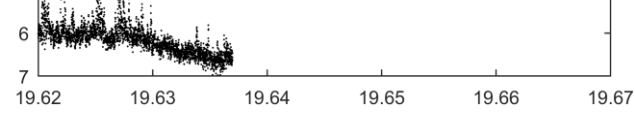
95046A (03-08-2020)



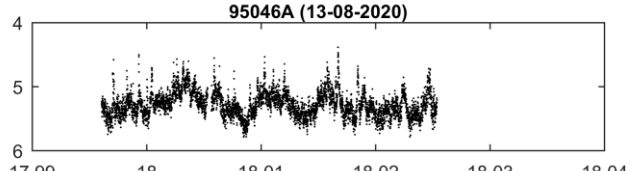
95046A (04-08-2020)



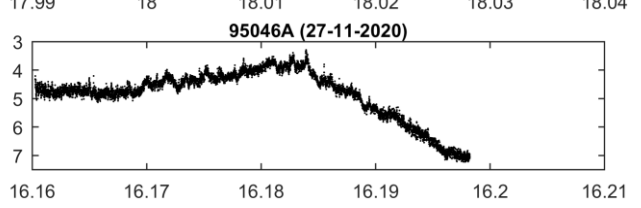
95046A (06-08-2020)



95046A (02-07-2020)



95046A (13-08-2020)



95046A (27-11-2020)

COSMOS 2322 (TSELINA-2)

NORAD ID: 23704

Int'l Code: 1995-058A

Dimensions:

Initial orbit (2002-12-28):

Perigee: 838 km

Apogee: 856 km

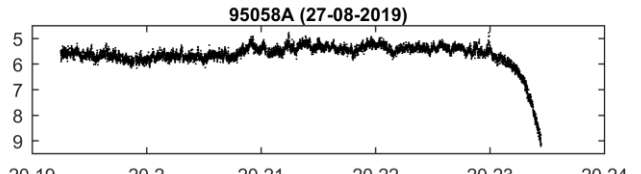
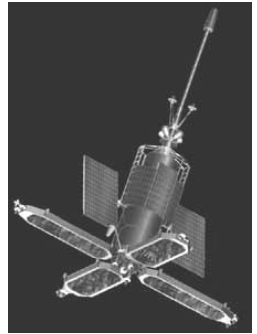
Inclination: 70.98°

Period: 101.87 min

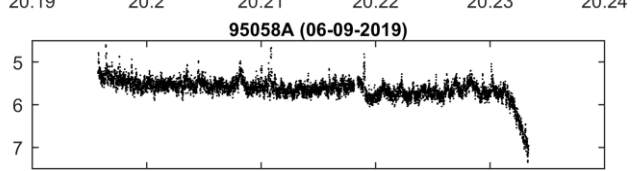
Eccentricity: 0.001

Launch date: 1995-10-31

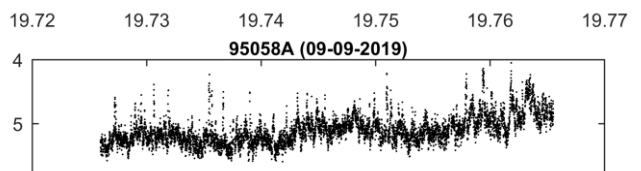
Source: Commonwealth of Independent States (former USSR) (CIS)



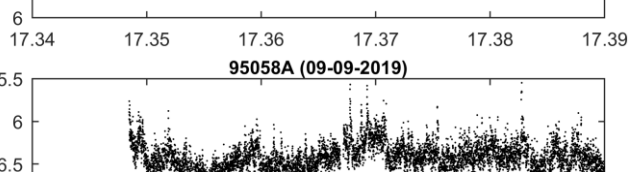
95058A (27-08-2019)



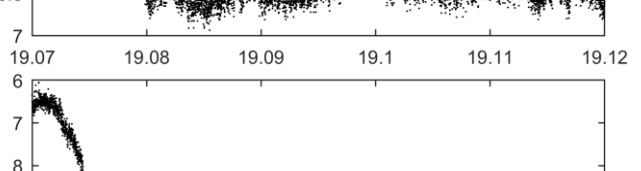
95058A (06-09-2019)



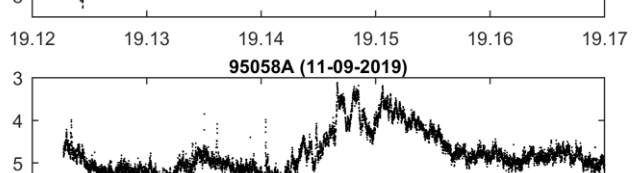
95058A (09-09-2019)



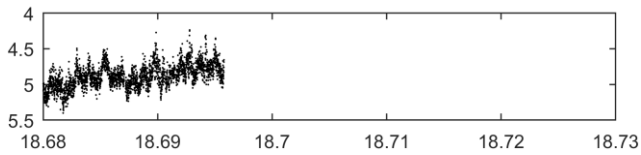
95058A (09-09-2019)



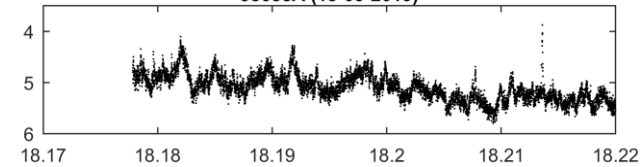
95058A (11-09-2019)



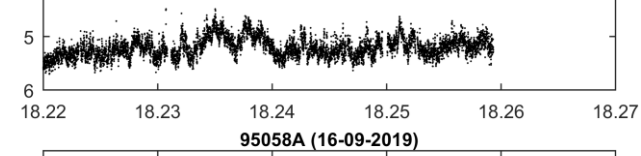
95058A (11-09-2019)



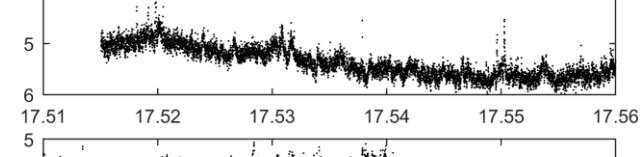
95058A (13-09-2019)



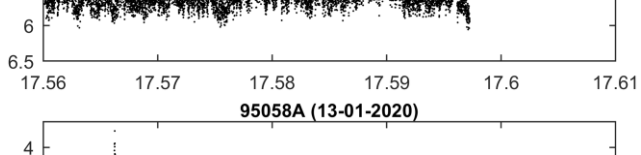
95058A (16-09-2019)



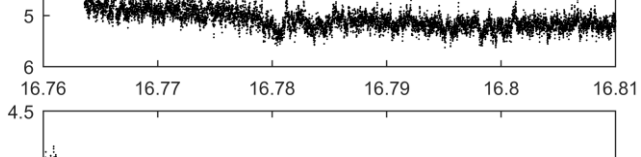
95058A (13-01-2020)



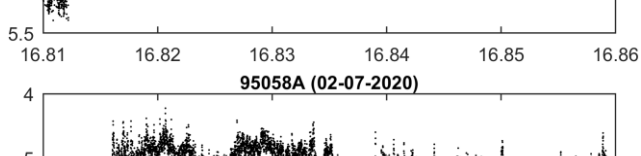
95058A (02-07-2020)



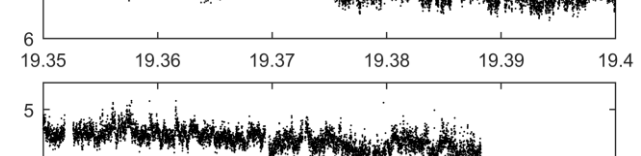
95058A (13-08-2020)



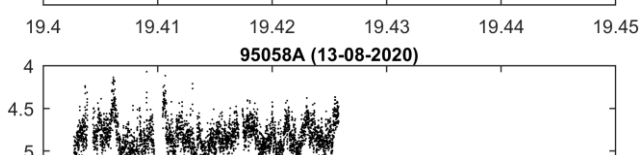
95058A (17-08-2020)



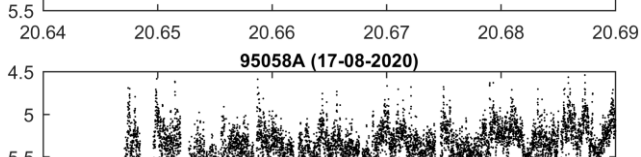
95058A (13-08-2020)



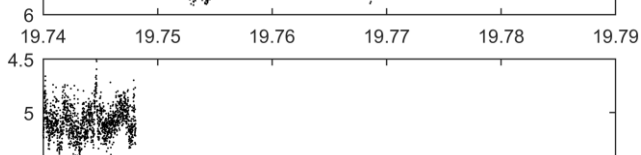
95058A (13-08-2020)



95058A (17-08-2020)



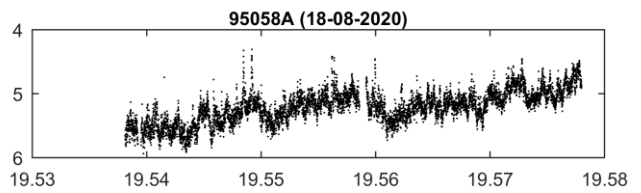
95058A (17-08-2020)



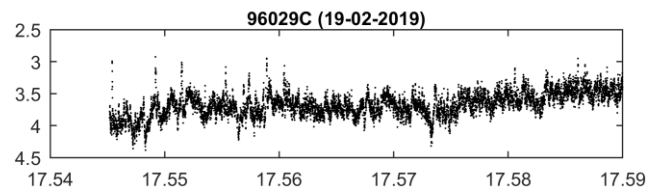
95058A (17-08-2020)



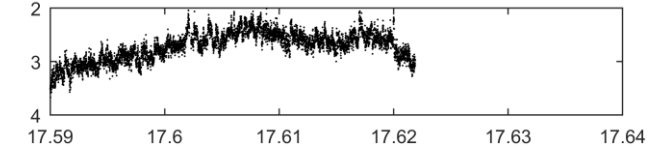
95058A (17-08-2020)



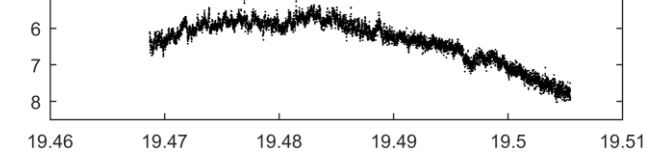
NOSS-2 4B (USA 121)
 NORAD ID: 23908
 Int'l Code: 1996-029C
 Dimensions:
 Initial orbit:
 Perigee: 1054 km
 Apogee: 1162 km
 Inclination: 63.42°
 Period: 107.44 min
 Eccentricity: 0.007
 Launch date: 1996-05-12
 Source: United States (US)



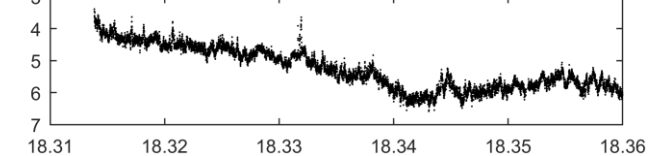
96029C (19-02-2019)



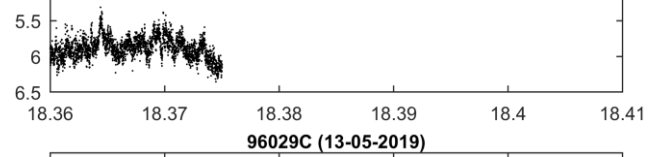
96029C (18-04-2019)



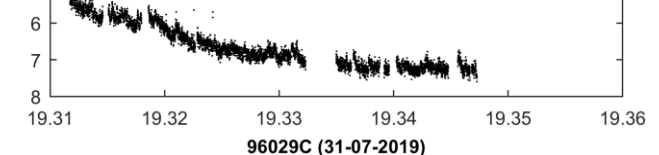
96029C (22-04-2019)



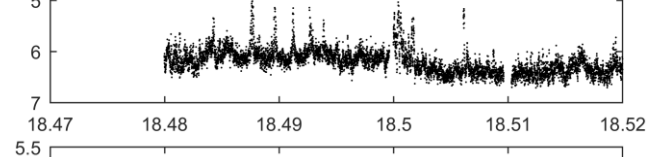
96029C (13-05-2019)



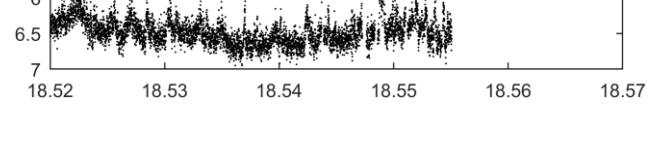
96029C (31-07-2019)



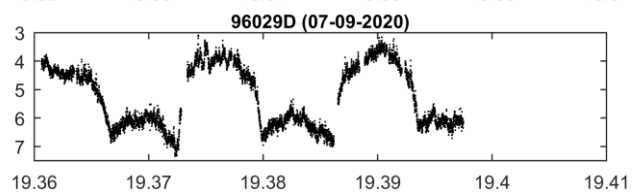
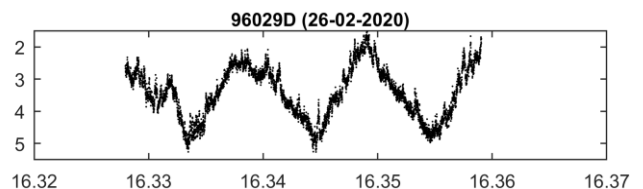
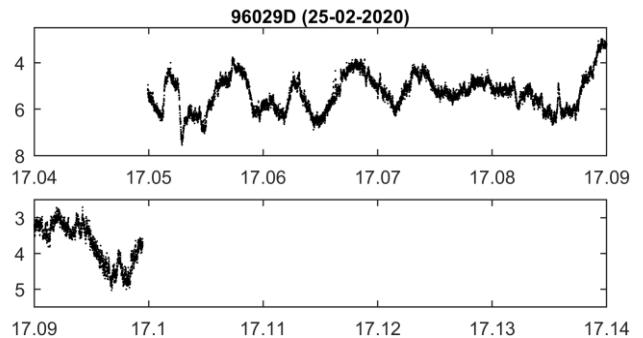
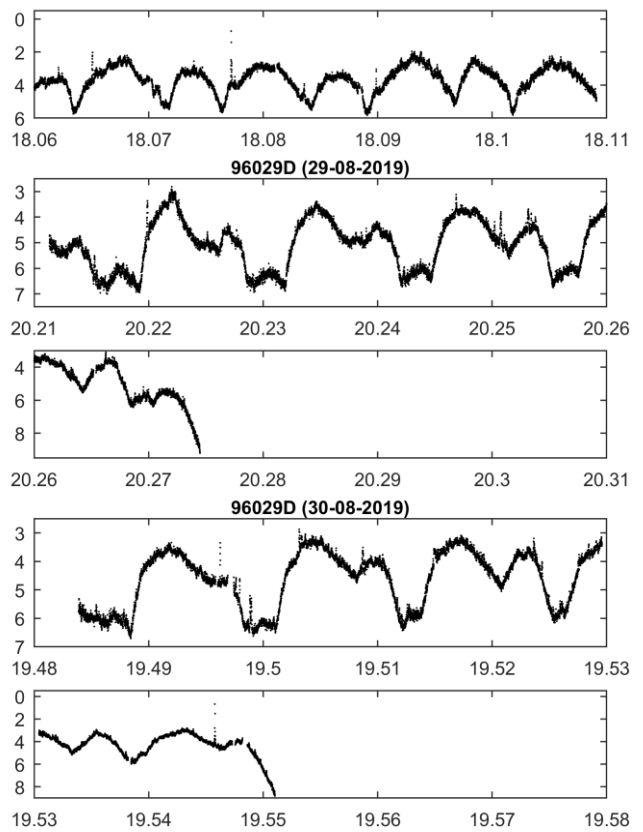
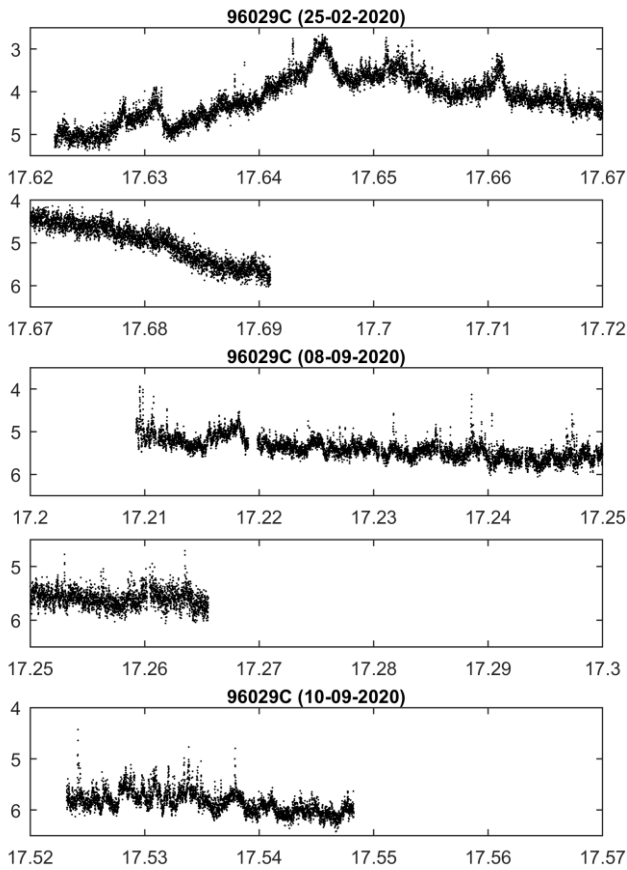
96029C (13-05-2019)



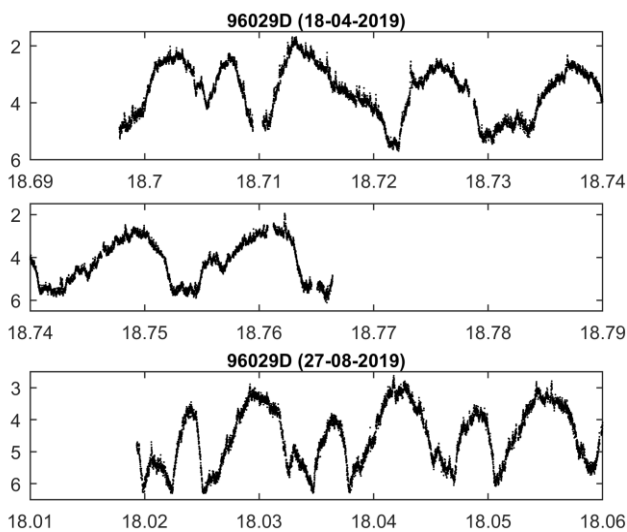
96029C (31-07-2019)



96029C (31-07-2019)

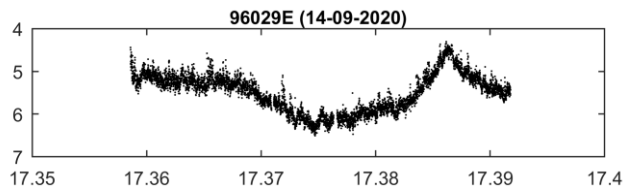
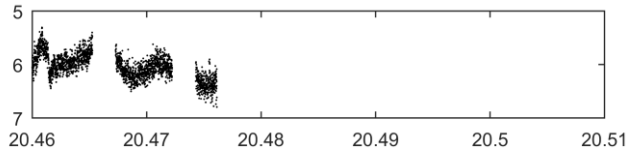
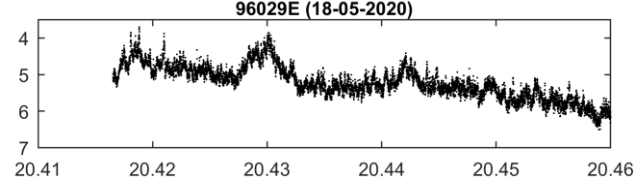
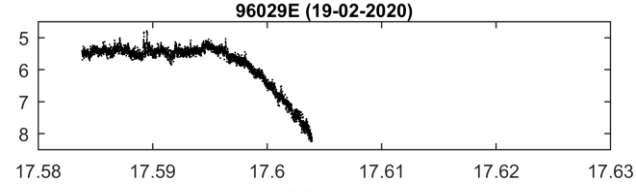
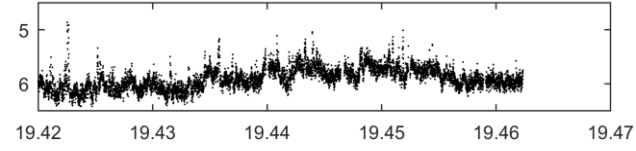
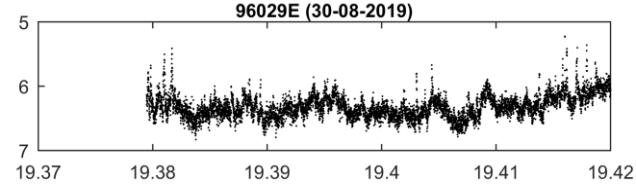
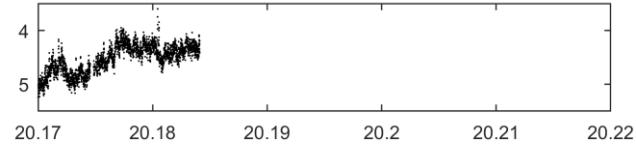
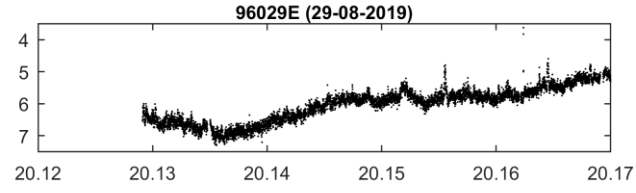
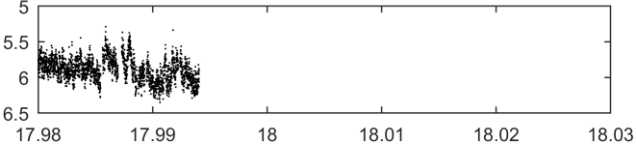
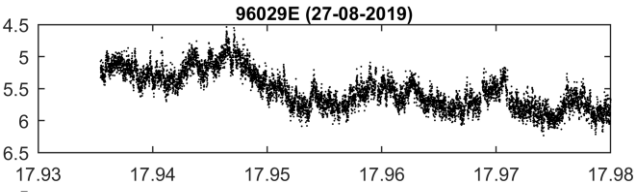
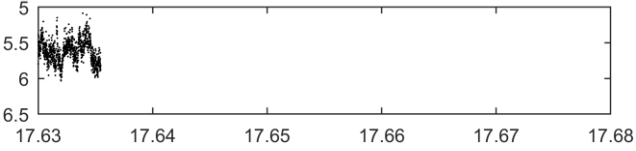
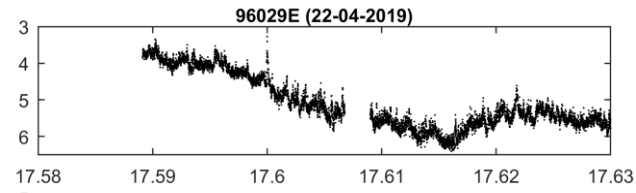
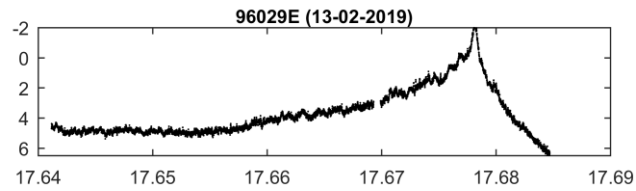


NOSS-2 4C (USA 122)
 NORAD ID: 23862
 Int'l Code: 1996-029D
 Dimensions:
 Initial orbit:
 Perigee: 1053 km
 Apogee: 1164 km
 Inclination: 63.50°
 Period: 107.44 min
 Eccentricity: 0.0074
 Launch date: 1996-05-12
 Source: United States (US)



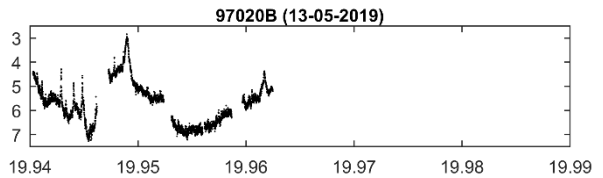
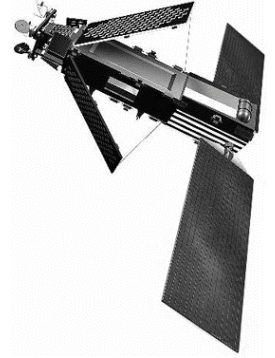
TIPS 1A (RALPH, USA 123)
 NORAD ID: 23936
 Int'l Code: 1996-029E
 Dimensions:
 Initial orbit:
 Perigee: 1056 km
 Apogee: 1161 km
 Inclination: 63.42°
 Period: 107.44 min
 Eccentricity: 0.007
 Launch date: 1996-05-12
 Source: United States (US)





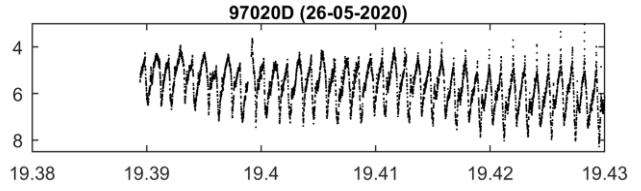
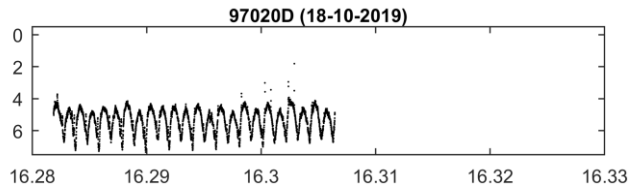
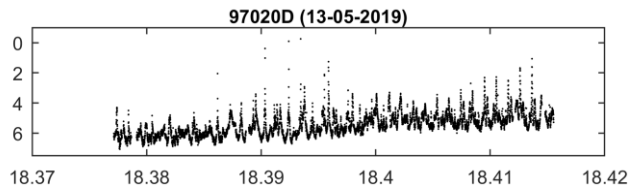
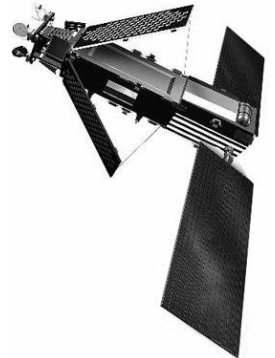
IRIDIUM 7

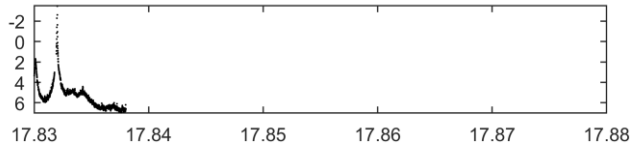
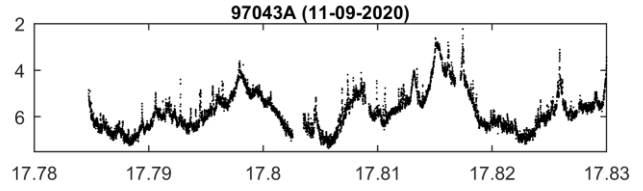
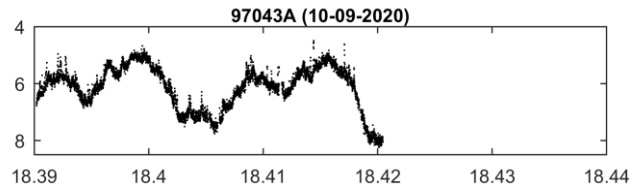
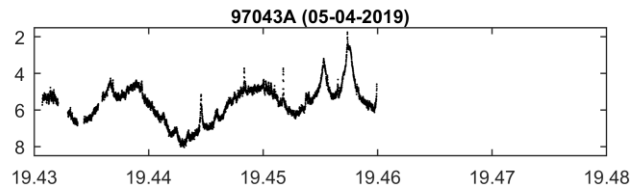
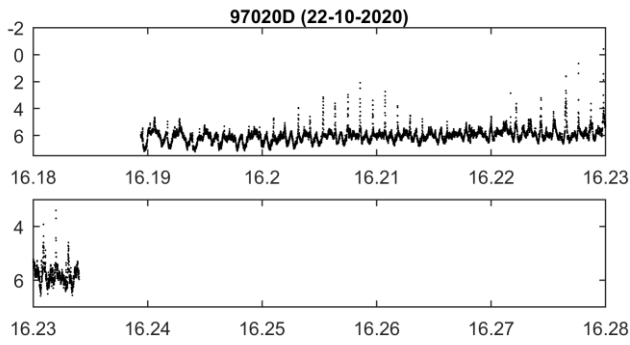
NORAD ID: 24793
 Int'l Code: 1997-020B
 Dimensions: box + 2 panels
 1m across 3.5m long
 Initial orbit:
 Perigee: 773 km
 Apogee: 782 km
 Inclination: 86.4°
 Period: 100.4 min
 Eccentricity: 0.0006
 Launch date: 1997-05-05
 Source: United States (US)



IRIDIUM 5

NORAD ID: 24795
 Int'l Code: 1997-020D
 Dimensions: box + 2 panels
 1 across 3.5m long
 Initial orbit:
 Perigee: 776 km
 Apogee: 779 km
 Inclination: 86.4°
 Period: 100.4 min
 Eccentricity: 0.00042
 Launch date: 1997-05-05
 Source: United States (US)





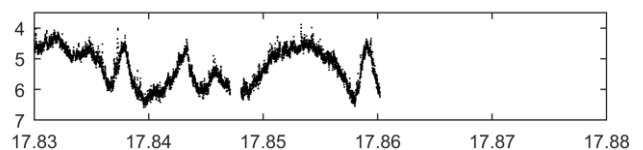
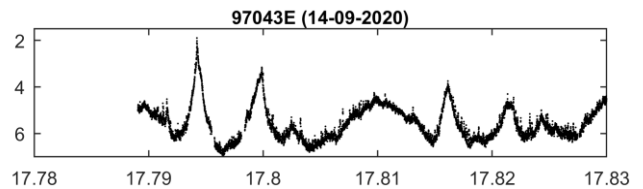
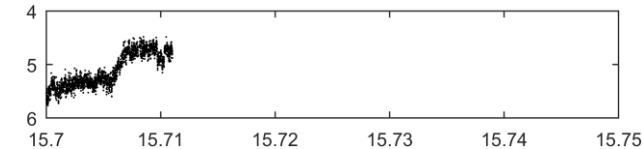
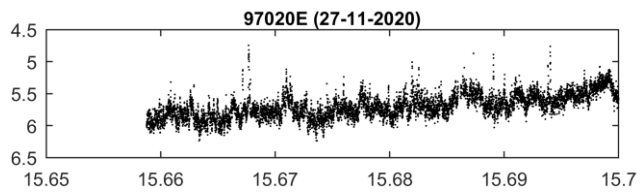
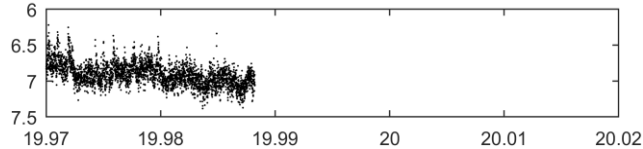
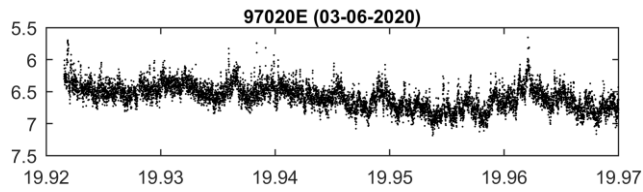
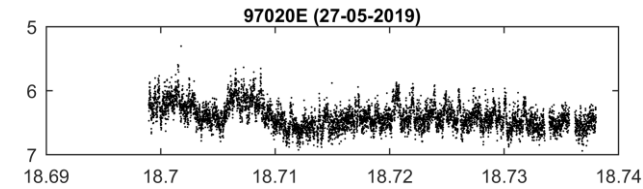
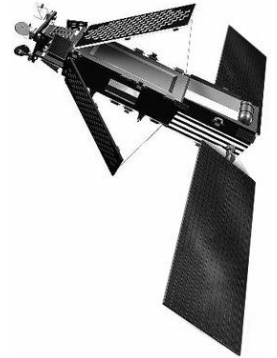
IRIDIUM 4

NORAD ID: 24796
 Int'l Code: 1997-020E
 Dimensions: box + 2 panels
 1 across 3.5m long
 Initial orbit:
 Perigee: 771 km
 Apogee: 784 km
 Inclination: 86.4°
 Period: 100.4 min
 Eccentricity: 0.00091
 Launch date: 1997-05-05
 Source: United States (US)



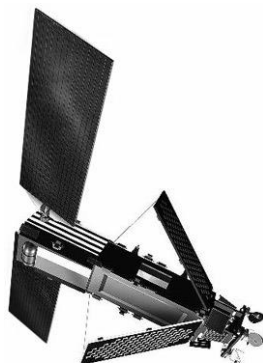
IRIDIUM 22

NORAD ID: 24906
 Int'l Code: 1997-043E
 Dimensions: box + 2 panels
 1 across 3.5m long
 Initial orbit:
 Perigee: 776 km
 Apogee: 779 km
 Inclination: 86.4°
 Period: 100.4 min
 Eccentricity: 0.00042
 Launch date: 1997-08-21
 Source: United States (US)



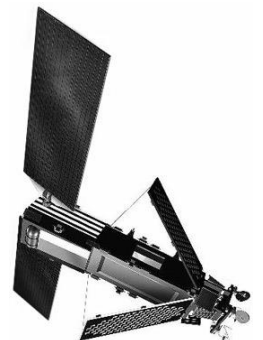
IRIDIUM 26

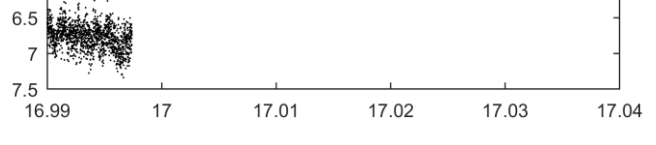
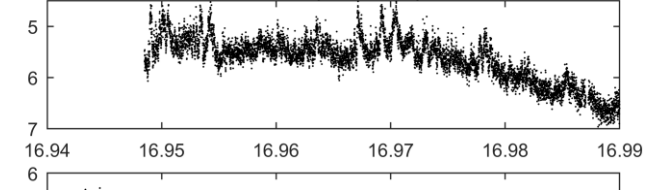
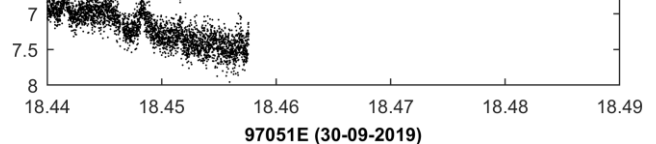
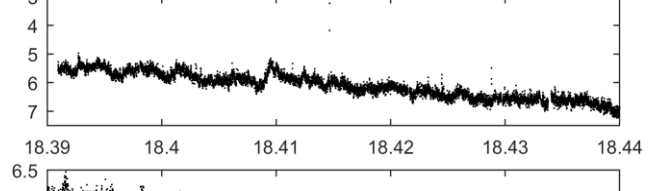
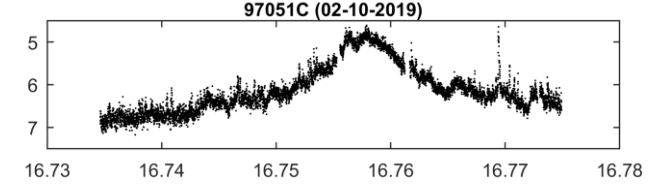
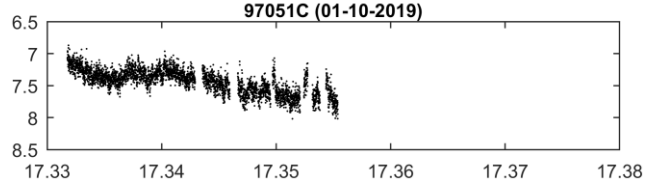
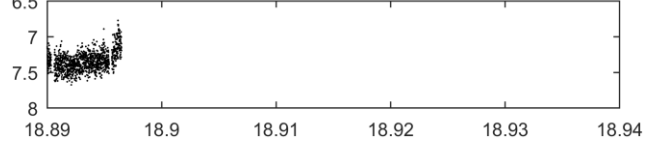
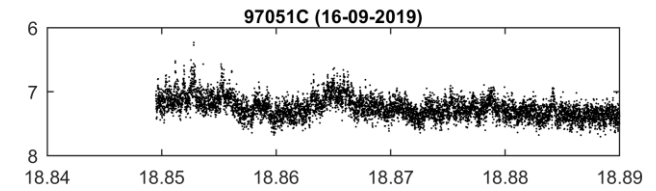
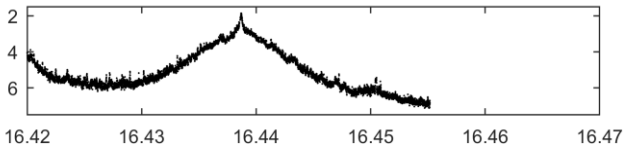
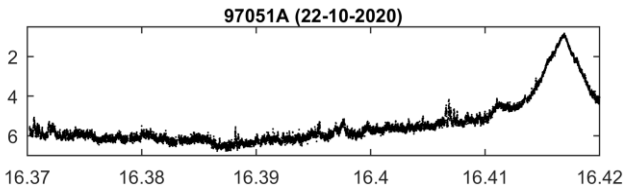
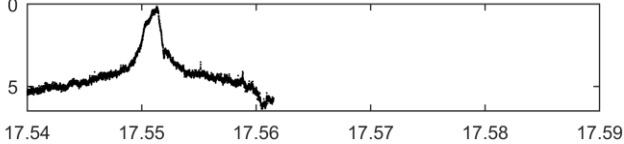
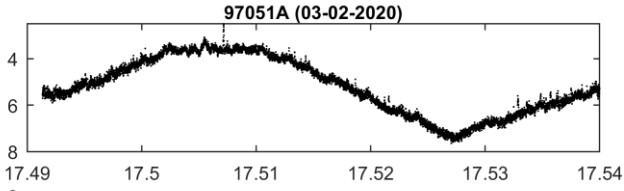
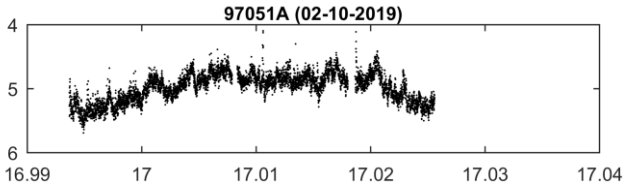
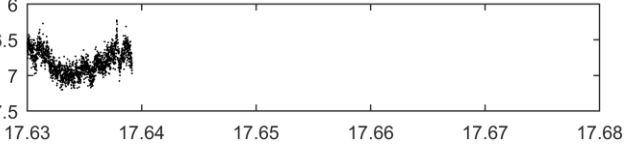
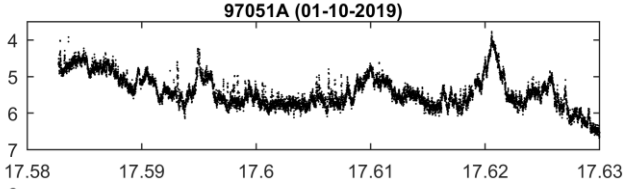
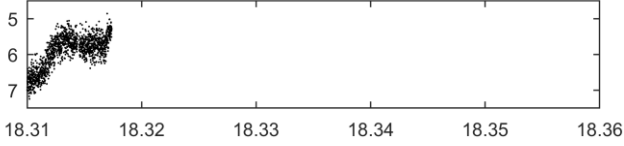
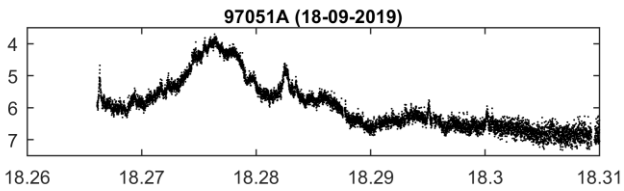
NORAD ID: 24903
 Int'l Code: 1997-043A
 Dimensions: box+2 panels
 1 across 3.5m long
 Initial orbit:
 Perigee: 774 km
 Apogee: 780 km
 Inclination: 86.4°
 Period: 100.38 min
 Eccentricity: 0.0004
 Launch date: 1997-08-21
 Source: United States (US)



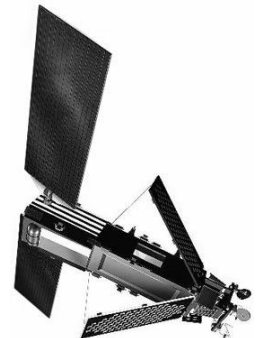
IRIDIUM 29

NORAD ID: 24944
 Int'l Code: 1997-051A
 Dimensions: box + 2 panels
 1 across 3.5 long
 Initial orbit:
 Perigee: 776 km
 Apogee: 778 km
 Inclination: 86.4°
 Period: 100.38 min
 Eccentricity: 0.0001
 Launch date: 1997-09-14
 Source: United States (US)

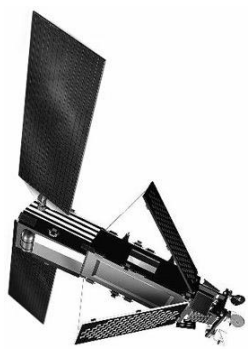




IRIDIUM 28
 NORAD ID: 24948
 Int'l Code: 1997-051E
 Dimensions: box + 2 panels
 1 across 3.5 long
 Initial orbit:
 Perigee: 776 km
 Apogee: 778 km
 Inclination: 86.4°
 Period: 100.38 min
 Eccentricity: 0.0001
 Launch date: 1997-09-14
 Source: United States (US)

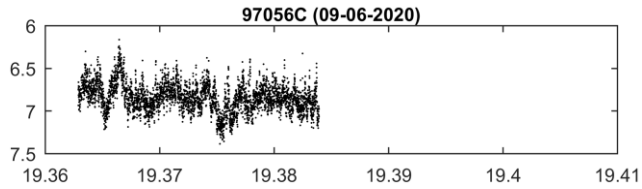


IRIDIUM 33
 NORAD ID: 24946
 Int'l Code: 1997-051C
 Dimensions: box + 2 panels
 1 m across 3.5 m long
 Initial orbit:
 Perigee: 774 km
 Apogee: 780 km
 Inclination: 86.3°
 Period: 100.38 min
 Eccentricity: 0.0001
 Launch date: 1997-09-14
 Source: United States (US)



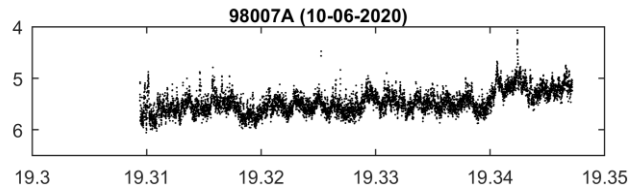
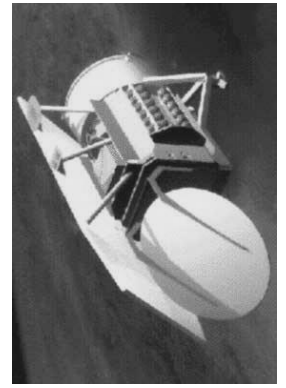
IRIDIUM 36

NORAD ID: 24967
Int'l Code: 1997-056C
Dimensions: box + 2 panels
1 across 3.5m long
Initial orbit:
Perigee: 562 km
Apogee: 566 km
Inclination: 86.7°
Period: 95.95 min
Eccentricity: 0.000288
Launch date: 1997-09-27
Source: United States (US)



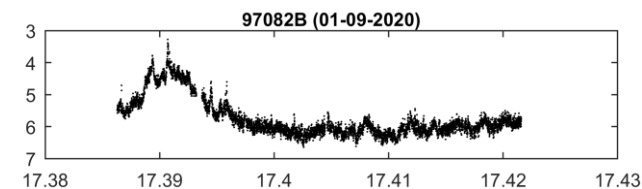
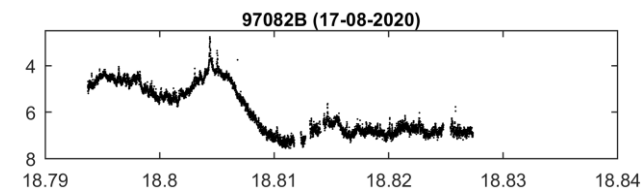
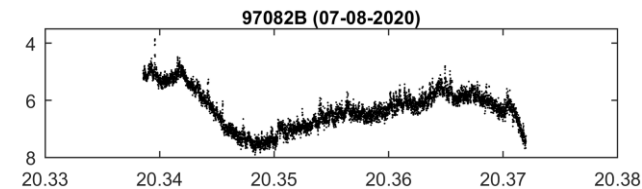
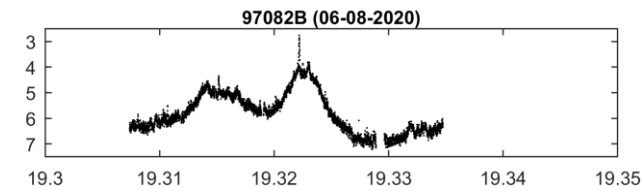
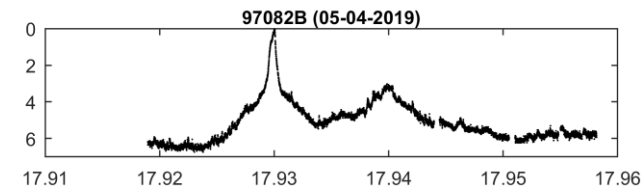
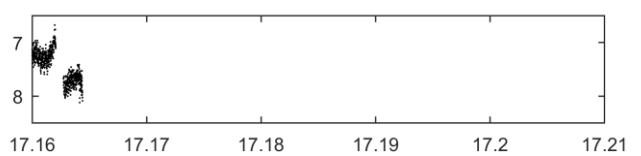
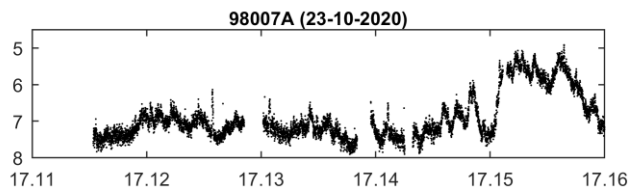
GFO

(GEOSAT FOLLOW-ON)
NORAD ID: 25157
Int'l Code: 1998-007A
Dimensions: box + panel
Initial orbit:
Perigee: 781 km
Apogee: 876 km
Inclination: 107.9°
Period: 101.47 min
Eccentricity: 0.0066
Launch date: 1998-02-10
Source: United States (US)



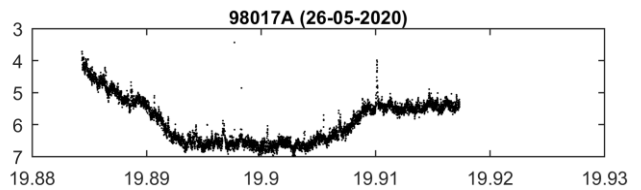
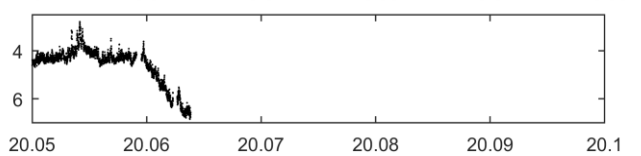
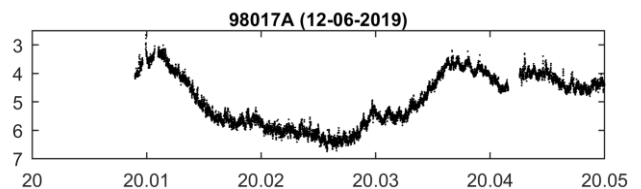
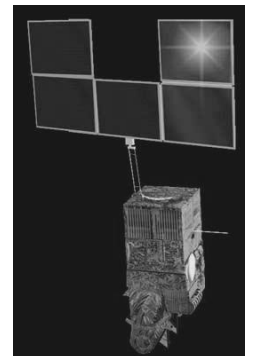
IRIDIUM 46

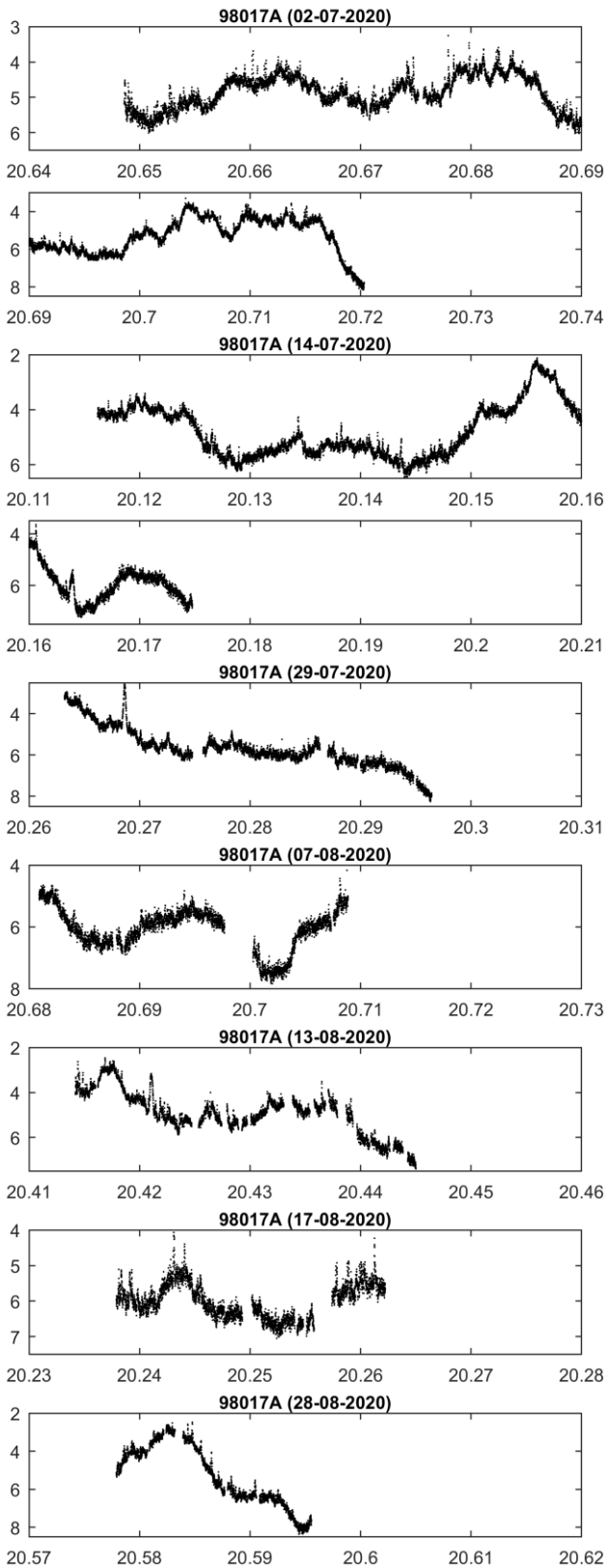
NORAD ID: 25105
Int'l Code: 1997-082B
Dimensions: box + 2 panels
1 across 3.5m long
Initial orbit:
Perigee: 776 km
Apogee: 779 km
Inclination: 86.4°
Period: 100.4 min
Eccentricity: 0.00042
Launch date: 1997-12-20
Source: United States (US)



SPOT 4

NORAD ID: 25260
Int'l Code: 1998-017A
Dimensions: box+5 panels
2.5m x 2.5m x 5.6m, 4m x 8m span
Initial orbit:
Perigee: 824 km
Apogee: 825 km
Inclination: 98.7°
Period: 101.39 min
Eccentricity: 0.00007
Launch date: 1998-03-24
Source: France (FR)



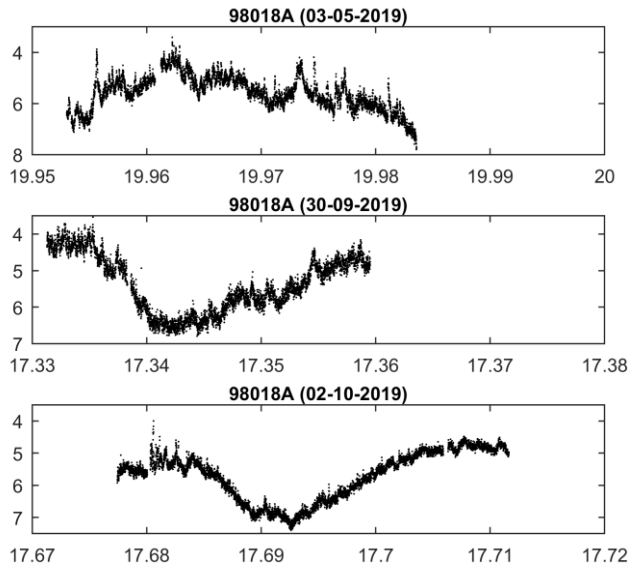


IRIDIUM 51

NORAD ID: 25262
 Int'l Code: 1998-018A
 Dimensions: box+2 panels
 1 across 3.5m long
 Initial orbit:
 Perigee: 775 km
 Apogee: 780 km
 Inclination: 86.4°
 Period: 100.40 min
 Eccentricity: 0.00035
 Launch date: 1998-03-25

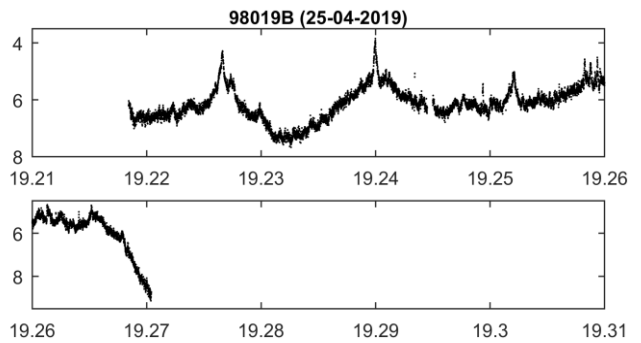
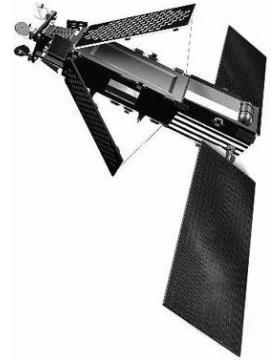


Source: United States (US)



IRIDIUM 57

NORAD ID: 25273
 Int'l Code: 1998-019B
 Dimensions: box + 2 panels
 1 across 3.5m long
 Initial orbit:
 Perigee: 776 km
 Apogee: 779 km
 Inclination: 86.4°
 Period: 100.4 min
 Eccentricity: 0.00042
 Launch date: 1998-03-30
 Source: United States (US)

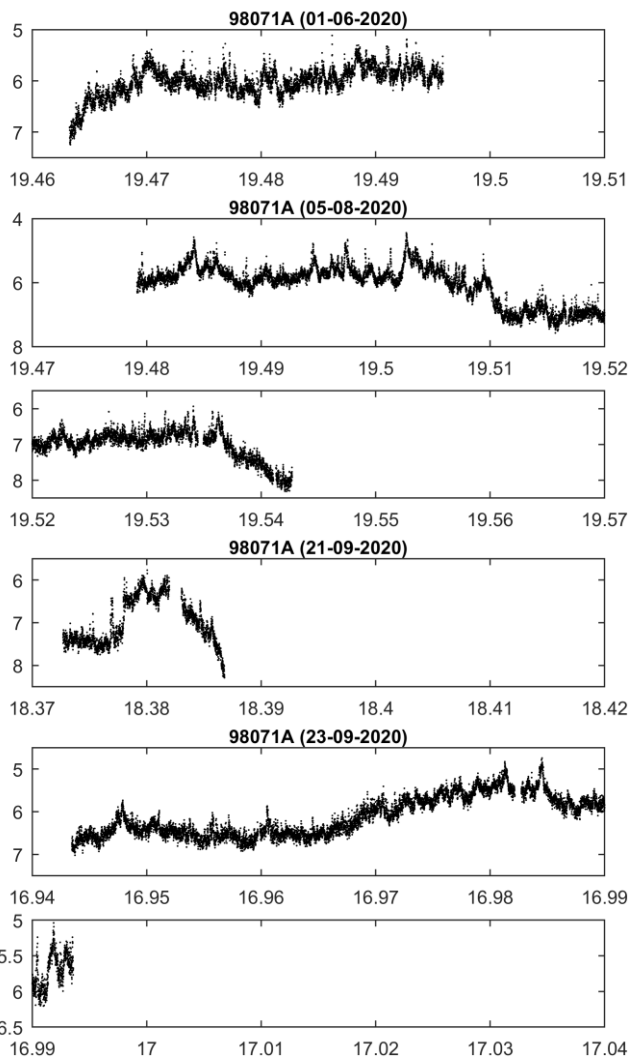
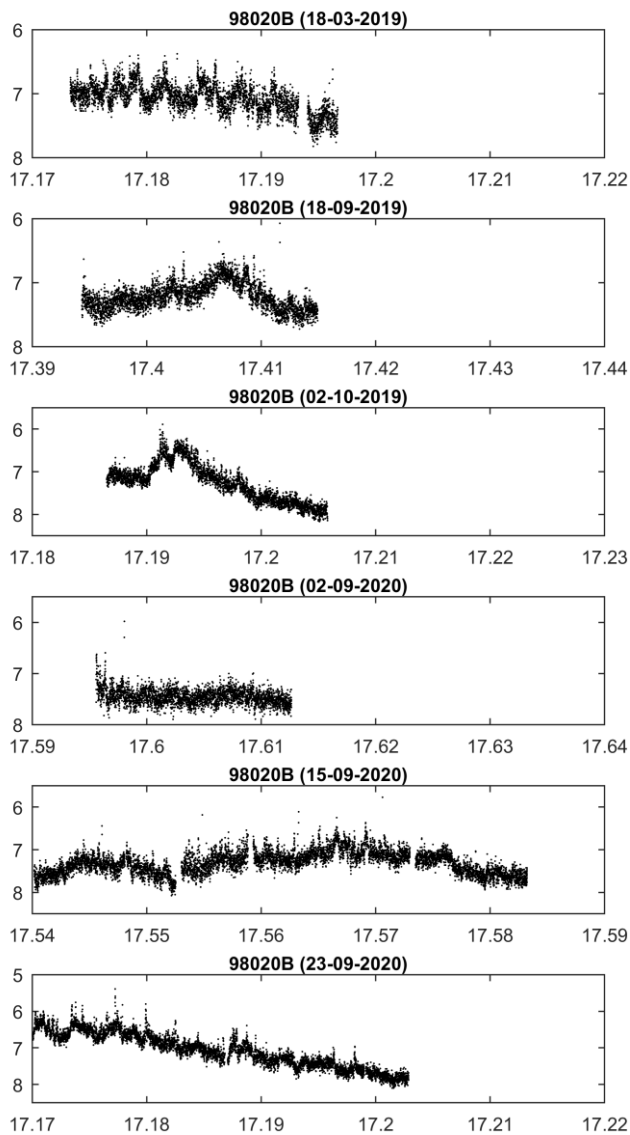


**PEGASUS R/B
 (Pegasus-XL 3rdstage)**

NORAD ID: 25281
 Int'l Code: 1998-020B
 Dimensions: cone-cylinder 0.97m dia,
 Initial orbit:
 Perigee: 522 km
 Apogee: 539 km
 Inclination: 97.6°
 Period: 95.2 min
 Eccentricity: 0.0012
 Launch date: 1998-04-02
 Source: United States (US)



2.08m long



SWAS

(SMEX 3, EXPLORER 74)

NORAD ID: 25560

Int'l Code: 1998-071A

Dimensions: box + 4 panels 1 side

Initial orbit:

Perigee: 638 km

Apogee: 650 km

Inclination: 69.9°

Period: 97.60 min

Eccentricity: 0.00086

Launch date: 1998-12-06

Source: United States (US)



GLOBALSTAR M042

NORAD ID: 25679

Int'l Code: 1999-019D

Dimensions: trapezoidal box

0.60 m x 1.50 m x 1.60 m + 2

panels 12 m span

Initial orbit:

Perigee: 1412 km

Apogee: 1414 km

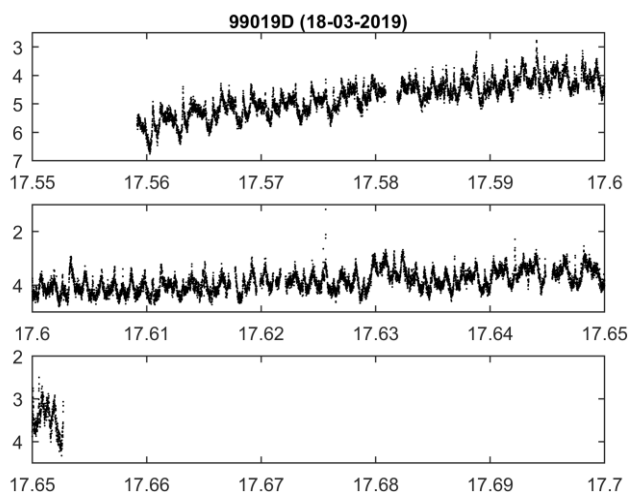
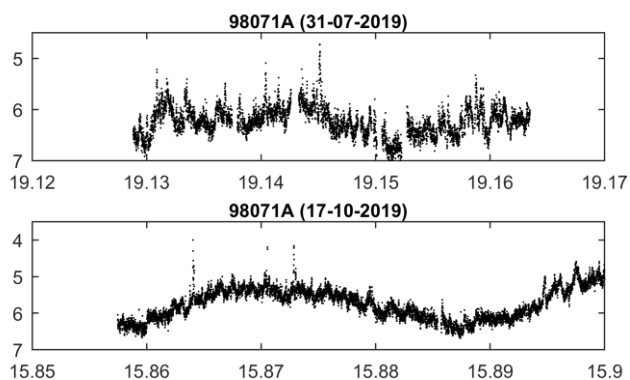
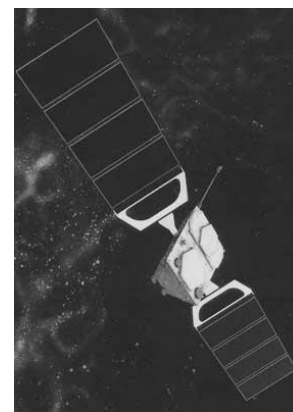
Inclination: 52.0°

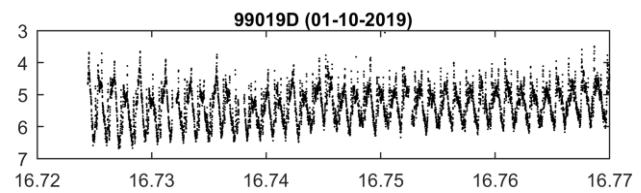
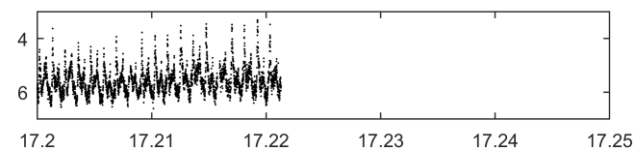
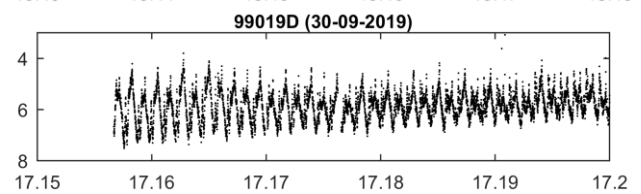
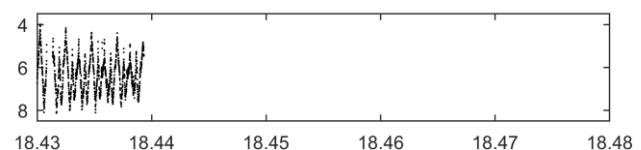
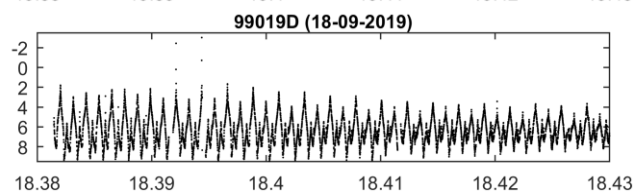
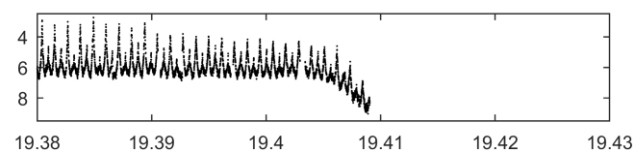
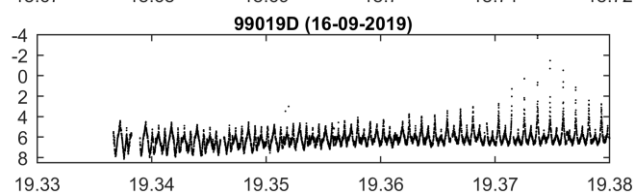
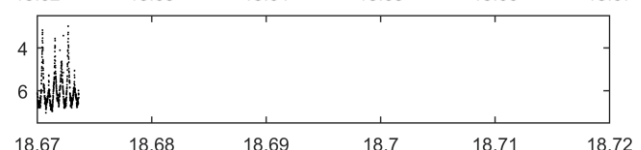
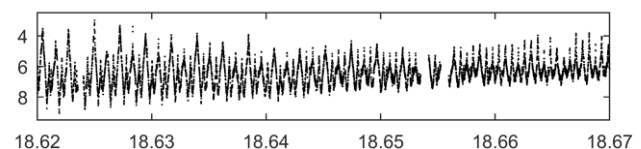
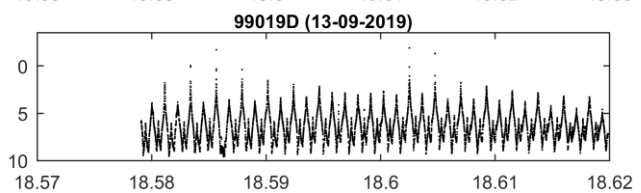
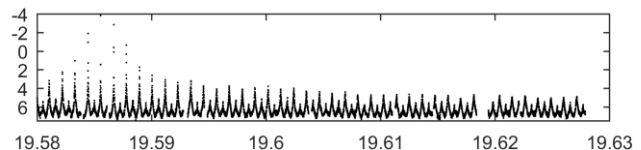
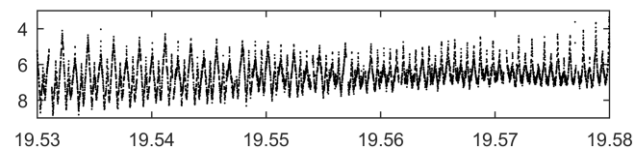
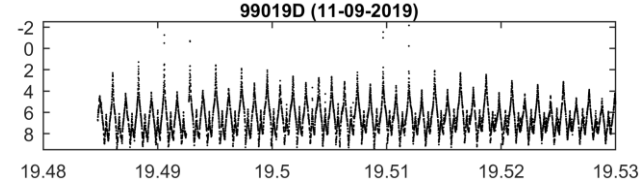
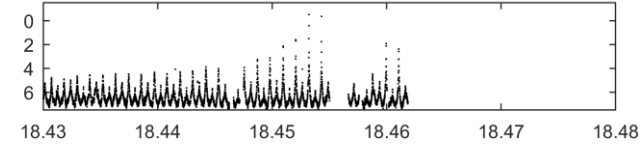
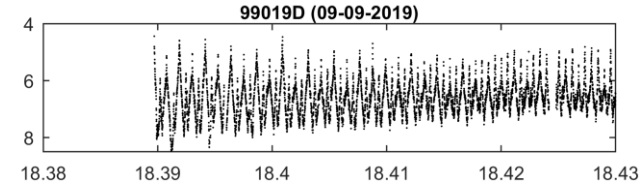
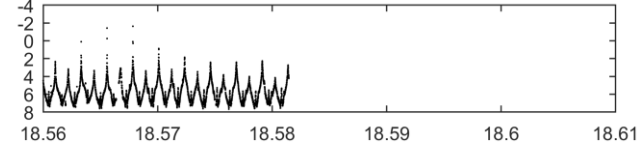
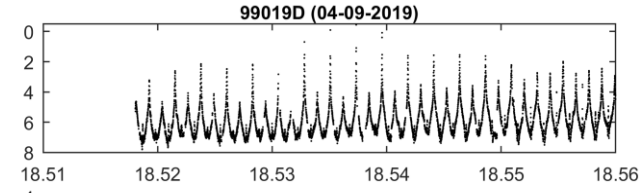
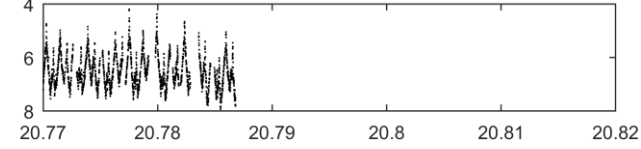
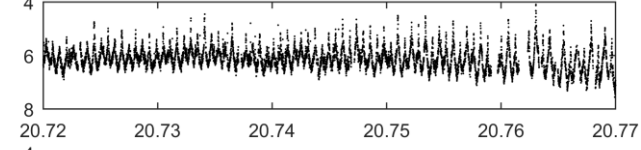
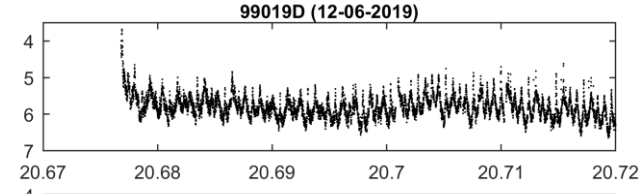
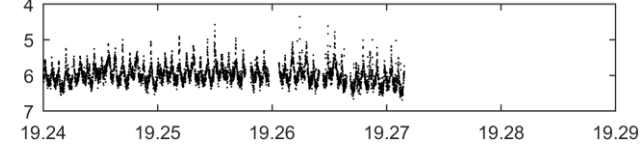
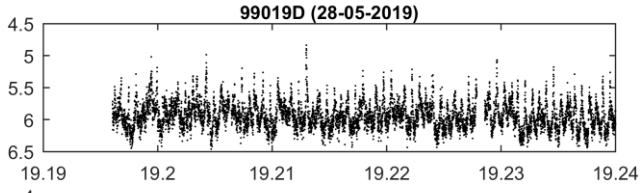
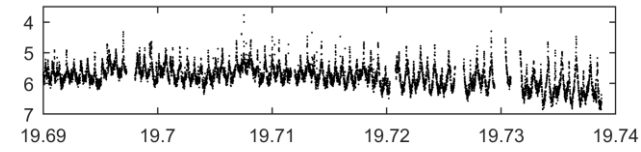
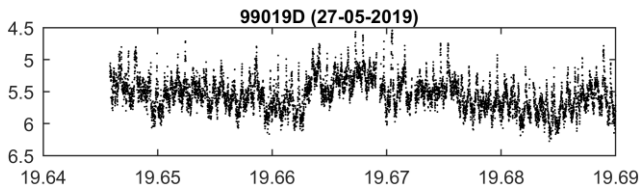
Period: 114.06 min

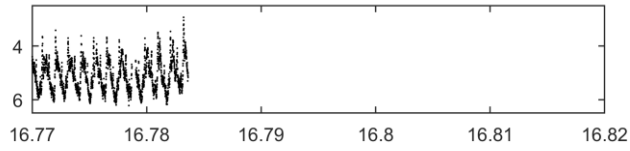
Eccentricity: 0.000128

Launch date: 1999-04-15

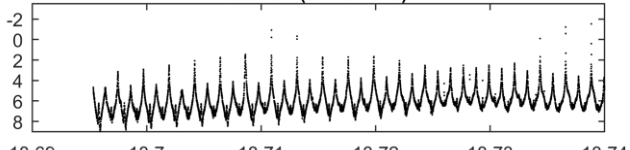
Source: Globalstar (GLOB)



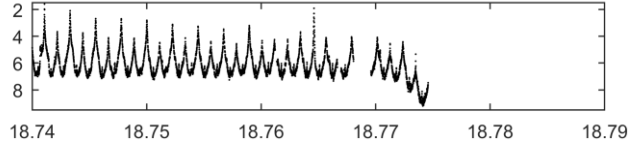




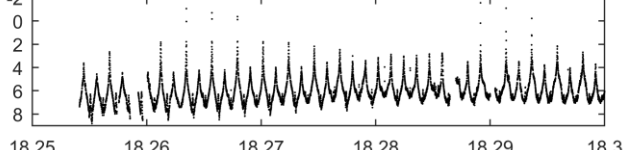
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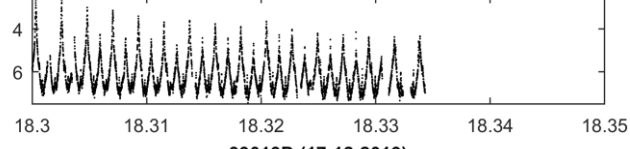
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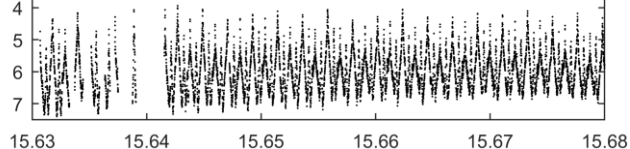
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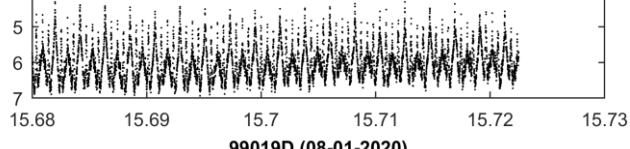
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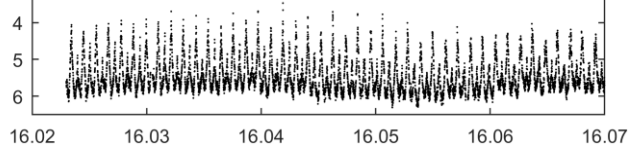
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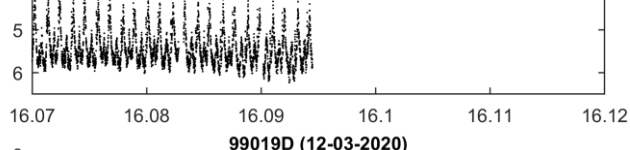
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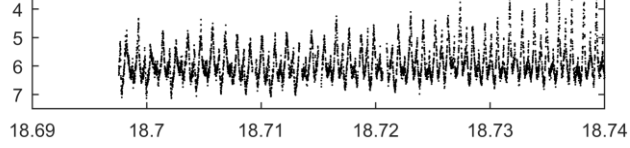
99019D (09-06-2020)



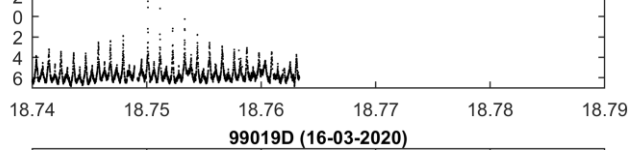
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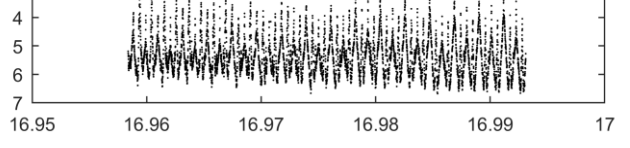
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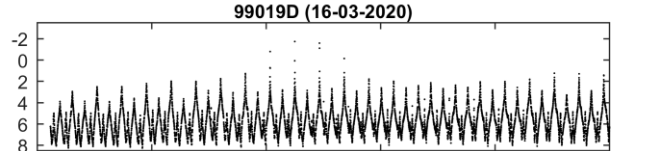
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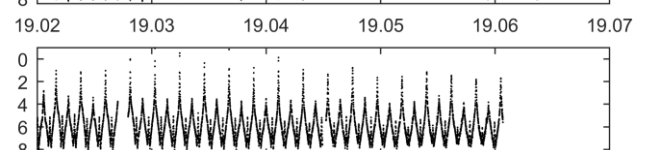
99019D (26-06-2020)



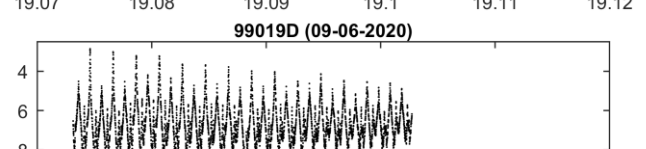
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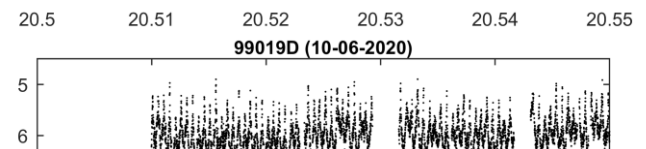
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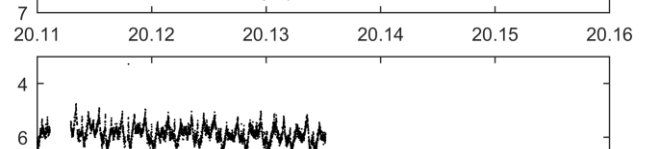
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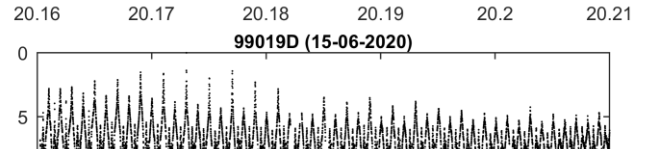
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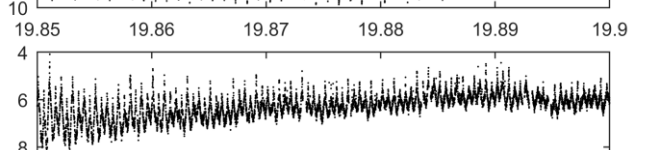
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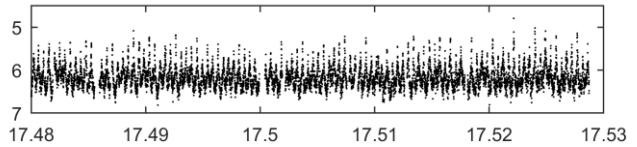
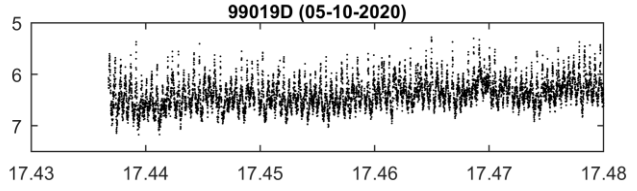
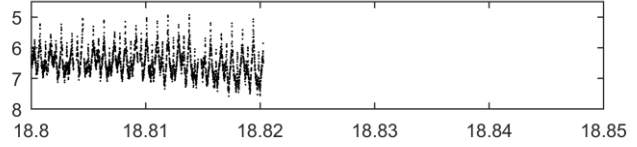
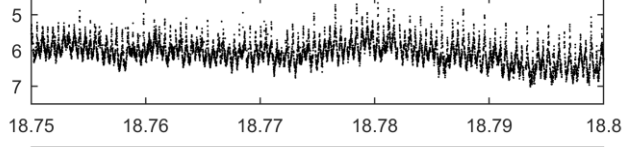
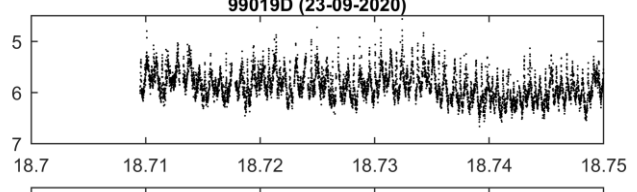
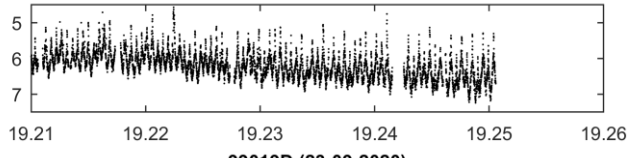
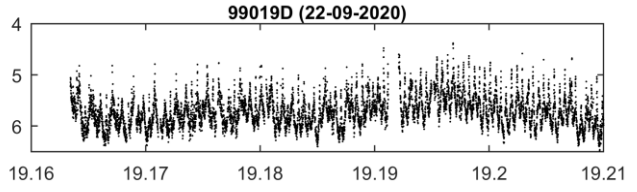
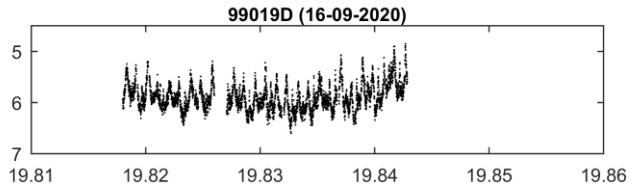
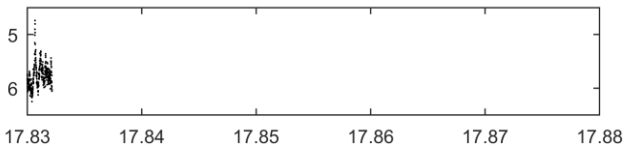
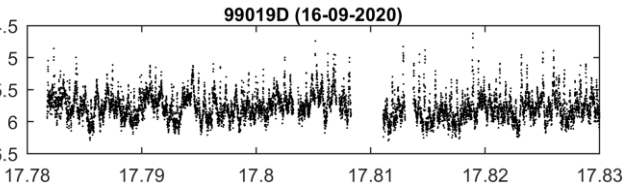
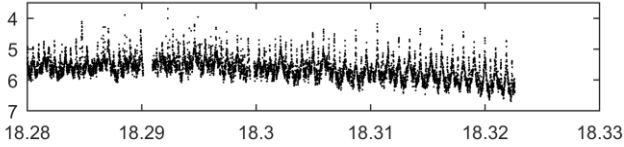
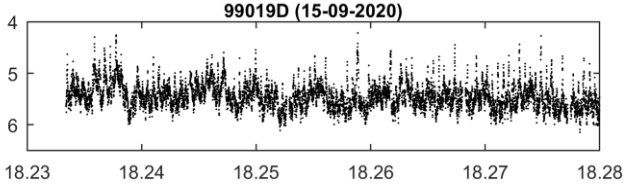
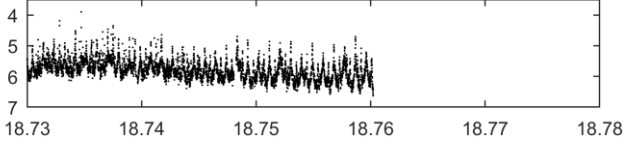
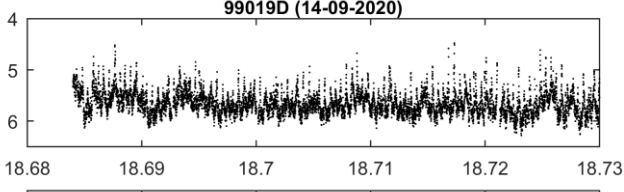
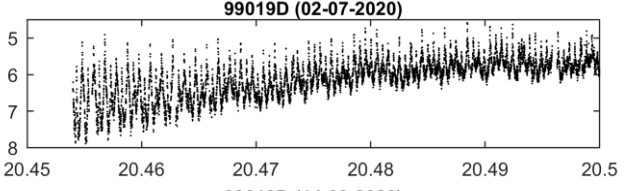
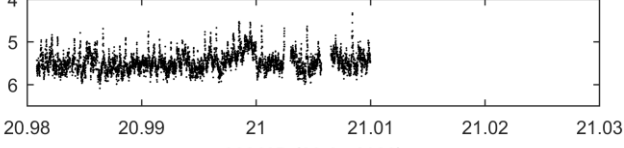
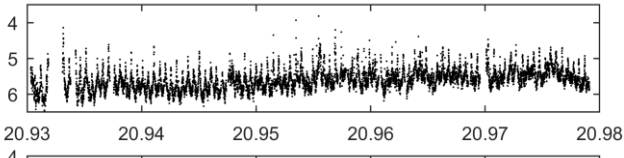
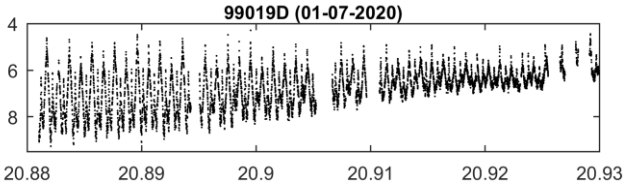
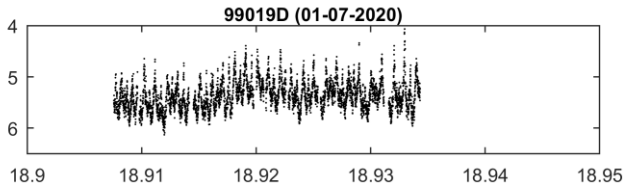
99019D (25-06-2020)



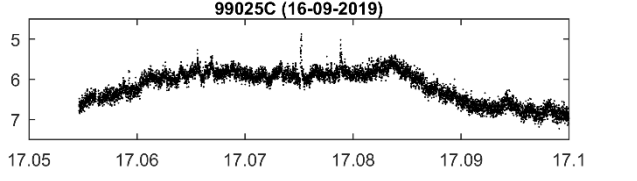
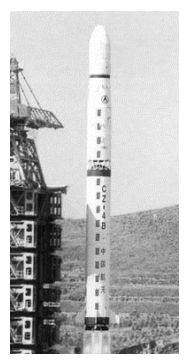
99019D (26-06-2020)

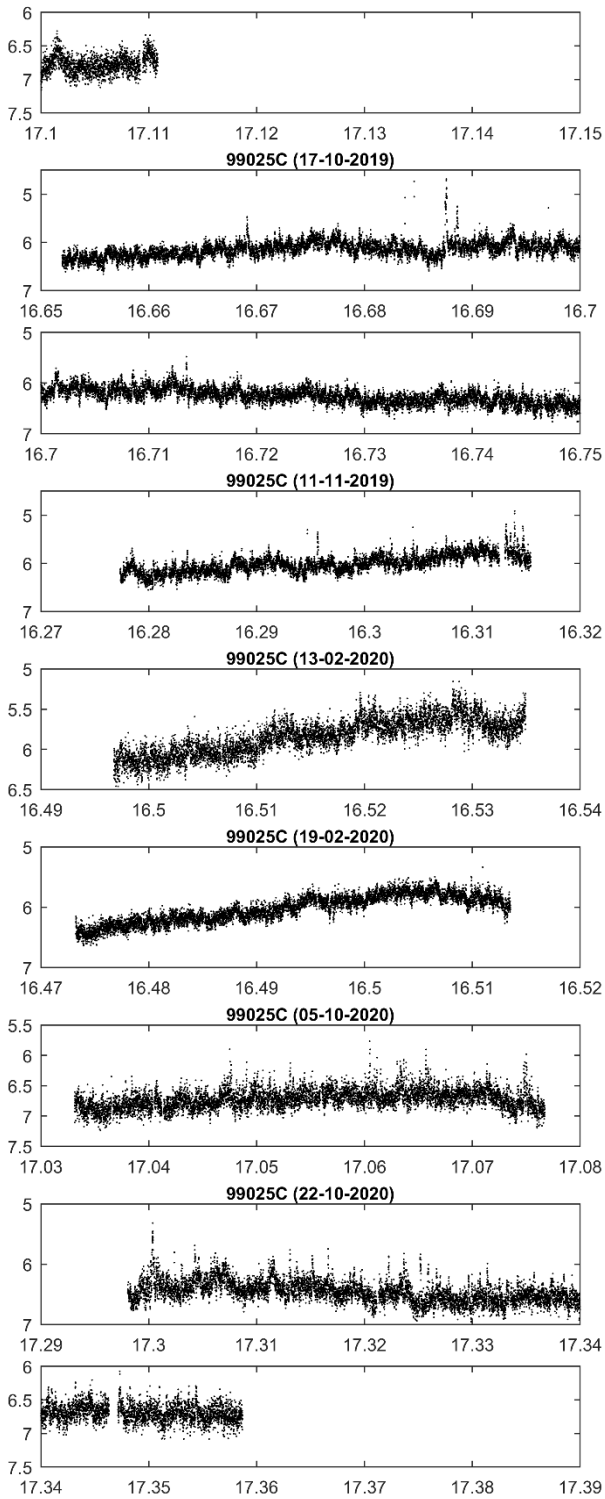


99019D (16-03-2020)



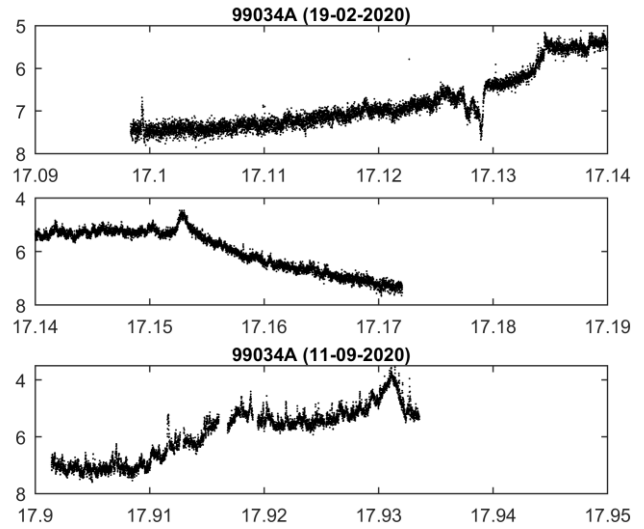
CZ-4B R/B (3rd stage)
 NORAD ID: 25732
 Int'l Code: 1999-025C
 Dimensions: cylinder 2m long,
 2.9m dia
 Initial orbit:
 Perigee:
 Apogee:
 Inclination:
 Period:
 Eccentricity:
 Launch date: 1999-05-10
 Source: People's Republic of China (PRC)





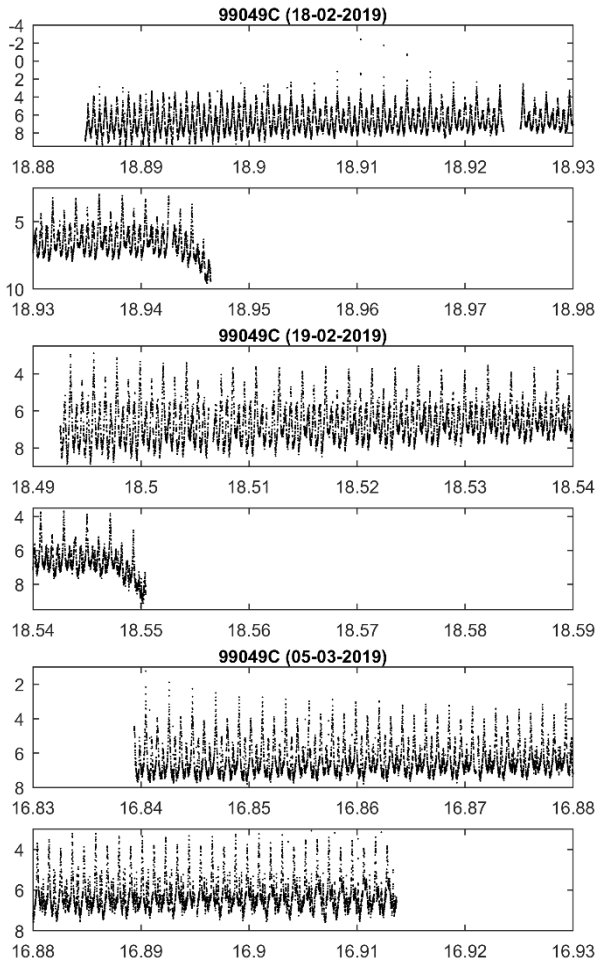
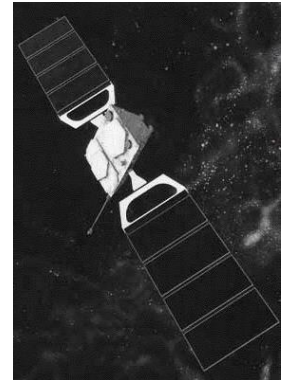
QUIKSCAT

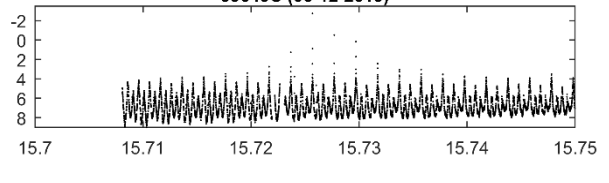
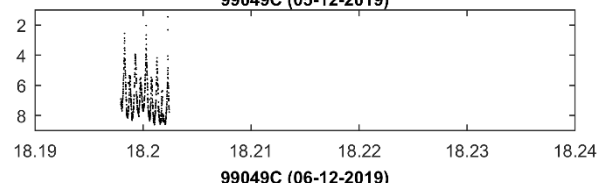
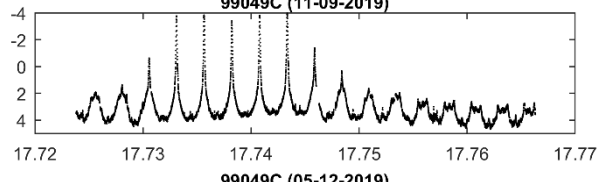
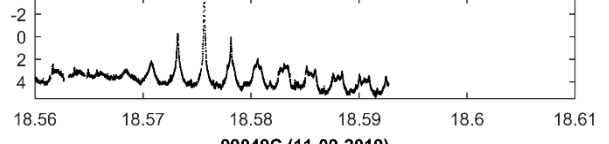
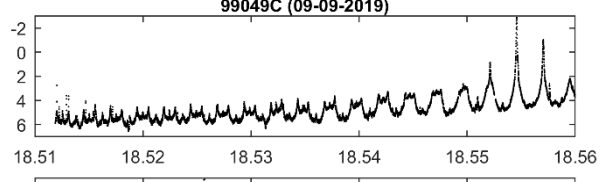
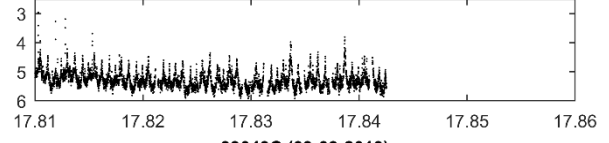
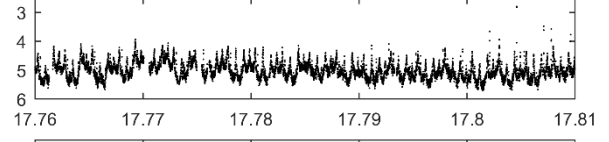
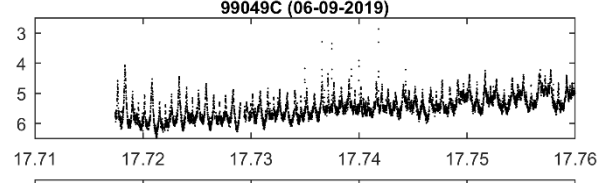
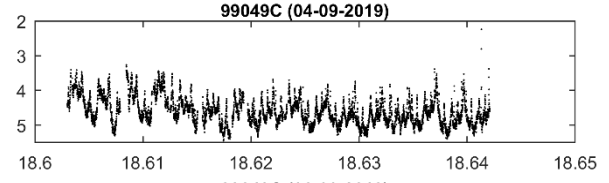
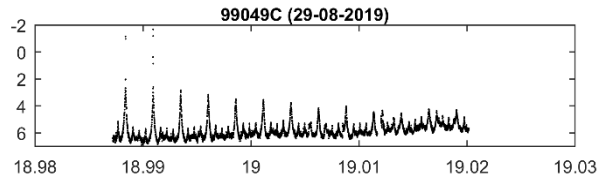
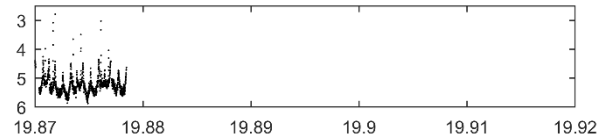
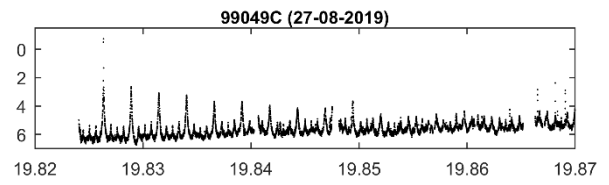
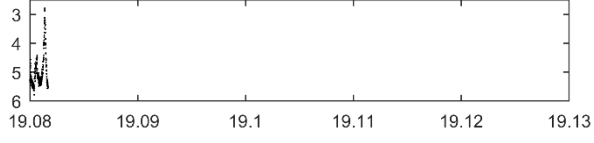
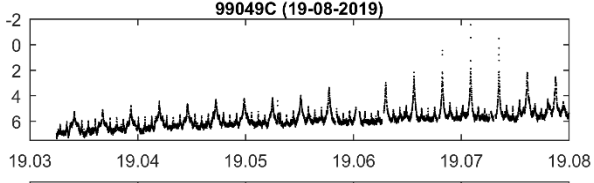
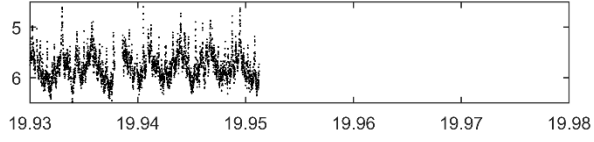
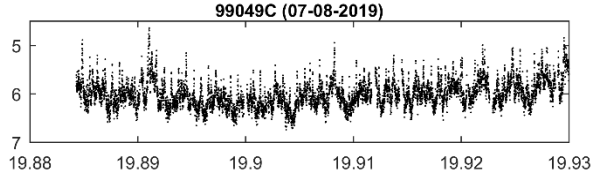
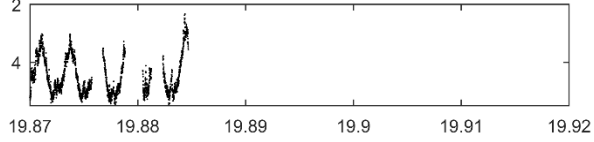
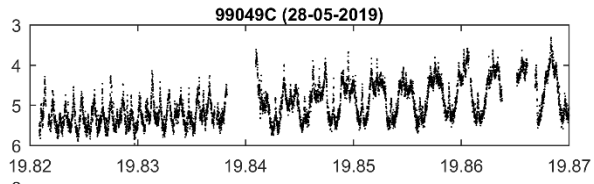
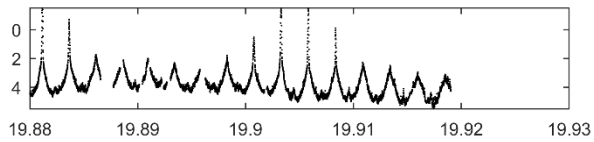
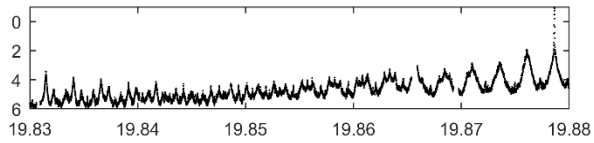
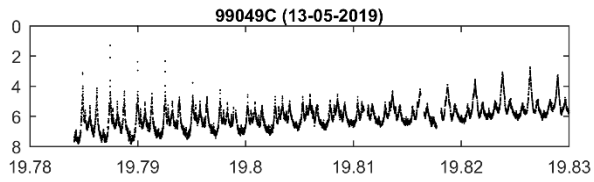
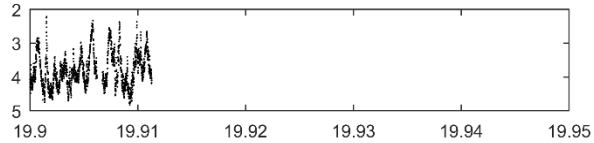
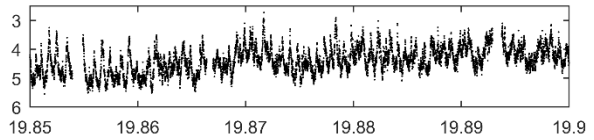
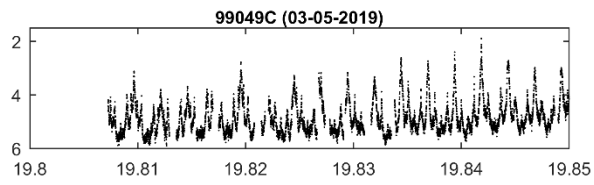
NORAD ID: 25789
 Int'l Code: 1999-034A
 Dimensions: box + 2 panels 2m dia, 2m high
 Initial orbit:
 Perigee: 804 km
 Apogee: 807 km
 Inclination: 98.6°
 Period: 100.99 min
 Eccentricity: 0.0001
 Launch date: 1999-06-20
 Source: United States (US)

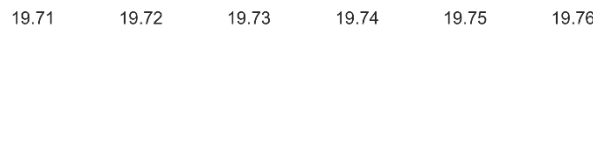
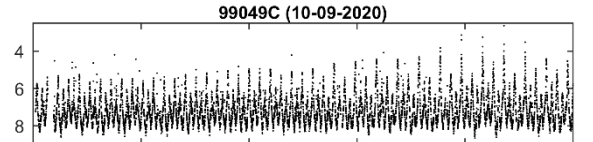
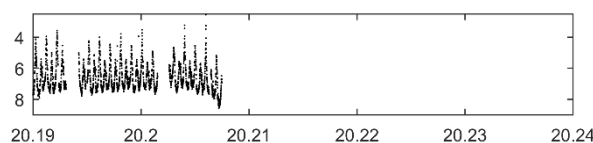
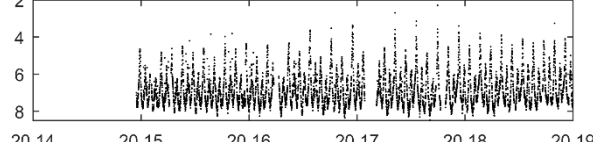
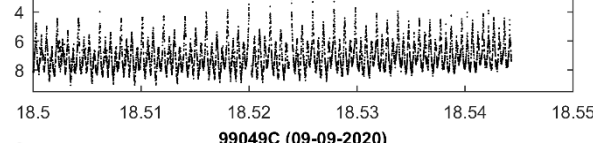
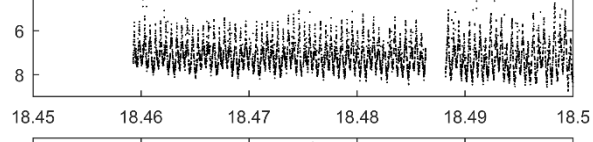
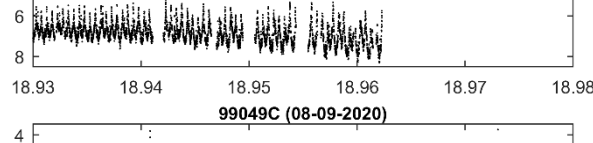
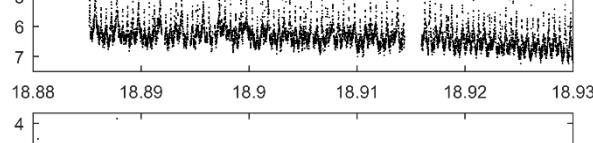
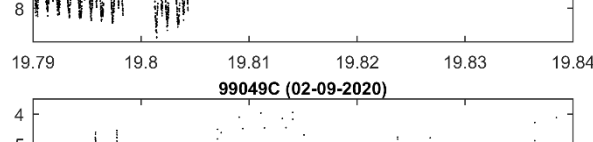
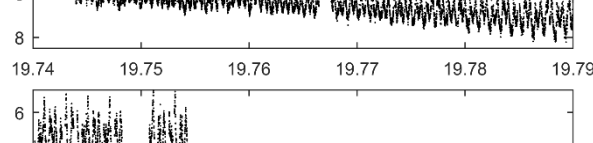
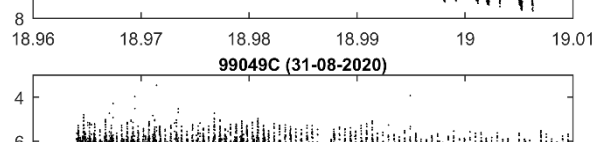
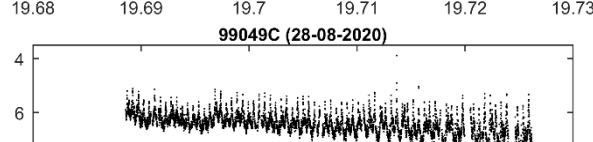
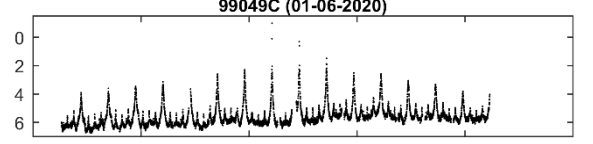
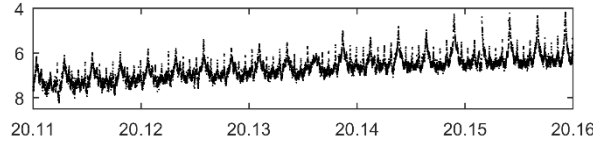
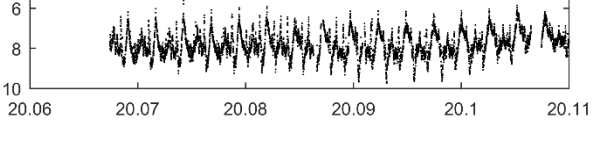
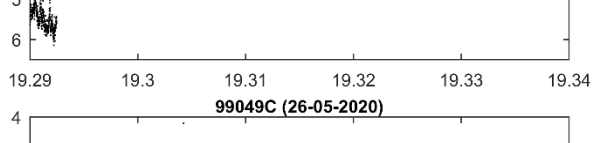
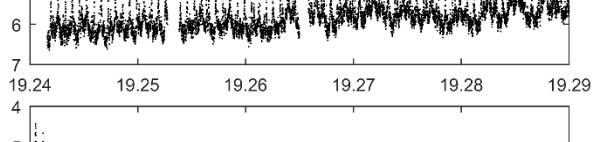
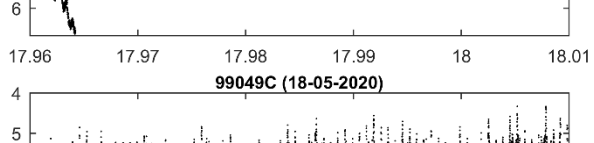
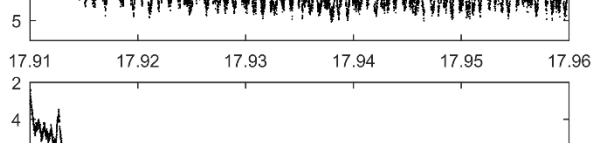
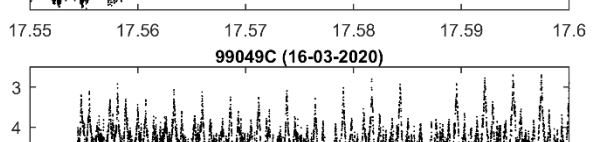
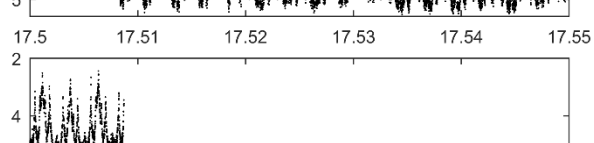
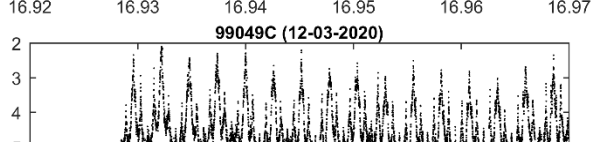
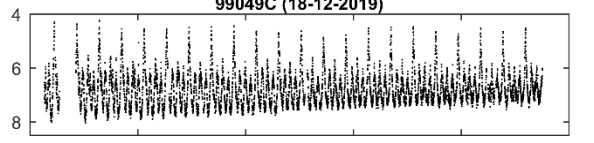
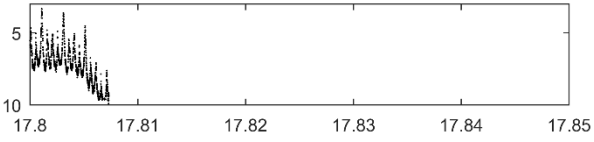
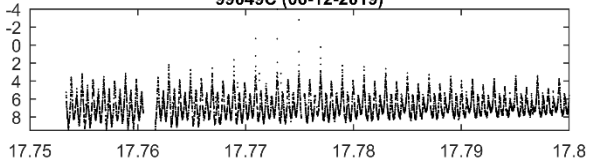
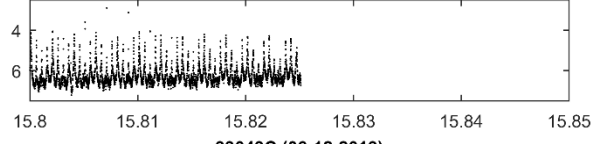
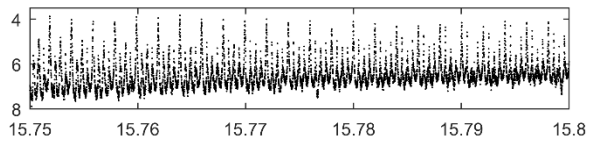


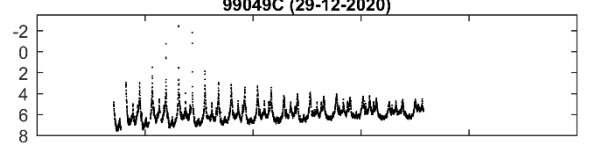
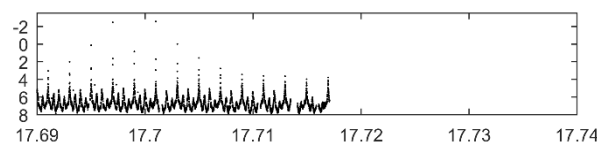
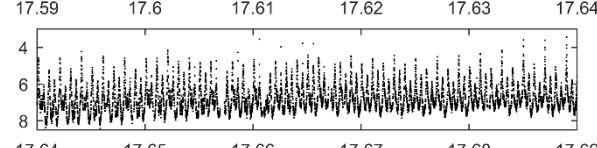
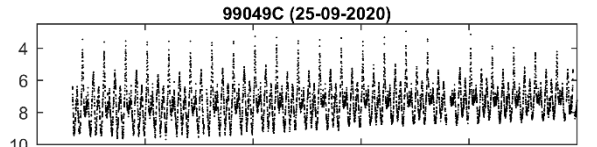
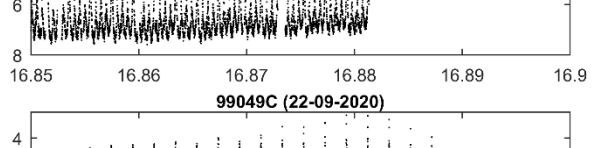
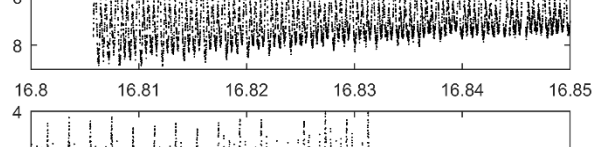
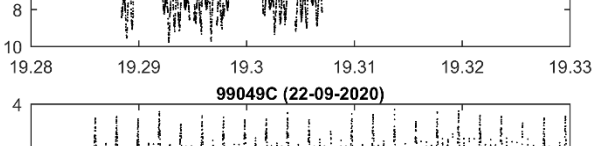
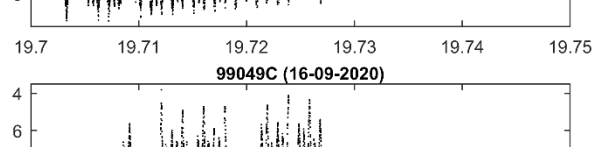
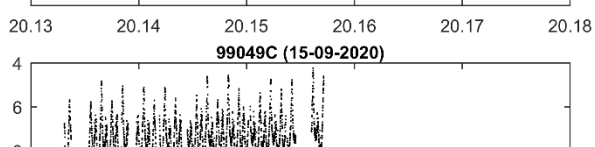
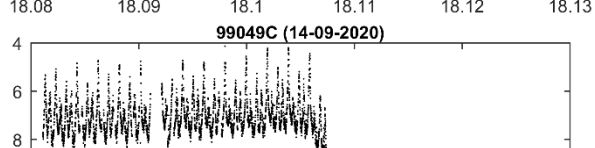
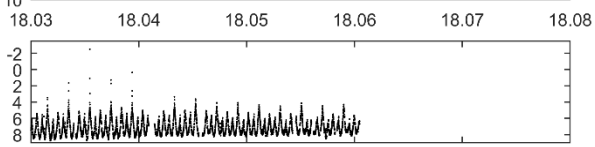
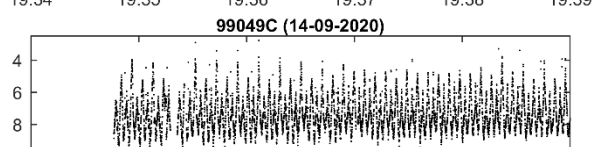
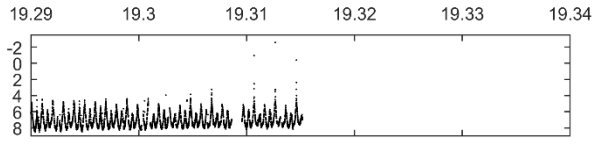
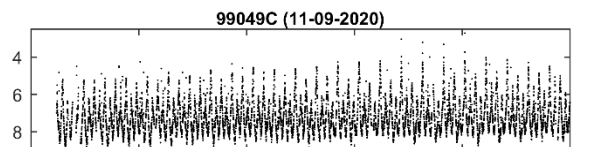
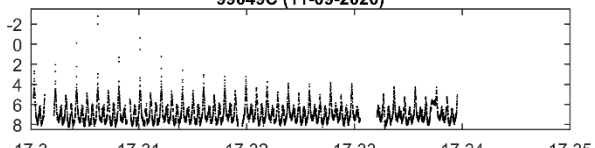
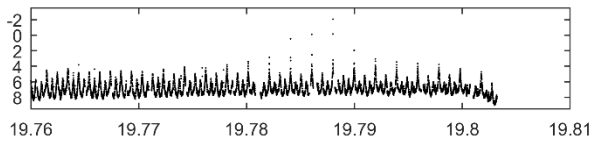
GLOBALSTAR M033

NORAD ID: 25909
 Int'l Code: 1999-049C
 Dimensions: trapezoidal box + 2 panels 0.6m x 1.5m x 1.6m
 Initial orbit:
 Perigee: 899 km
 Apogee: 955 km
 Inclination: 51.9°
 Period: 103.57 min
 Eccentricity: 0.004
 Launch date: 1999-09-22
 Source: Globalstar (GLOB)









TERRA (EOS AM-1)

NORAD ID: 25994

Int'l Code: 1999-068A

Dimensions: box 1.7m x 2m x 5.9m

Initial orbit:

Perigee: 655 km

Apogee: 686 km

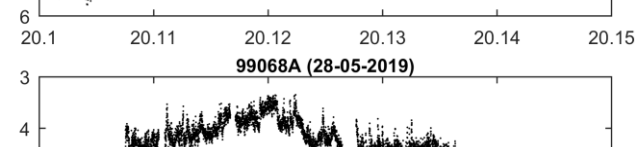
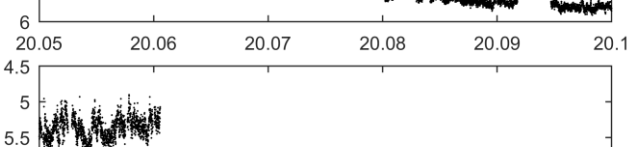
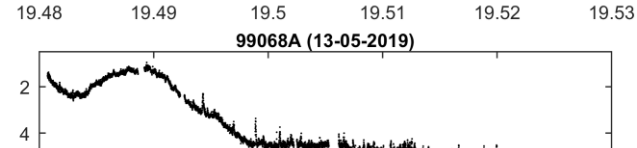
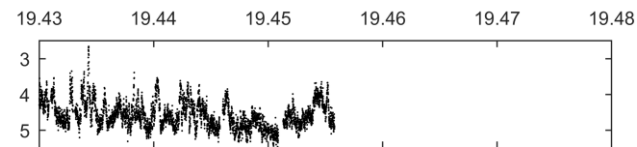
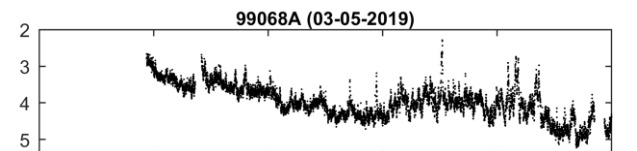
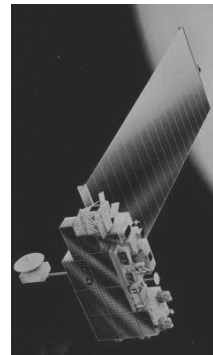
Inclination: 98.2°

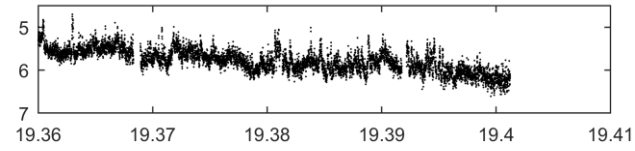
Period: 98.15 min

Eccentricity: 0.0022

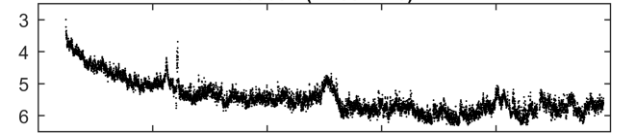
Launch date: 1999-12-18

Source: United States (US)

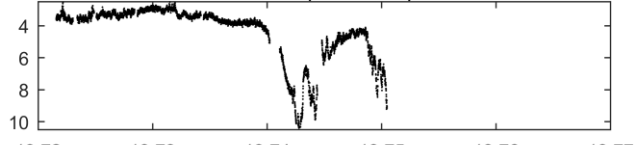




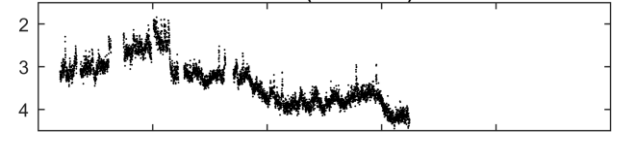
99068A (12-06-2019)



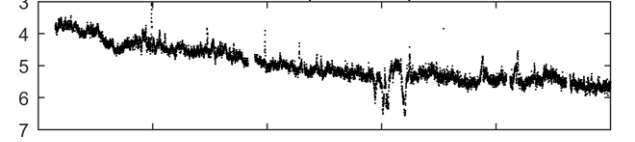
99068A (25-06-2019)



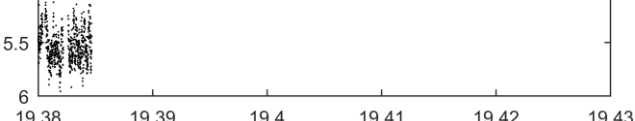
99068A (02-07-2019)



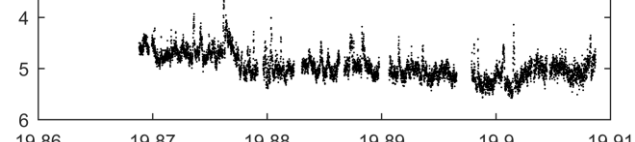
99068A (31-07-2019)



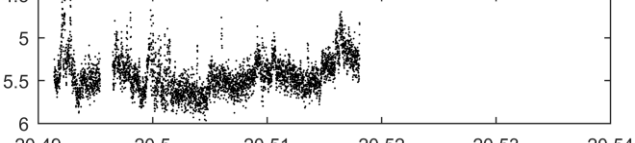
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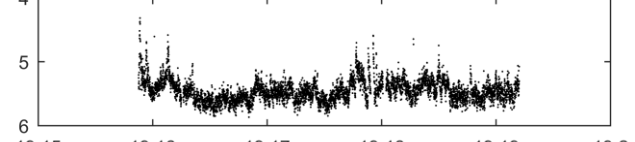
99068A (29-08-2019)



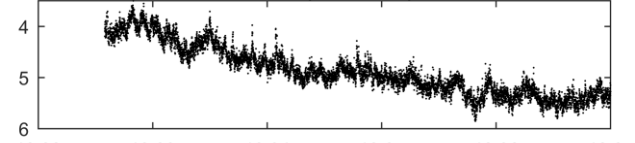
99068A (01-06-2020)



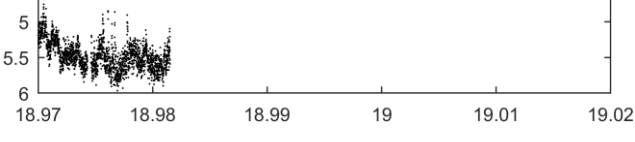
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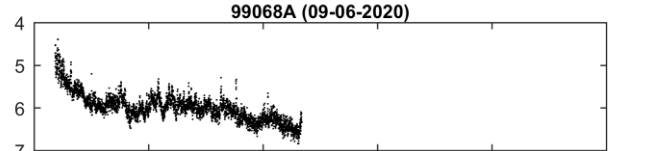
99068A (04-08-2020)



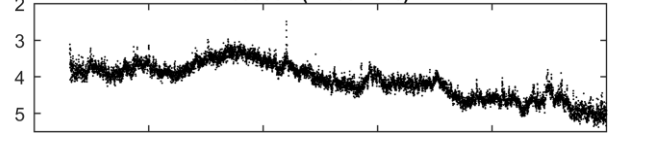
99068A (09-06-2020)



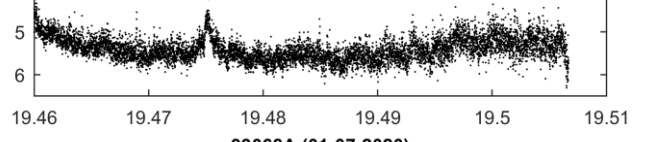
99068A (22-06-2020)



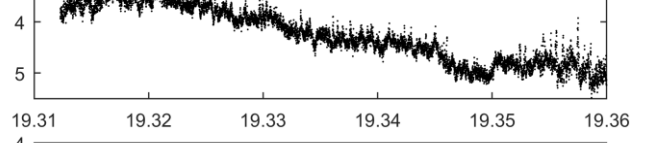
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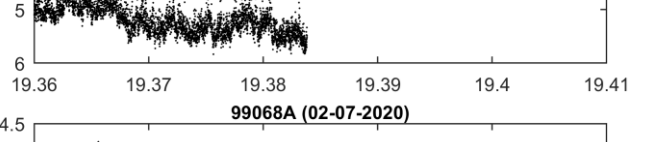
99068A (09-07-2020)



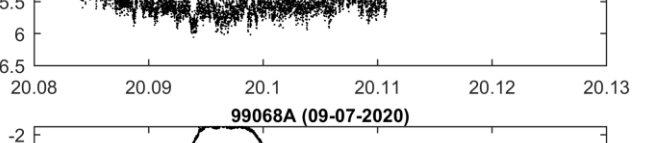
99068A (10-07-2020)



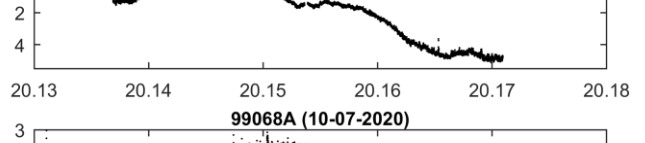
99068A (02-07-2020)



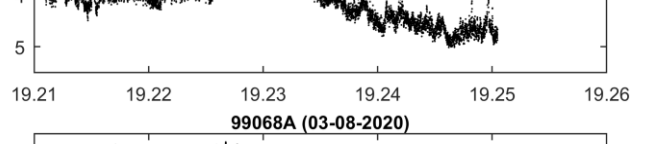
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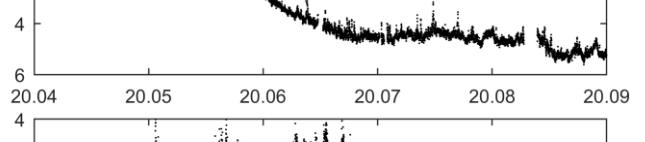
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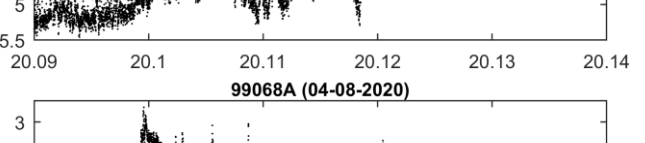
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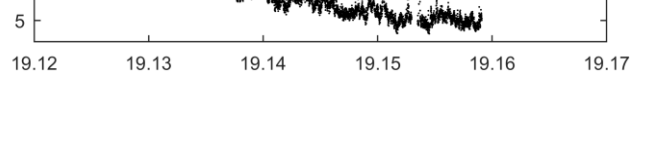
99068A (04-08-2020)



99068A (03-08-2020)



99068A (04-08-2020)



99068A (04-08-2020)



99068A (04-08-2020)

COSMOS 2369 (TSELINA-2 18)

NORAD ID: 26069

Int'l Code: 2000-006A

Dimensions: cylinder + 6 panels

Initial orbit:

Perigee: 849.6 km

Apogee: 862.3 km

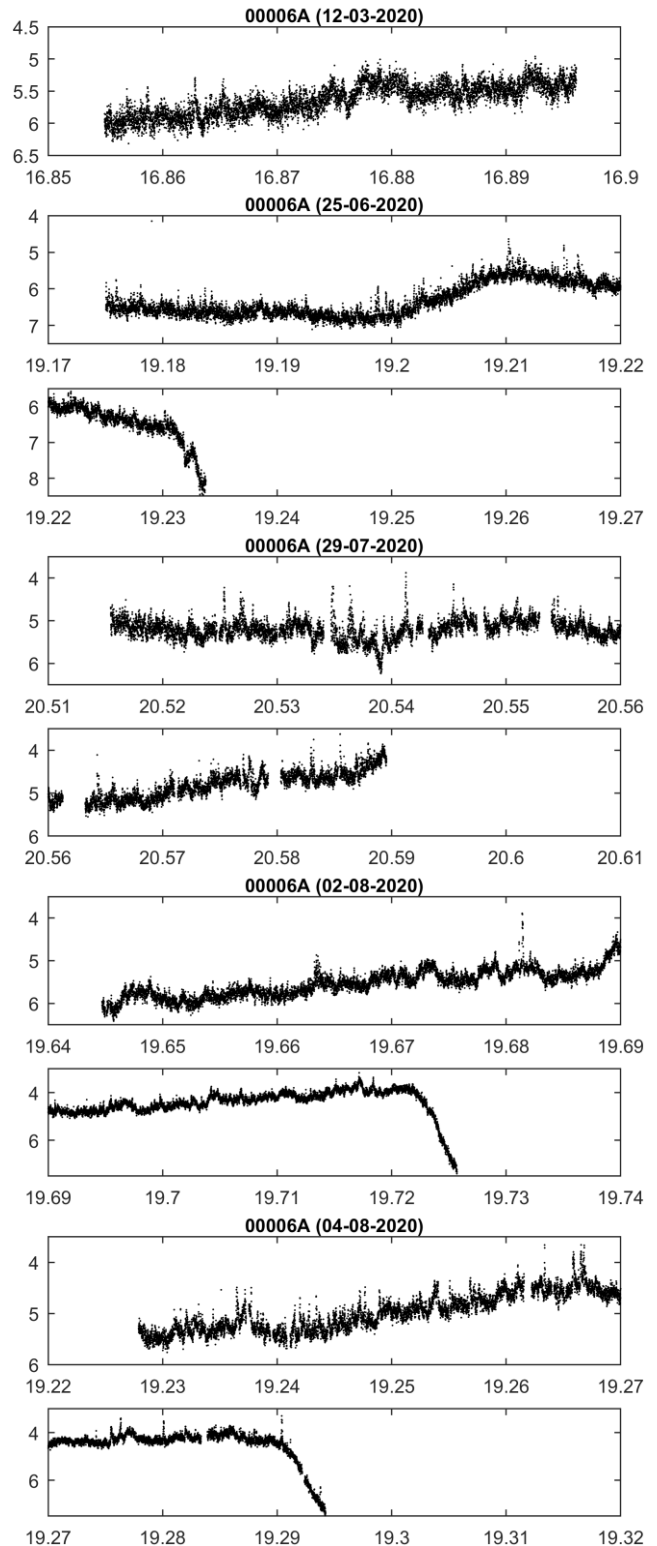
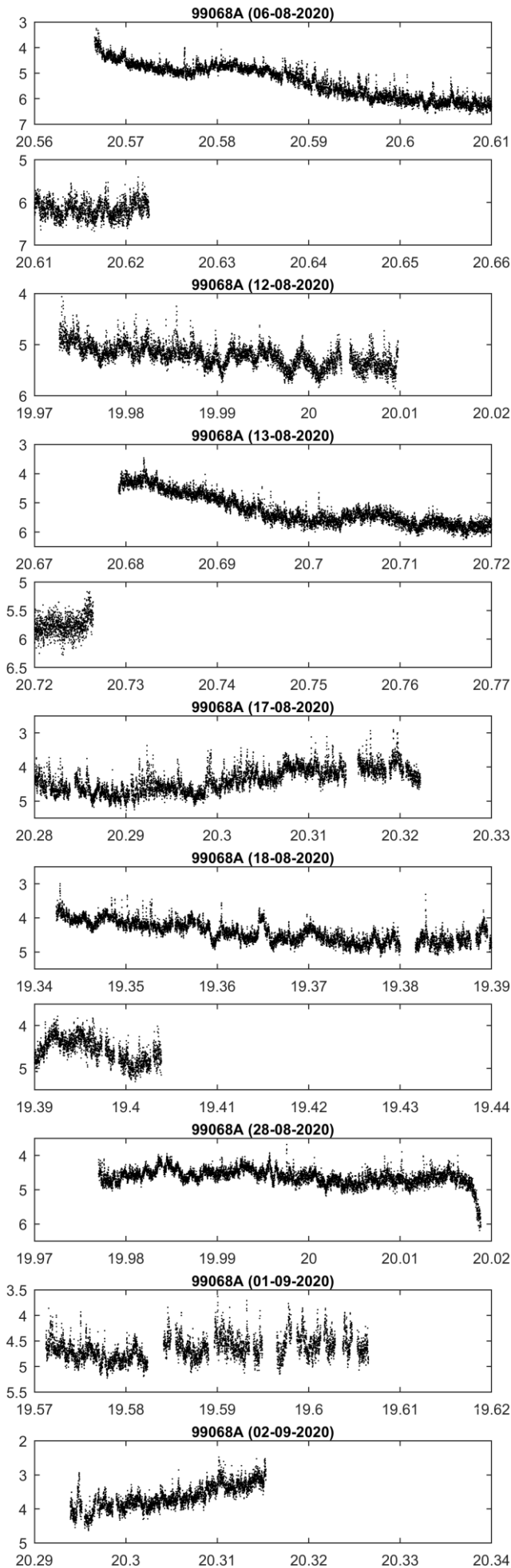
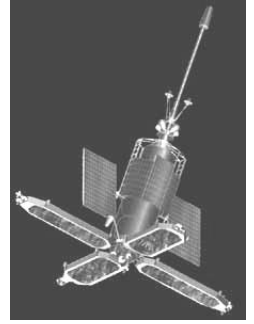
Inclination: 71.0°

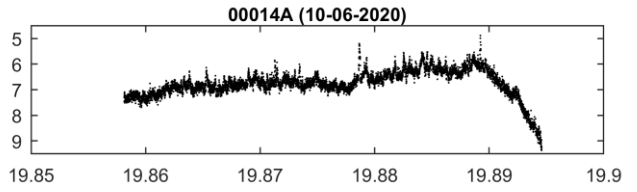
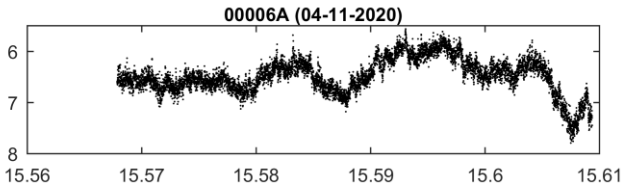
Period: 101.9 min

Eccentricity: 0.0004

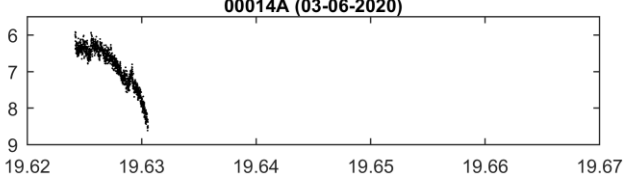
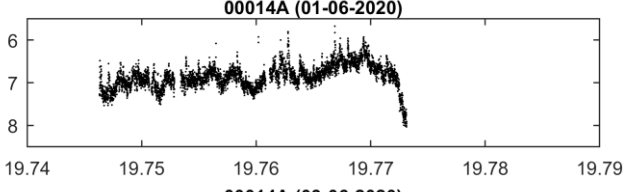
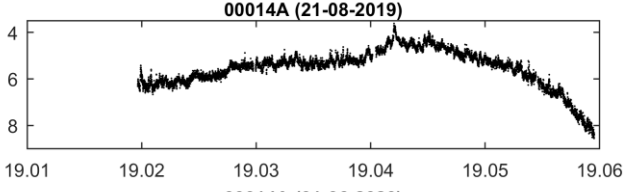
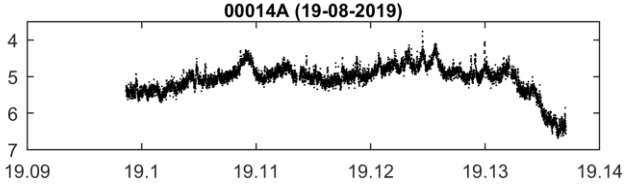
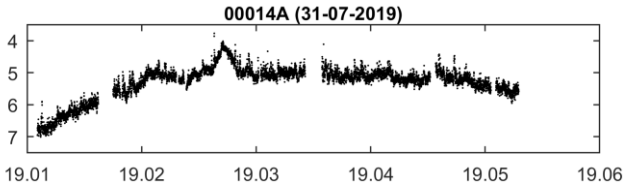
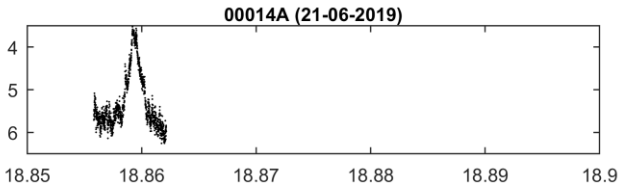
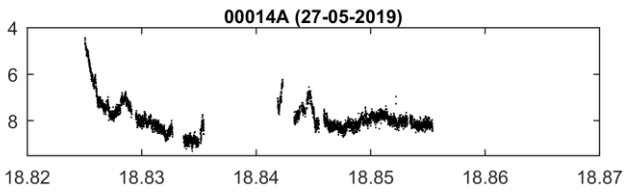
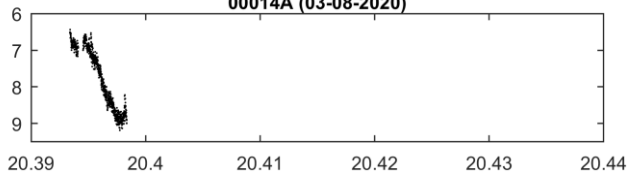
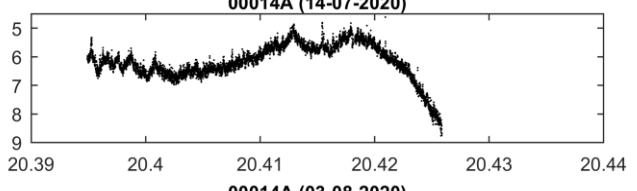
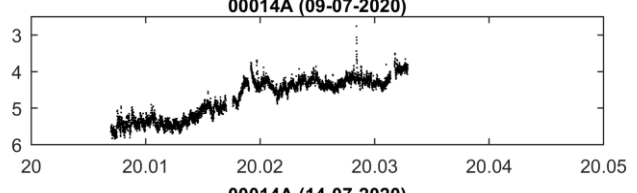
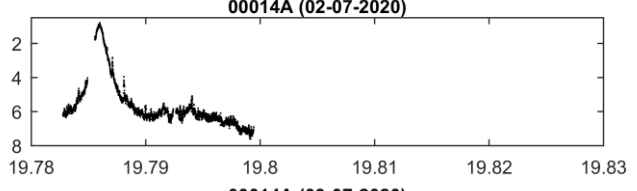
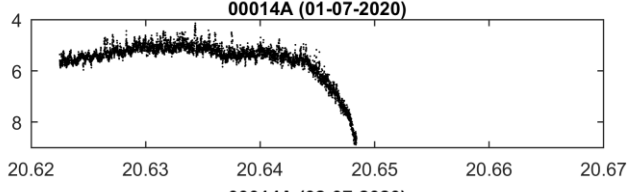
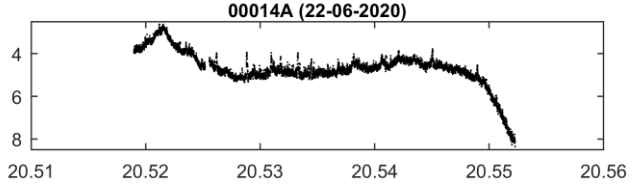
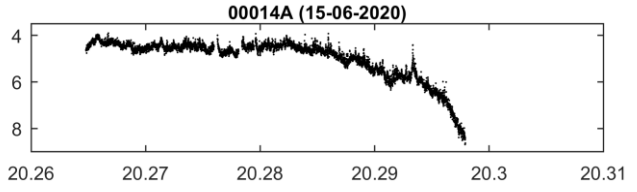
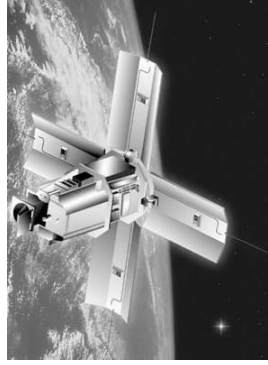
Launch date: 2000-02-03

Source: Commonwealth of Independent States (former USSR) (CIS)



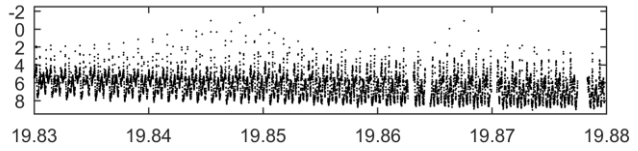
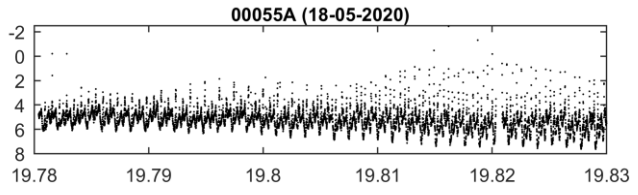
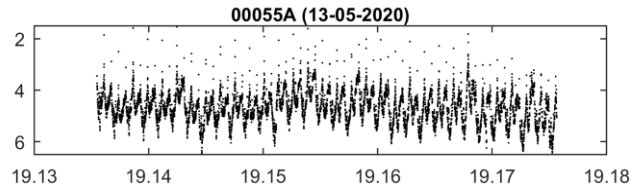
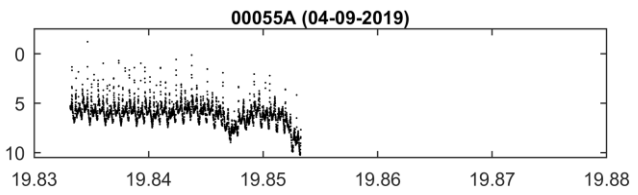
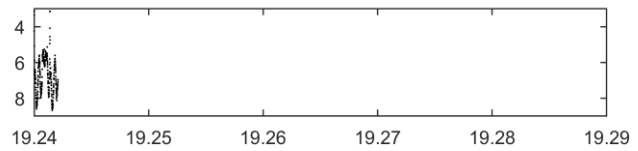
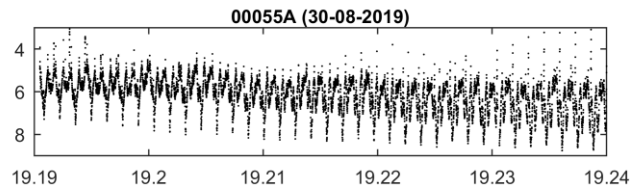
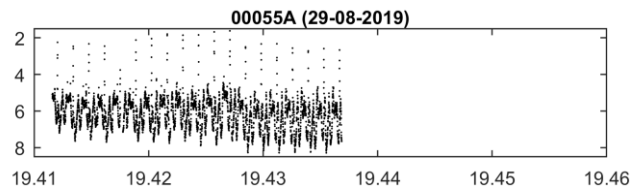
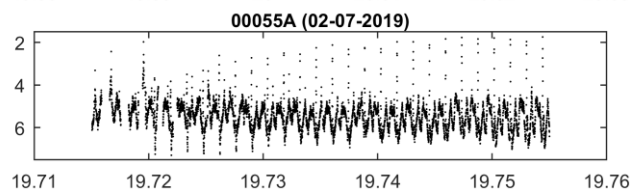
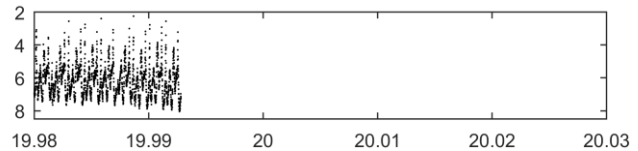
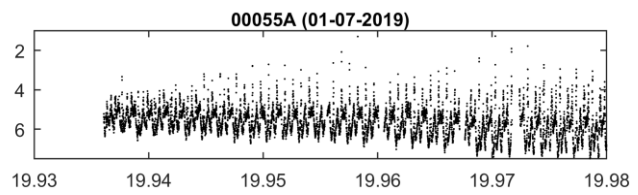
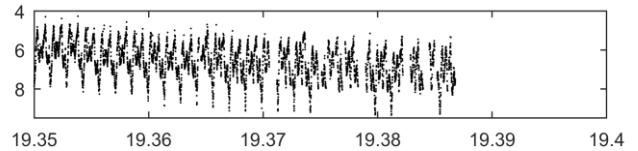
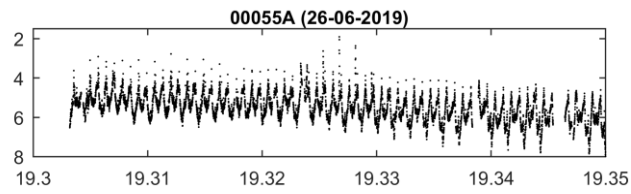
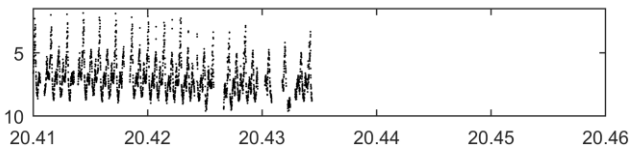
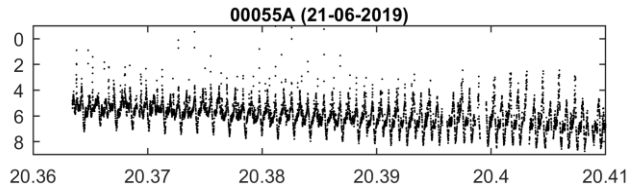
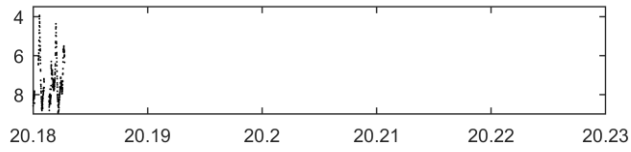
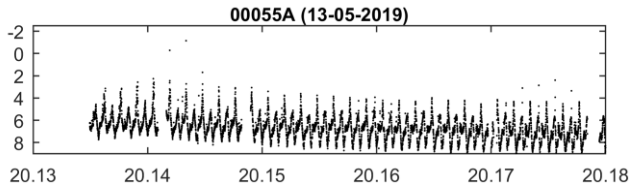
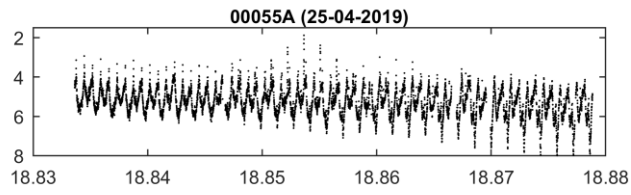
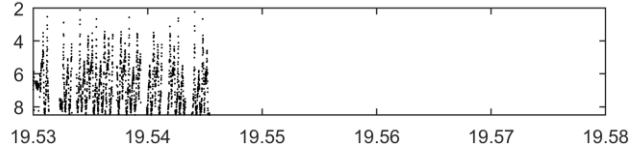
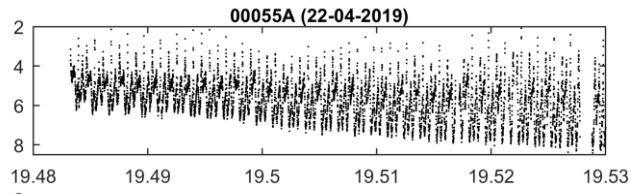
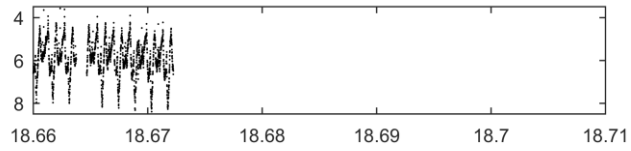
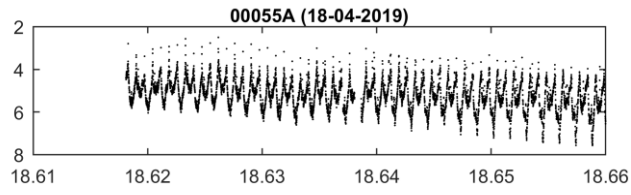
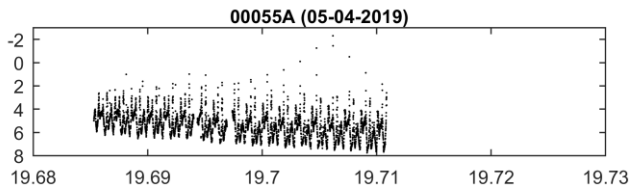


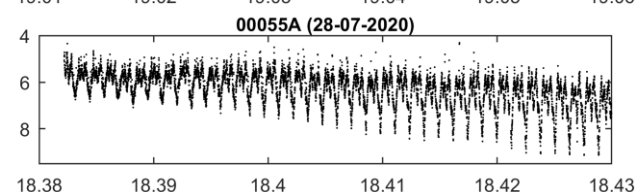
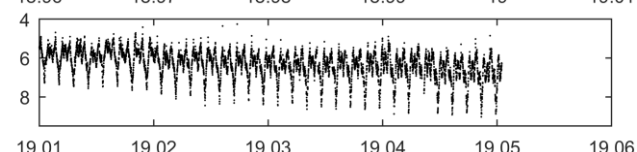
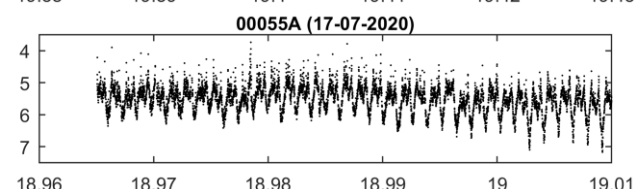
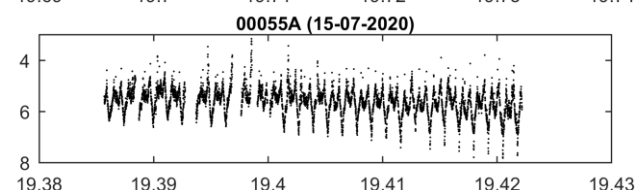
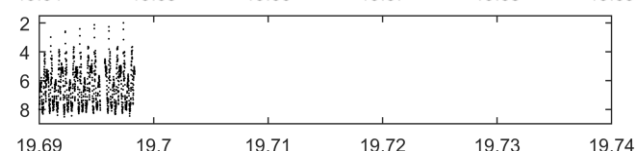
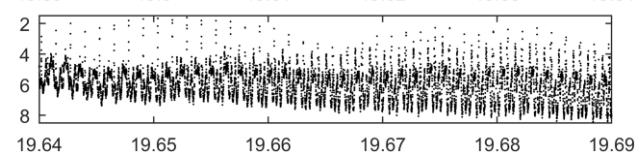
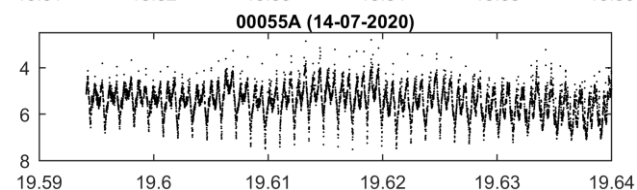
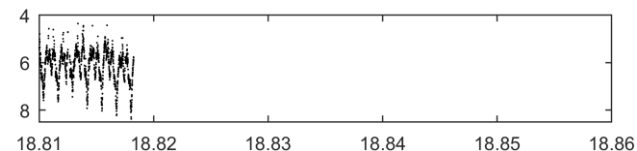
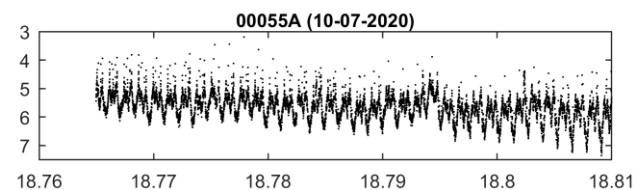
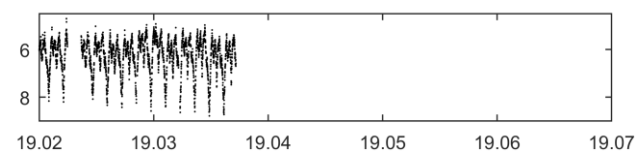
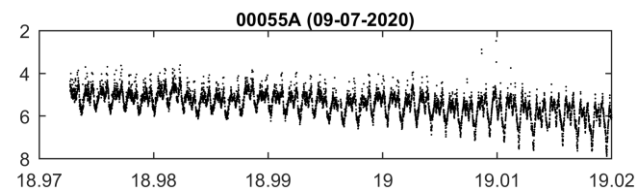
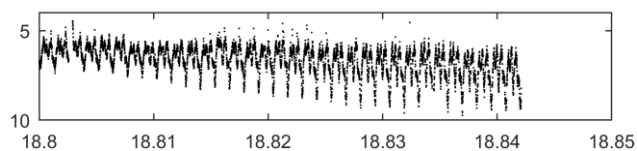
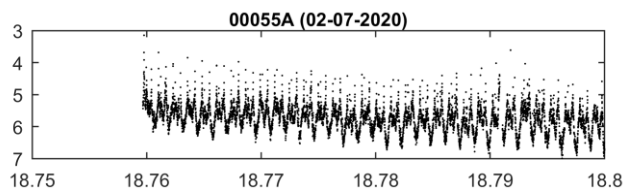
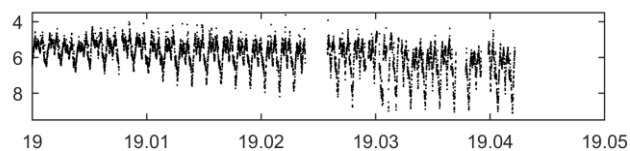
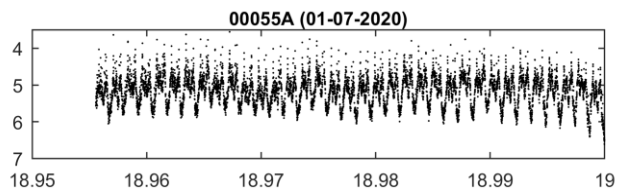
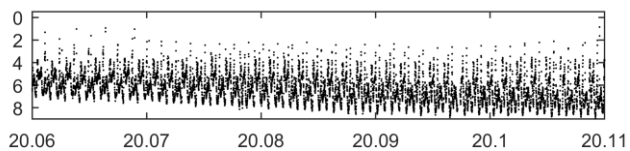
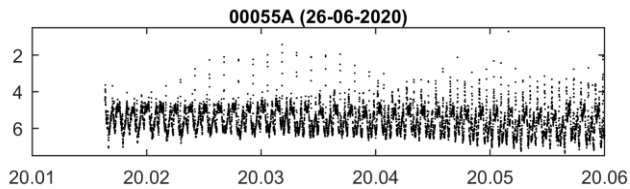
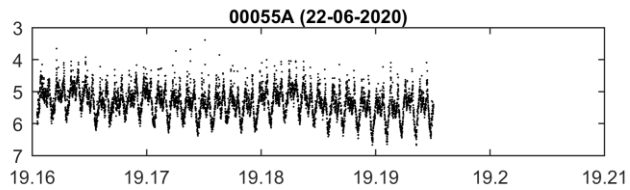
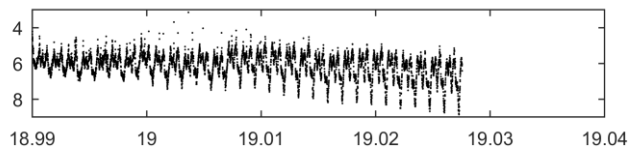
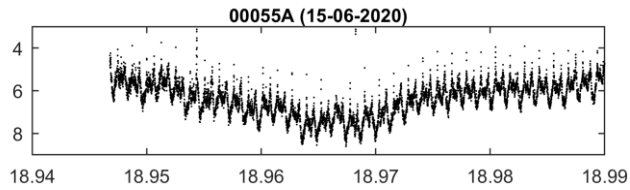
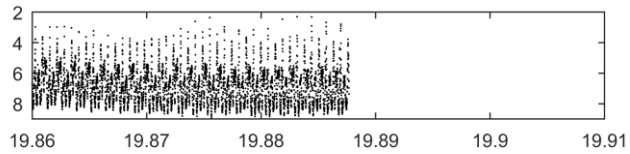
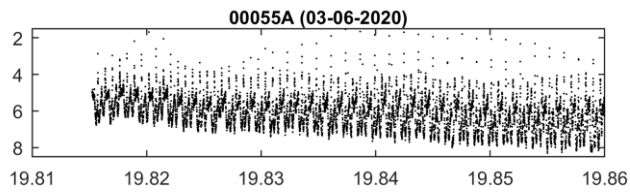
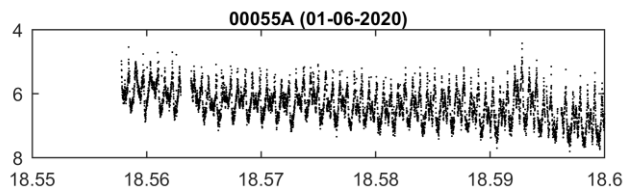
MTI (P97-3)
 NORAD ID: 26102
 Int'l Code: 2000-014A
 Dimensions: box + 4 panels
 Initial orbit:
 Perigee: 573 km
 Apogee: 611 km
 Inclination: 97.40°
 Period: 96.52 min
 Eccentricity: 0.003
 Launch date: 2000-03-12
 Source: United States (US)

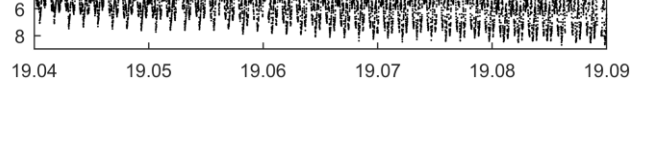
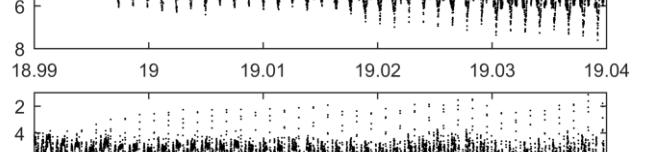
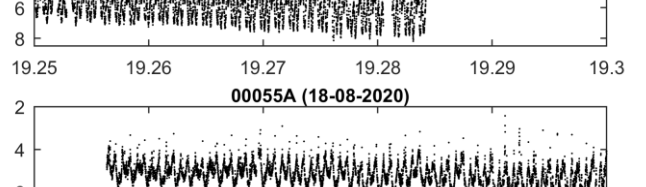
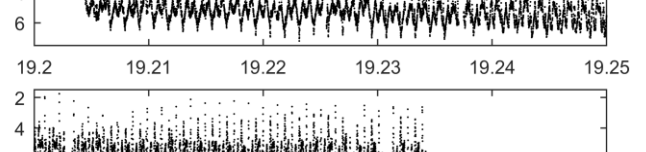
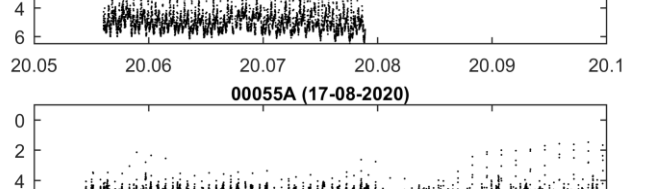
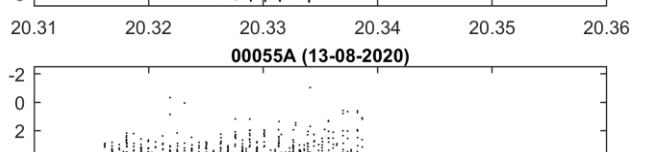
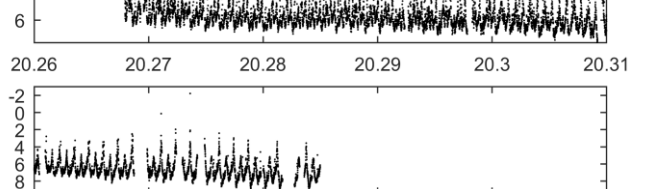
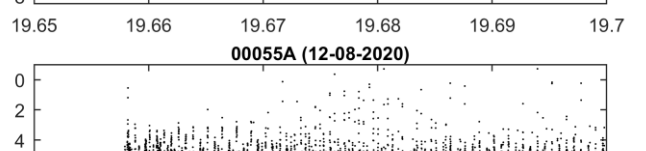
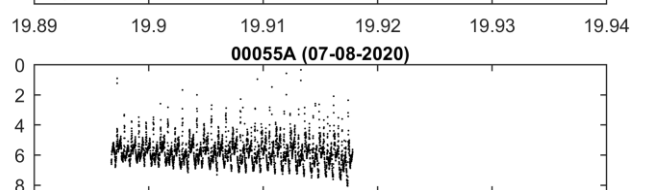
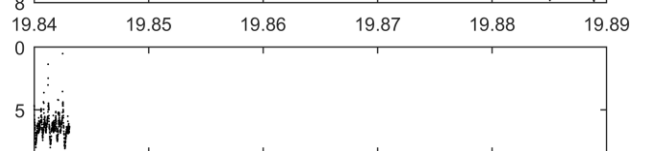
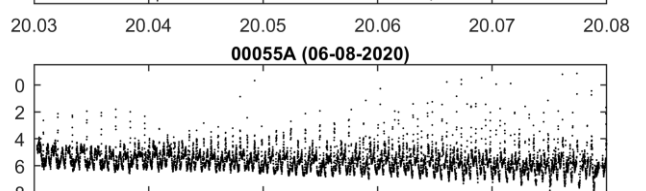
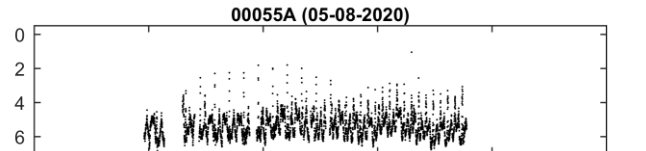
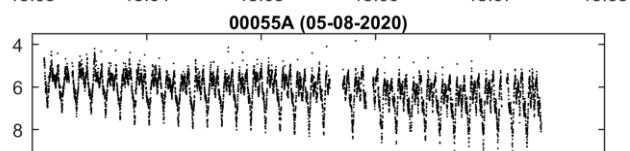
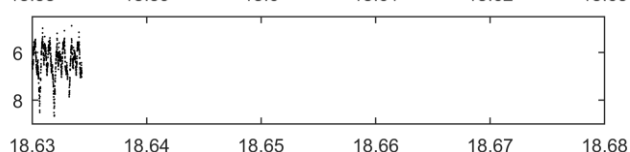
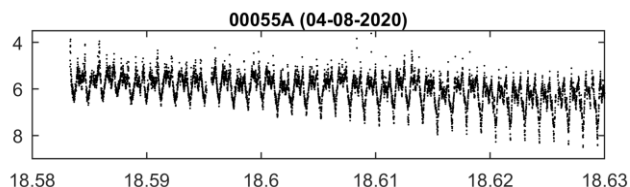
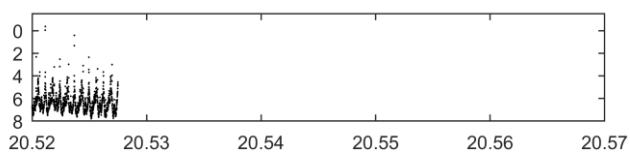
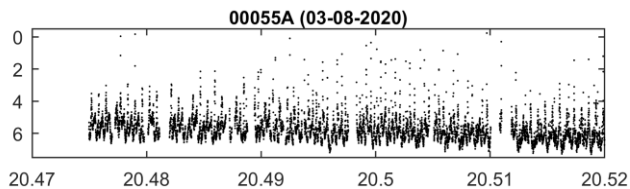
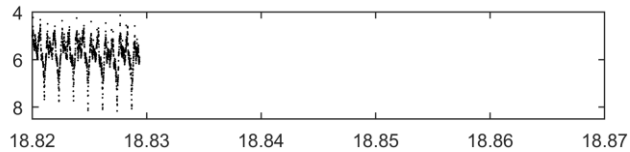
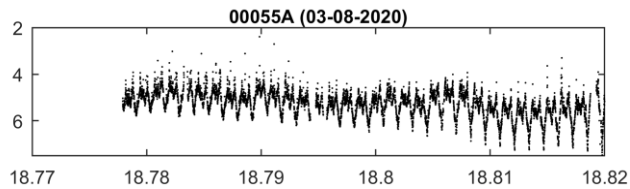
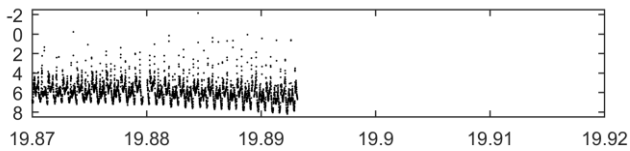
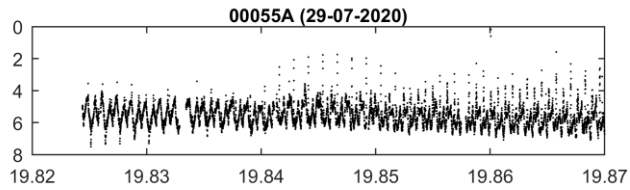
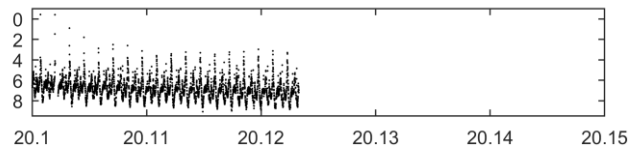
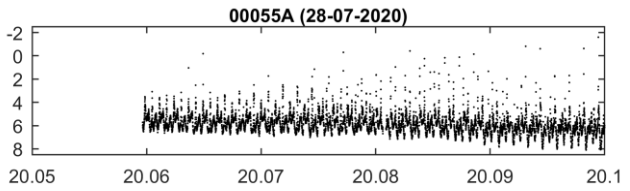
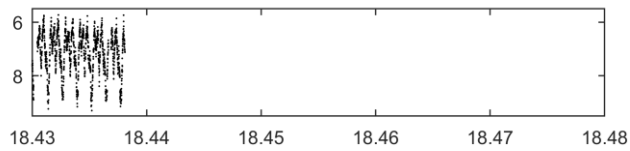


NOAA 16
 NORAD ID: 26536
 Int'l Code: 2000-055A
 Dimensions: box + panel,
 4.2 m long, 1.9 m dia
 Initial orbit:
 Perigee: 848 km
 Apogee: 863 km
 Inclination: 98.79°
 Period: 102.05 min
 Eccentricity: 0.001
 Launch date: 2000-09-21
 Source: United States (US)









**DNEPR 1 R/B (3rd stage)(R-36M2 DS)
(SAUDISAT 1A ROCKET)**

NORAD ID: 26550

Int'l Code: 2000-057F

Dimensions:

Initial orbit:

Perigee: 585 km

Apogee: 1353 km

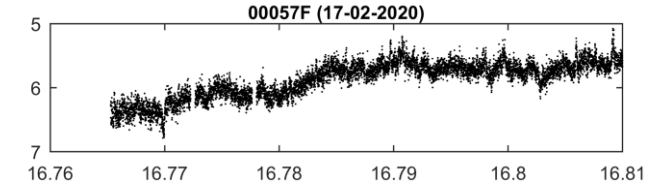
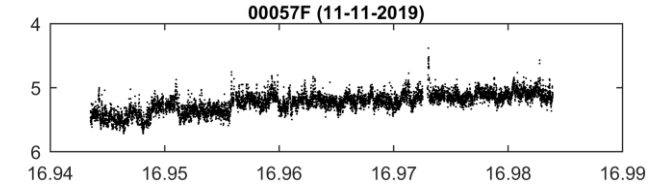
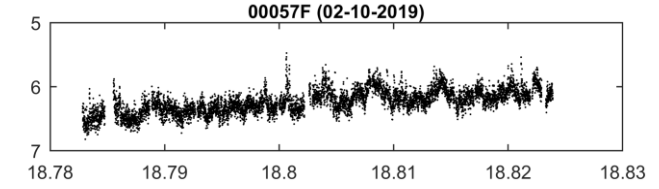
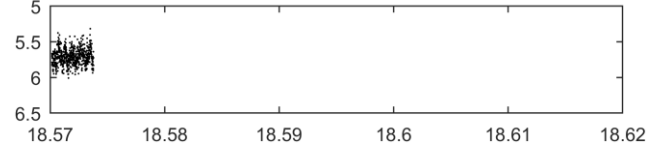
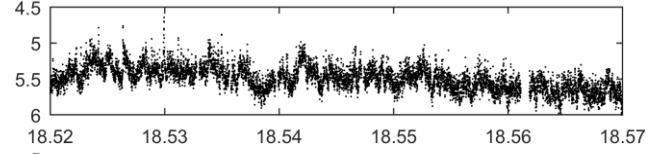
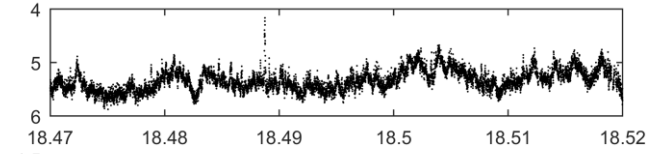
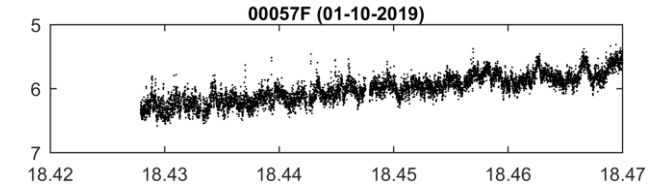
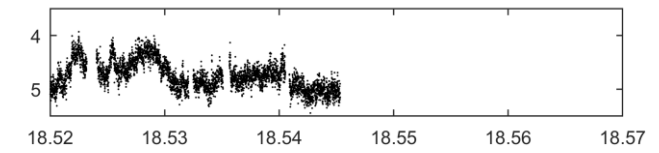
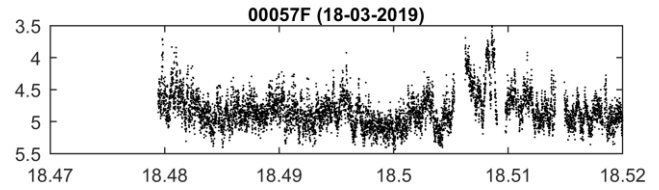
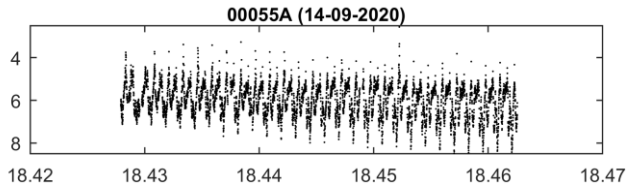
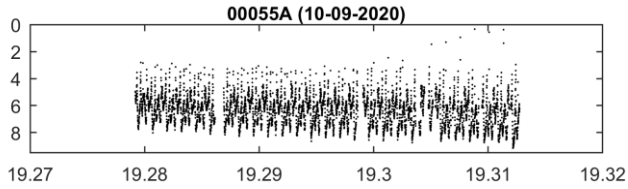
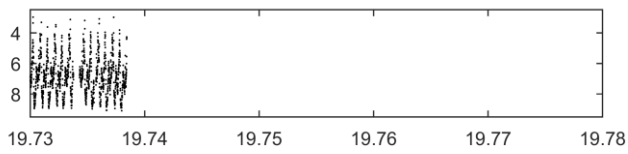
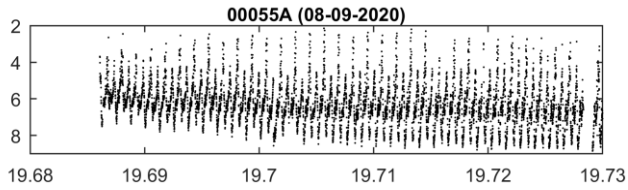
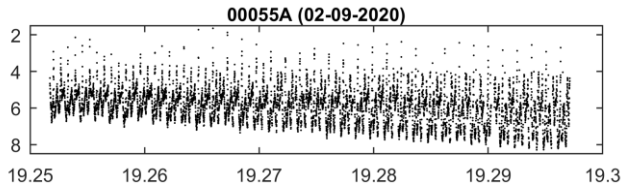
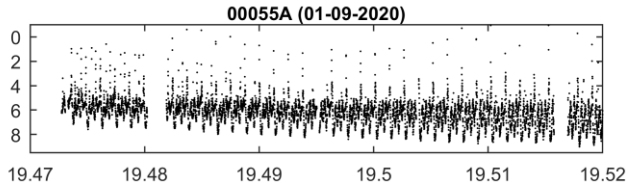
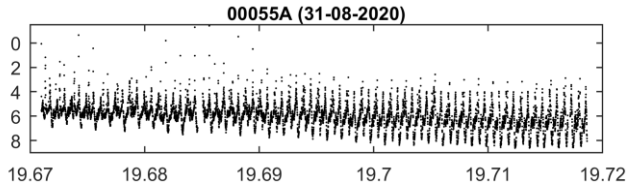
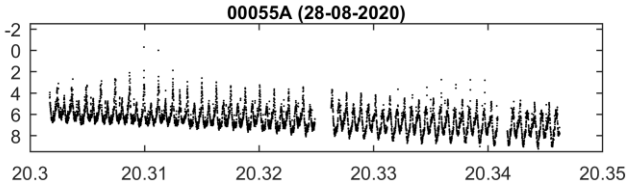
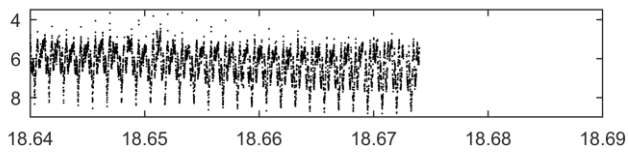
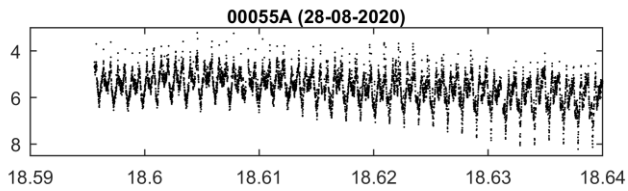
Inclination: 64.57°

Period: 104.47 min

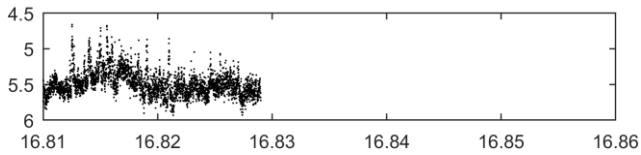
Eccentricity: 0.052

Launch date: 2000-09-26

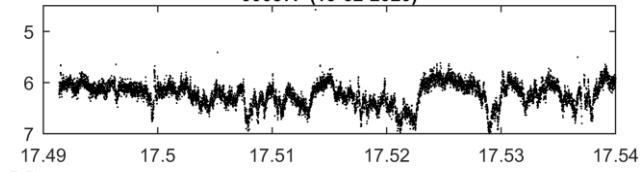
Source: Commonwealth of Independent States (former USSR) (CIS)



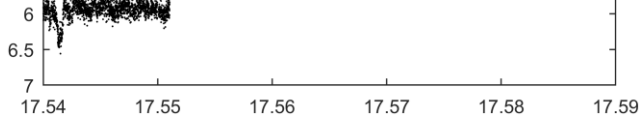
Period: 107.26 min
 Eccentricity: 0
 Launch date: 2001-09-08
 Source: United States (US)



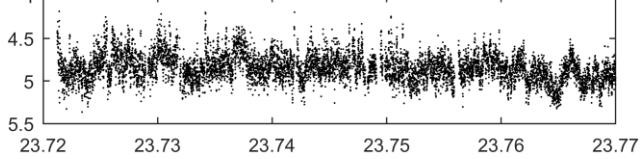
00057F (19-02-2020)



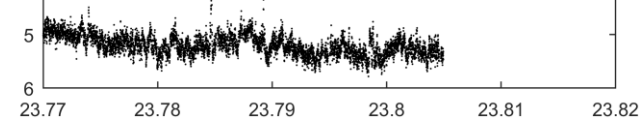
00057F (02-07-2020)



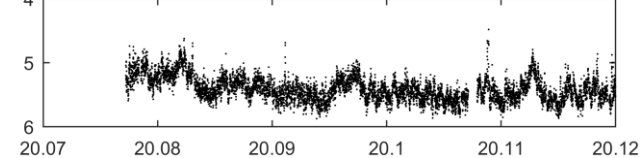
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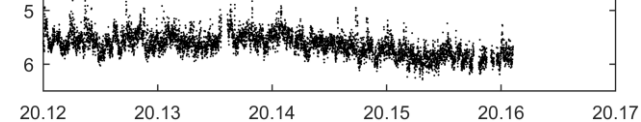
00057F (17-07-2020)



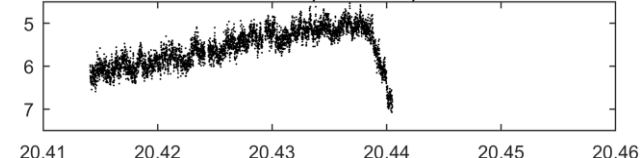
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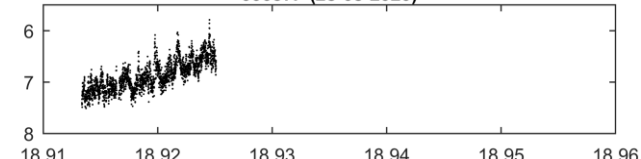
00057F (17-08-2020)



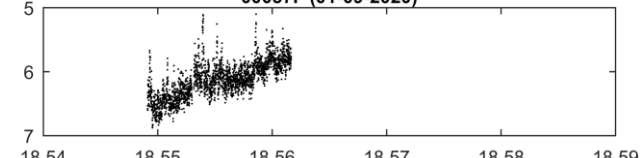
00057F (17-08-2020)



00057F (28-08-2020)



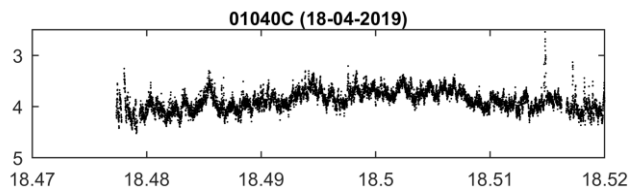
00057F (01-09-2020)



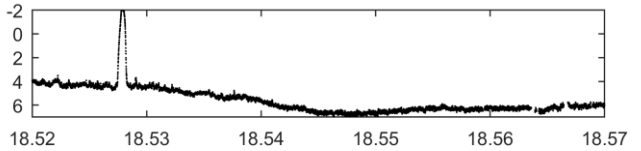
00057F (01-09-2020)

INTRUDER 5B
(USA 160 DEB, NOSS 3-1 (C), NROL 13)

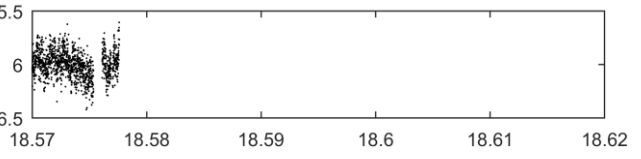
NORAD ID: 26907
 Int'l Code: 2001-040C
 Dimensions:
 Initial orbit:
 Perigee: 1100 km
 Apogee: 1100 km
 Inclination: 63.0 °



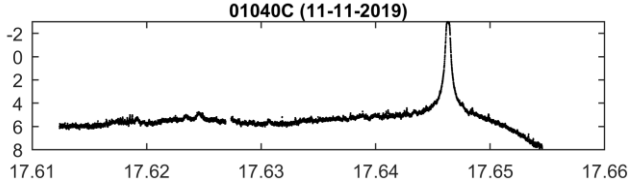
01040C (18-04-2019)



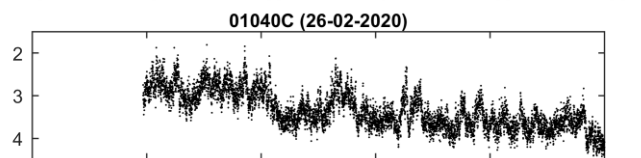
01040C (11-11-2019)



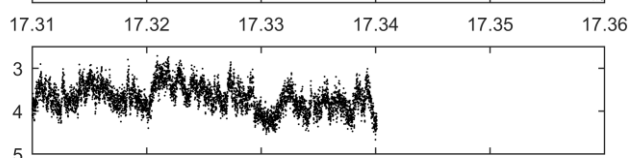
01040C (26-02-2020)



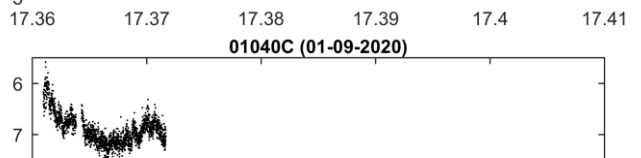
01040C (01-09-2020)



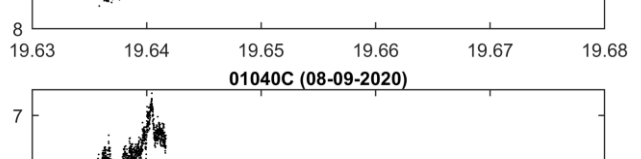
01040C (08-09-2020)



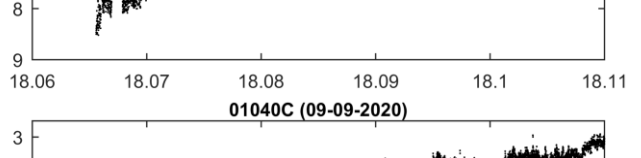
01040C (09-09-2020)



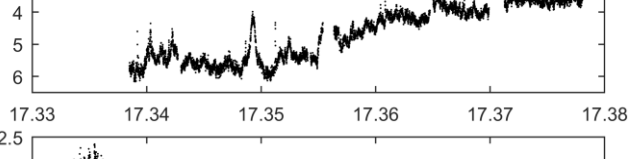
01040C (09-09-2020)



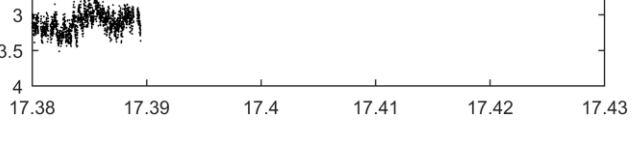
01040C (09-09-2020)



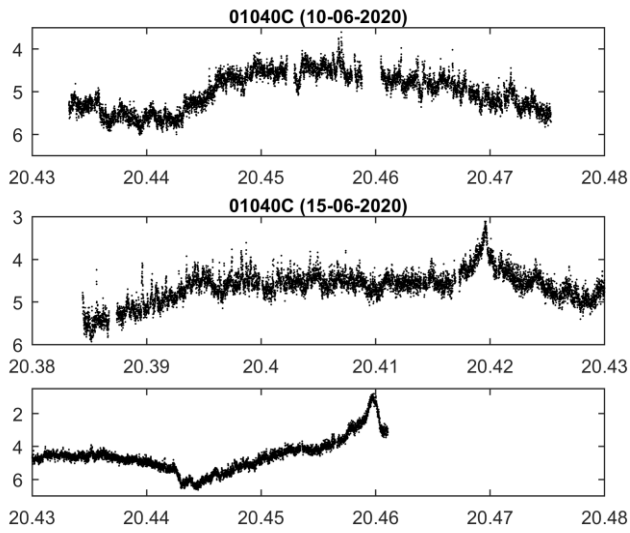
01040C (09-09-2020)



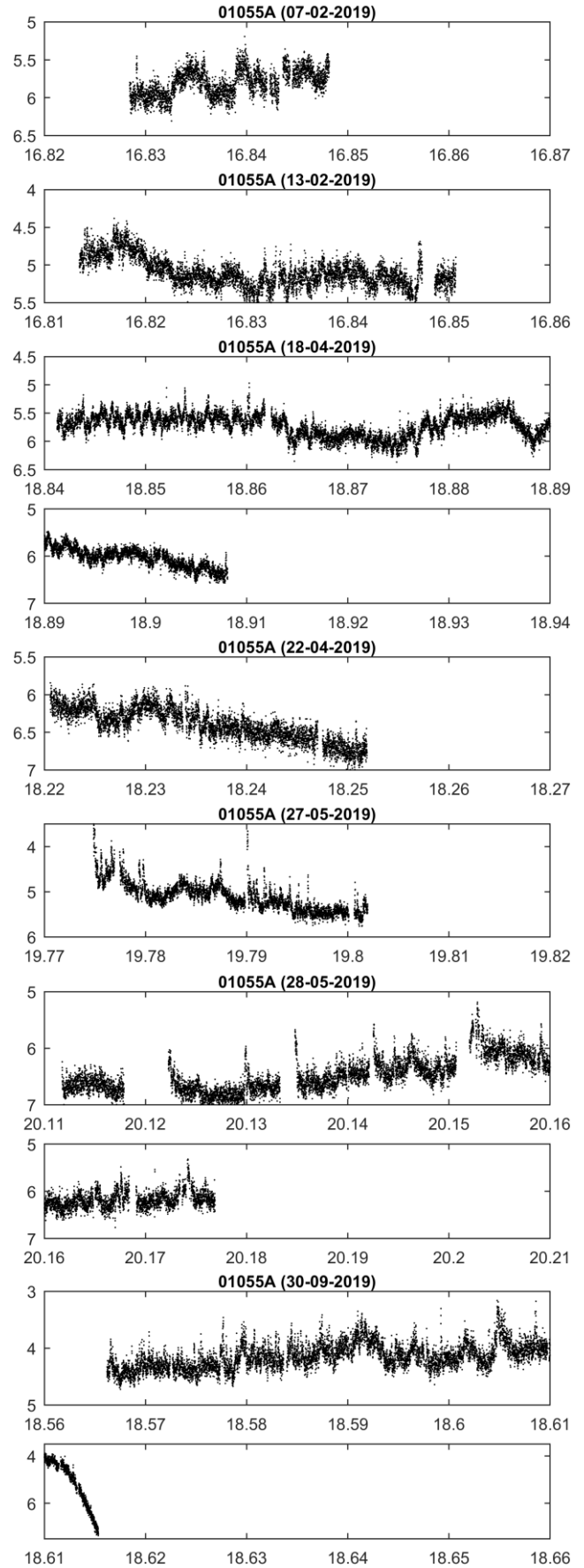
01040C (09-09-2020)



01040C (09-09-2020)

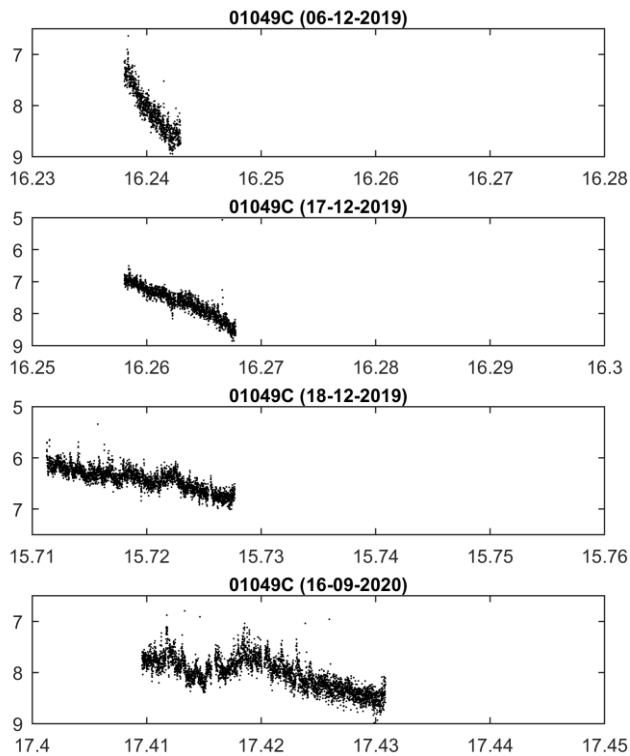
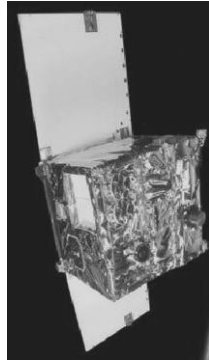


Eccentricity: 0.0005
 Launch date: 2001-12-07
 Source: United States (US)



BIRD 2

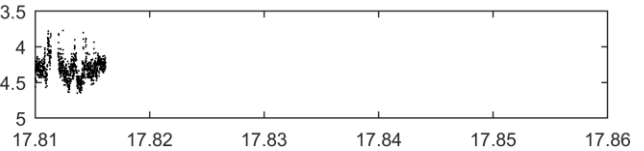
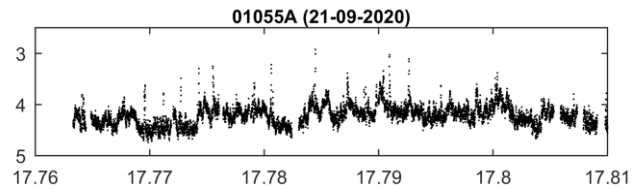
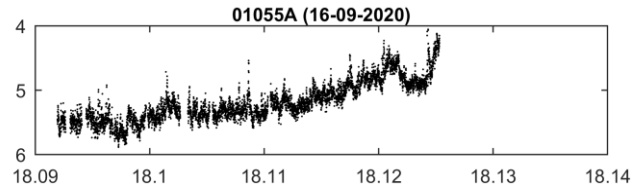
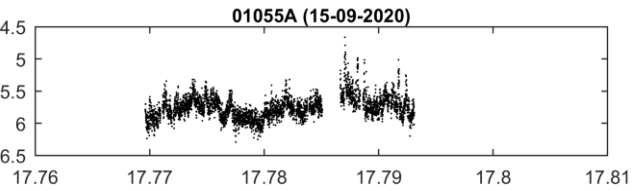
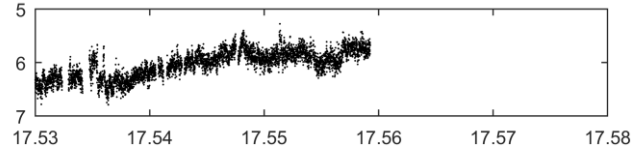
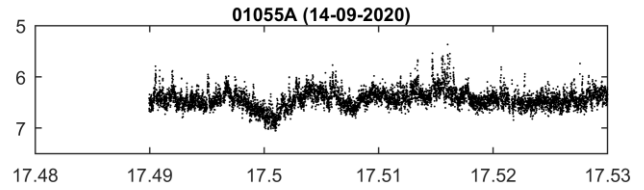
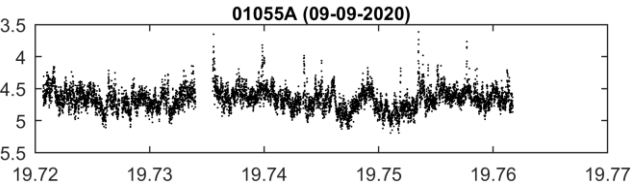
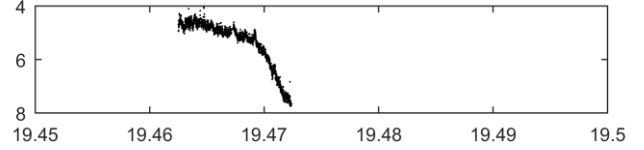
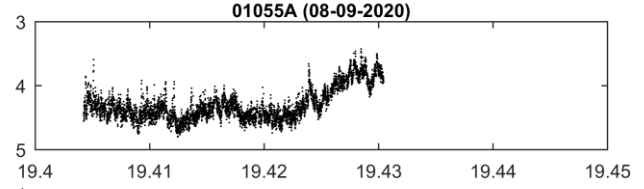
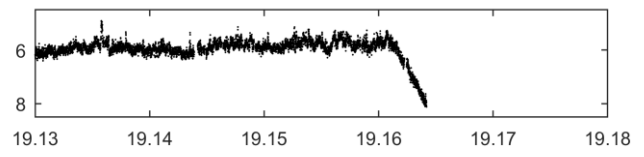
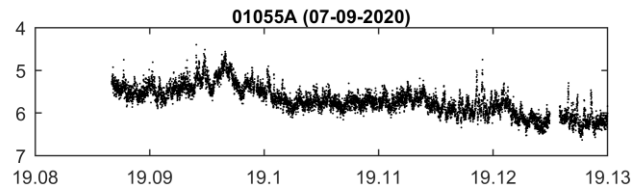
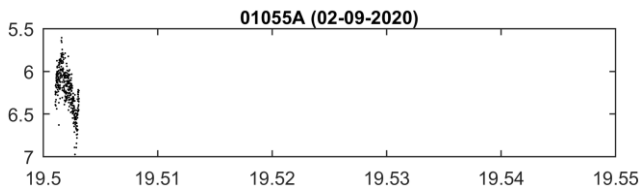
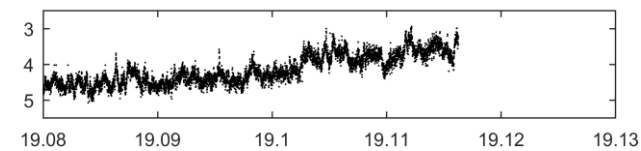
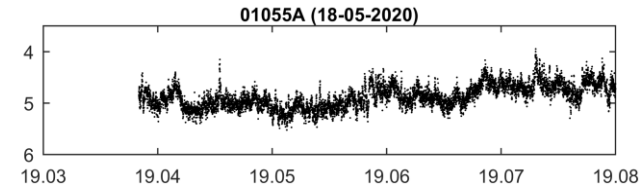
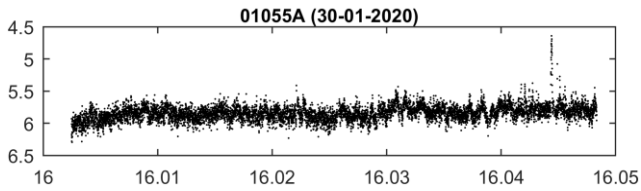
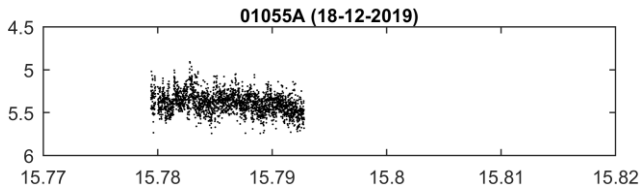
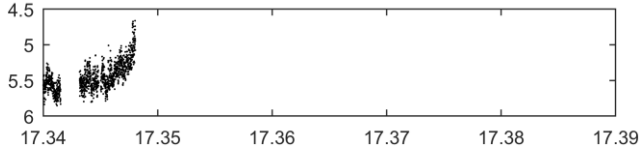
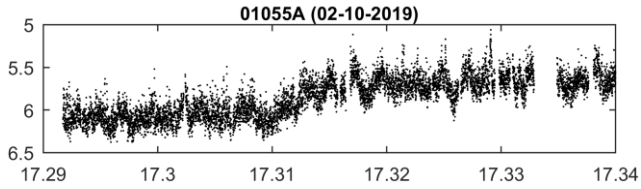
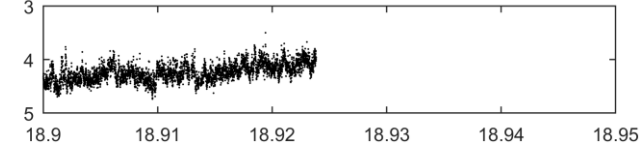
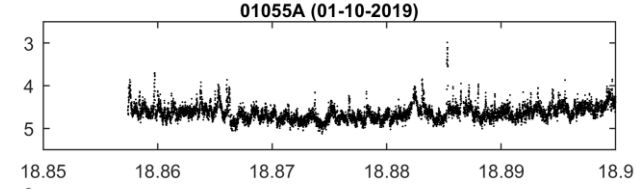
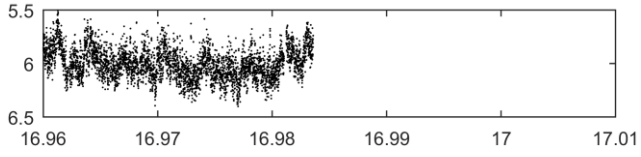
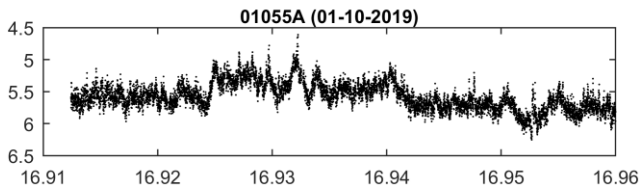
NORAD ID: 26959
 Int'l Code: 2001-049C
 Dimensions:
 Initial orbit:
 Perigee: 550 km
 Apogee: 580 km
 Inclination: 97.7°
 Period: 95.96 min
 Eccentricity: 0.002
 Launch date: 2001-10-22
 Source: Germany (GER)



JASON 1

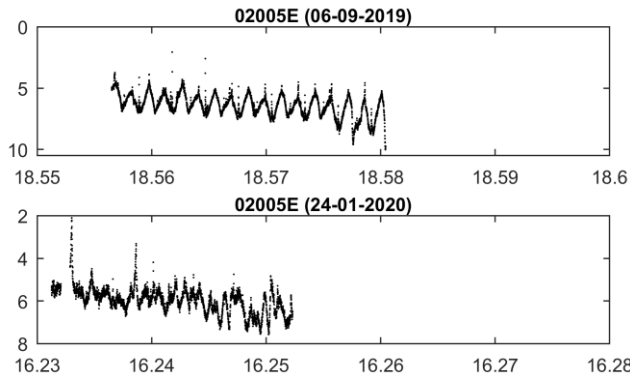
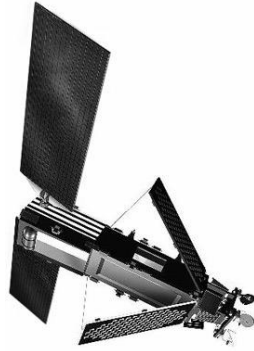
NORAD ID: 26997
 Int'l Code: 2001-055A
 Dimensions:
 Initial orbit:
 Perigee: 1320 km
 Apogee: 1328 km
 Inclination: 66.0°
 Period: 112.11 min





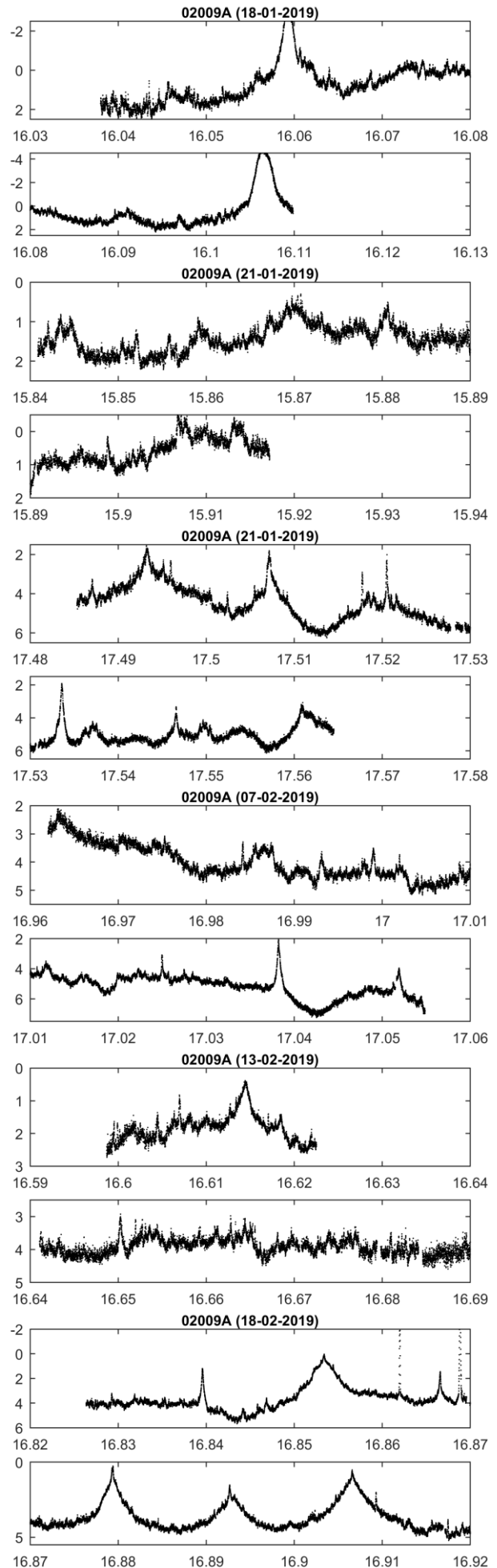
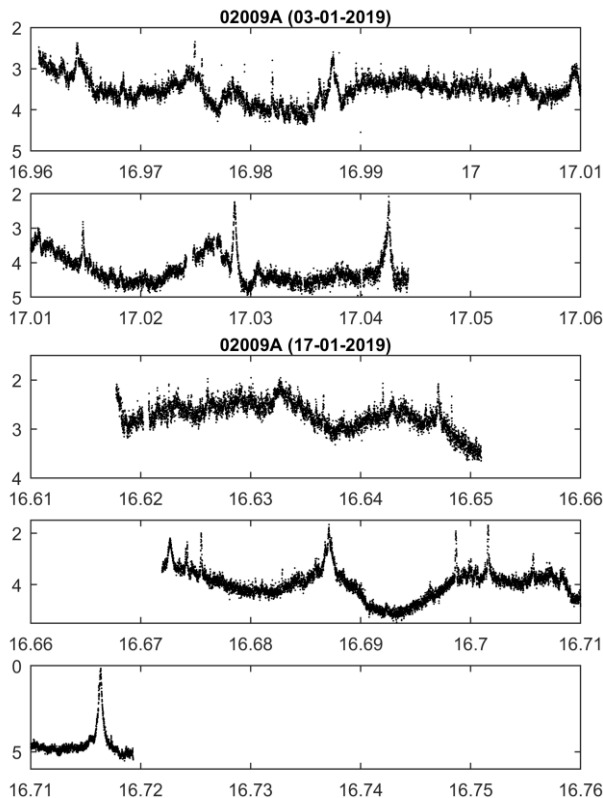
IRIDIUM 96

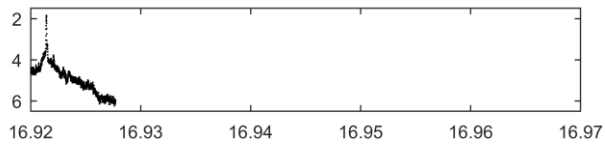
NORAD ID: 27376
Int'l Code: 2002-005E
Dimensions: box + 2 panels,
1 m across, 3.5 m long
Initial orbit:
Perigee: 782 km
Apogee: 787 km
Inclination: 86.4°
Period: 100.4 min
Eccentricity: 0.000349
Launch date: 2002-02-11
Source: United States (US)



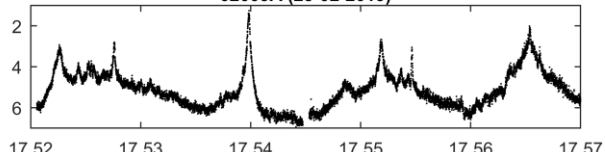
ENVISAT

NORAD ID: 27386
Int'l Code: 2002-009A
Dimensions: cylindrical 6m x 2m
Initial orbit:
Perigee: 784 km
Apogee: 790 km
Inclination: 98.5°
Period: 100.60 min
Eccentricity: 0.0004
Launch date: 2002-03-01
Source: European Space Agency (ESA)

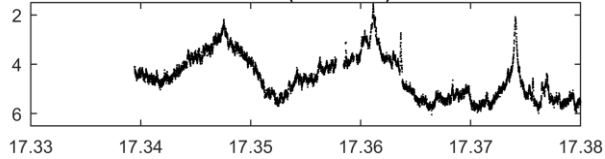




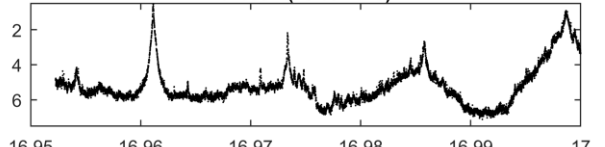
02009A (25-02-2019)



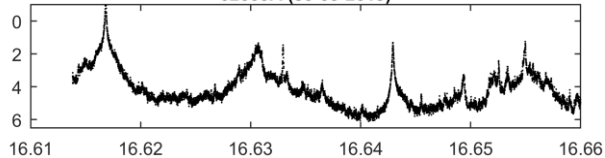
02009A (04-04-2019)



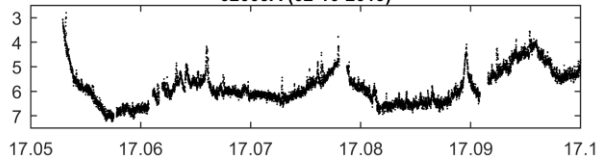
02009A (16-09-2019)



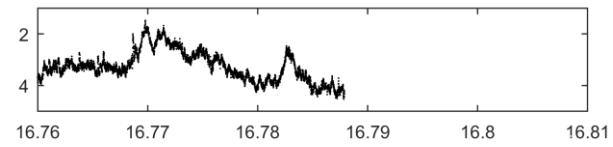
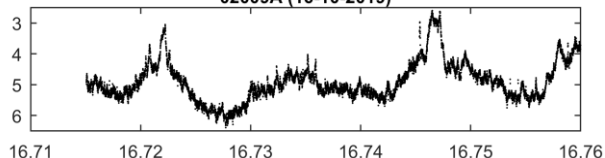
02009A (30-09-2019)



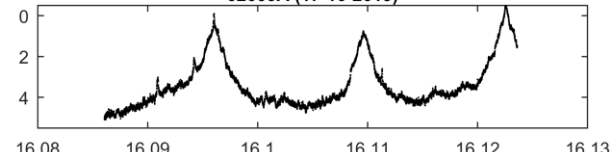
02009A (02-10-2019)



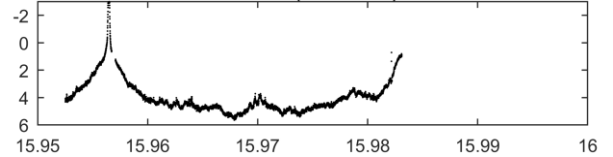
02009A (16-10-2019)



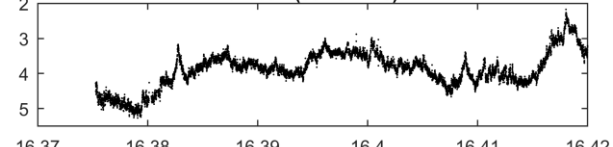
02009A (17-10-2019)



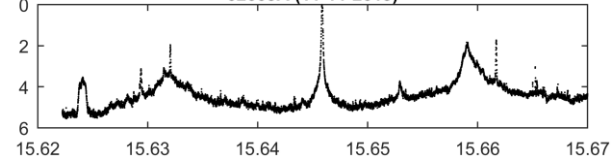
02009A (28-10-2019)



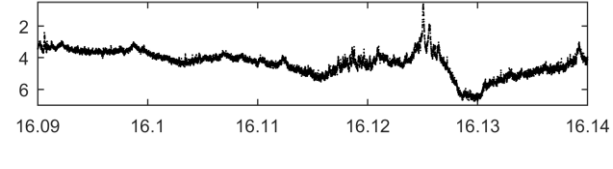
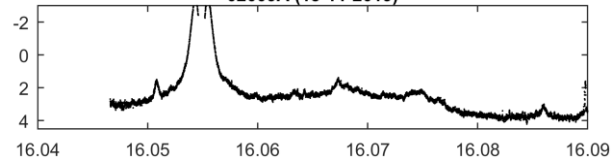
02009A (30-10-2019)

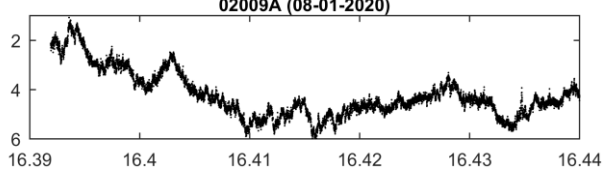
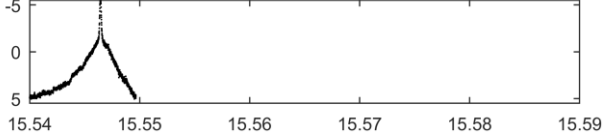
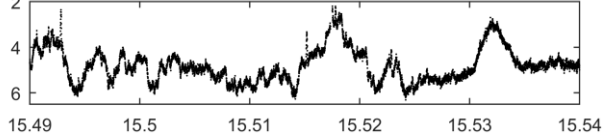
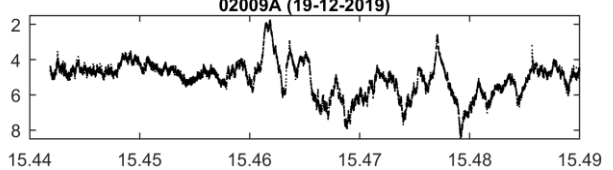
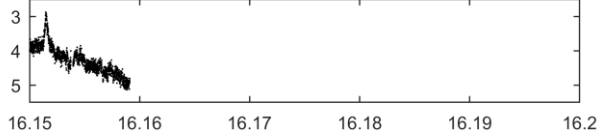
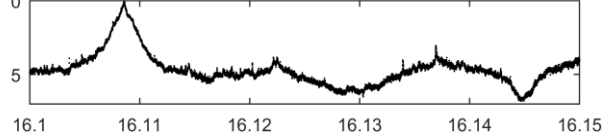
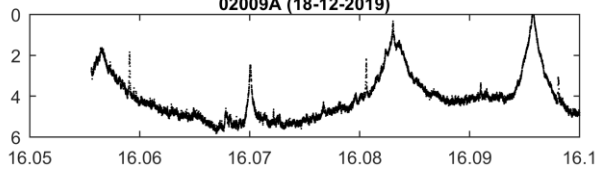
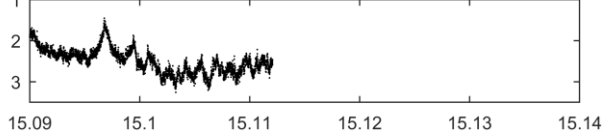
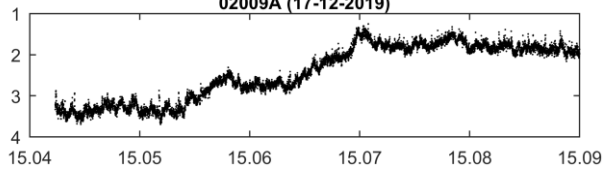
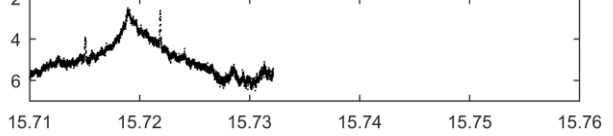
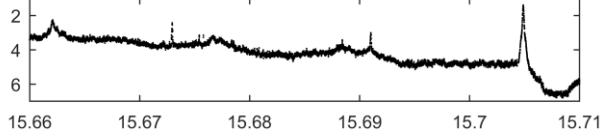
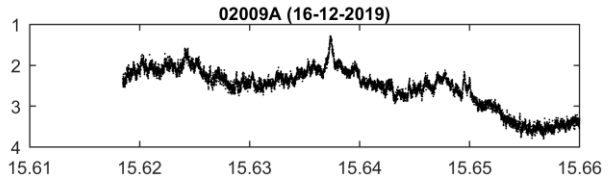
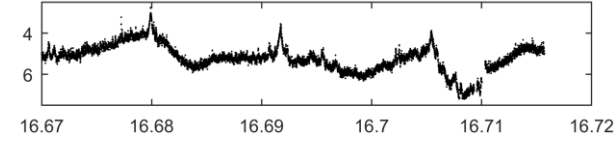
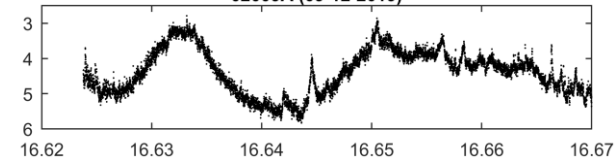
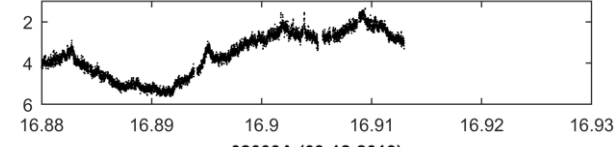
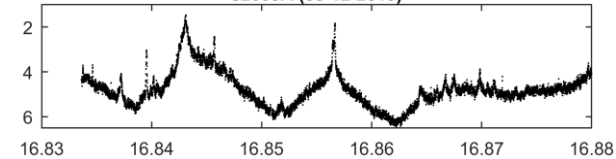
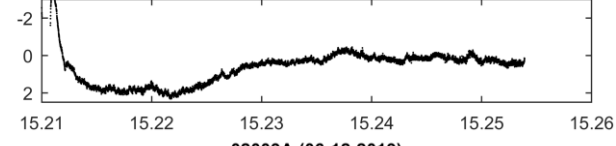
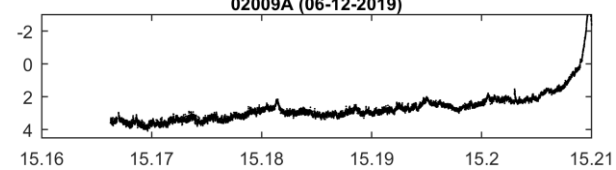
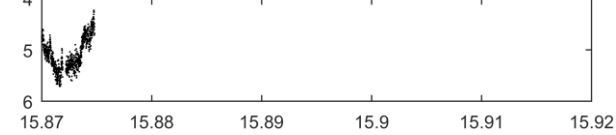
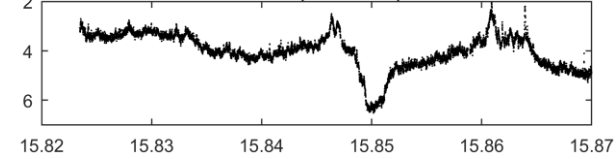
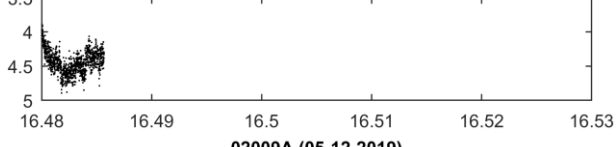
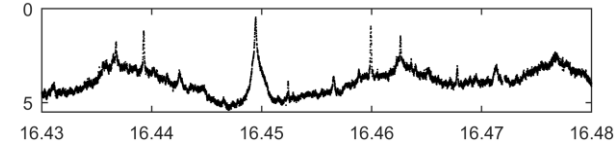
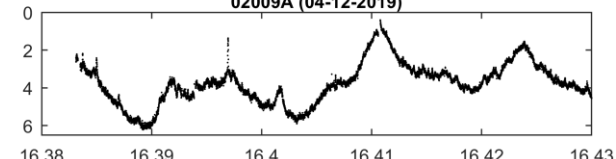
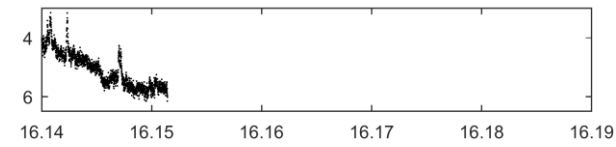


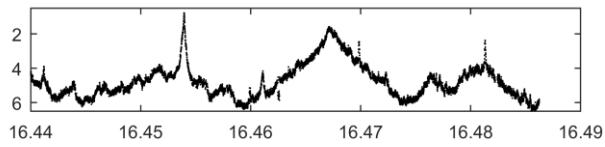
02009A (11-11-2019)



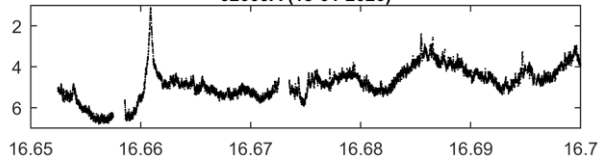
02009A (13-11-2019)



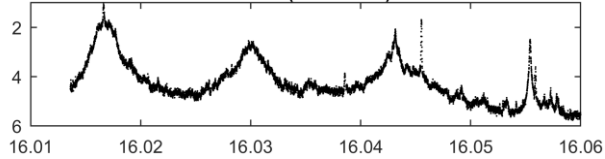




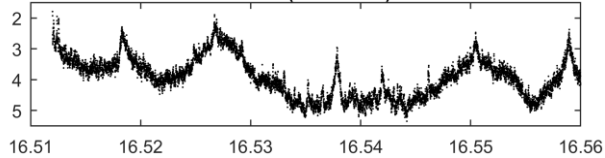
02009A (13-01-2020)



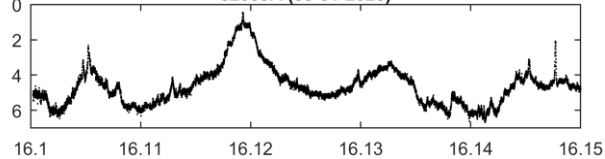
02009A (14-01-2020)



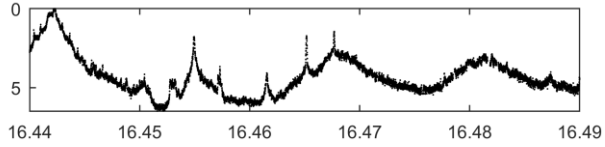
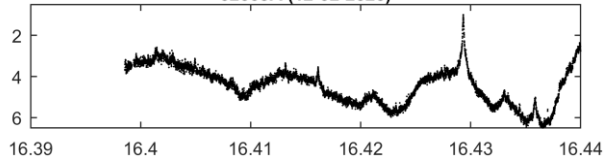
02009A (24-01-2020)



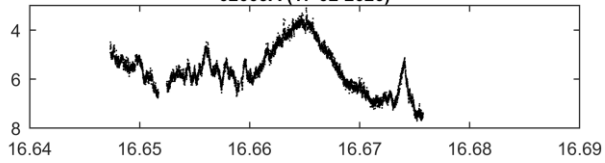
02009A (30-01-2020)



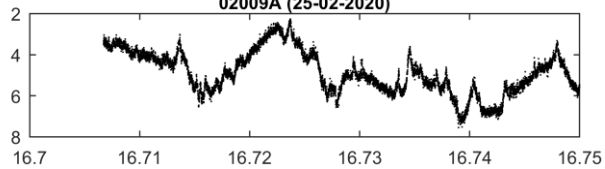
02009A (12-02-2020)



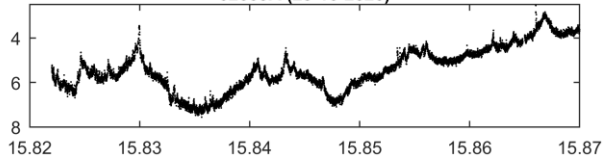
02009A (17-02-2020)



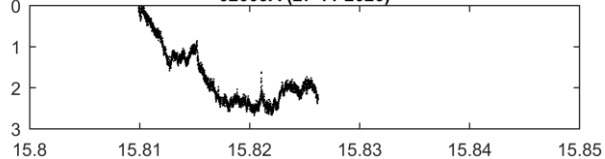
02009A (25-02-2020)



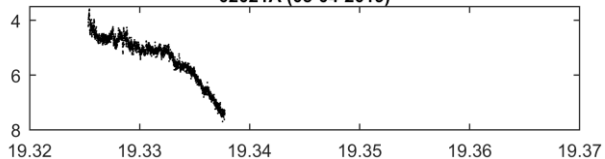
02009A (23-10-2020)



02009A (27-11-2020)



02021A (05-04-2019)

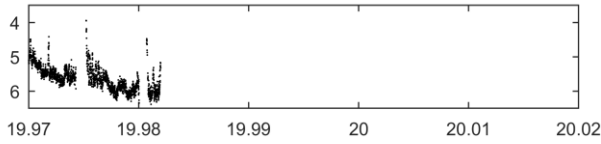


02021A (27-05-2019)

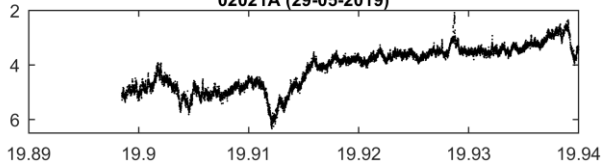


SPOT 5
 NORAD ID: 27421
 Int'l Code: 2002-021A
 Dimensions:
 Initial orbit:
 Perigee: 816 km
 Apogee: 818 km
 Inclination: 98.7°
 Period: 101.23 min
 Eccentricity: 0.00014
 Launch date: 2002-05-04
 Source: France (FR)

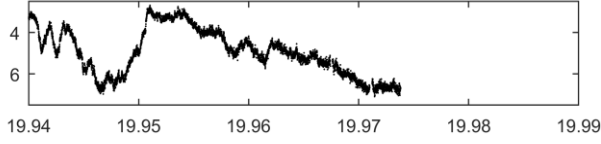




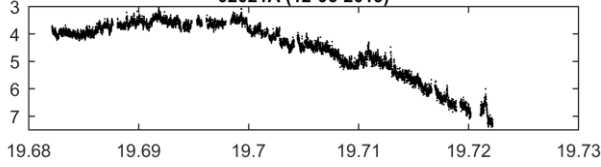
02021A (29-05-2019)



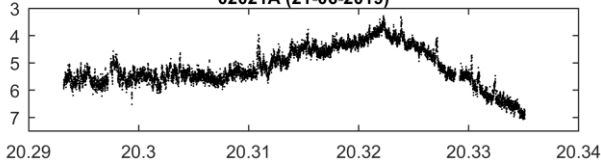
02021A (19-08-2019)



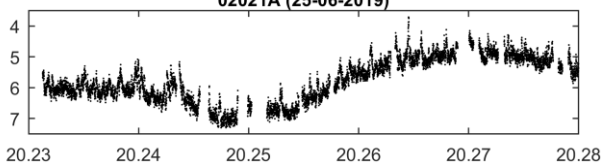
02021A (12-06-2019)



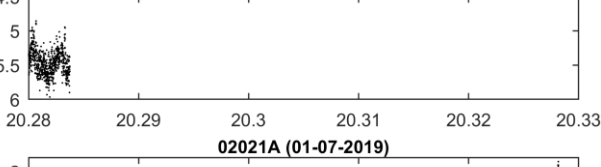
02021A (21-06-2019)



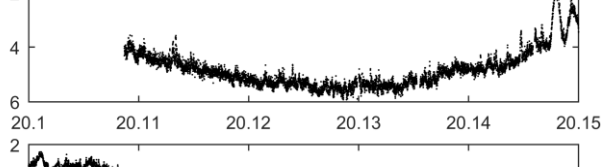
02021A (25-06-2019)



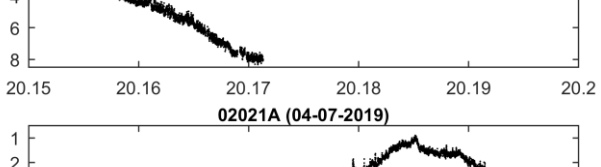
02021A (01-07-2019)



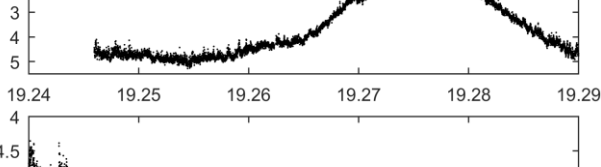
02021A (07-08-2019)



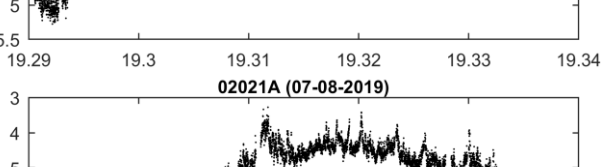
02021A (04-07-2019)



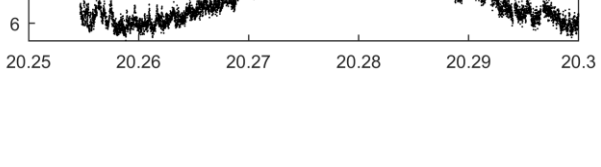
02021A (03-06-2020)



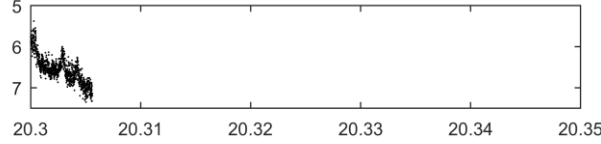
02021A (09-06-2020)



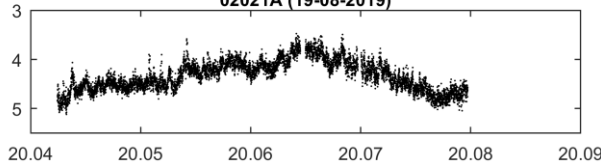
02021A (22-06-2020)



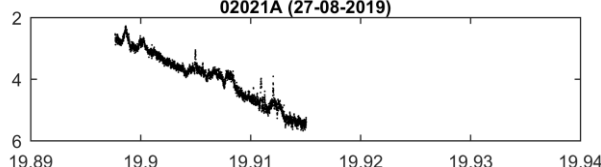
02021A (26-05-2020)



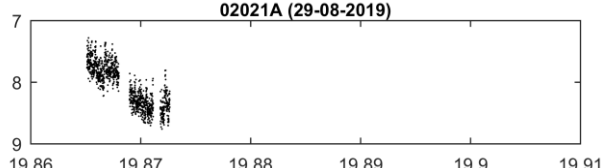
02021A (27-08-2019)



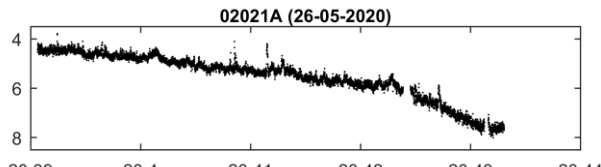
02021A (29-08-2019)



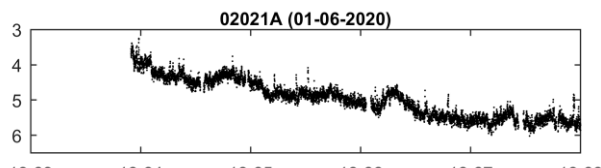
02021A (26-05-2020)



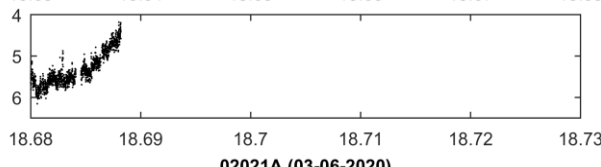
02021A (01-06-2020)



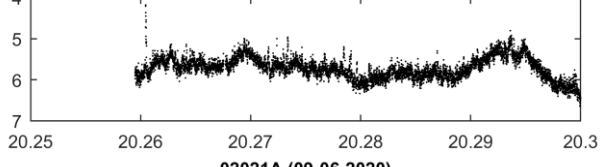
02021A (03-06-2020)



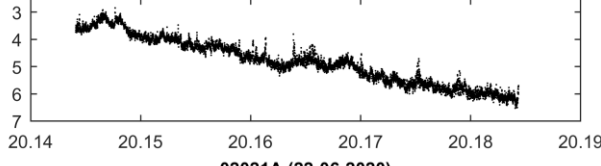
02021A (09-06-2020)



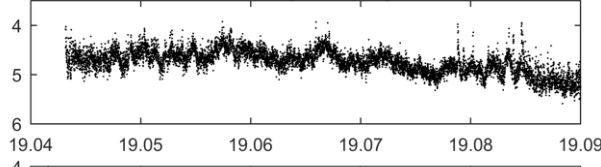
02021A (22-06-2020)



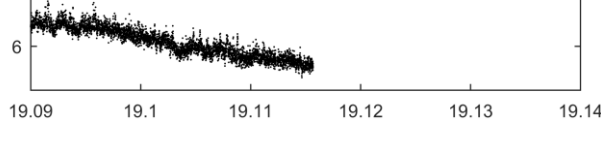
02021A (29-08-2019)



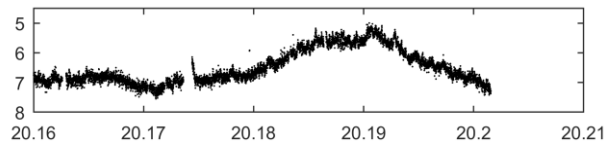
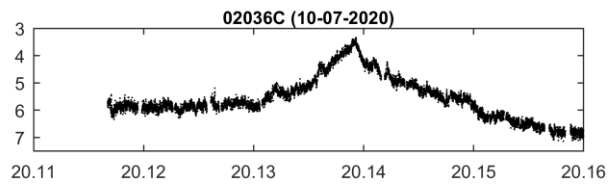
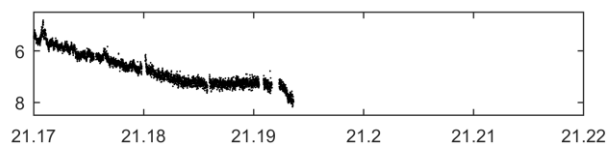
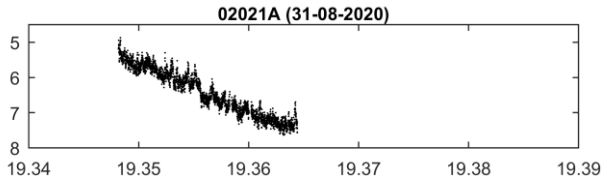
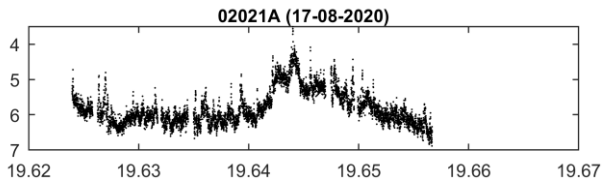
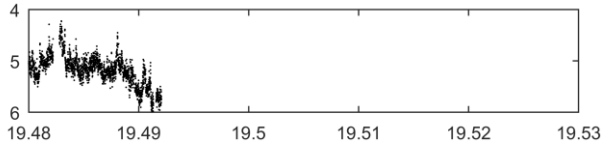
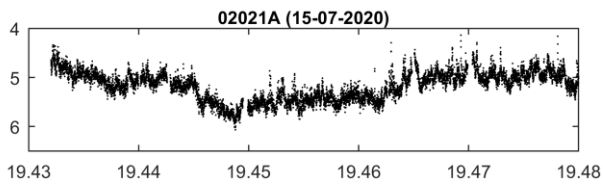
02021A (26-05-2020)



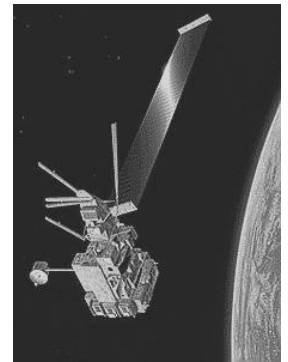
02021A (26-05-2020)



02021A (26-05-2020)

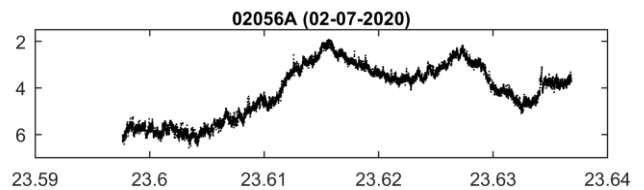


ADEOS 2 (Midori 2)
 NORAD ID: 27597
 Int'l Code: 2002-056A
 Dimensions:
 Initial orbit:
 Perigee: 804 km
 Apogee: 807 km
 Inclination: 98.6°
 Period: 100.99 min
 Eccentricity: 0.0002
 Launch date: 2002-12-14
 Source: Japan (JPN)

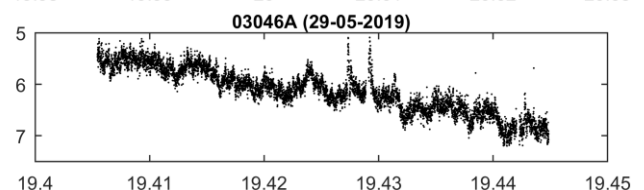
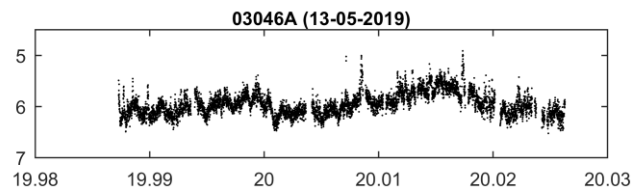
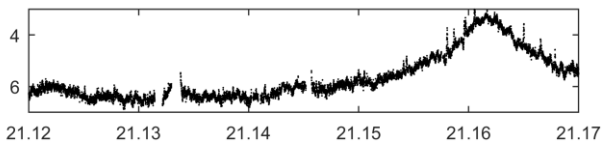
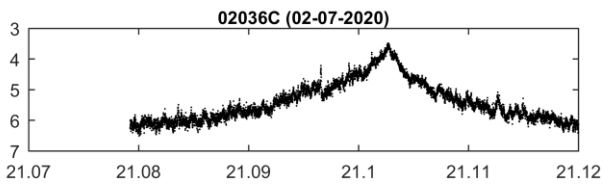
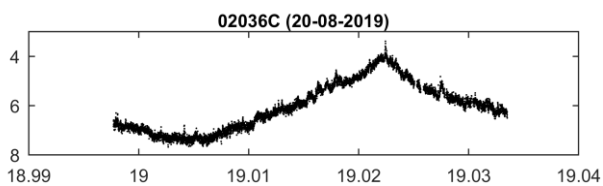


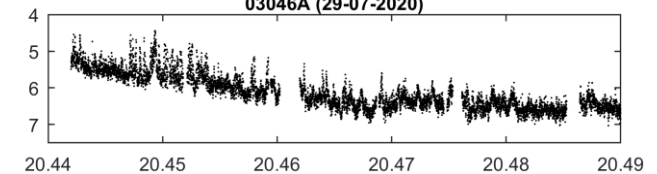
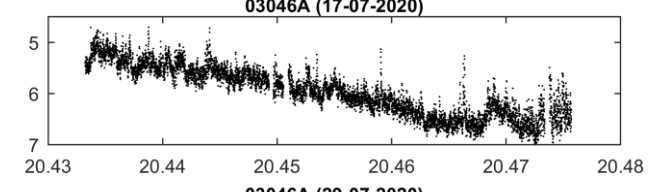
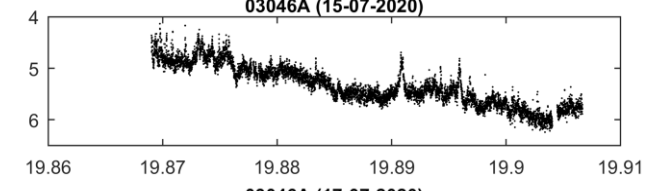
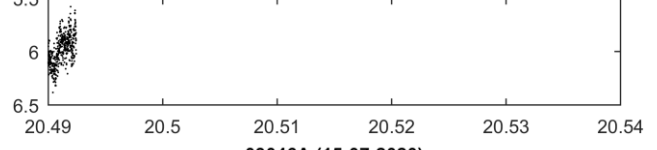
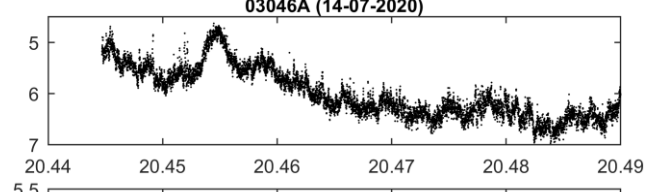
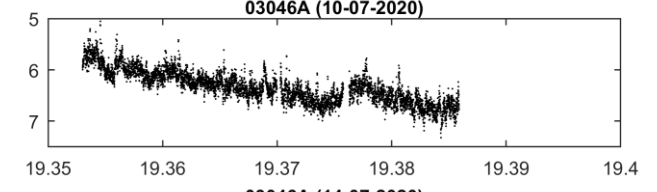
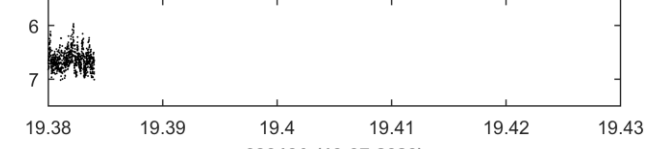
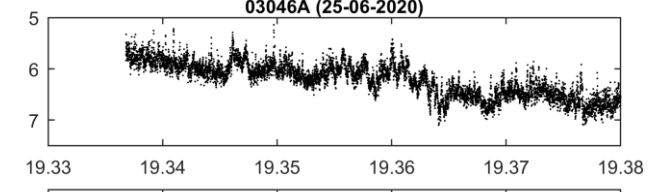
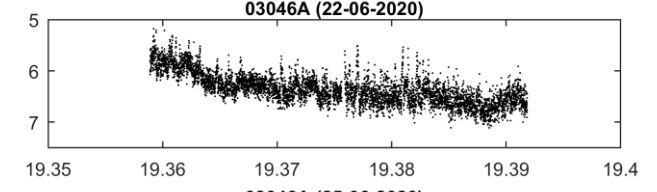
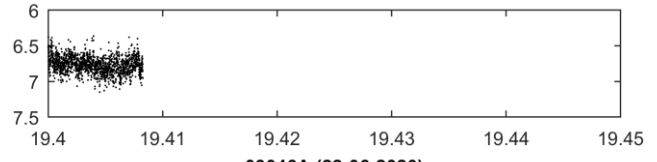
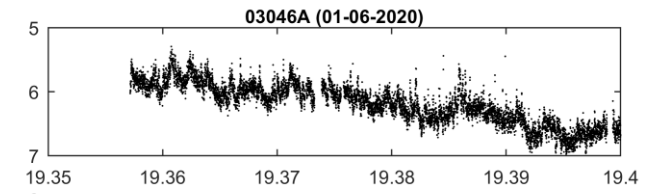
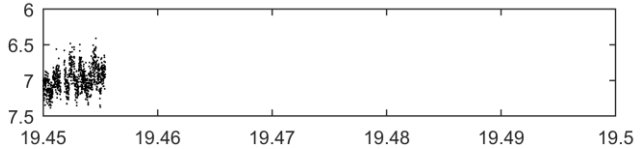
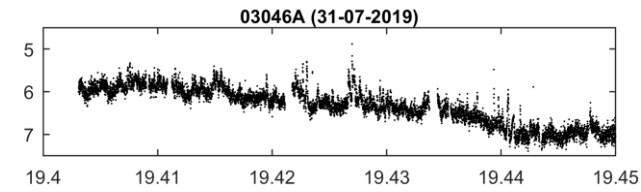
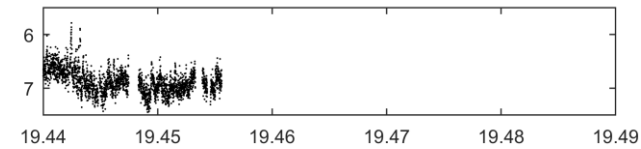
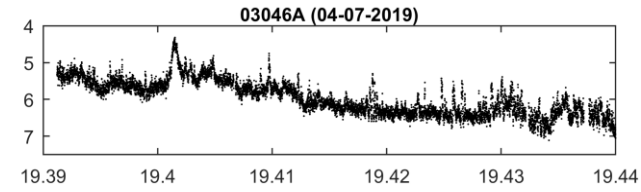
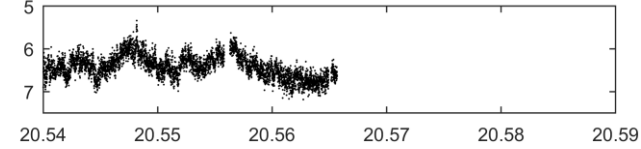
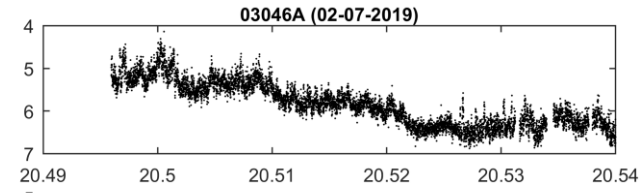
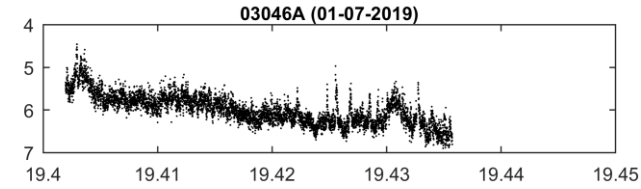
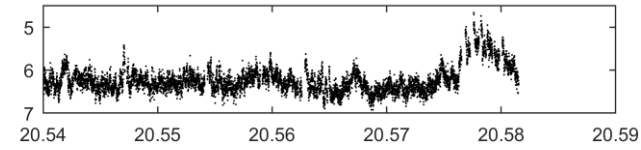
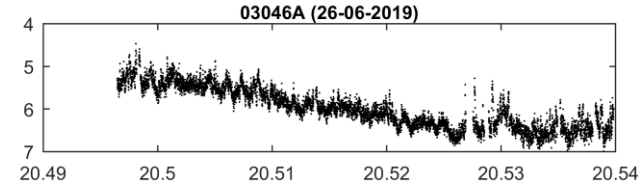
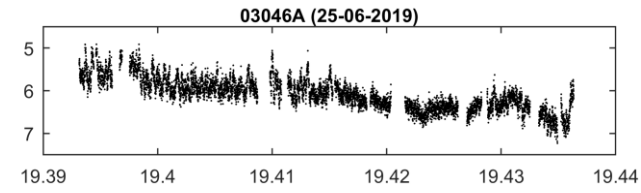
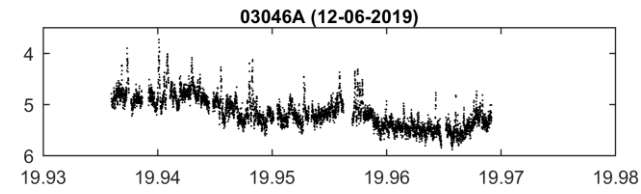
**SL-8 R/B (S3M)
 (COSMOS 2390 ROCKET)**

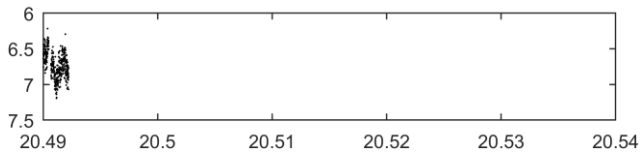
Kosmos-3M (2nd stage)
 NORAD ID: 27466
 Int'l Code: 2002-036C
 Dimensions: cylinder 7.4m long, 2.4m dia
 Initial orbit:
 Perigee: 1468 km
 Apogee: 1509 km
 Inclination: 82.4°
 Period: 115.73 min
 Eccentricity: 0.00261
 Launch date: 2002-07-08
 Source: Commonwealth of Independent States
 (former USSR) (CIS)



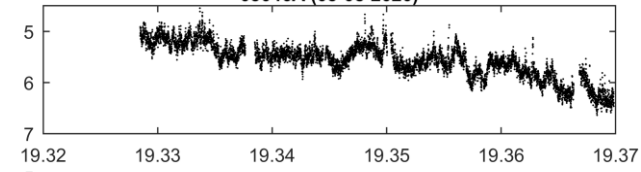
IRS P6
 NORAD ID: 28051
 Int'l Code: 2003-046A
 Dimensions:
 Initial orbit:
 Perigee: 802 km
 Apogee: 875 km
 Inclination: 98.7°
 Period: 101.68 min
 Eccentricity: 0.00506
 Launch date: 2003-10-17
 Source: India (IND)



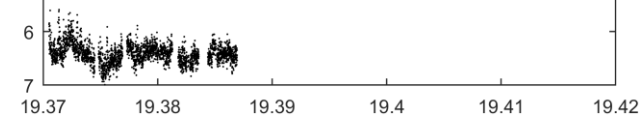




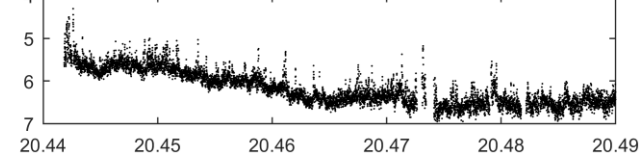
03046A (03-08-2020)



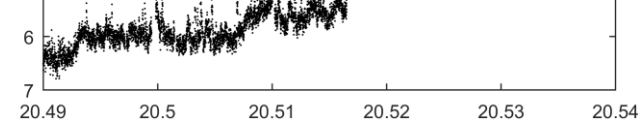
03046A (04-08-2020)



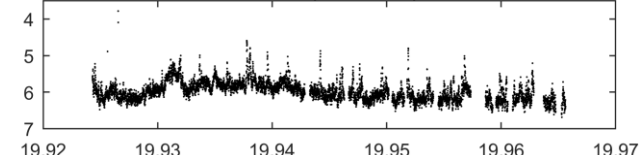
03046A (05-08-2020)



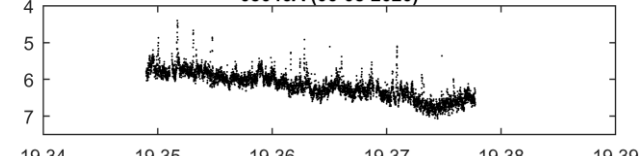
03046A (06-08-2020)



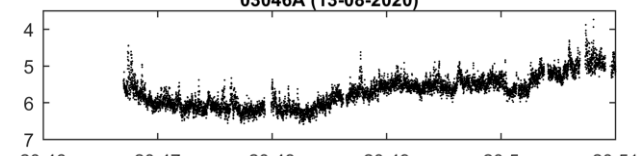
03046A (07-08-2020)



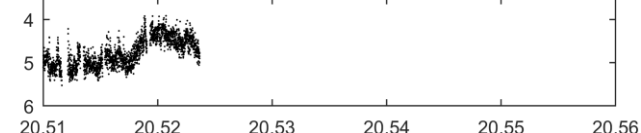
03046A (08-08-2020)



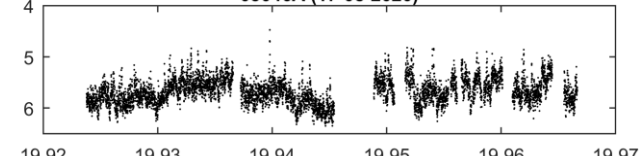
03046A (09-08-2020)



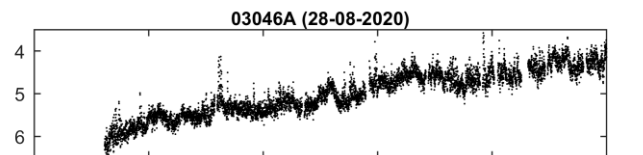
03046A (10-08-2020)



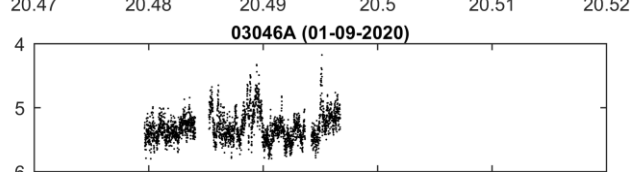
03046A (11-08-2020)



03046A (12-08-2020)



03046A (28-08-2020)



03046A (01-09-2020)

NOSS 3-2 (1) (USA 173)

NORAD ID: 28095

Int'l Code: 2003-054A

Dimensions:

Initial orbit:

Perigee: 1013 km

Apogee: 1200 km

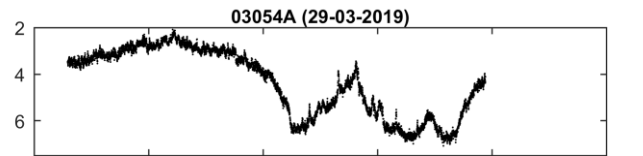
Inclination: 63.4°

Period: 107.40 min

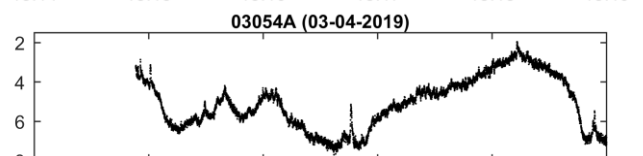
Eccentricity: 0.0125

Launch date: 2003-12-02

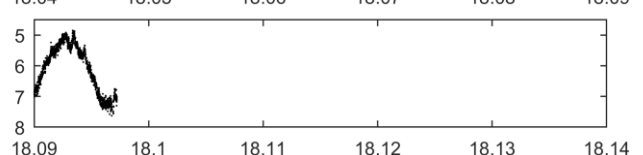
Source: United States (US)



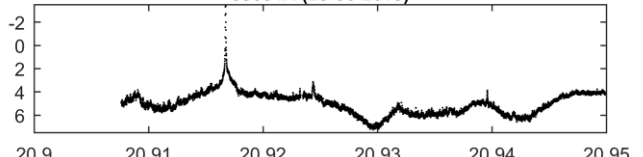
03054A (29-03-2019)



03054A (03-04-2019)



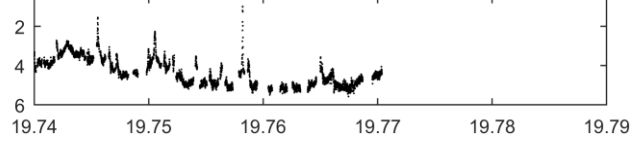
03054A (25-06-2019)



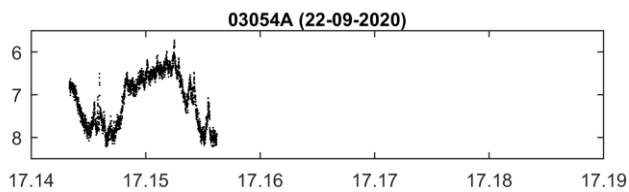
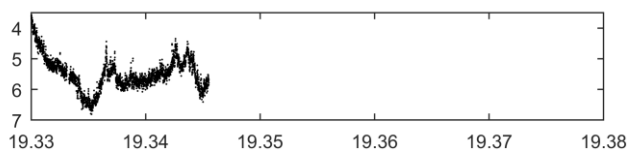
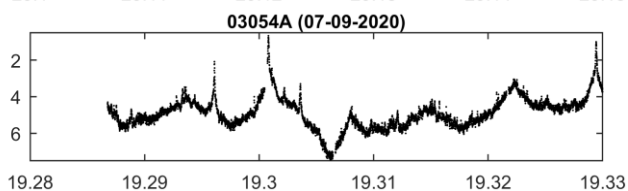
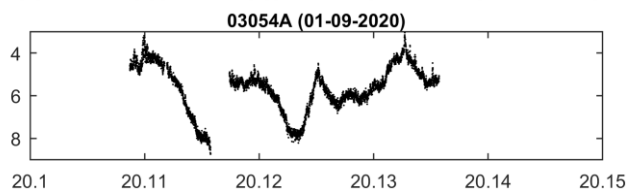
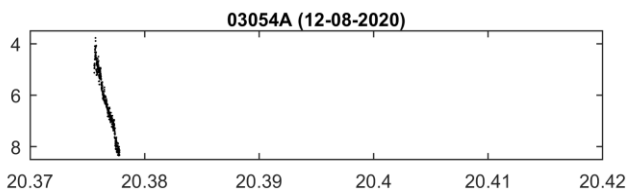
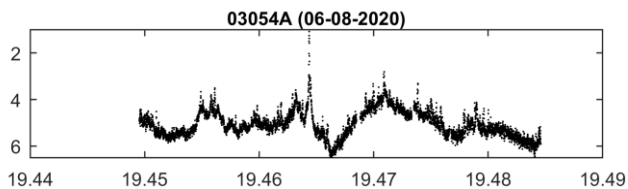
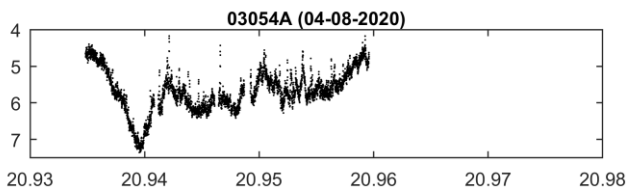
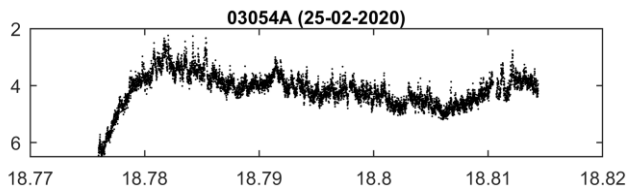
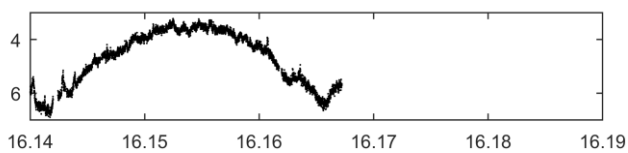
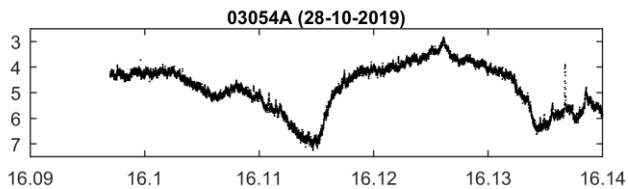
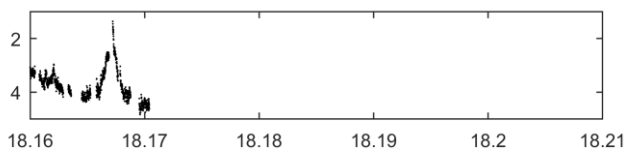
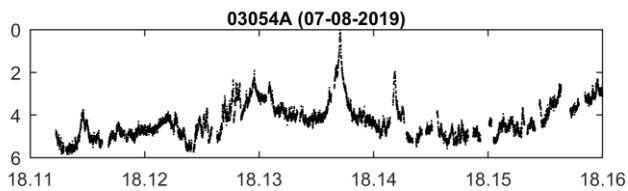
03054A (31-07-2019)



03054A (01-08-2019)



03054A (02-08-2019)



USA 173 P/L 2 (NOSS 3-2 (2))

NORAD ID: 28097

Int'l Code: 2003-054C

Dimensions:

Initial orbit:

Perigee: 1011 km

Apogee: 1202 km

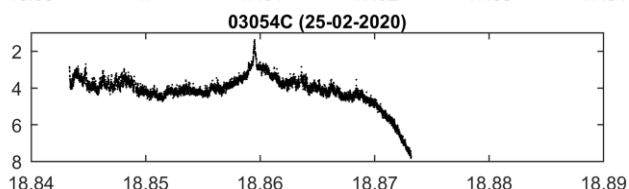
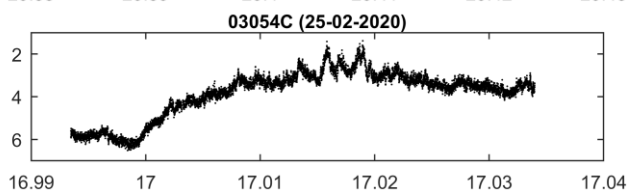
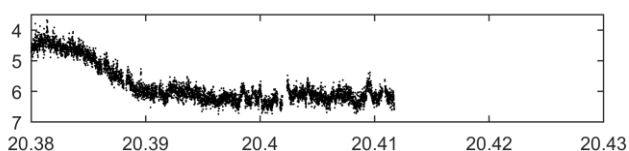
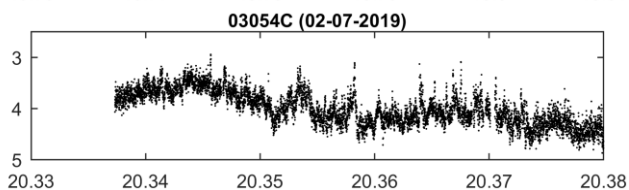
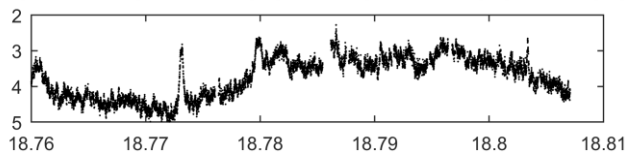
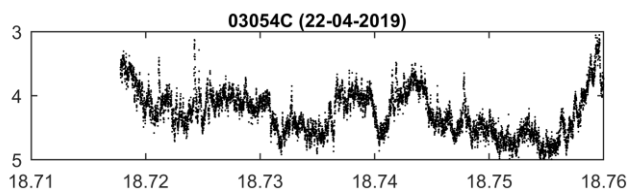
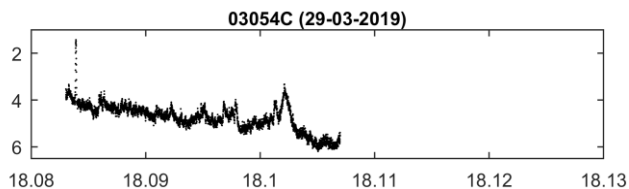
Inclination: 63.4°

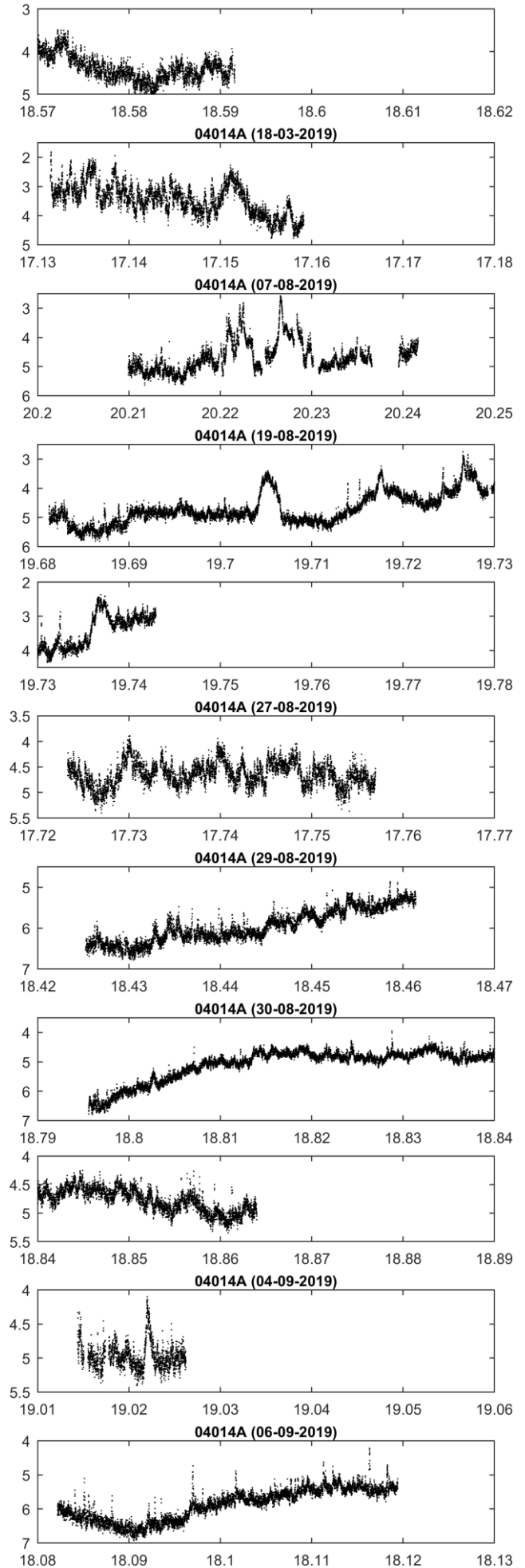
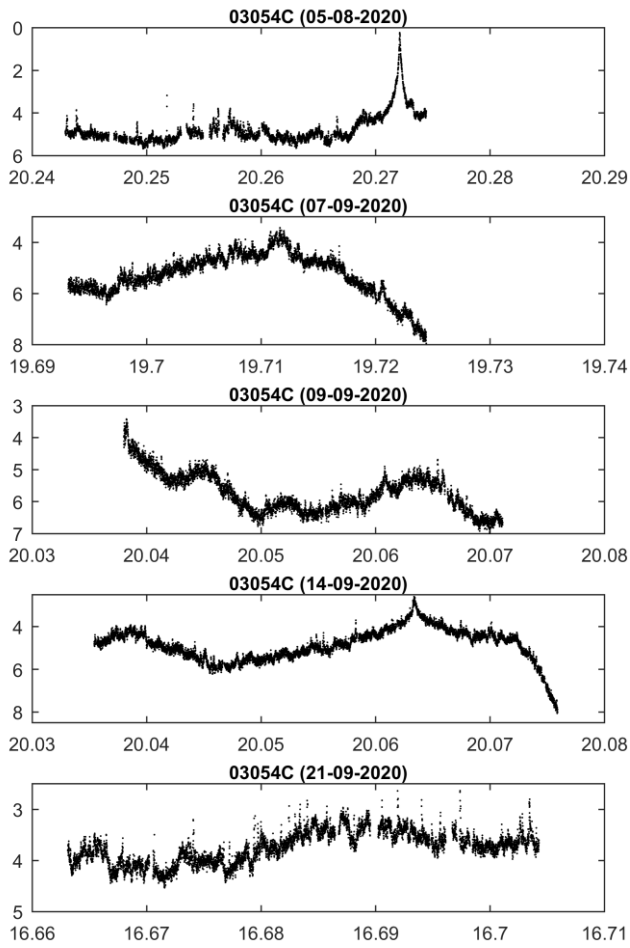
Period: 107.4 min

Eccentricity: 0.01277

Launch date: 2003-12-02

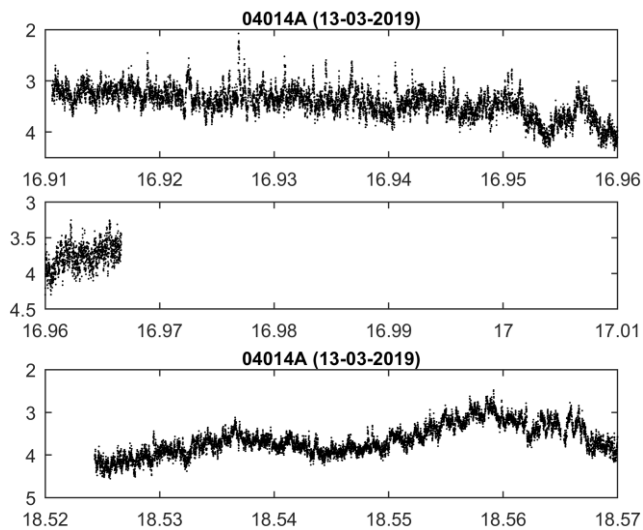
Source: United States (US)

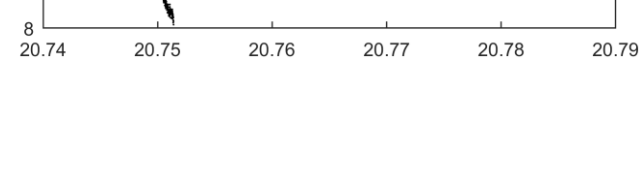
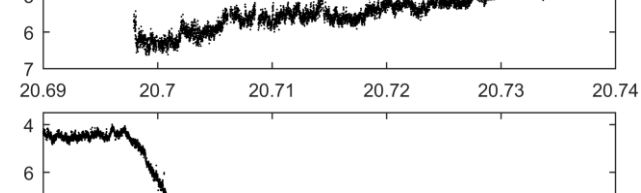
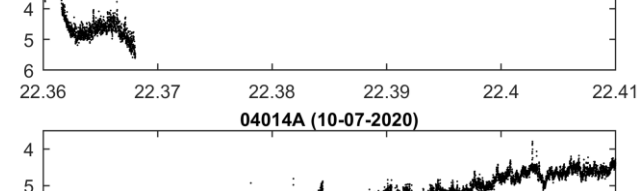
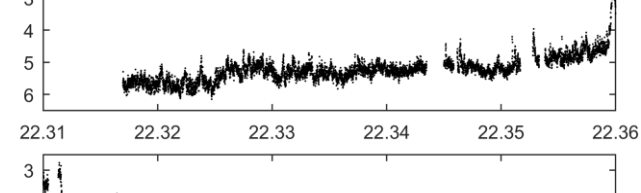
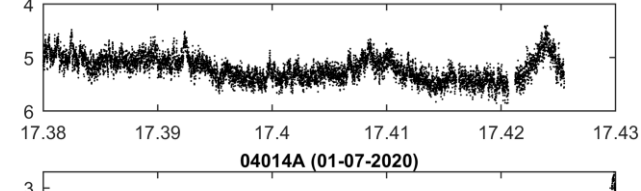
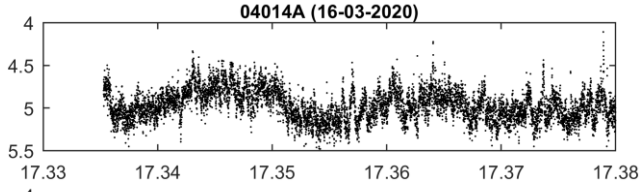
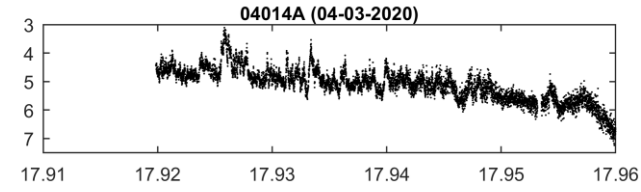
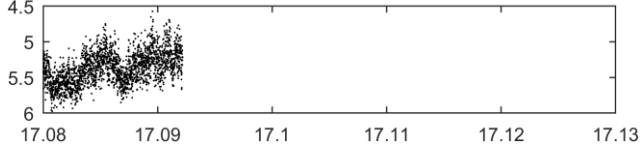
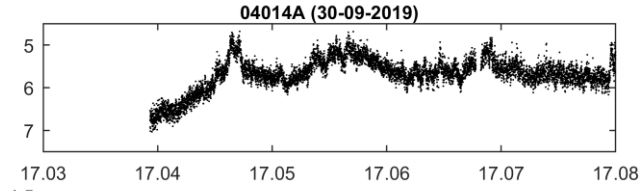
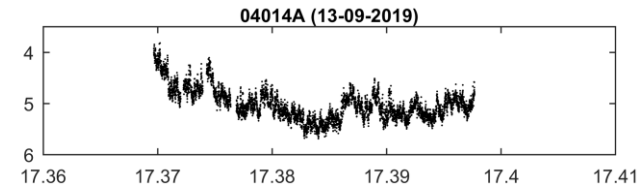
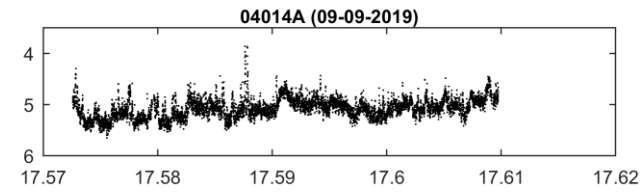


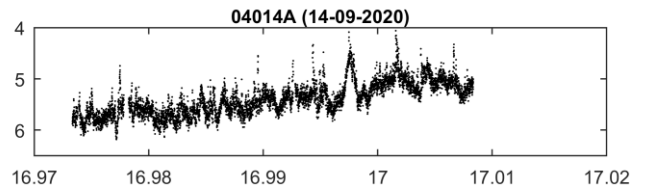
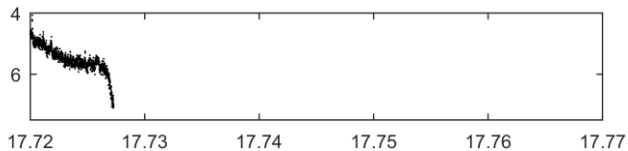
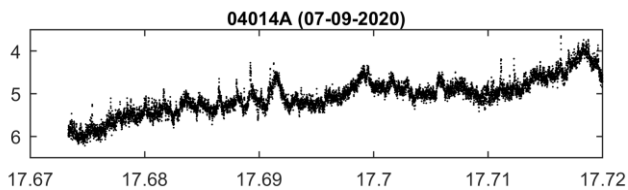
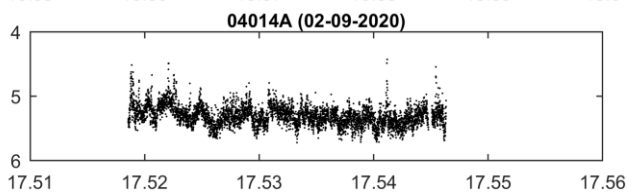
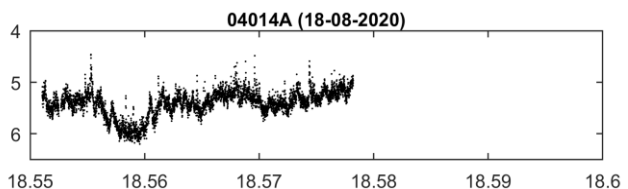
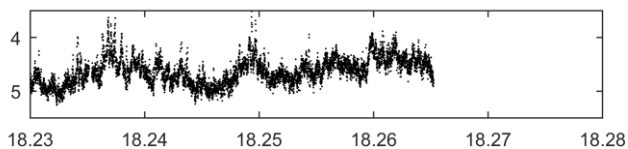
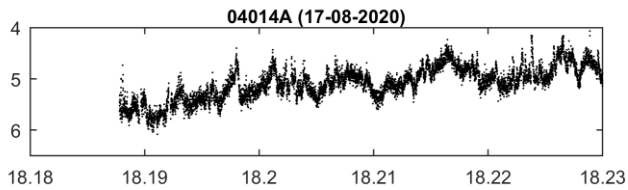
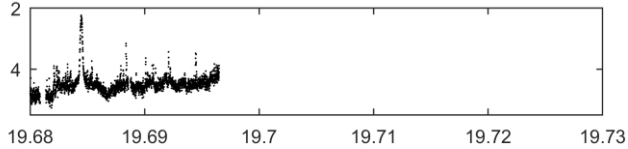
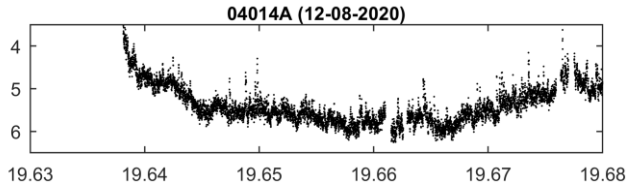
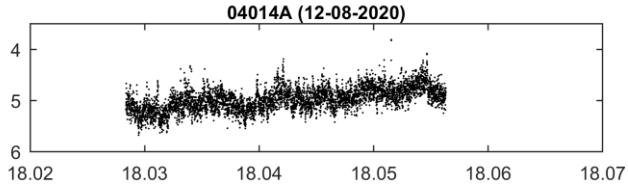
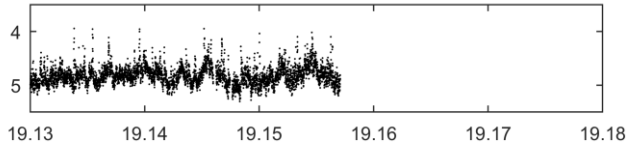
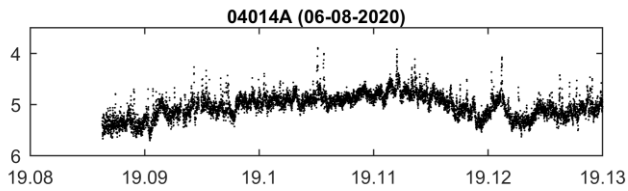


GRAVITY PROBE B (GP-B)

NORAD ID: 28230
 Int'l Code: 2004-014A
 Dimensions:
 Initial orbit:
 Perigee: 641 km
 Apogee: 645 km
 Inclination: 90.01°
 Period: 97.59 min
 Eccentricity: 0.0003
 Launch date: 2004-04-20
 Source: United States (US)







ROCSAT 2 (FORMOSAT-2)

NORAD ID: 28254

Int'l Code: 2004-018A

Dimensions: 6-sided box

Initial orbit:

Perigee: 721 km

Apogee: 743 km

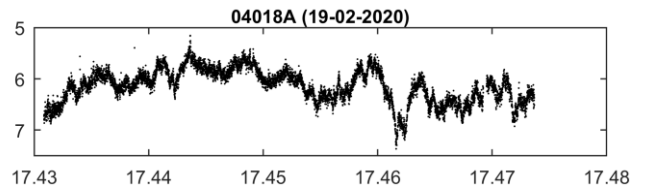
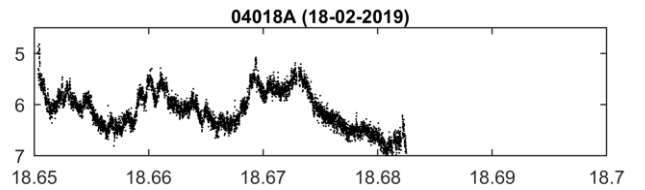
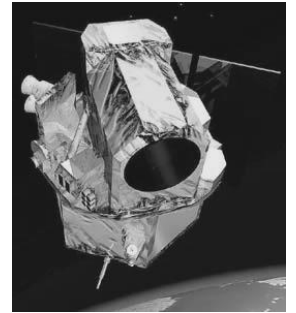
Inclination: 99.11°

Period: 99.43 min

Eccentricity: 0.002

Launch date: 2004-05-20

Source: Taiwan (Republic of China) (ROC)



COSMOS 2406 (TSELINA-2)

NORAD ID: 28352

Int'l Code: 2004-021A

Dimensions: cylinder +2 panels

Initial orbit:

Perigee: 847 km

Apogee: 865 km

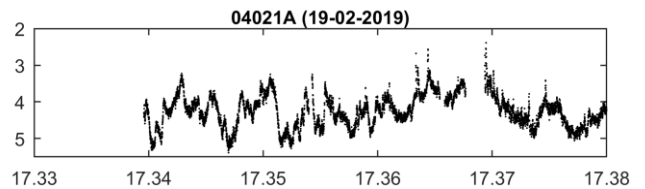
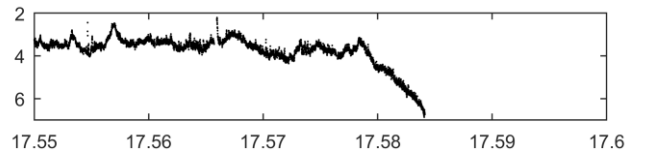
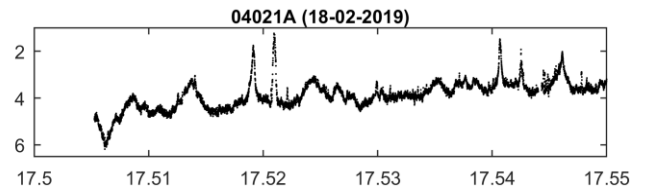
Inclination: 71.01°

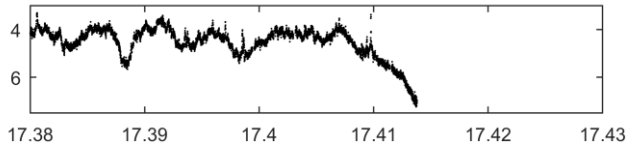
Period: 102.06 min

Eccentricity: 0.001

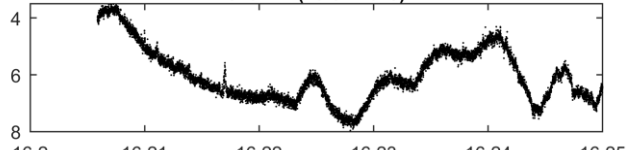
Launch date: 2004-06-10

Source: Commonwealth of Independent States (former USSR) (CIS)

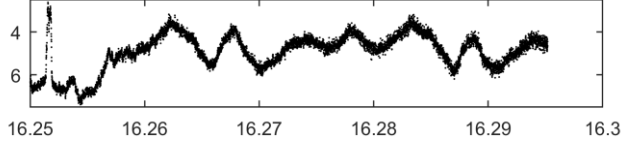




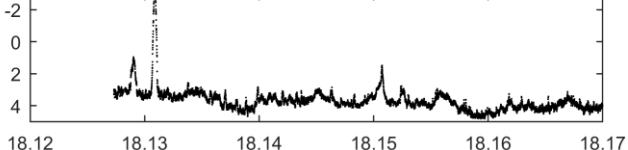
04021A (25-02-2019)



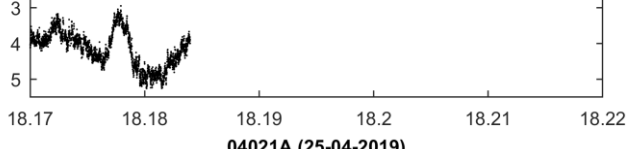
04021A (25-02-2019)



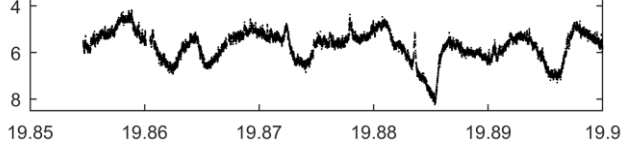
04021A (25-04-2019)



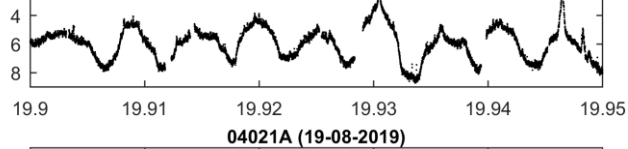
04021A (25-04-2019)



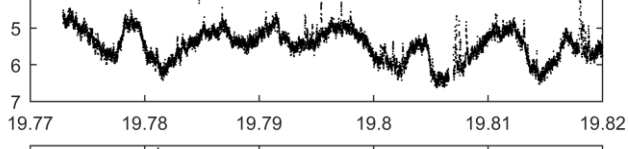
04021A (25-04-2019)



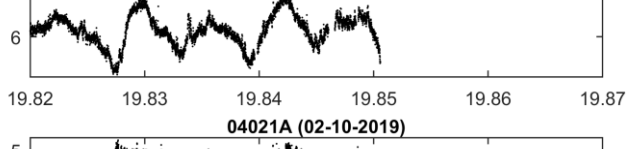
04021A (25-04-2019)



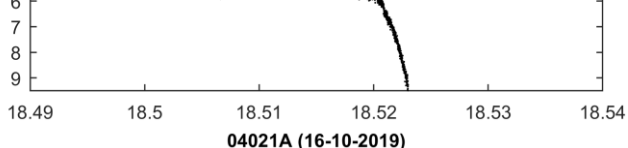
04021A (19-08-2019)



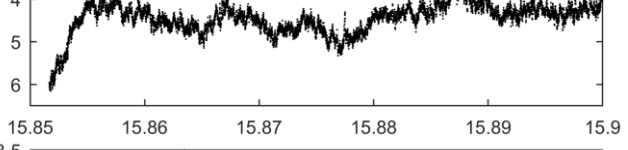
04021A (19-08-2019)



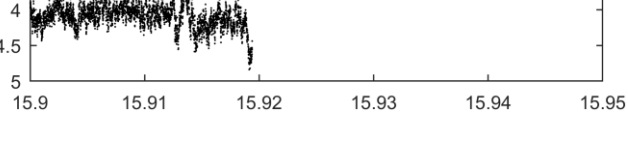
04021A (02-10-2019)



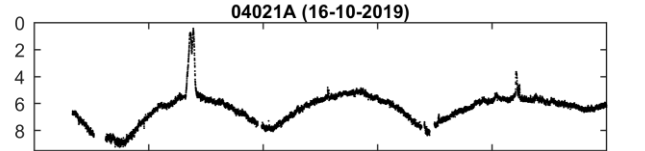
04021A (16-10-2019)



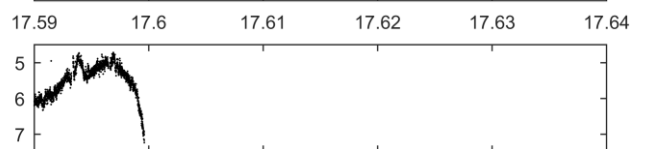
04021A (16-10-2019)



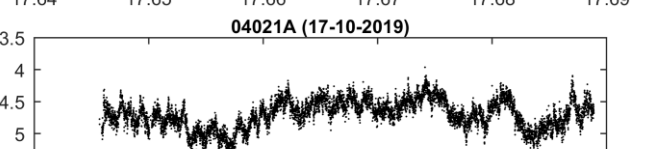
04021A (16-10-2019)



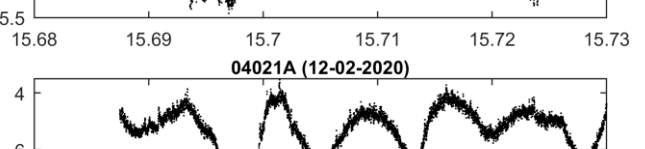
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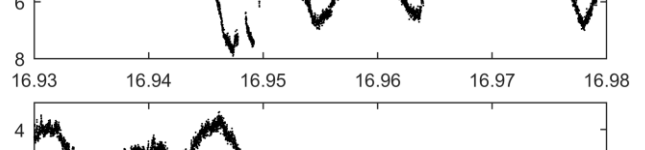
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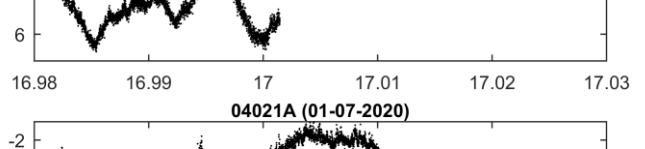
04021A (17-10-2019)



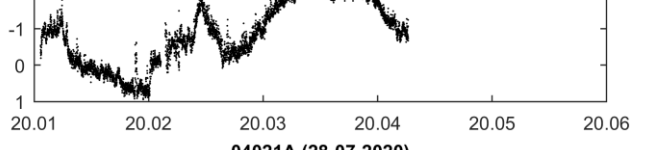
04021A (12-02-2020)



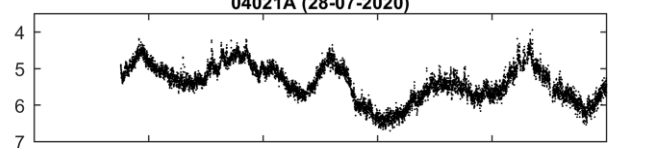
04021A (12-02-2020)



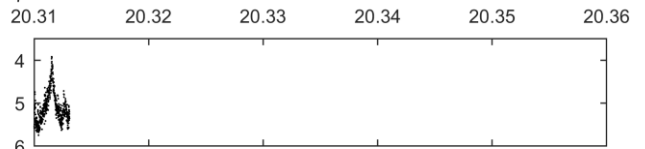
04021A (01-07-2020)



04021A (28-07-2020)



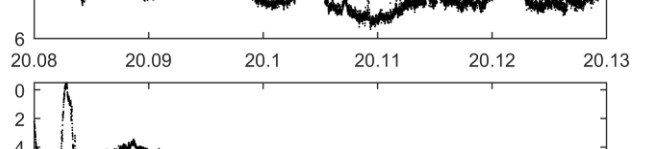
04021A (28-07-2020)



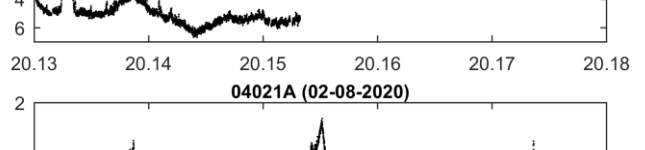
04021A (29-07-2020)



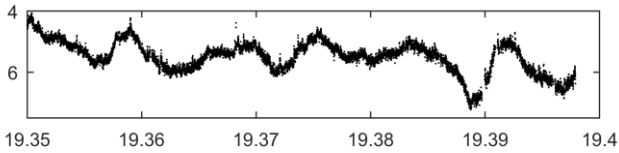
04021A (29-07-2020)



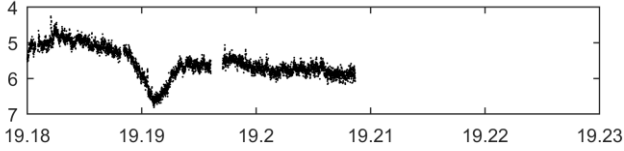
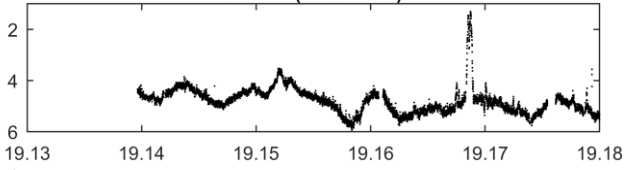
04021A (02-08-2020)



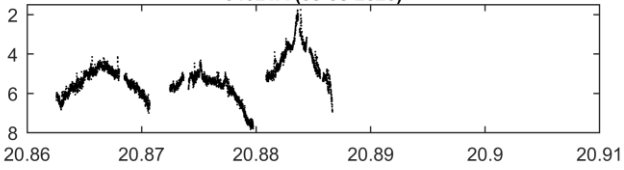
04021A (02-08-2020)



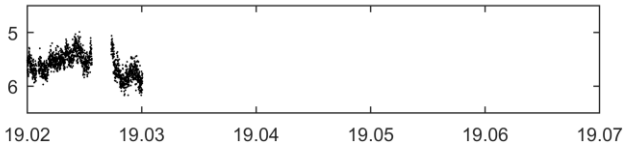
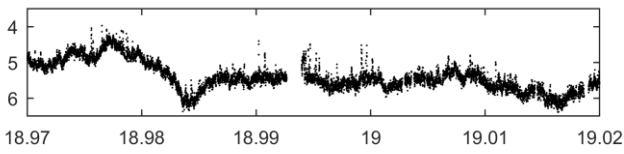
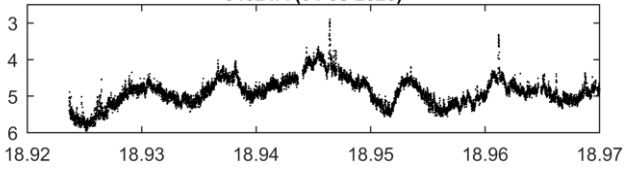
04021A (03-08-2020)



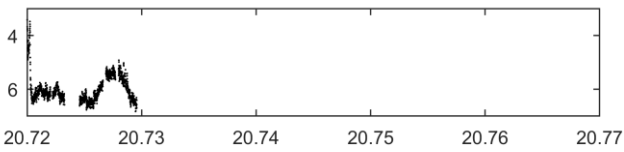
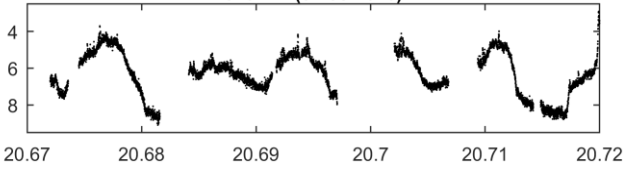
04021A (03-08-2020)



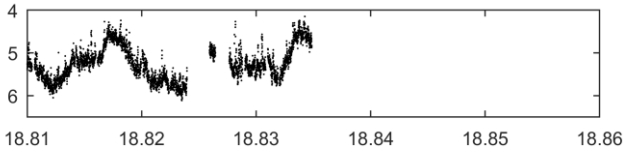
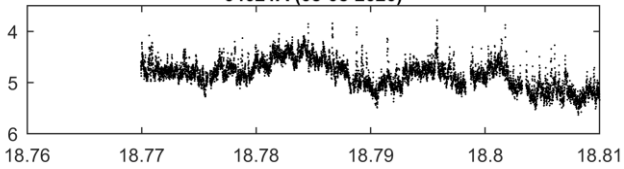
04021A (04-08-2020)



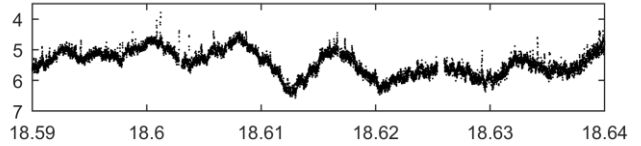
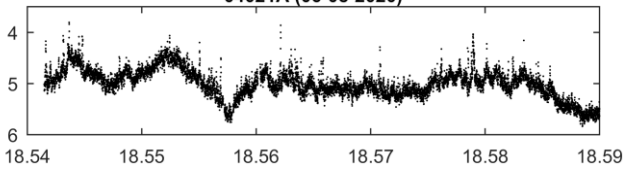
04021A (04-08-2020)



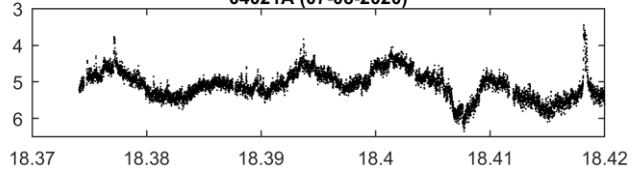
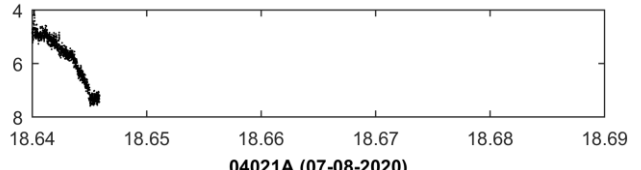
04021A (05-08-2020)



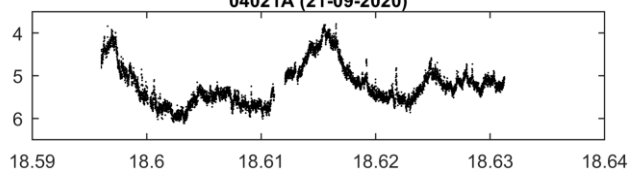
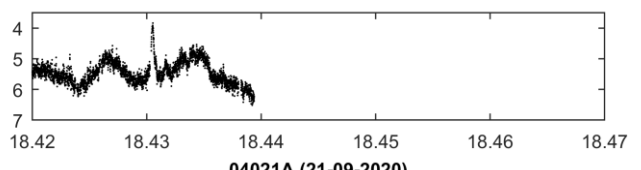
04021A (06-08-2020)



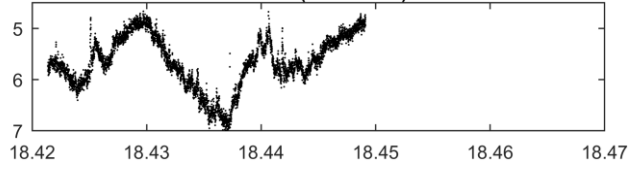
04021A (07-08-2020)



04021A (21-09-2020)

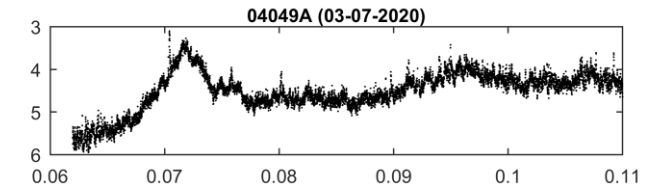


04021A (22-09-2020)

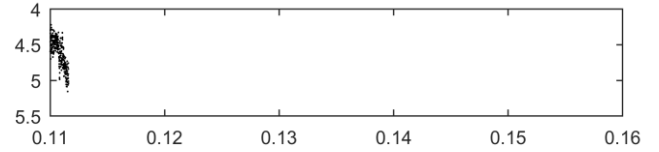


HELIOS-2A

NORAD ID: 28492
 Int'l Code: 2004-049A
 Dimensions: 3.4m x 3.7m x 6m
 Initial orbit:
 Perigee: 665 km
 Apogee: 666 km
 Inclination: 98.07°
 Period: 98.06 min
 Eccentricity: 0.0001
 Launch date: 2004-12-18
 Source: France (FR)



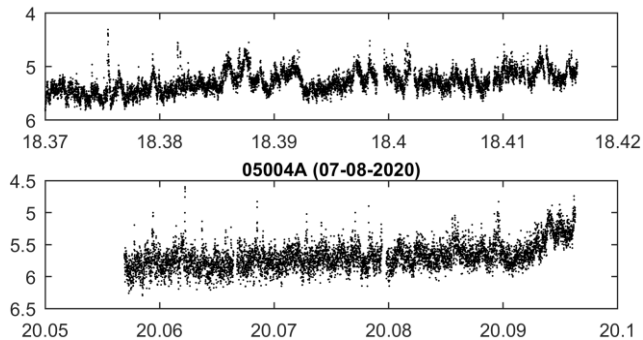
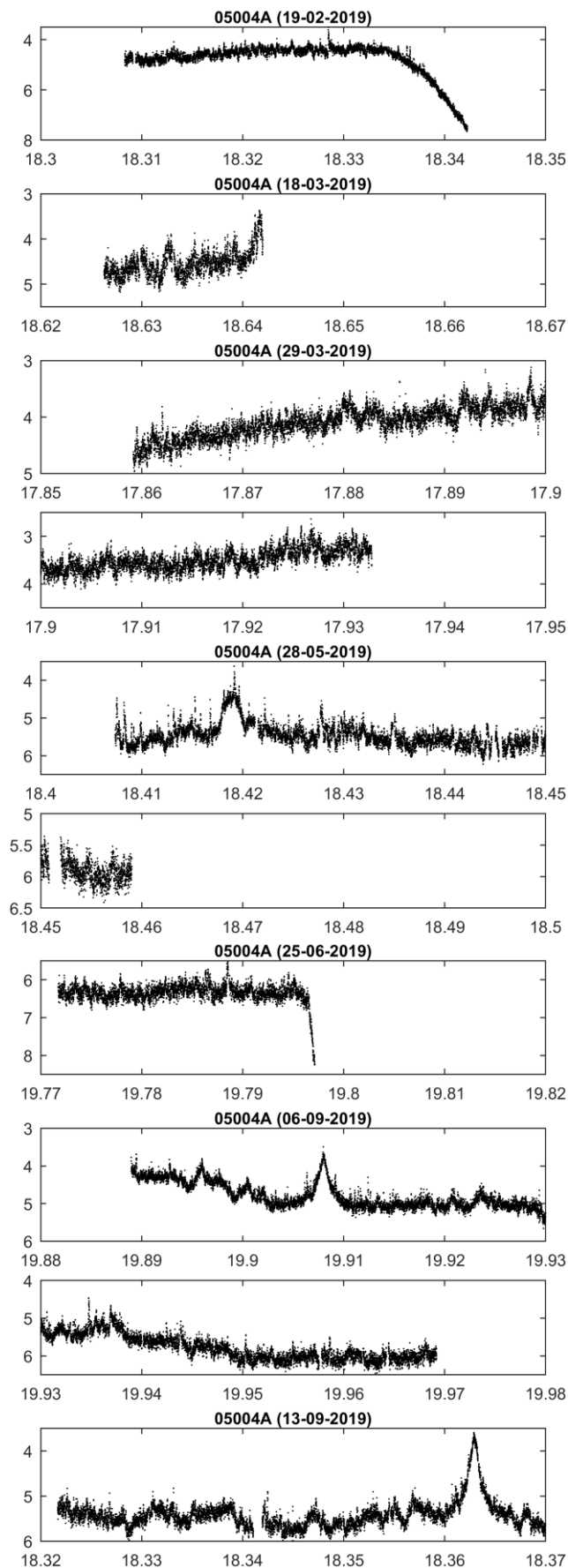
04049A (03-07-2020)



USA 181 (NOSS C3-1)

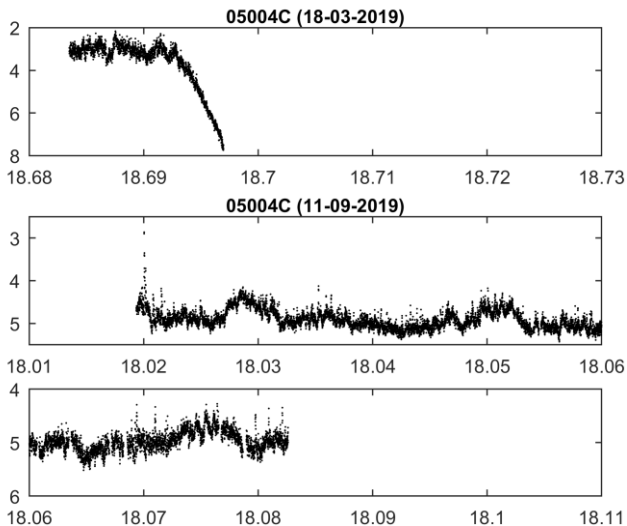
NORAD ID: 28537
 Int'l Code: 2005-004A
 Dimensions:
 Initial orbit:
 Perigee: 1011 km
 Apogee: 1209 km

Inclination: 63.4°
 Period: 107.47 min
 Eccentricity: 0.0132
 Launch date: 2005-02-03
 Source: United States (US)



USA 181 DEB (NOSS-3 3B)

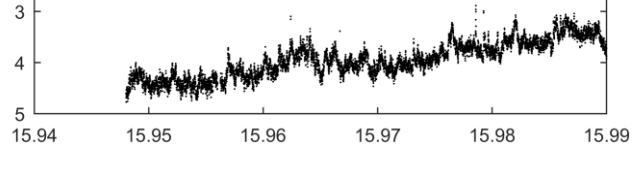
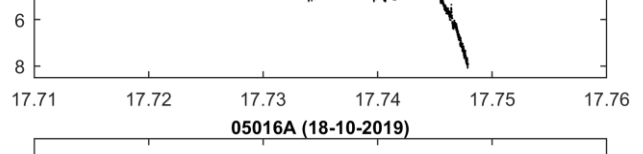
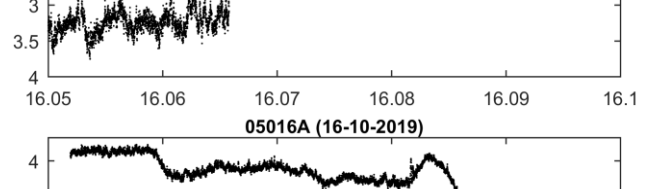
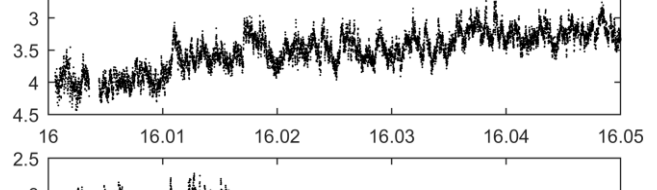
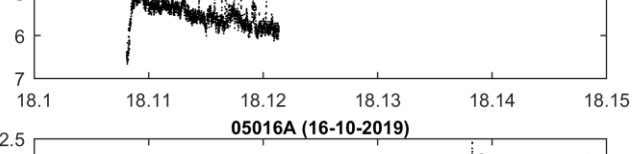
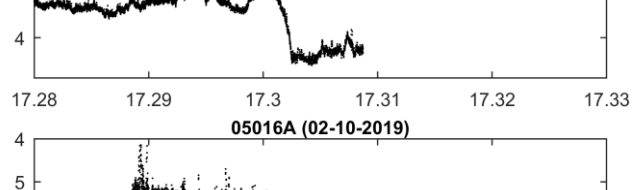
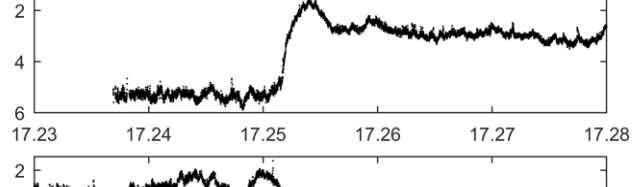
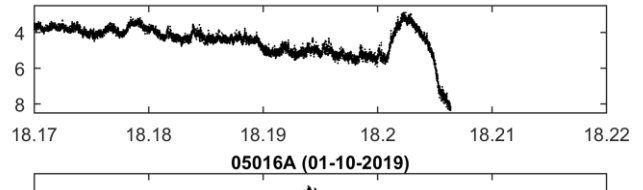
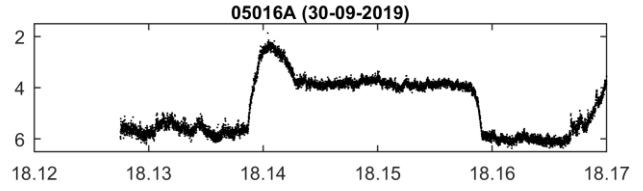
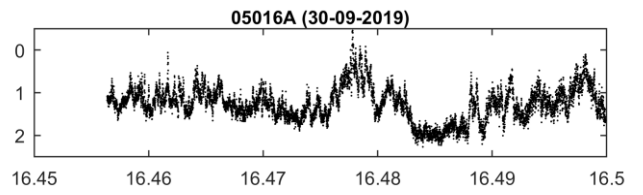
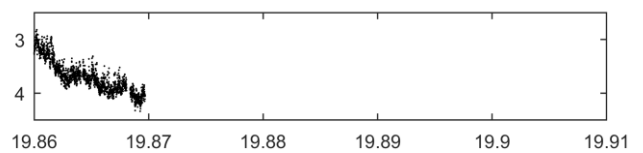
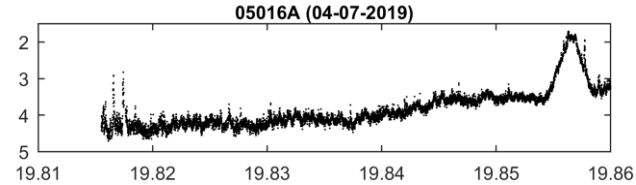
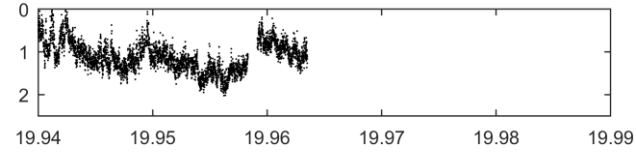
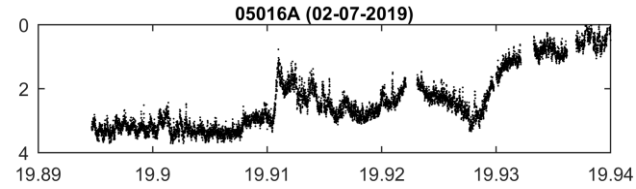
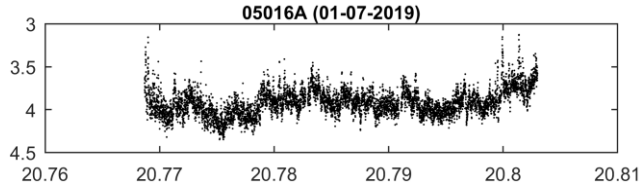
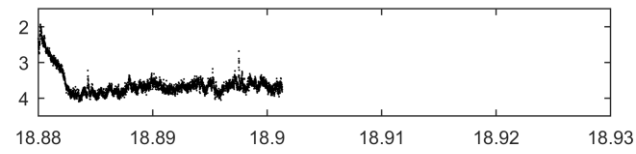
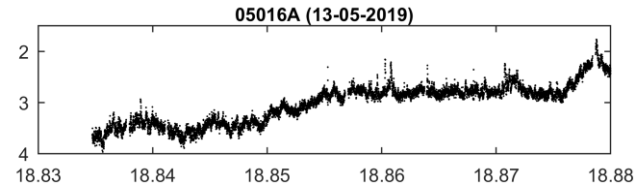
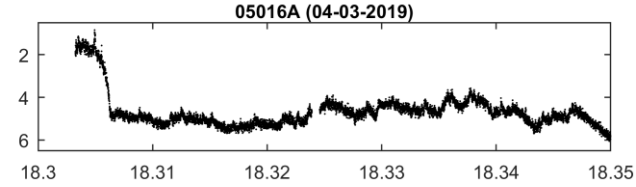
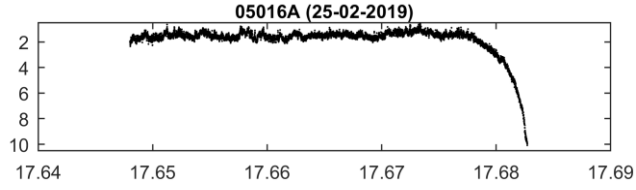
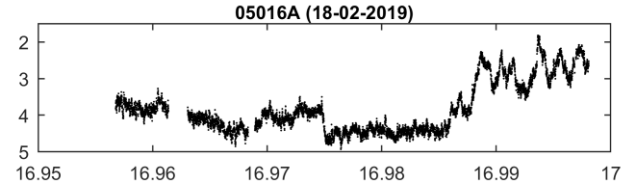
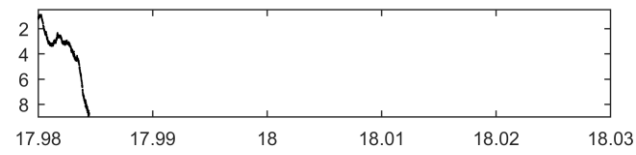
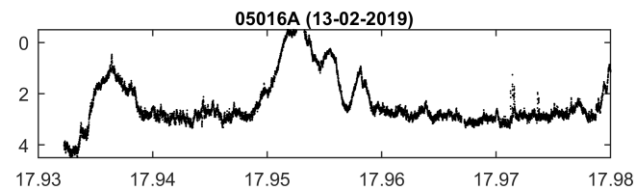
NORAD ID: 28541
 Int'l Code: 2005-004C
 Dimensions:
 Initial orbit:
 Perigee: 1011 km
 Apogee: 1209 km
 Inclination: 63.4°
 Period: 107.47 min
 Eccentricity: 0.01323
 Launch date: 2005-02-03
 Source: United States (US)

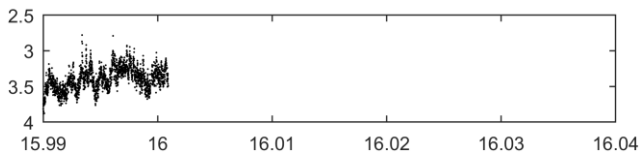


USA 182 (LACROSSE 5)

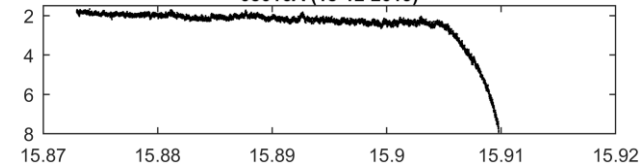
NORAD ID: 28646
 Int'l Code: 2005-016A
 Dimensions: cylindrical 12m long,
 4m dia, 45m span
 Initial orbit:
 Perigee: 712 km
 Apogee: 718 km
 Inclination: 57.0°
 Period: 99.08 min
 Eccentricity: 0.00042
 Launch date: 2005-04-30
 Source: United States (US)



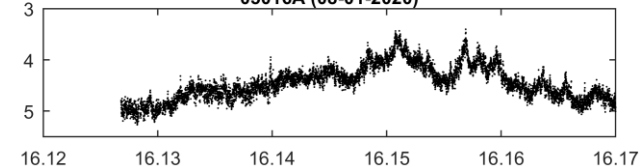




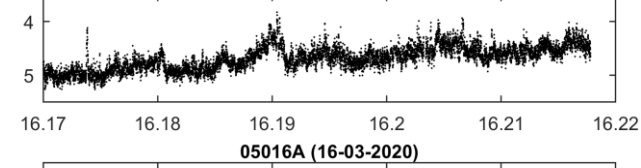
05016A (18-12-2019)



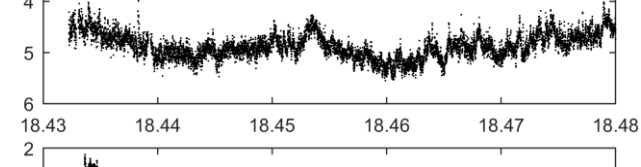
05016A (08-01-2020)



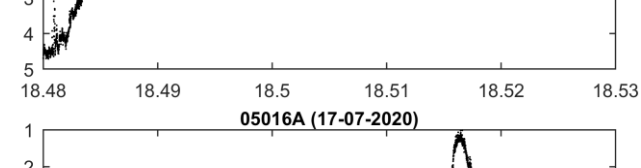
05016A (16-03-2020)



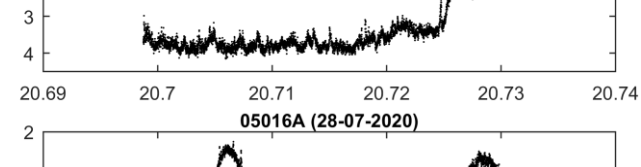
05016A (17-07-2020)



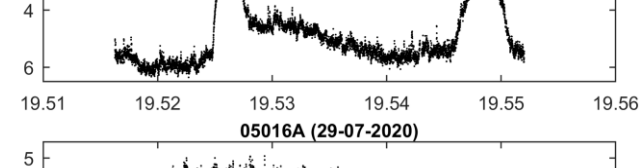
05016A (28-07-2020)



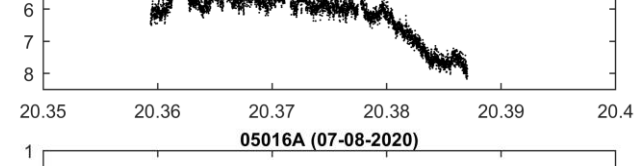
05016A (29-07-2020)



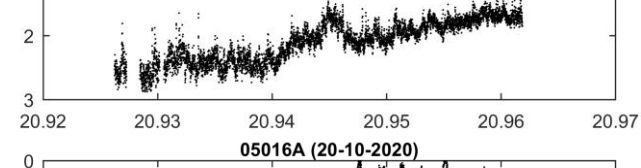
05016A (07-08-2020)



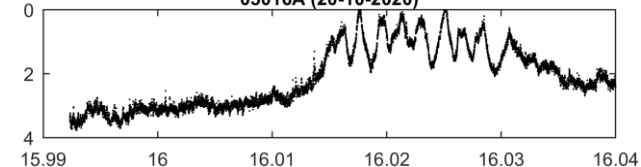
05016A (20-10-2020)



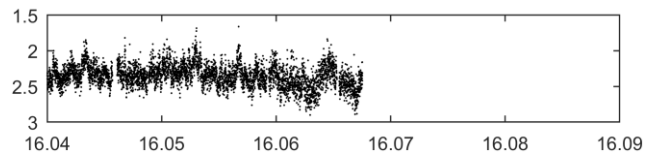
05017A (18-04-2019)



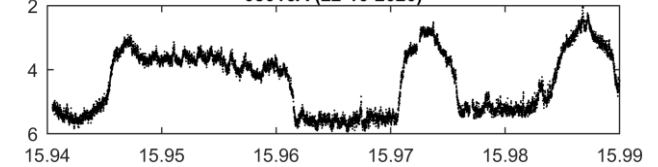
05017A (03-05-2019)



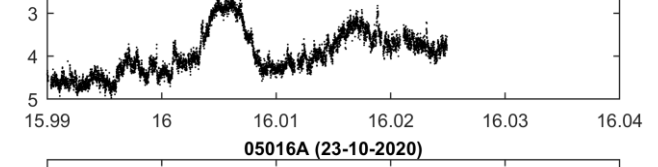
05017A (03-05-2019)



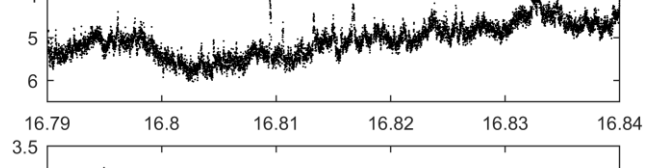
05016A (22-10-2020)



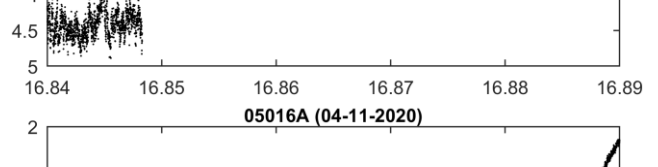
05016A (23-10-2020)



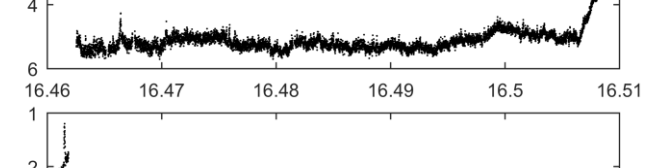
05016A (04-11-2020)



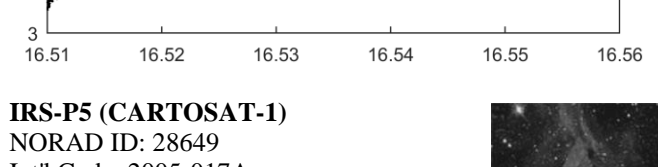
05016A (04-11-2020)



05016A (04-11-2020)



05016A (04-11-2020)



05016A (04-11-2020)

IRS-P5 (CARTOSAT-1)

NORAD ID: 28649

Int'l Code: 2005-017A

Dimensions:

Initial orbit:

Perigee: 607 km

Apogee: 717 km

Inclination: 97.82°

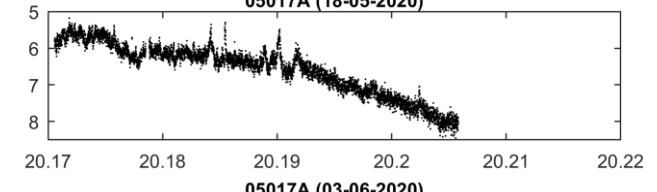
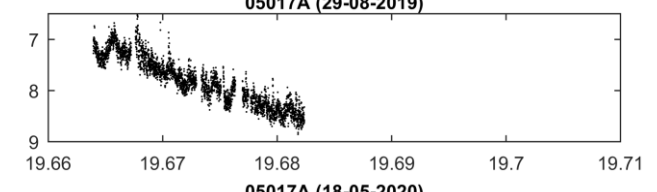
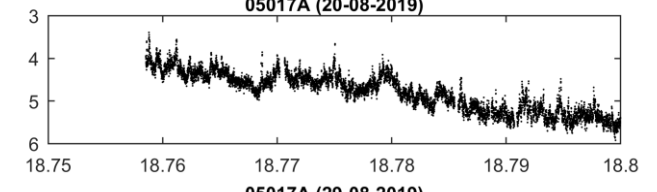
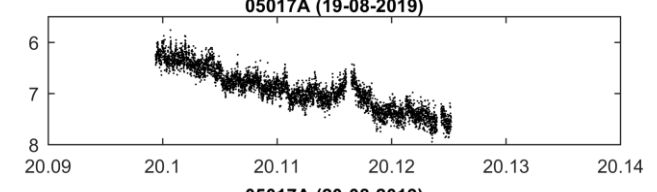
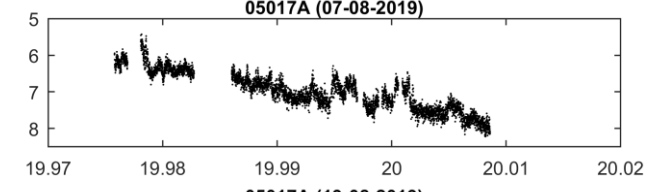
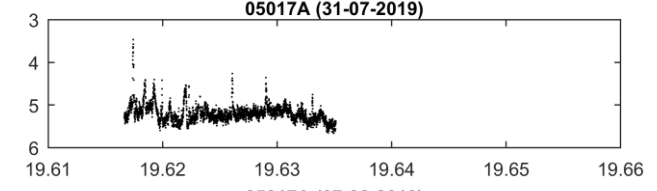
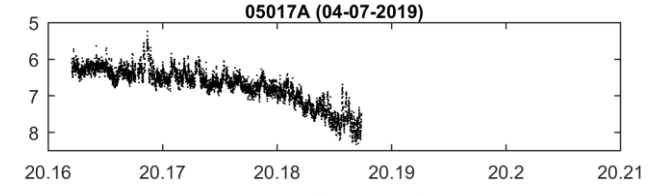
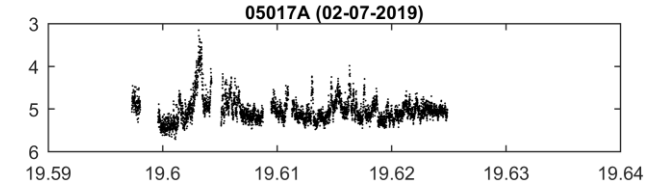
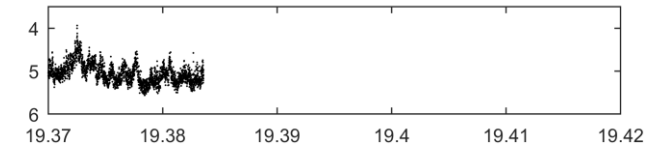
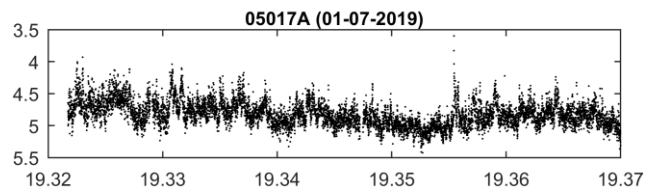
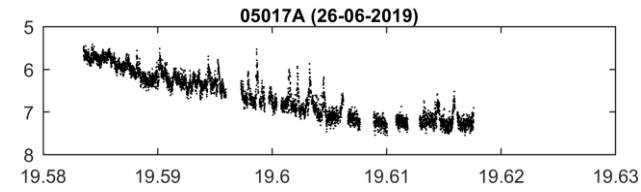
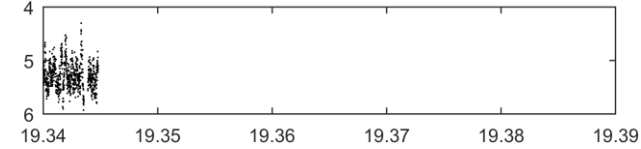
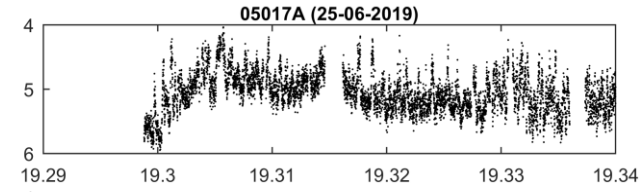
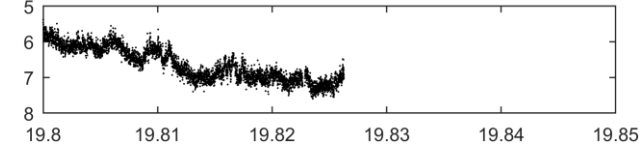
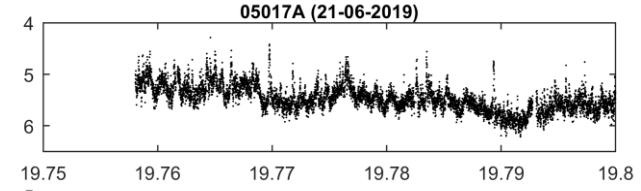
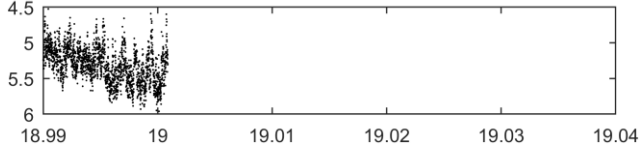
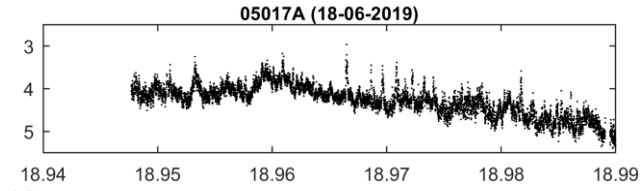
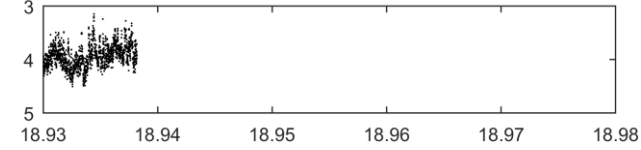
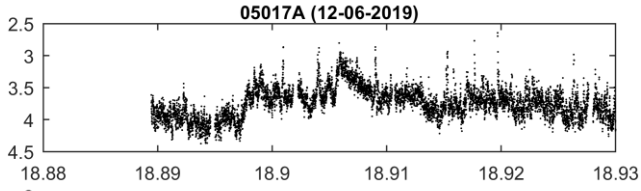
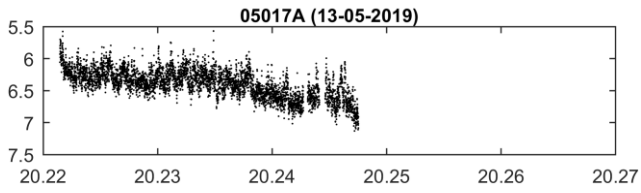
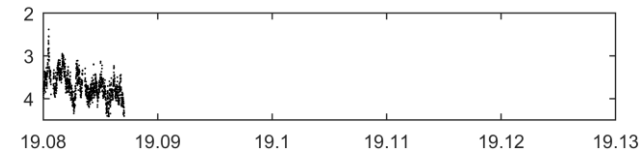
Period: 97.98 min

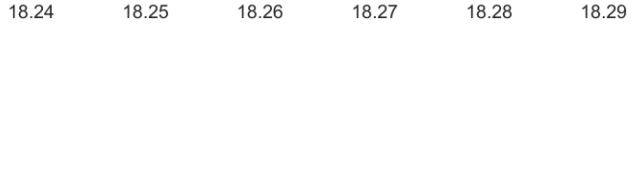
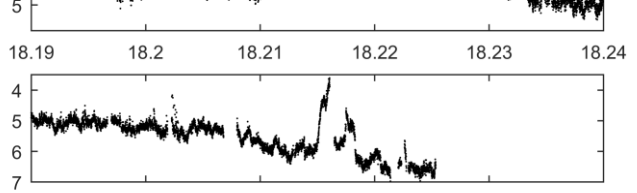
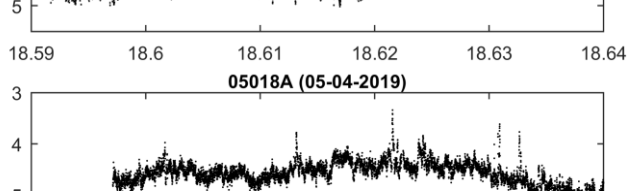
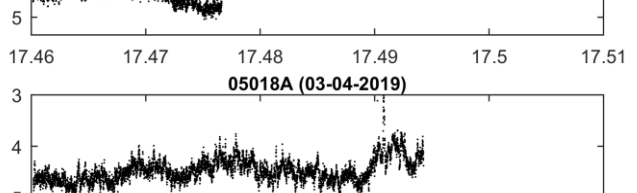
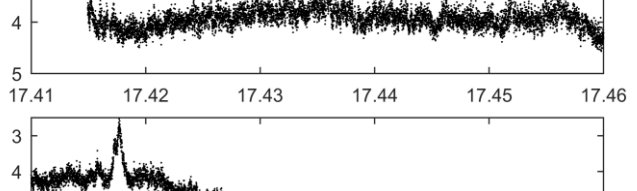
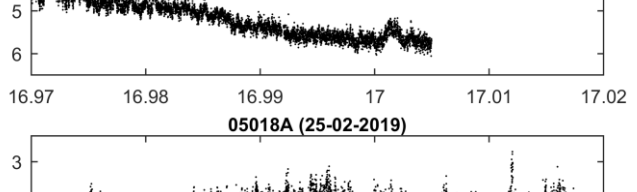
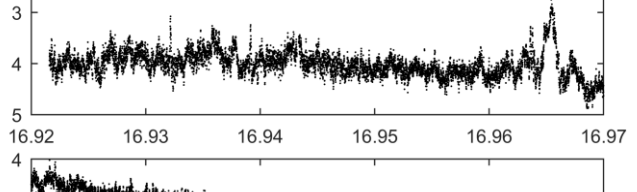
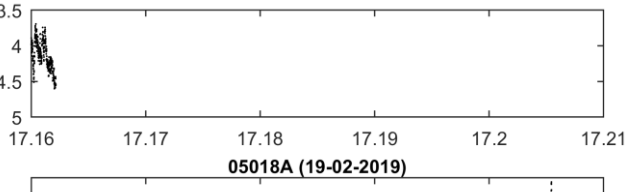
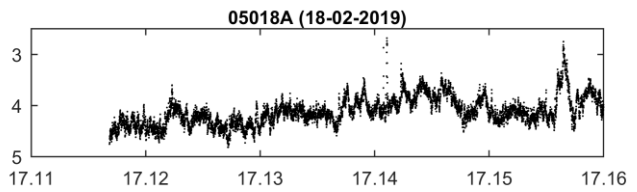
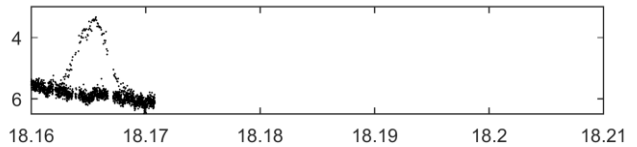
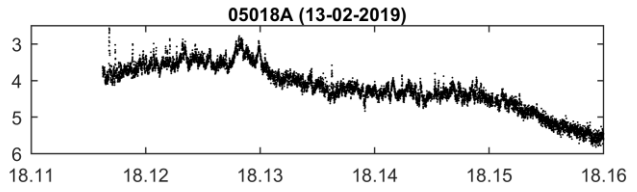
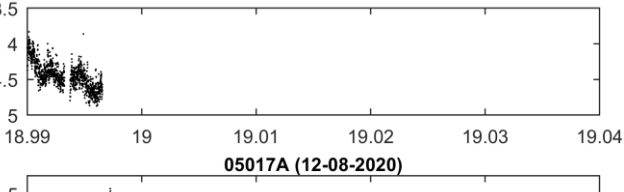
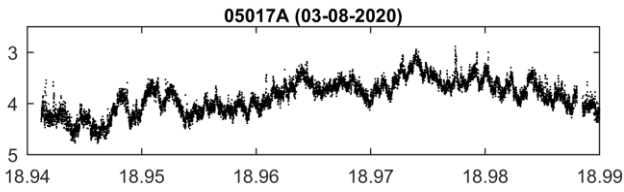
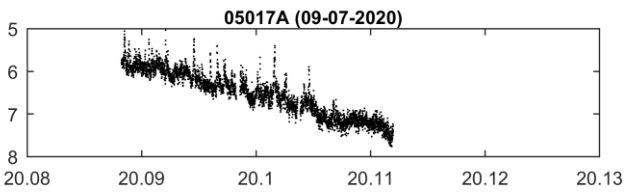
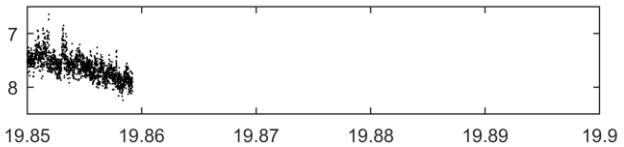
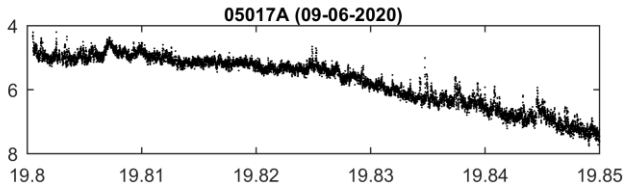
Eccentricity: 0.008

Launch date: 2005-05-05

Source: India (IND)

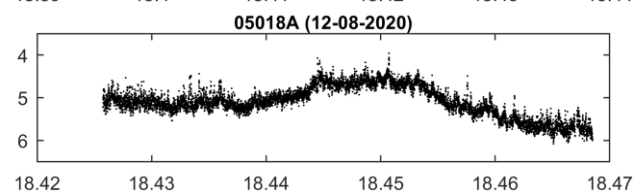
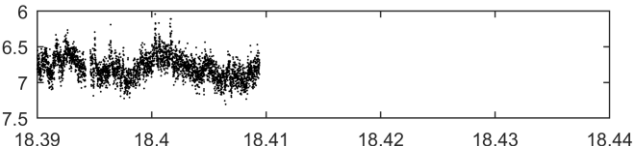
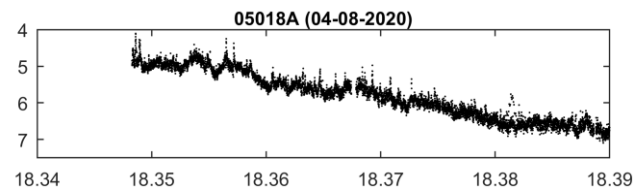
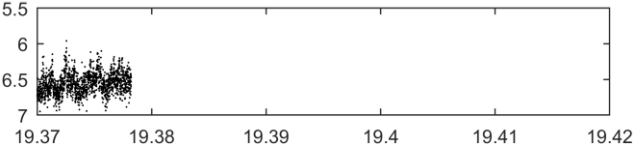
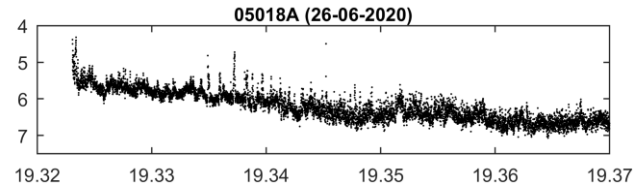
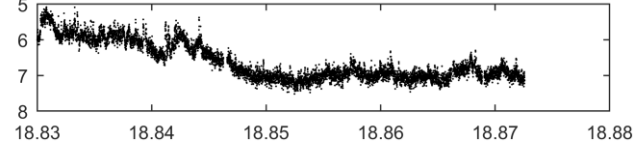
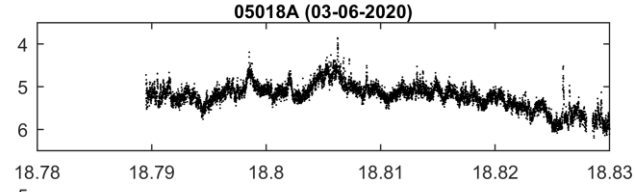
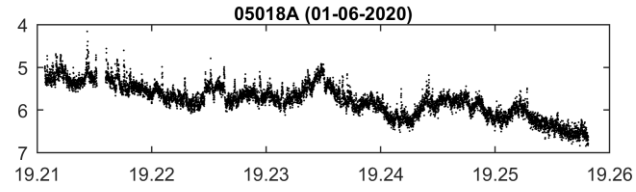
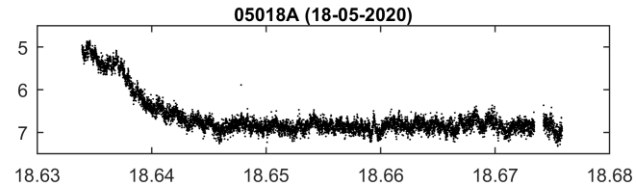
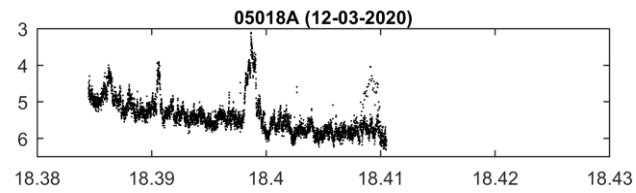
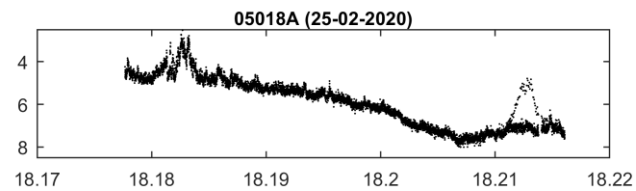
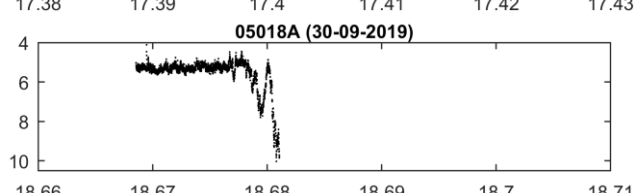
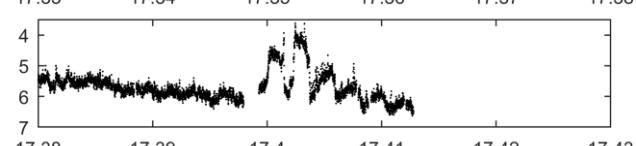
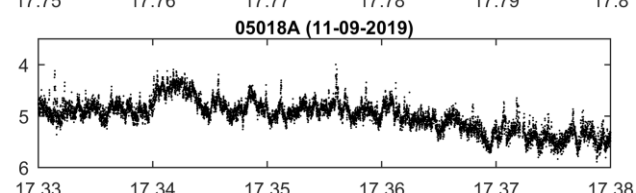
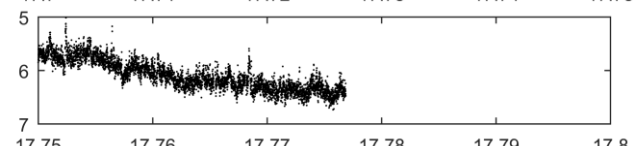
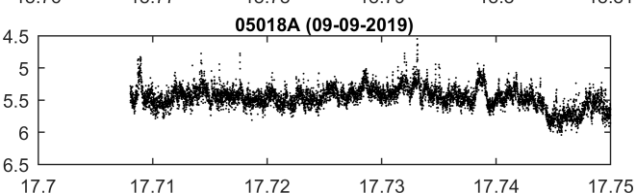
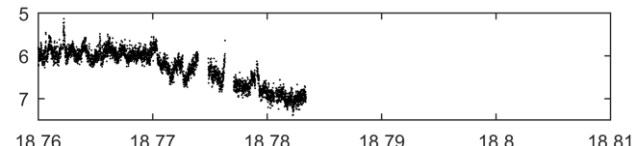
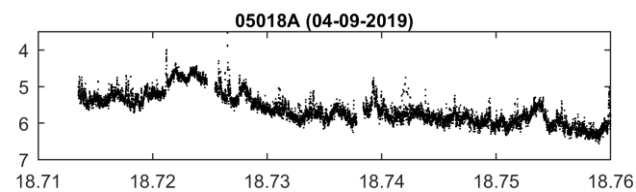
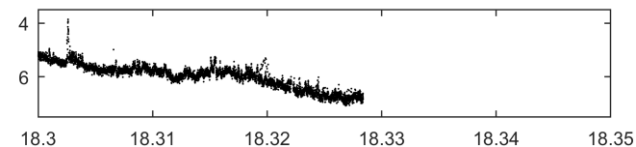
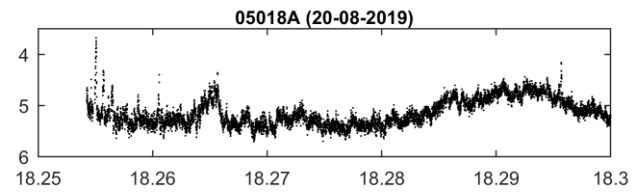
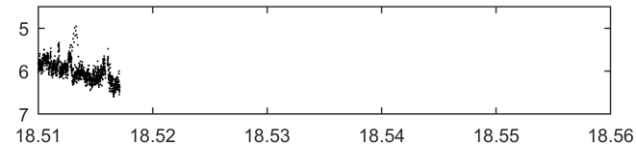
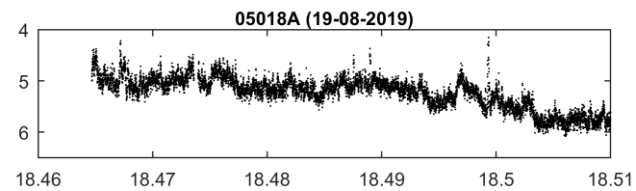


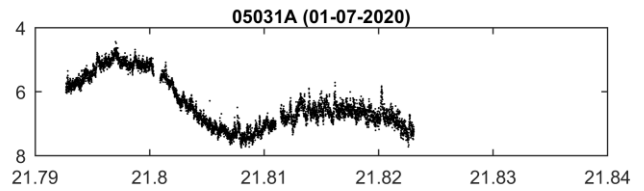
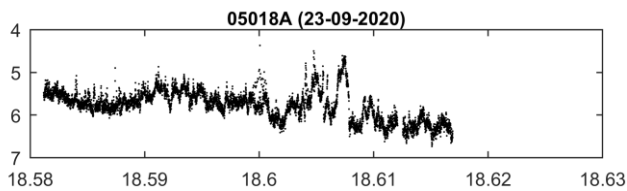
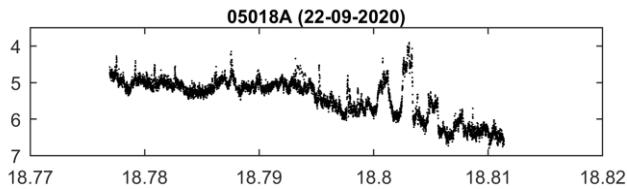
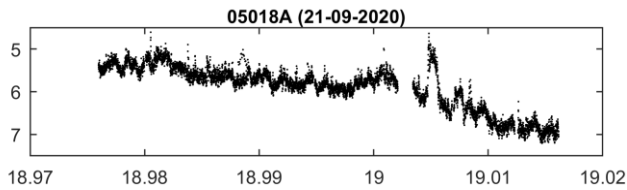
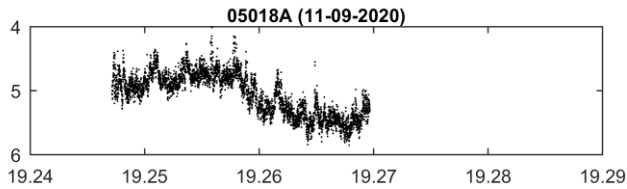
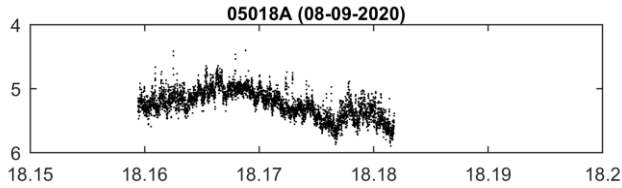
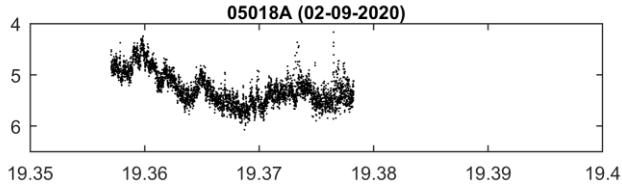
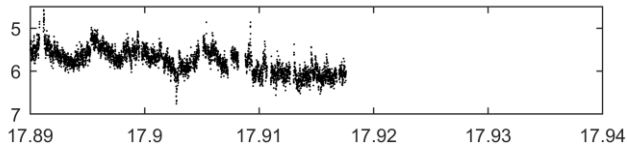
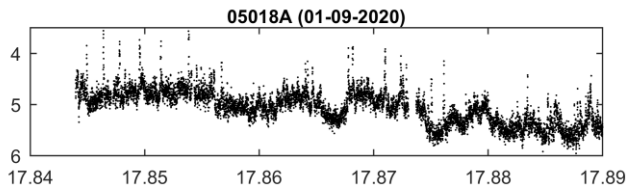




NOAA 18 (NOAA N)
 NORAD ID: 28654
 Int'l Code: 2005-018A
 Dimensions: cylindrical 4.2m long,
 1.88m dia
 Initial orbit:
 Perigee: 846 km
 Apogee: 866 km
 Inclination: 98.74°
 Period: 102.07 min
 Eccentricity: 0.001
 Launch date: 2005-05-20
 Source: United States (US)







MONITOR-E 1

NORAD ID: 28822

Int'l Code: 2005-032A

Dimensions:

Initial orbit:

Perigee: 524 km

Apogee: 544 km

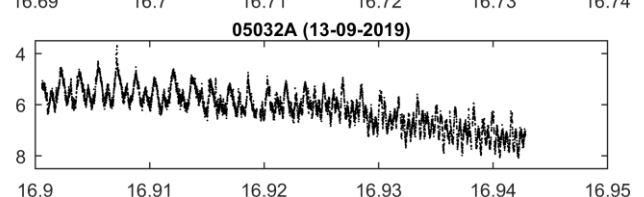
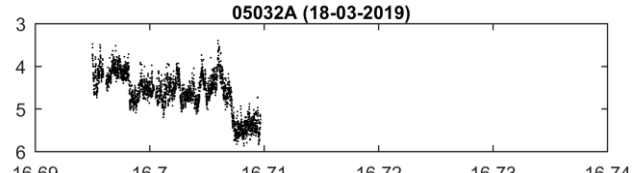
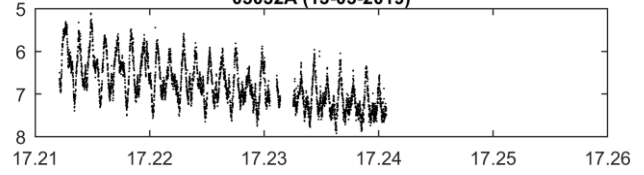
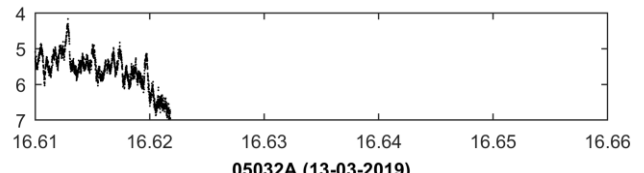
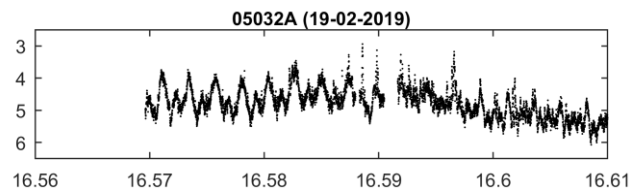
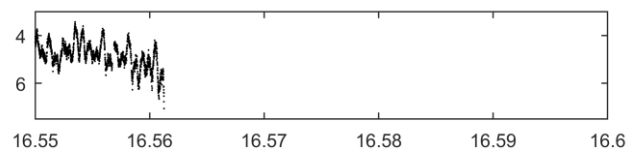
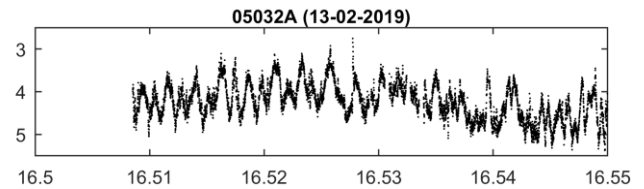
Inclination: 97.56°

Period: 95.32 min

Eccentricity: 0.001

Launch date: 2005-08-26

Source: Commonwealth of Independent States (former USSR) (CIS)



KIRARI (OICETS)

NORAD ID: 28809

Int'l Code: 2005-031A

Dimensions: box 0.78m x 1.1m x 1.5m, 9.36 span

Initial orbit:

Perigee: 597 km

Apogee: 612 km

Inclination: 97.83°

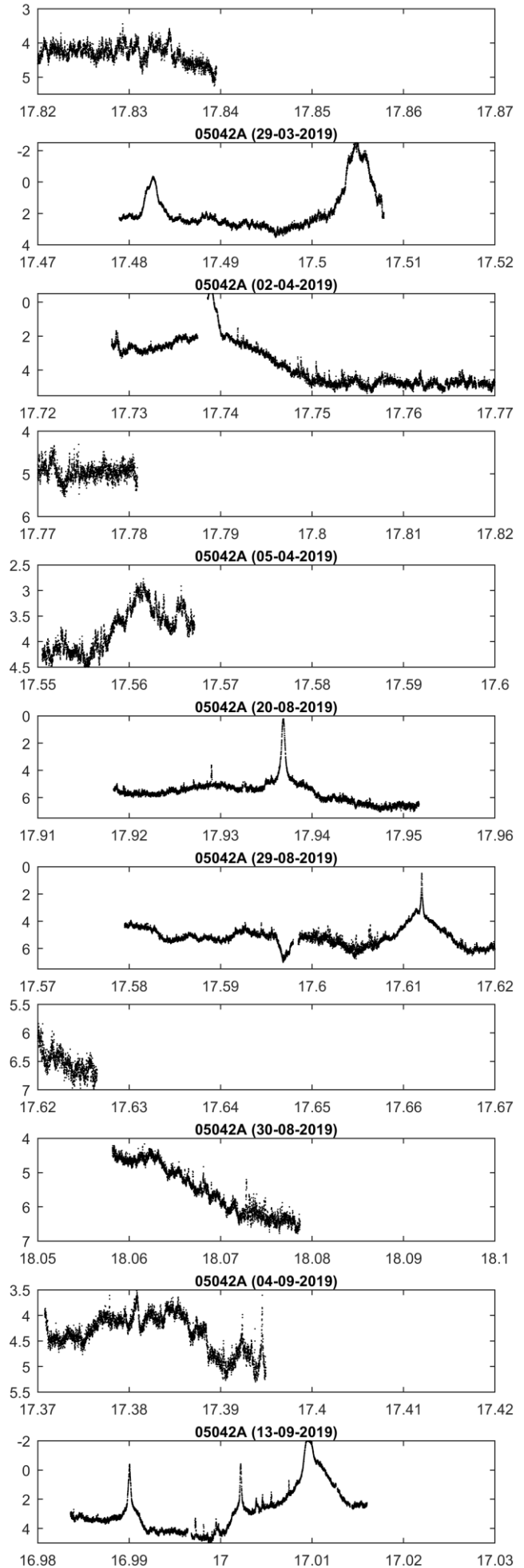
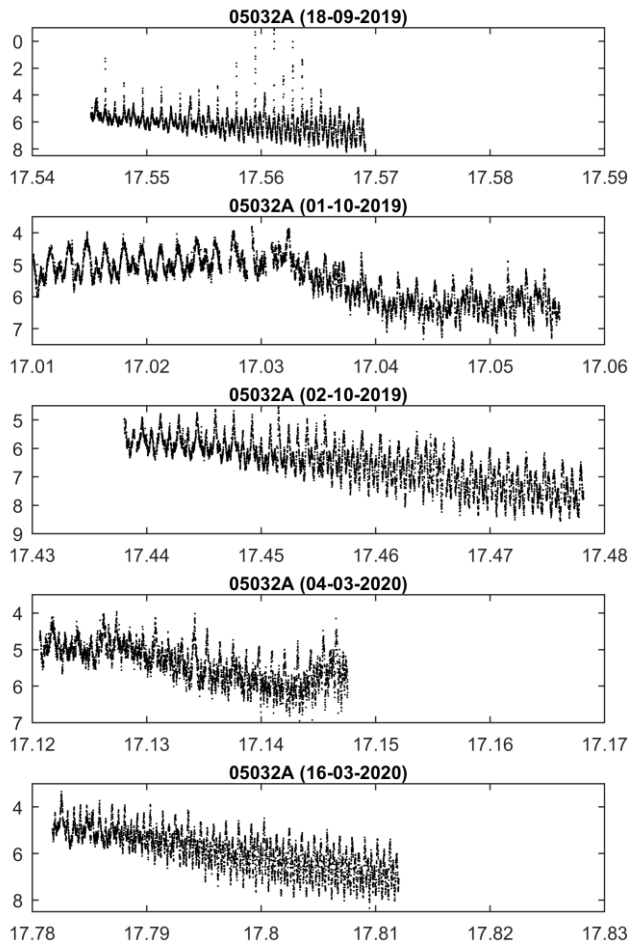
Period: 96.78 min

Eccentricity: 0.001

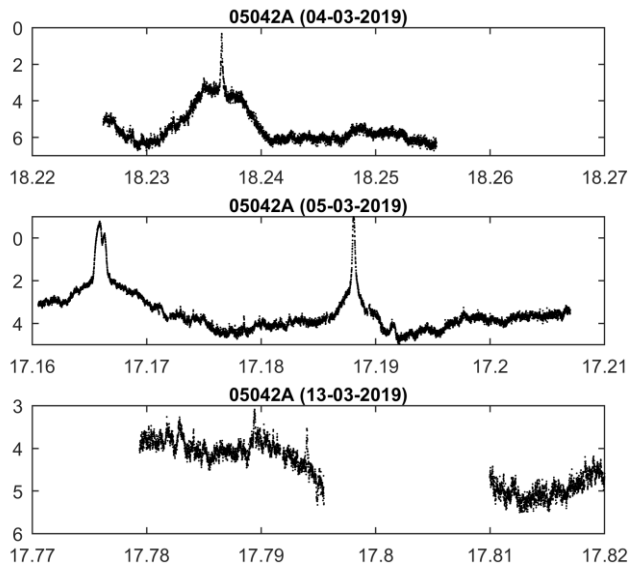
Launch date: 2005-08-23

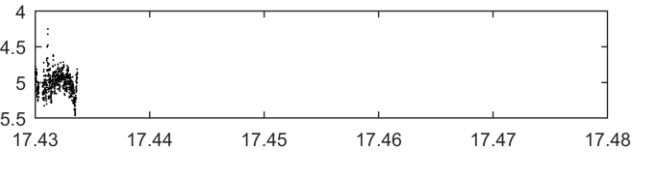
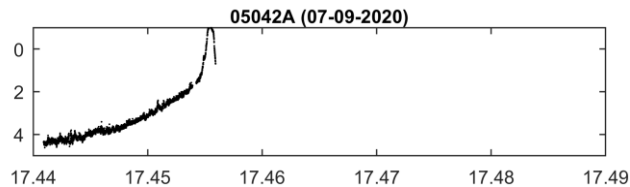
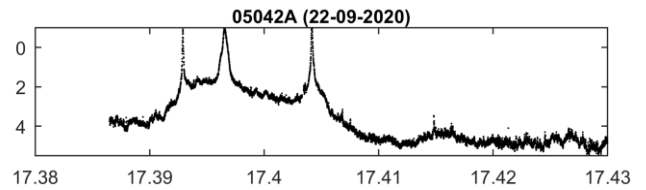
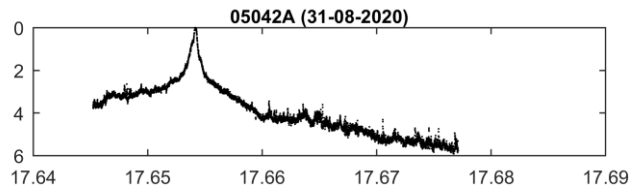
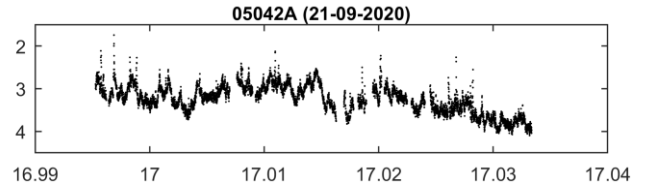
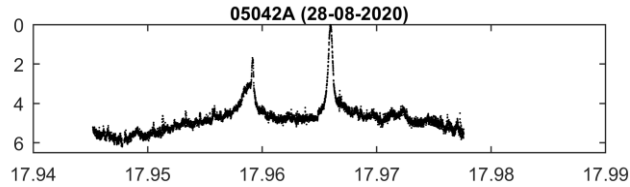
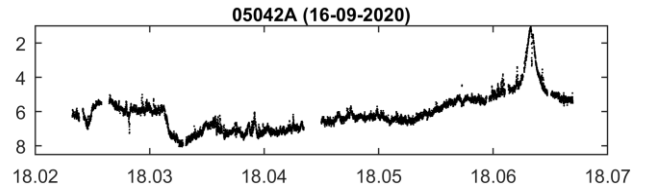
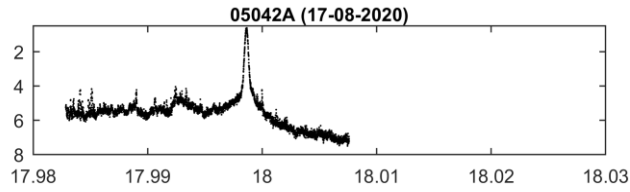
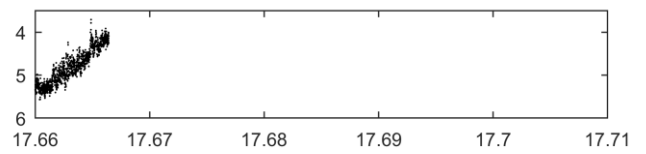
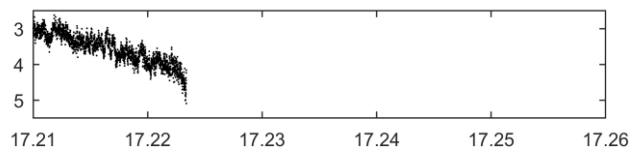
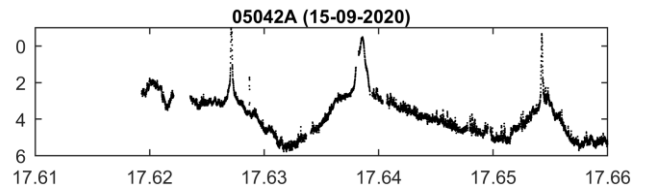
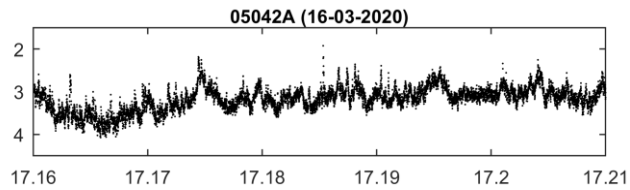
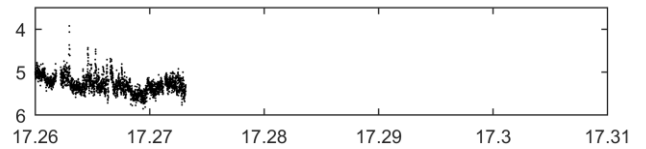
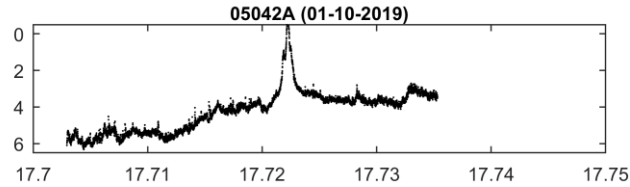
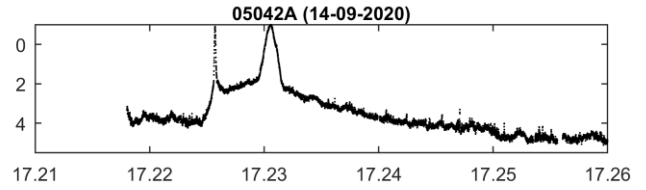
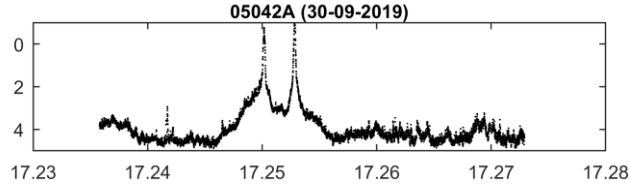
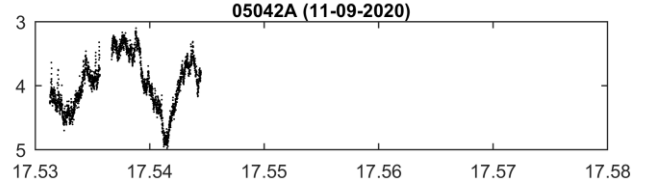
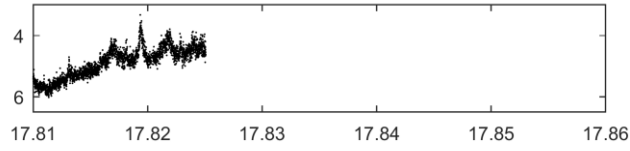
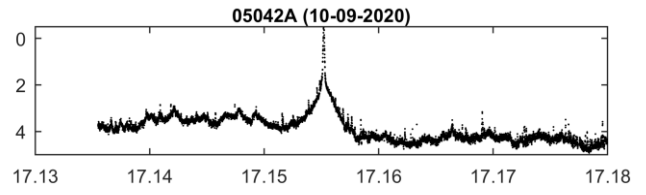
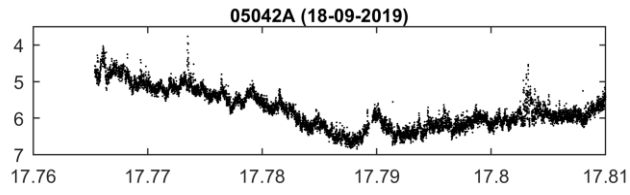
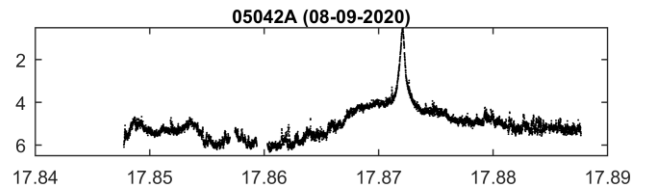
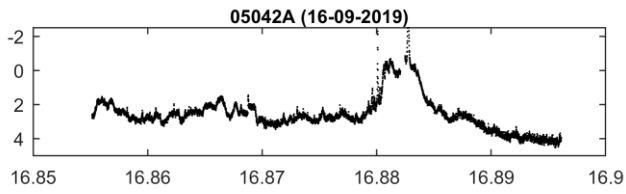
Source: Japan (JPN)





USA 186
(NRO-L 20, KH-12 5)
 NORAD ID: 28888
 Int'l Code: 2005-042A
 Dimensions:
 Initial orbit:
 Perigee: 264 km
 Apogee: 1050 km
 Inclination: 97.8°
 Period: 97.87 min
 Eccentricity: 0.0559
 Launch date: 2005-10-19
 Source: United States (US)





RESURS DK-1

NORAD ID: 29228

Int'l Code: 2006-021A

Dimensions:

Initial orbit:

Perigee: 355 km

Apogee: 585 km

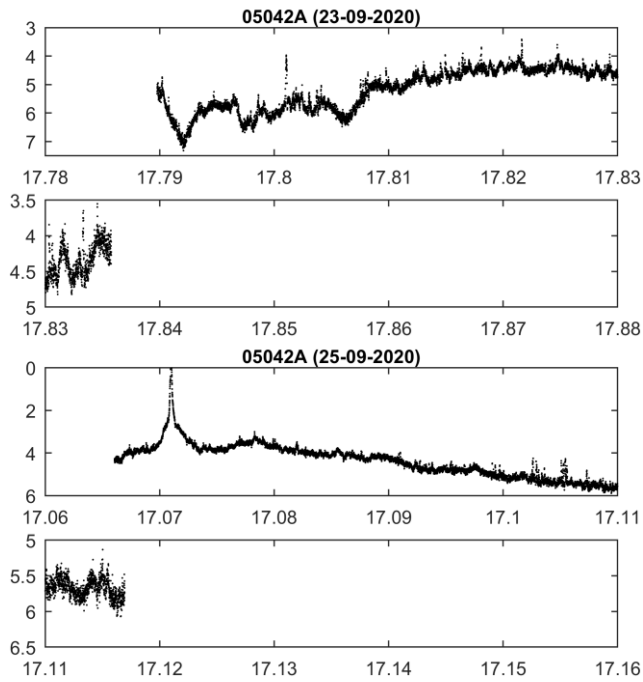
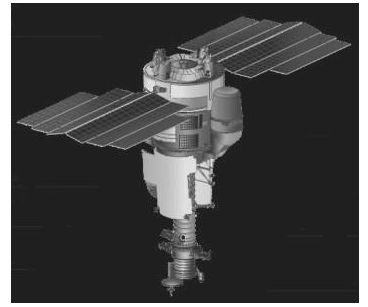
Inclination: 69.94°

Period: 94.00 min

Eccentricity: 0.017

Launch date: 2006-06-15

Source: Commonwealth of Independent States (former USSR) (CIS)



ALOS (DAICHI) (Advanced Land Observing Satellite)

NORAD ID: 28931

Int'l Code: 2006-002A

Dimensions: box 6.5m x 3.5m x 4.5m,
palsar 8.9m x 3.1m, solar array 22m x 3m

Initial orbit:

Perigee: 695 km

Apogee: 697 km

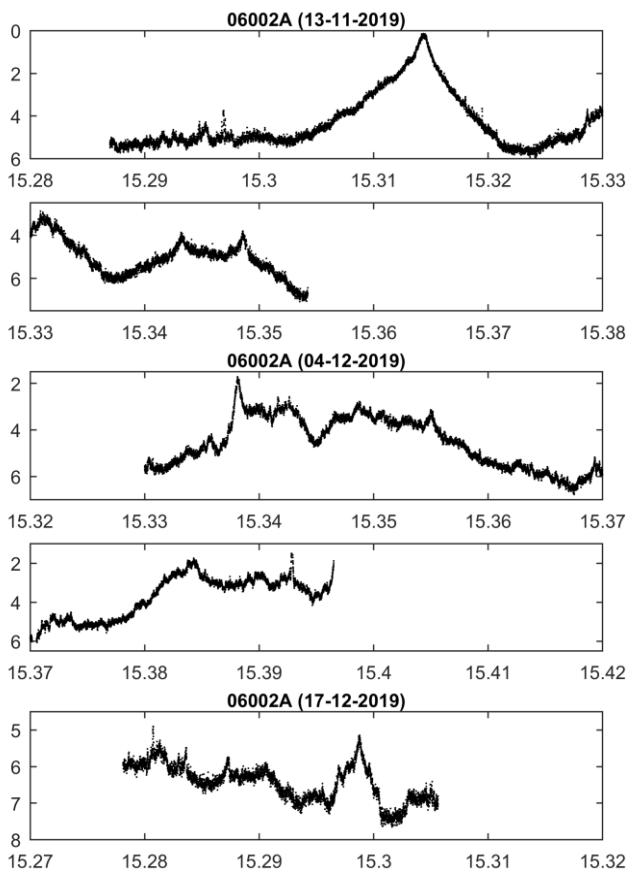
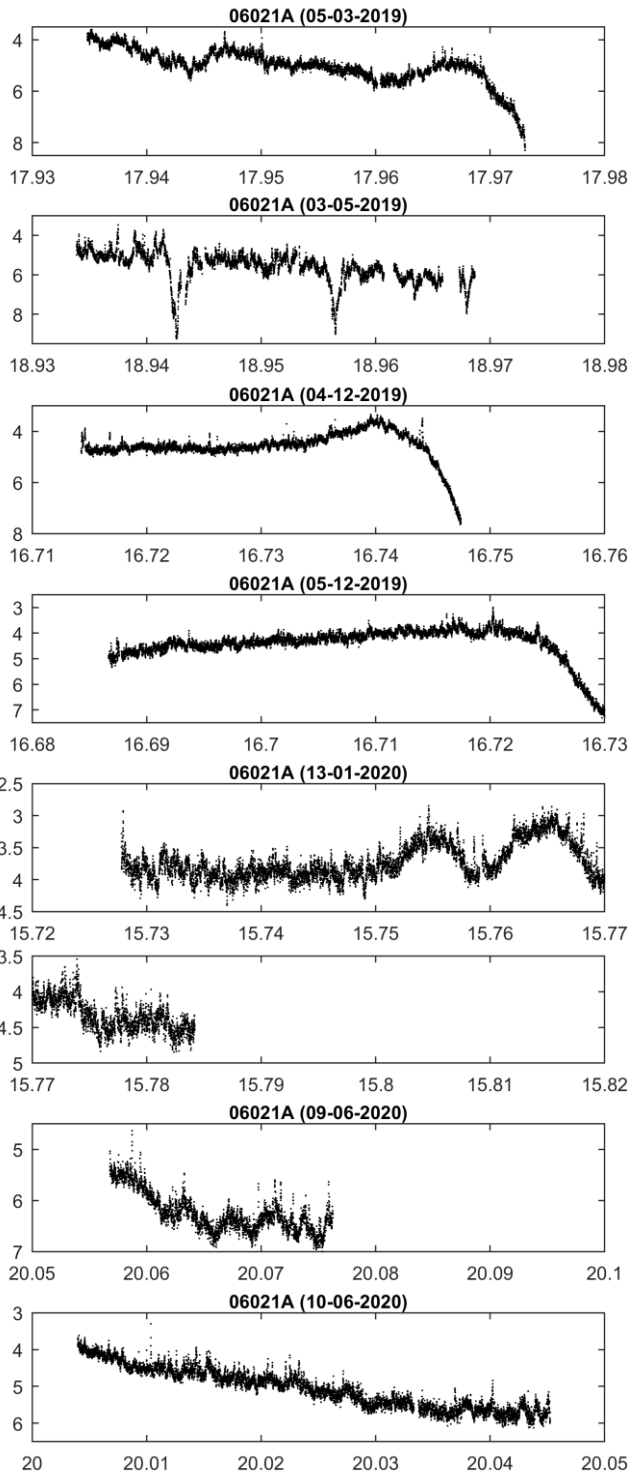
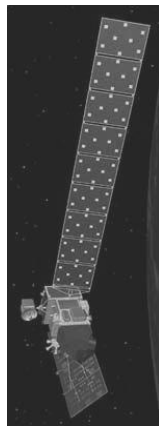
Inclination: 98.23°

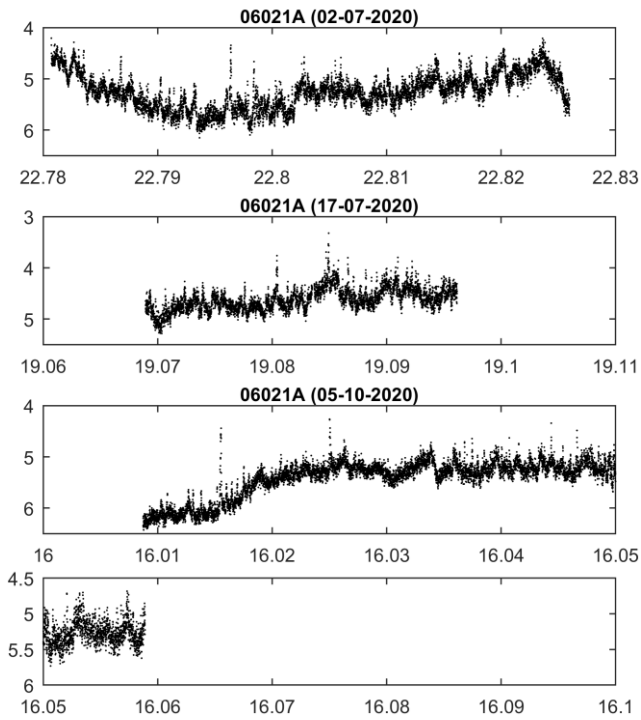
Period: 98.68 min

Eccentricity: 0.0001

Launch date: 2006-01-24

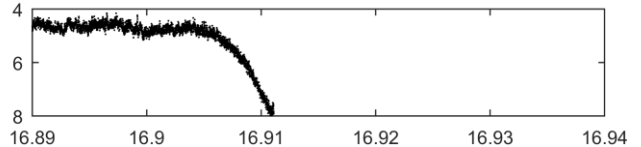
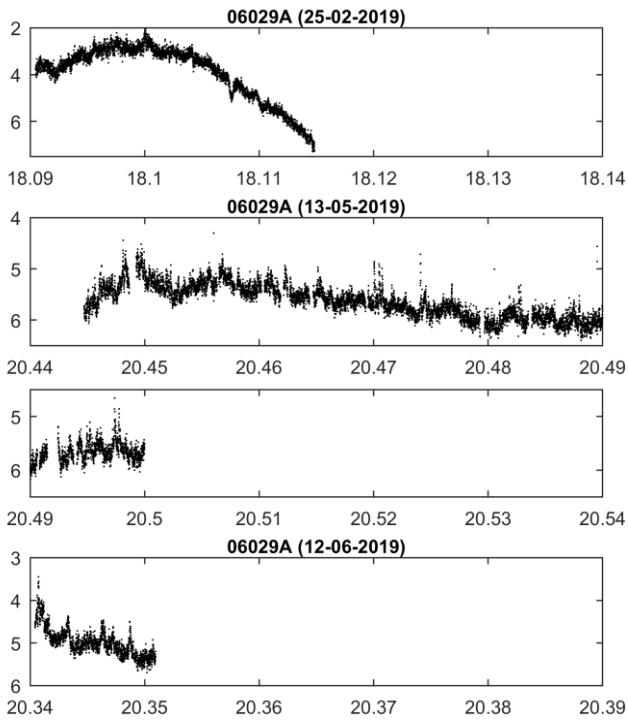
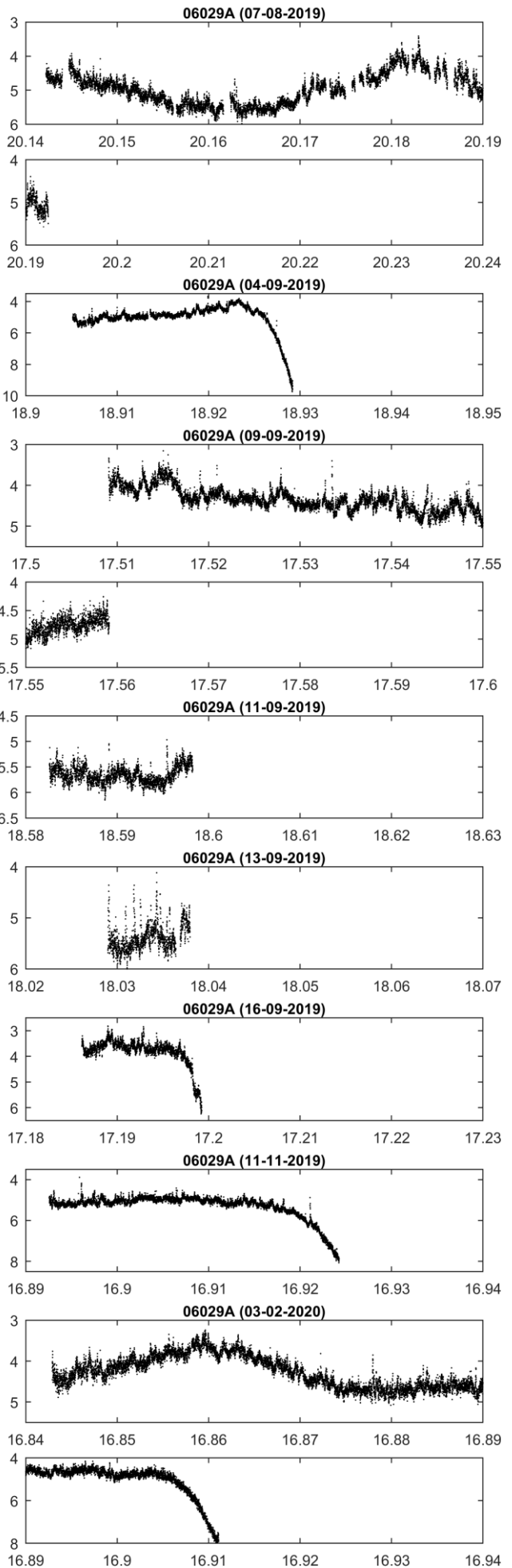
Source: Japan (JPN)

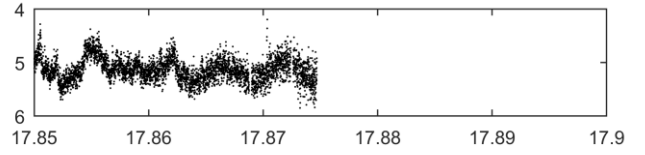
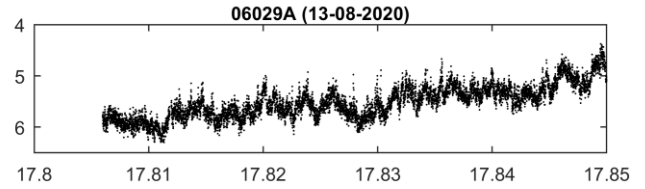
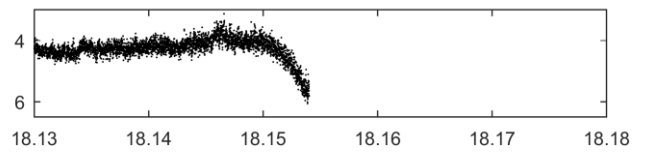
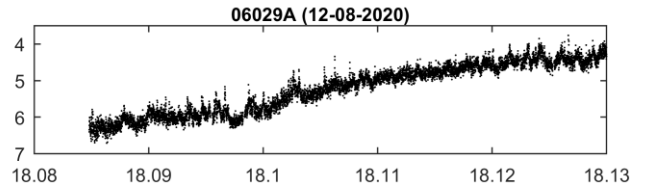
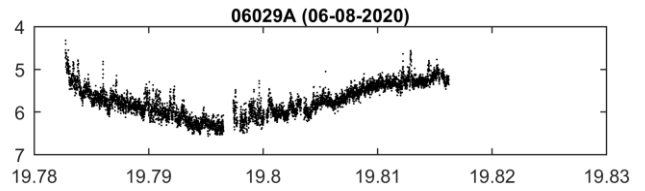
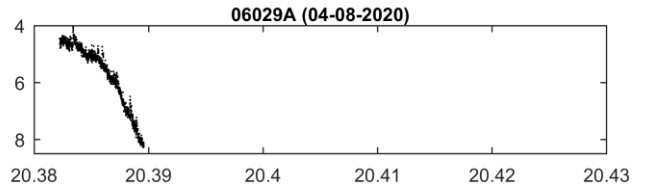
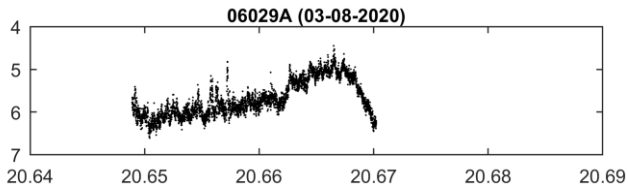
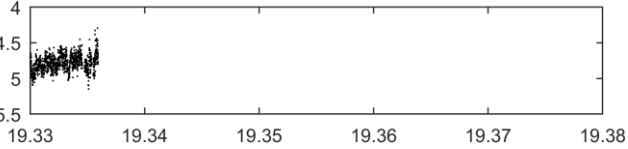
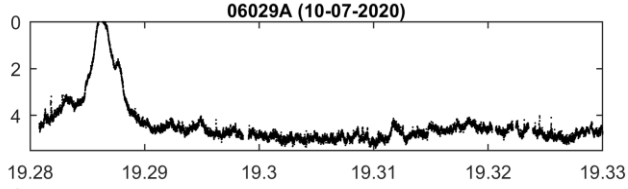
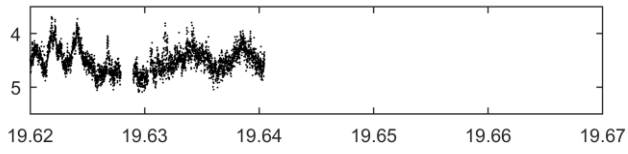
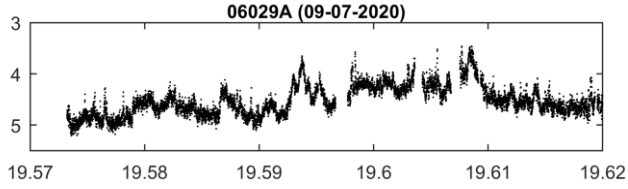
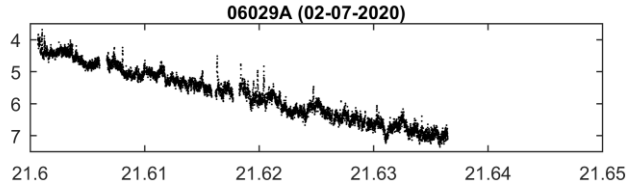
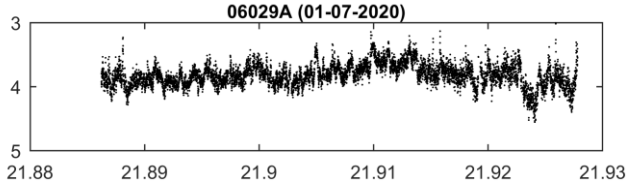
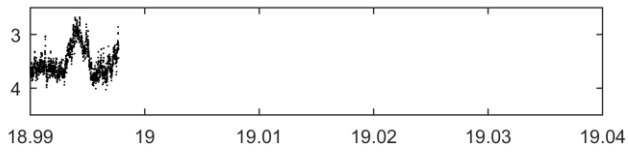
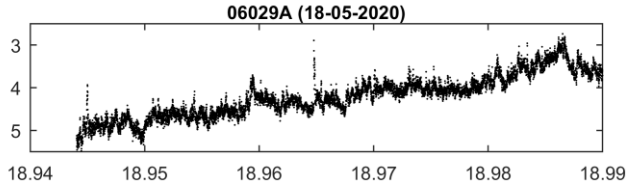
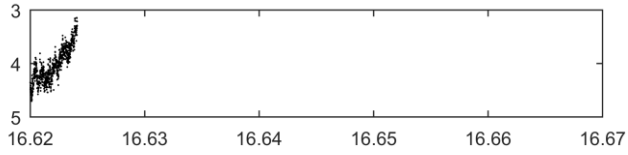
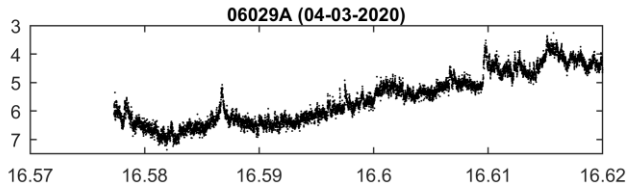




GENESIS 1

NORAD ID: 29252
 Int'l Code: 2006-029A
 Dimensions: inflatable cylinder
 4.5m long, 2.4m dia
 Initial orbit:
 Perigee: 555 km
 Apogee: 561 km
 Inclination: 64.51°
 Period: 95.82 min
 Eccentricity: 0.0005
 Launch date: 2006-07-12
 Source: United States (US)





KOMPSAT 2 (ARIRANG-2)

NORAD ID: 29268

Int'l Code: 2006-031A

Dimensions: hexagonal

2.5m long, 2m dia, 6.8m span

Initial orbit:

Perigee: 679 km

Apogee: 701 km

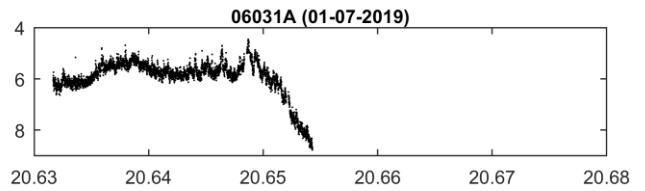
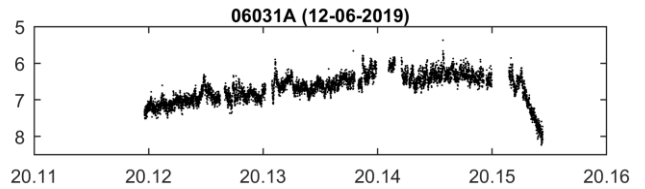
Inclination: 98.14°

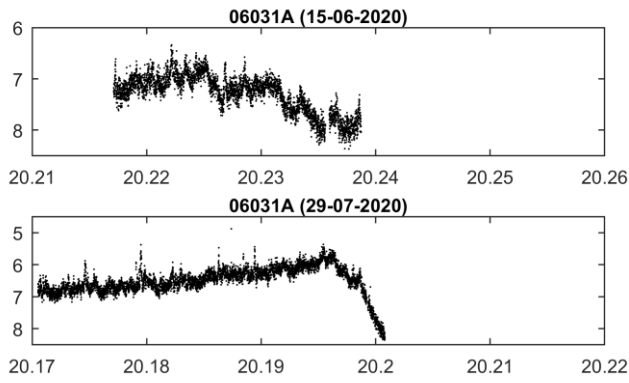
Period: 98.57 min

Eccentricity: 0.002

Launch date: 2006-07-28

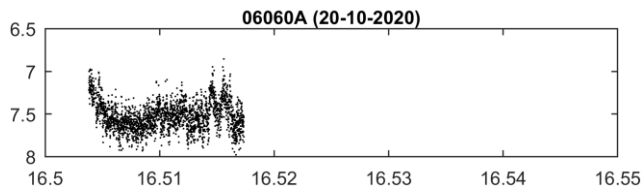
Source: South Korea (SKOR)





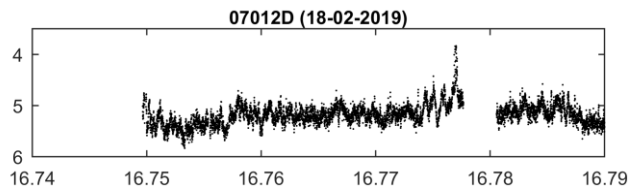
SAR LUPE 1

NORAD ID: 29658
 Int'l Code: 2006-060A
 Dimensions: box 4m x 3m x 2m,
 parabolic dish 3.3m x 2.7m
 Initial orbit:
 Perigee: 467 km
 Apogee: 505 km
 Inclination: 98.17°
 Period: 94.33 min
 Eccentricity: 0.003
 Launch date: 2006-12-19
 Source: Germany (GER)



DNEPR plume shield (GDS)

NORAD ID: 31120
 Int'l Code: 2007-012D
 Dimensions:
 Initial orbit:
 Perigee: 649 km
 Apogee: 660 km
 Inclination: 98.09°
 Period: 97.83 min
 Eccentricity: 0.0008
 Launch date: 2007-04-17
 Source: Commonwealth of Independent States (former USSR) (CIS)

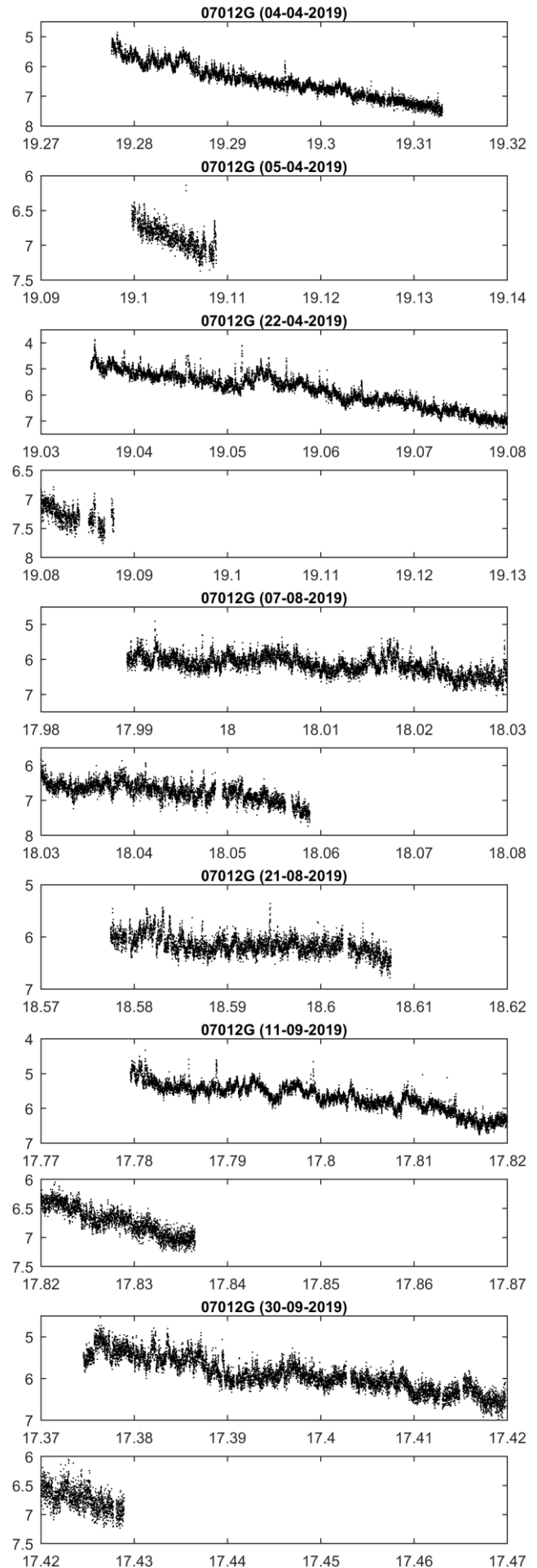


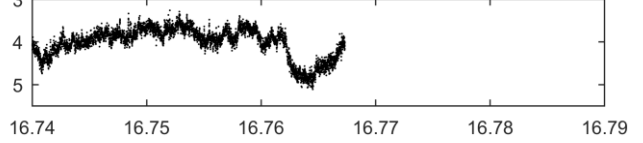
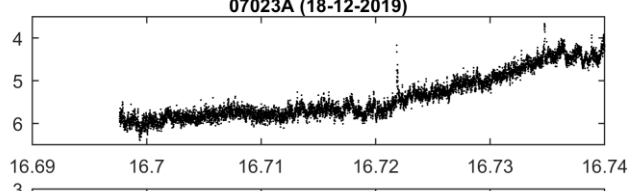
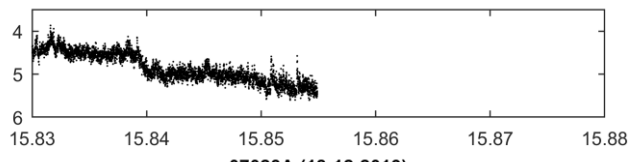
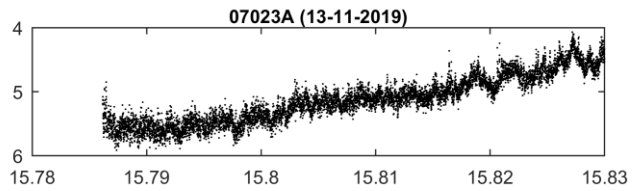
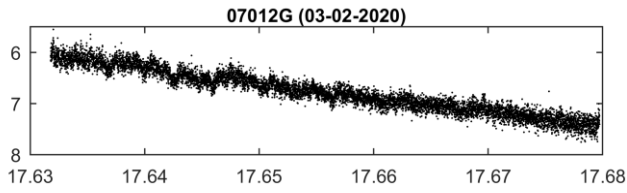
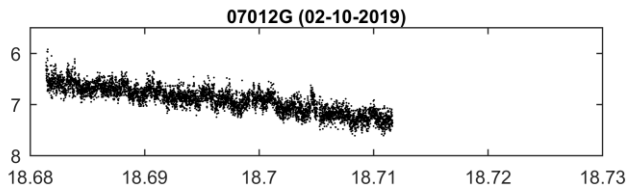
DNEPR-1 (3rd stage) (R-36M2 DS)

NORAD ID: 31123
 Int'l Code: 2007-012G
 Dimensions:
 Initial orbit:
 Perigee: 625 km
 Apogee: 1079 km
 Inclination: 98.08°
 Period: 101.98 min
 Eccentricity: 0.031
 Launch date: 2007-04-17



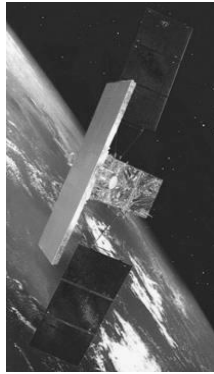
Source: Commonwealth of Independent States (former USSR) (CIS)





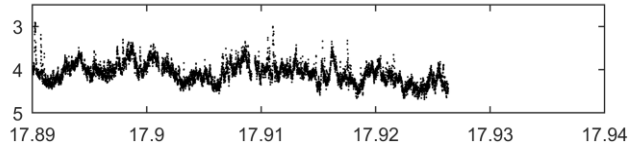
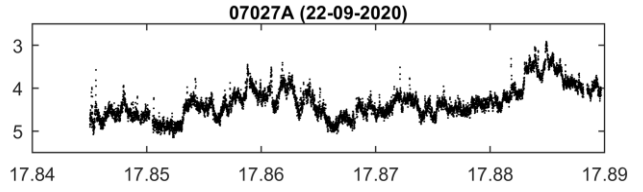
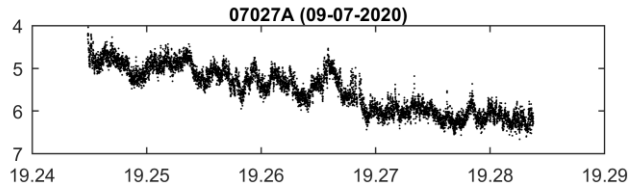
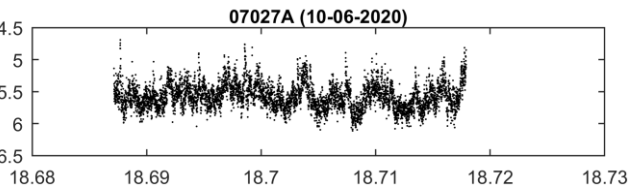
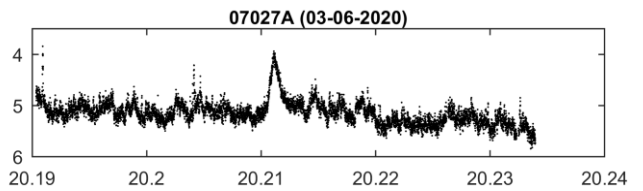
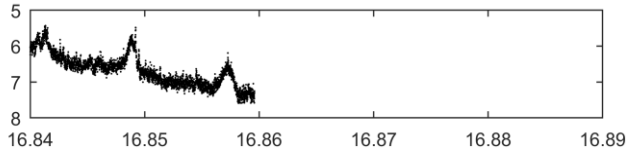
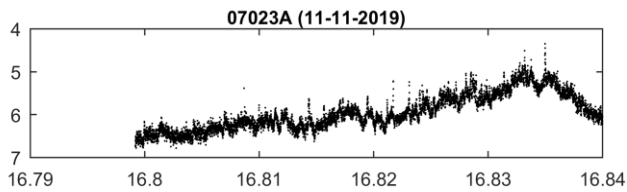
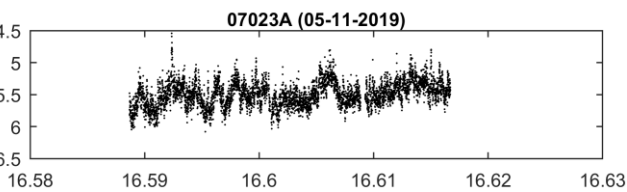
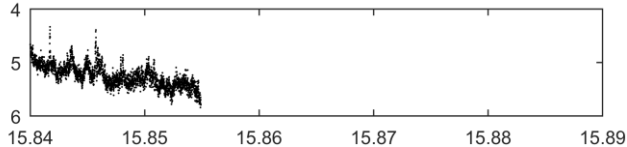
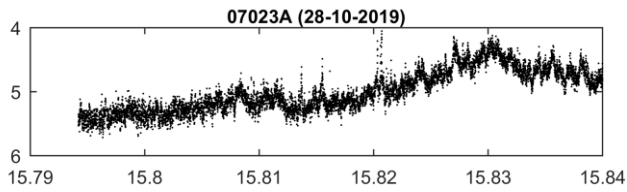
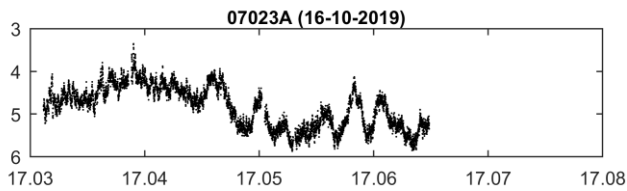
SKYMED 1 (COSMO 1)

NORAD ID: 31598
 Int'l Code: 2007-023A
 Dimensions:
 Initial orbit:
 Perigee: 622 km
 Apogee: 625 km
 Inclination: 97.86°
 Period: 97.18 min
 Eccentricity: 0.0002
 Launch date: 2007-06-08
 Source: Italy (IT)



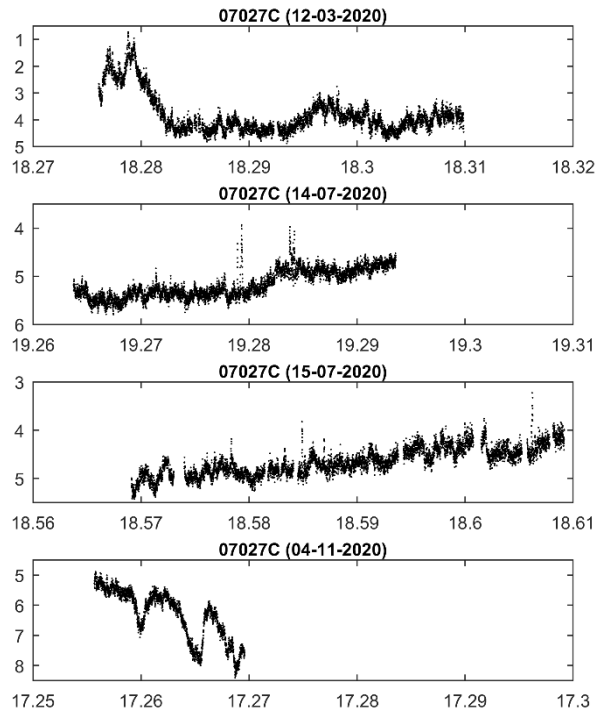
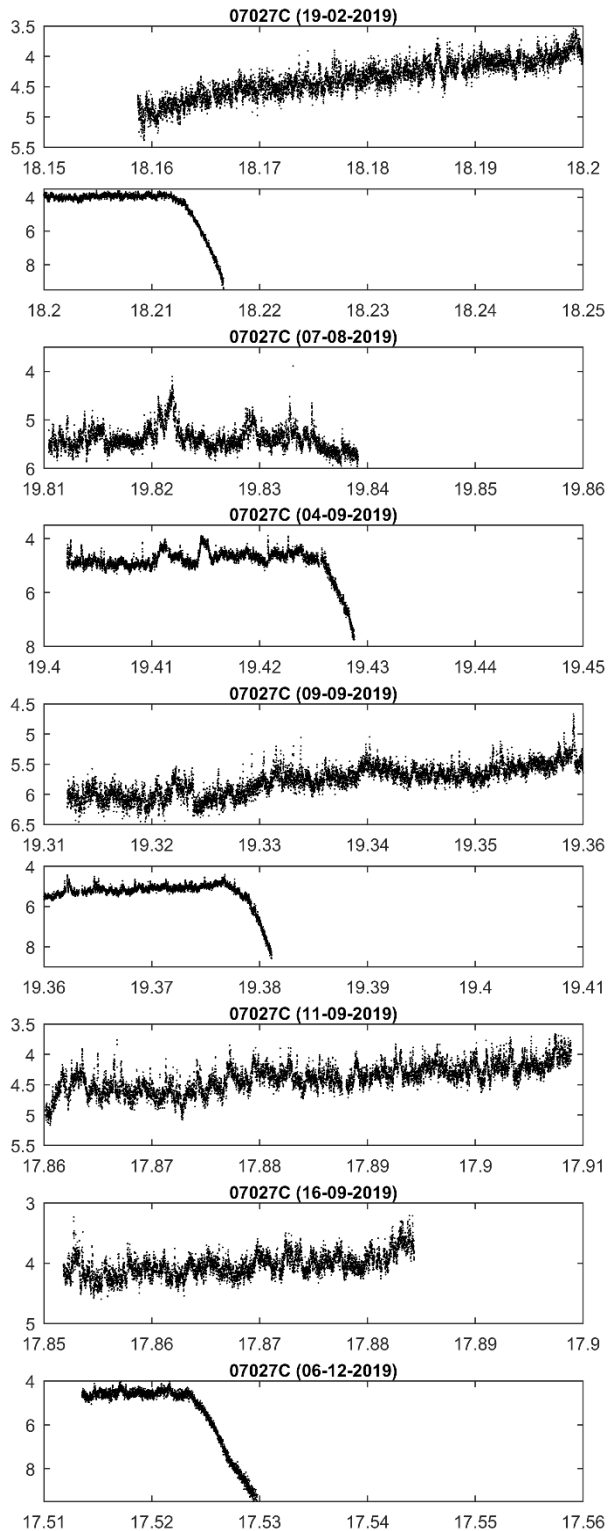
NOSS 3-4 A(USA 194)

NORAD ID: 31701
 Int'l Code: 2007-027A
 Dimensions:
 Initial orbit:
 Perigee: 790 km
 Apogee: 1233 km
 Inclination: 63.44°
 Period: 105.37min
 Eccentricity: 0.030
 Launch date: 2007-06-15
 Source: United States (US)



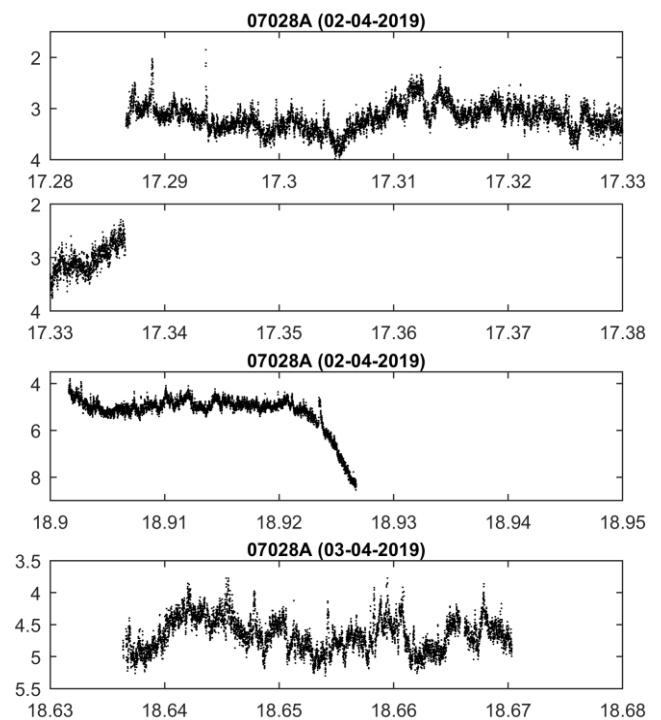
NOSS 3-4 C (USA 194 DEB)

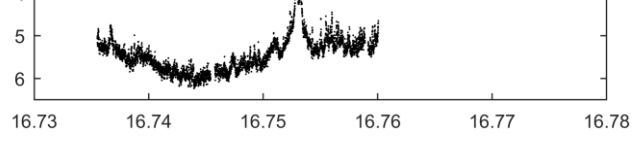
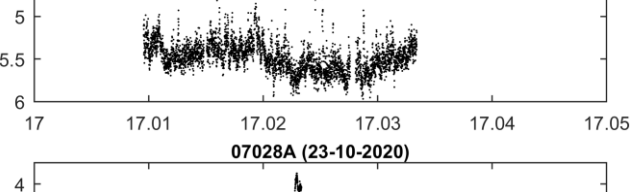
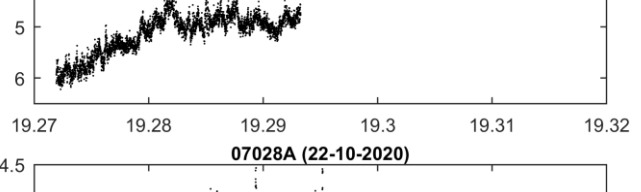
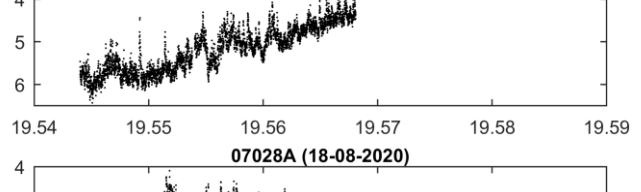
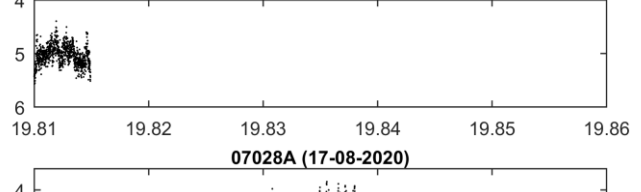
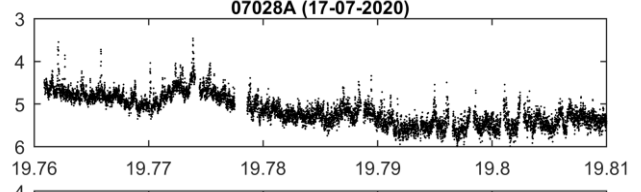
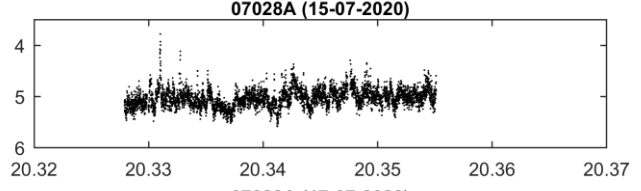
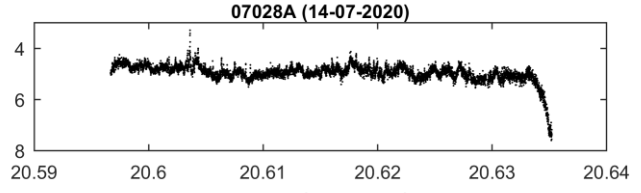
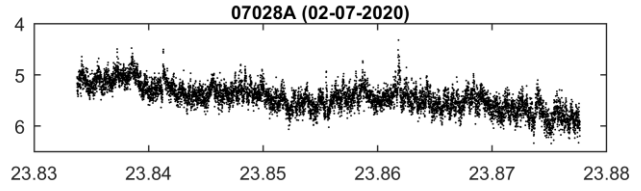
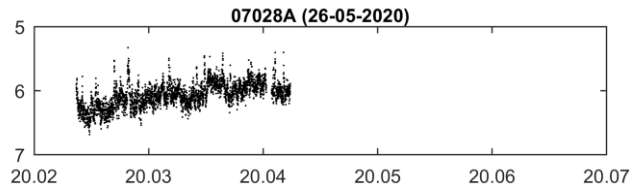
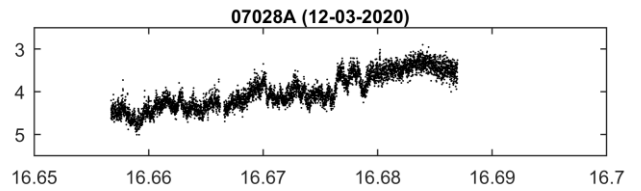
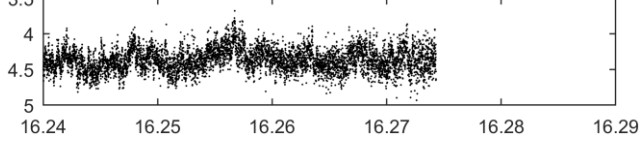
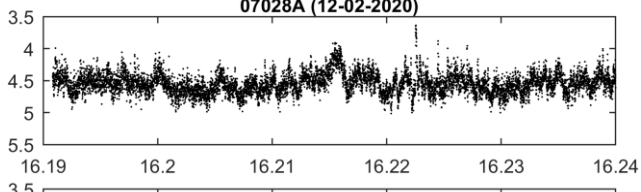
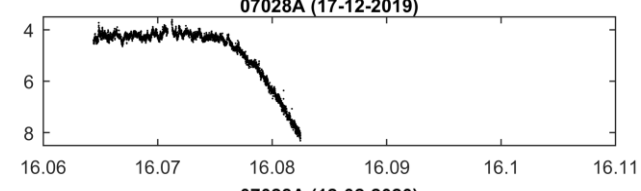
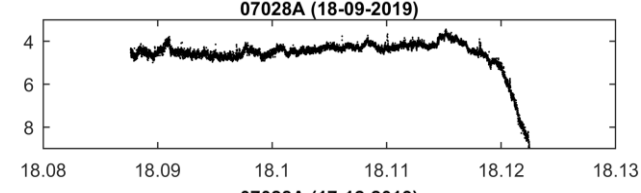
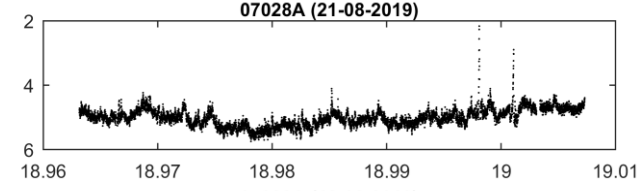
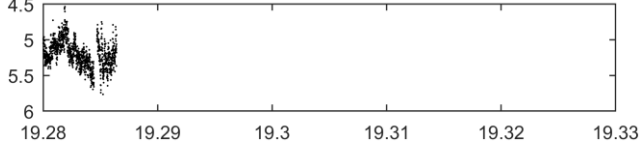
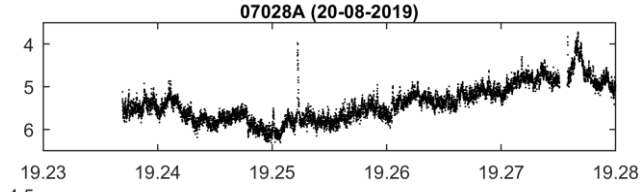
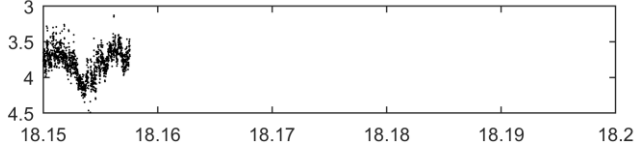
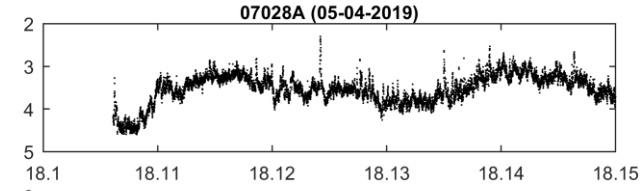
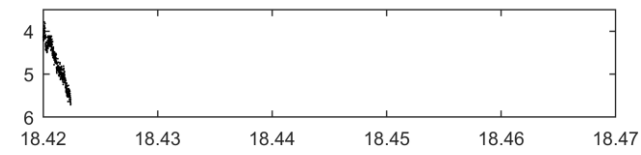
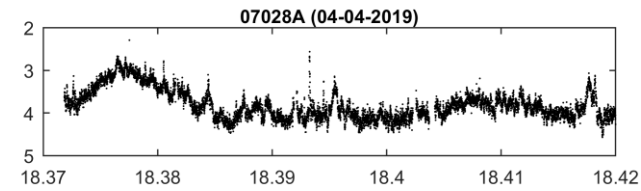
NORAD ID: 31708
Int'l Code: 2007-027C
Dimensions:
Initial orbit:
Perigee: 847 km
Apogee: 1183 km
Inclination: 62.66°
Period: 105.45 min
Eccentricity: 0.023
Launch date: 2007-06-15
Source: United States (US)



GENESIS 2

NORAD ID: 31789
Int'l Code: 2007-028A
Dimensions: inflatable cylinder
4.4m long, 2.54m dia
Initial orbit:
Perigee: 553 km
Apogee: 563 km
Inclination: 64.51°
Period: 95.82 min
Eccentricity: 0.007
Launch date: 2007-06-28
Source: United States (US)





COSMOS 2428 (TSELINA-2)

NORAD ID: 31792

Int'l Code: 2007-029A

Dimensions:

Initial orbit:

Perigee: 848 km

Apogee: 856 km

Inclination: 70.99°

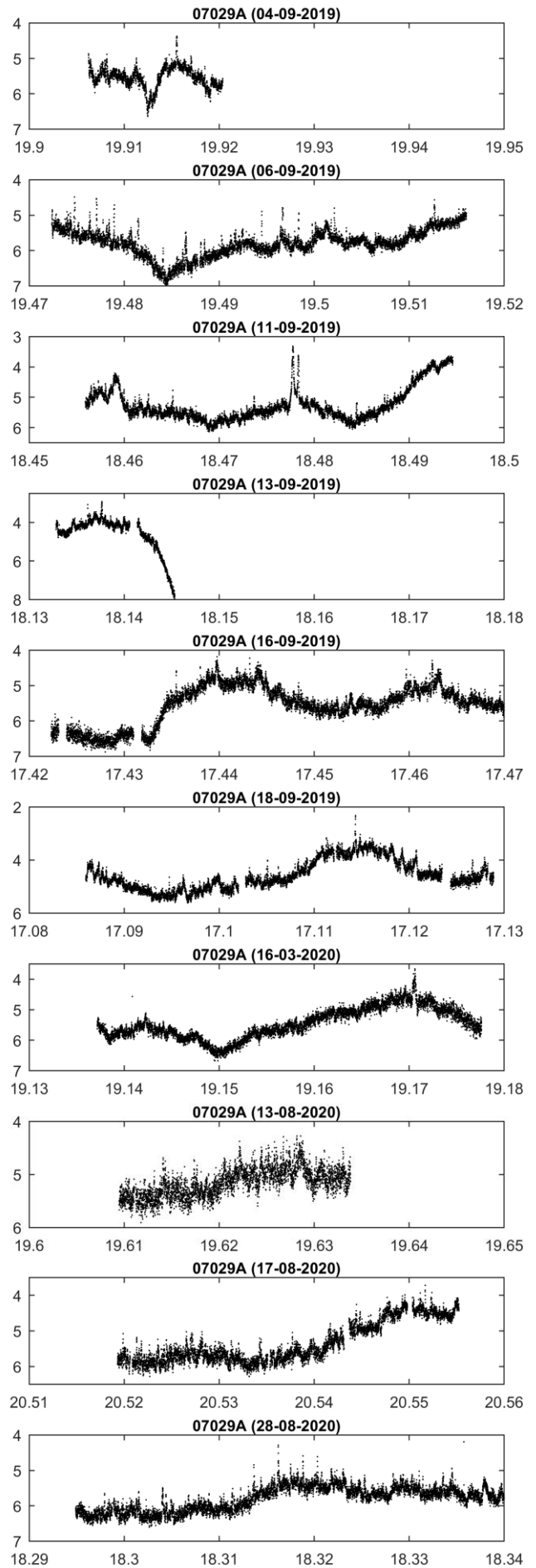
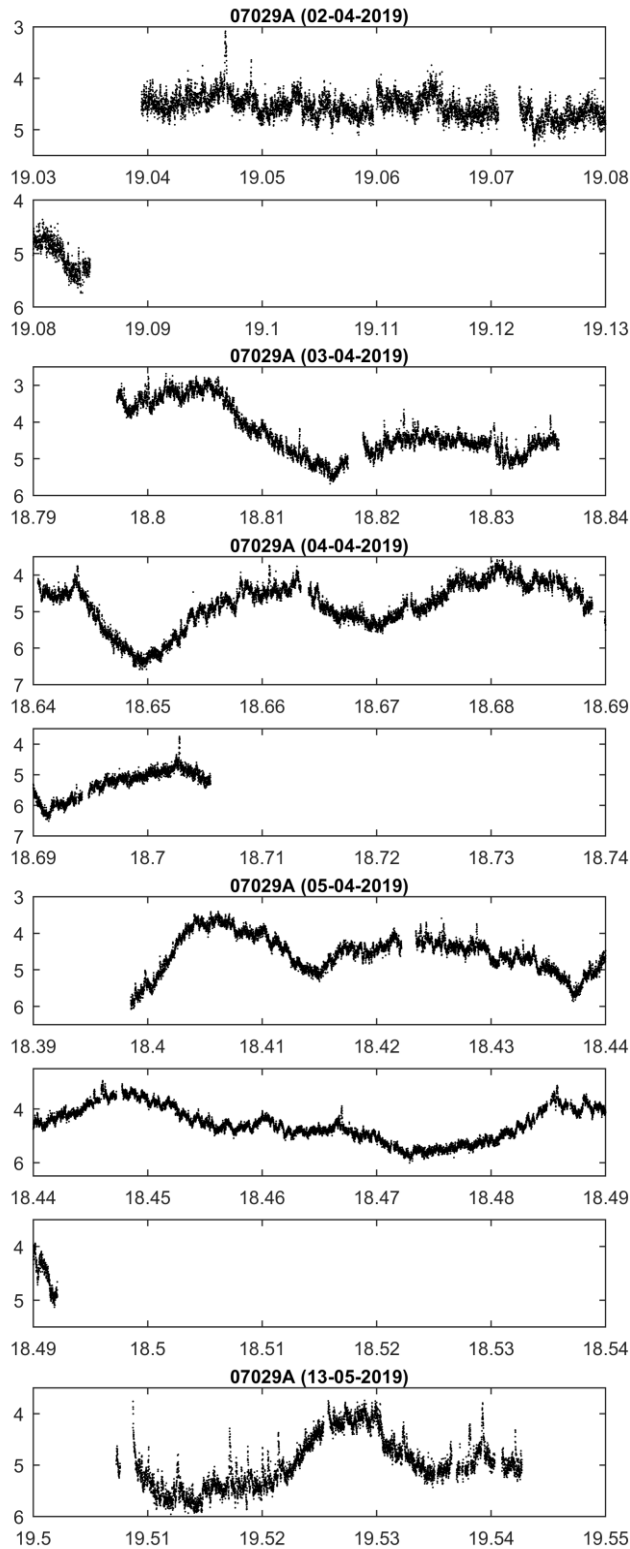
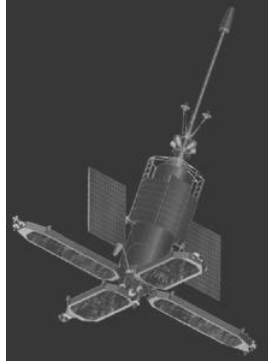
Period: 101.97 min

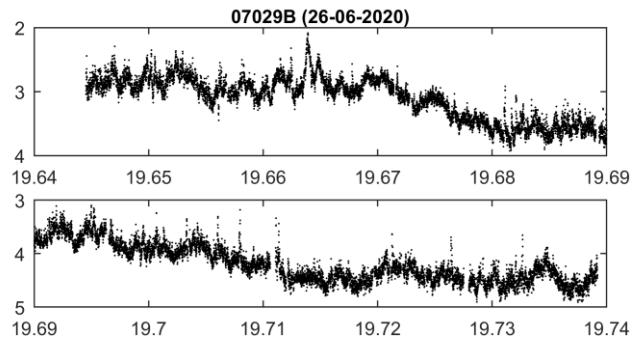
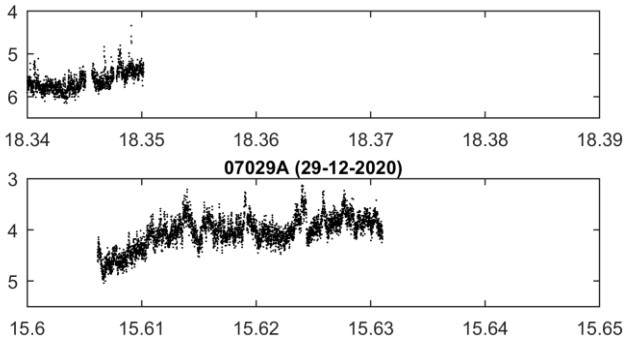
Eccentricity: 0.0005

Launch date: 2007-06-29

Source: Commonwealth of

Independent States (former USSR) (CIS)





ZENIT-2M (2nd stage)

NORAD ID: 31793

Int'l Code: 2007-029B

Dimensions: cylinder 10.41 m long,

3.9 m dia

Initial orbit:

Perigee: 836 km

Apogee: 851 km

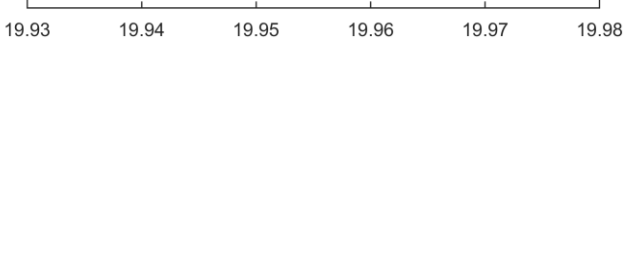
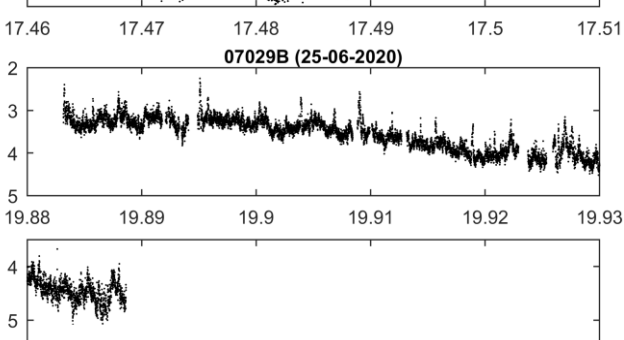
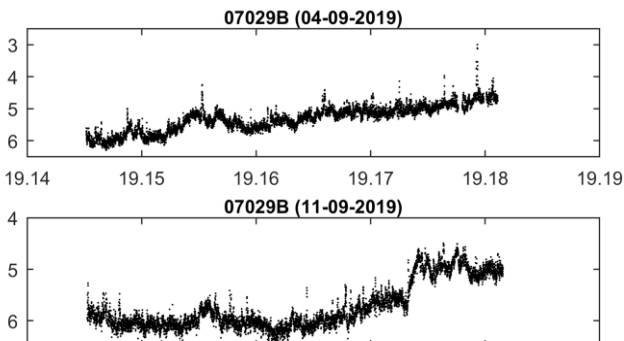
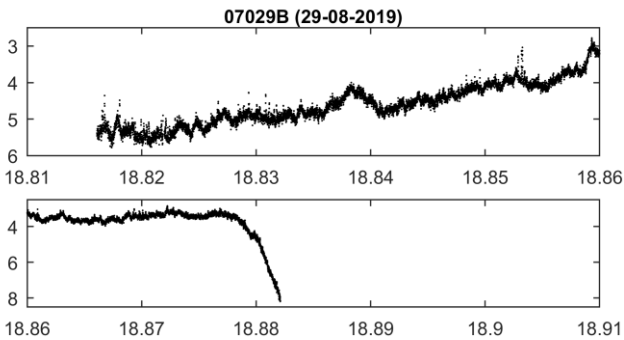
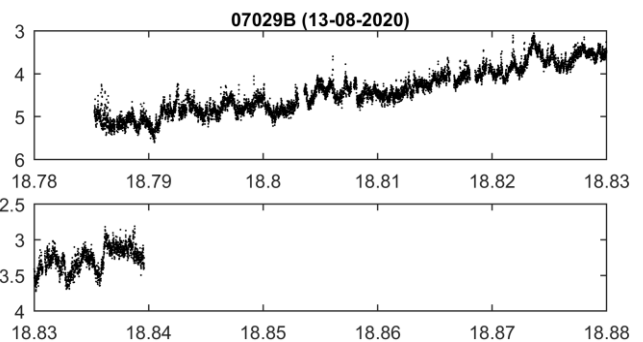
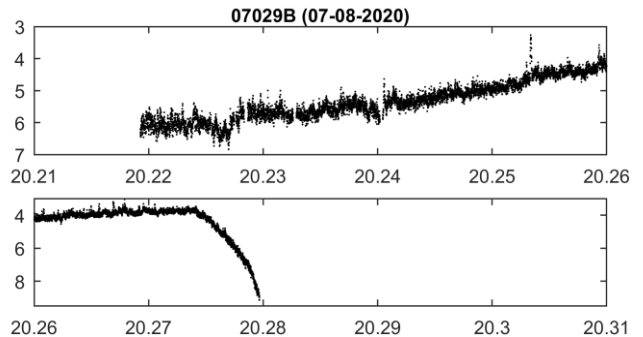
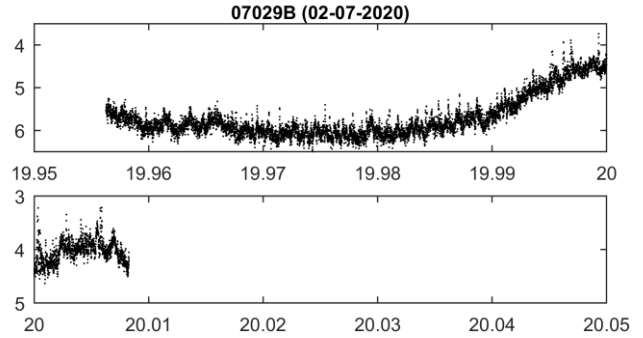
Inclination: 70.9°

Period: 101.82 min

Eccentricity: 0.001

Launch date: 2007-06-29

Source: Commonwealth of Independent States (former USSR) (CIS)



WORLDVIEW 1

NORAD ID: 32060

Int'l Code: 2007-041A

Dimensions:

box 3.6m x 2.5m x 2.5m, 7.1m span

Initial orbit:

Perigee: 493 km

Apogee: 494 km

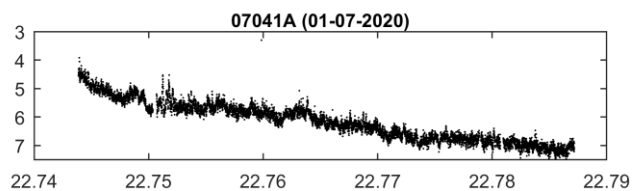
Inclination: 97.50°

Period: 94.48 min

Eccentricity: 0.00004

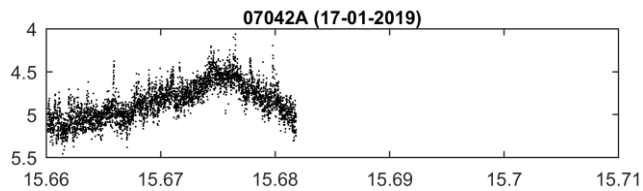
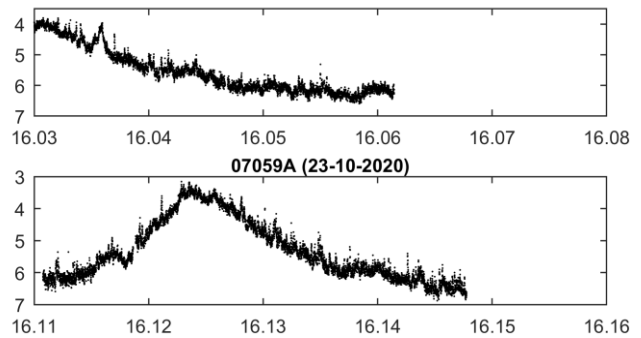
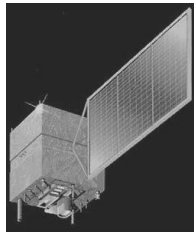
Launch date: 2007-09-18

Source: United States (US)



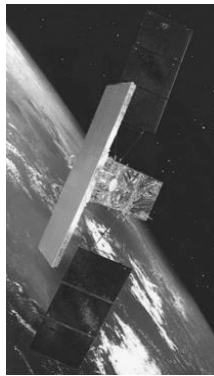
ZI YUAN 1-2B (CBERS 2B)

NORAD ID: 32062
Int'l Code: 2007-042A
Dimensions: box 1.8m x 2.0m x 2.2m,
panel 6.3m x 2.6m
Initial orbit:
Perigee: 767 km
Apogee: 770 km
Inclination: 98.54°
Period: 100.22 min
Eccentricity: 0.0002
Launch date: 2007-09-19
Source: China/Brazil (CHBZ)



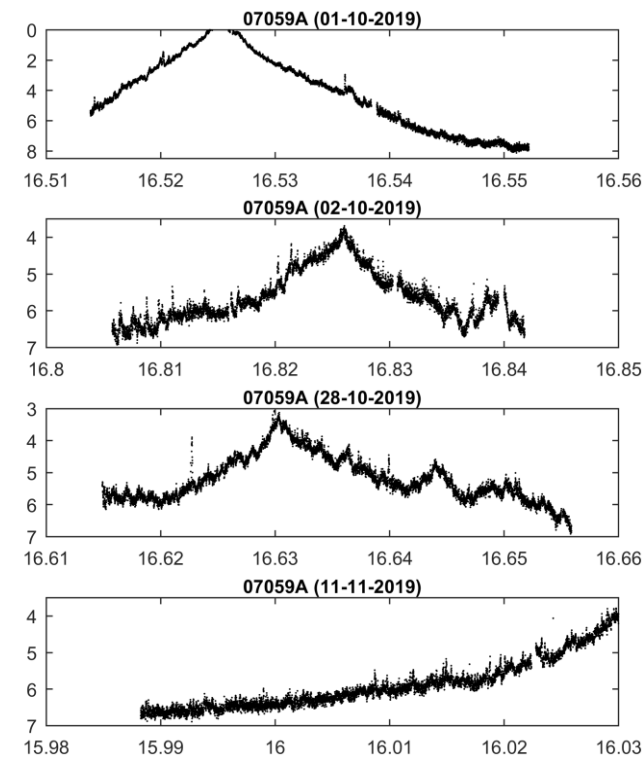
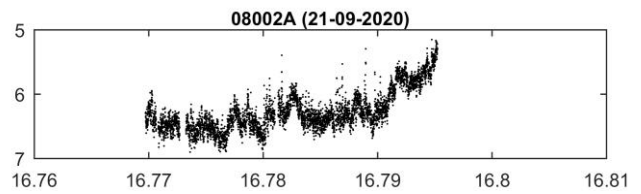
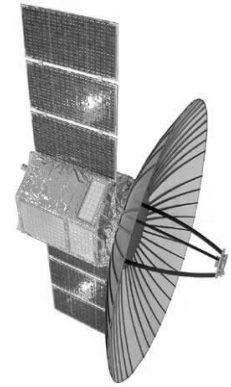
SKYMED 2 (COSMO 2)

NORAD ID: 32376
Int'l Code: 2007-059A
Dimensions: cylinder 5.88m x 2.44m
Initial orbit:
Perigee: 621 km
Apogee: 622 km
Inclination: 97.86°
Period: 97.13 min
Eccentricity: 0.0001
Launch date: 2007-12-09
Source: Italy (IT)



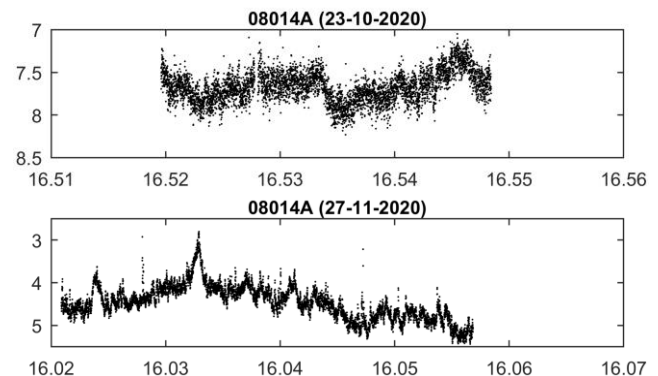
TECSAR (Ofeg 8)

NORAD ID: 32476
Int'l Code: 2008-002A
Dimensions: hexagonal
cylinder+2panels+dish
1.2m dia to 0.7m dia(top), 2.3m high
Initial orbit:
Perigee: 470 km
Apogee: 584 km
Inclination: 41.05°
Period: 95.18min
Eccentricity: 0.008
Launch date: 2008-01-21
Source: Israel (ISRA)



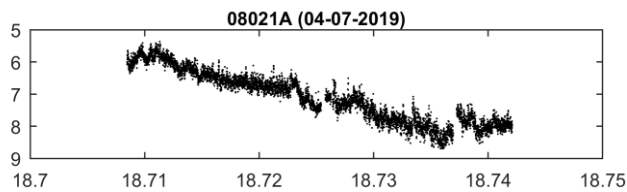
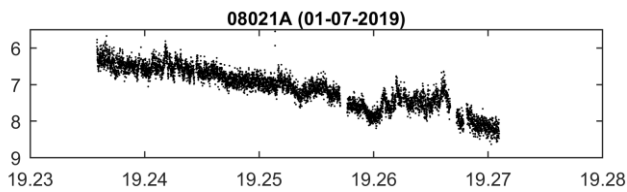
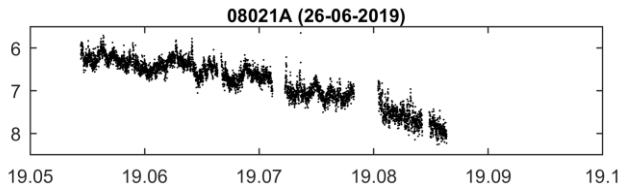
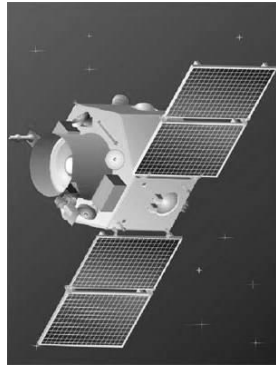
SAR-LUPE 4

NORAD ID: 32750
Int'l Code: 2008-014A
Dimensions: box 4m x 3m x 2m
+parabolic dish 3.3m x 2.7m
Initial orbit:
Perigee: 468 km
Apogee: 506 km
Inclination: 98.16°
Period: 94.35min
Eccentricity: 0.003
Launch date: 2008-03-27
Source: Germany (GER)



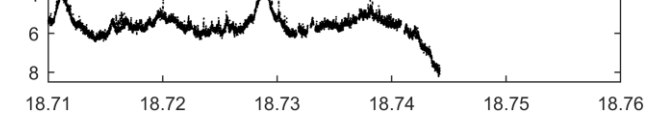
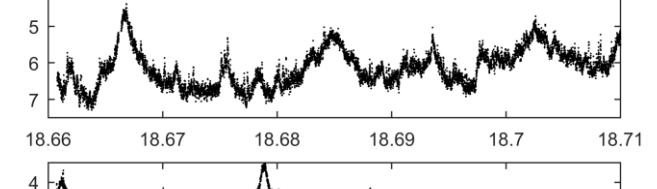
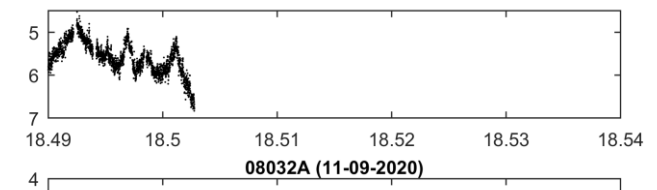
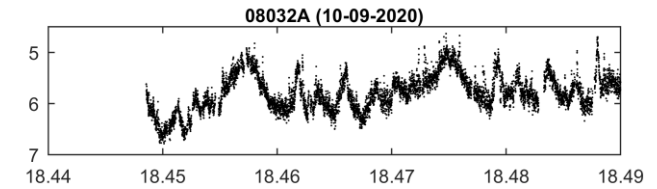
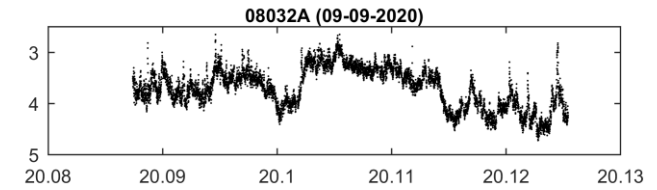
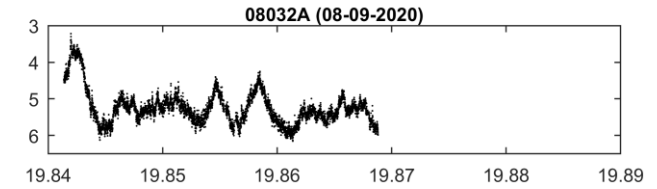
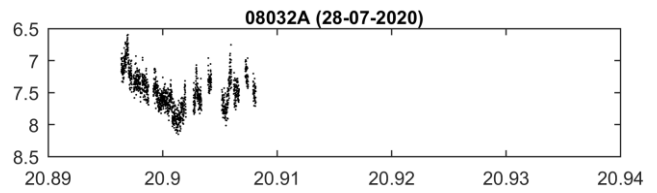
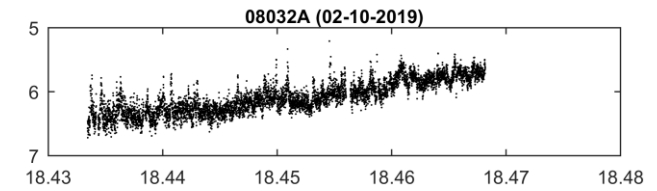
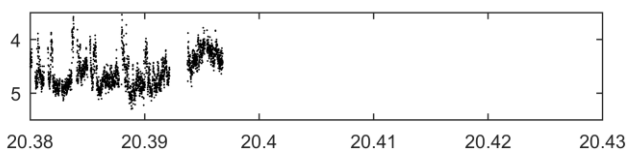
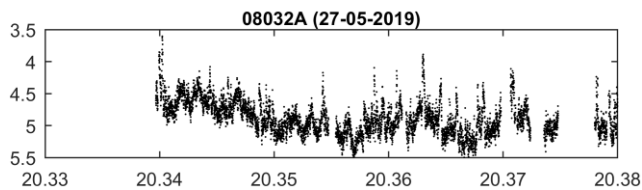
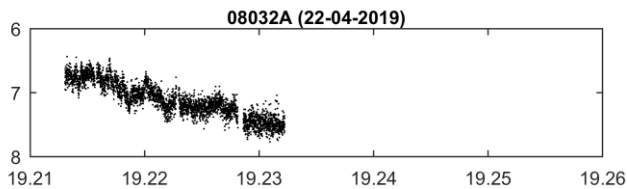
CARTOSAT 2A

NORAD ID: 32783
Int'l Code: 2008-021A
Dimensions: box + 2 panels
Initial orbit:
Perigee: 617 km
Apogee: 659 km
Inclination: 97.92°
Period: 97.48min
Eccentricity: 0.003
Launch date: 2008-04-28
Source: India (IND)



JASON 2 (OSTM)

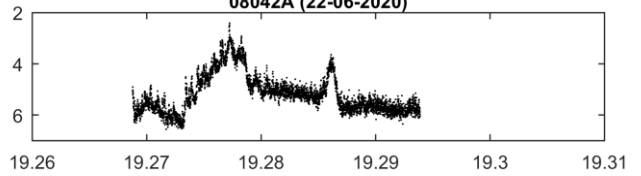
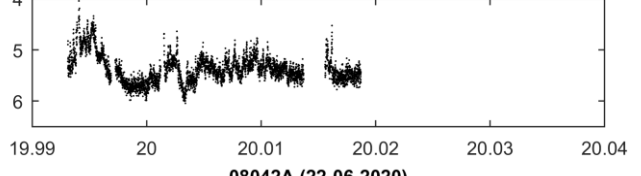
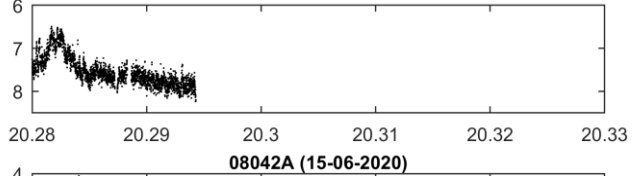
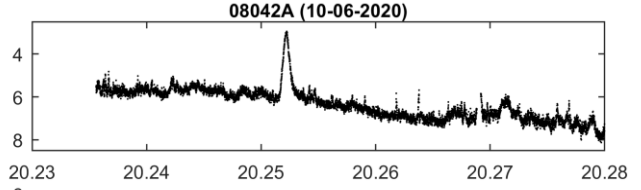
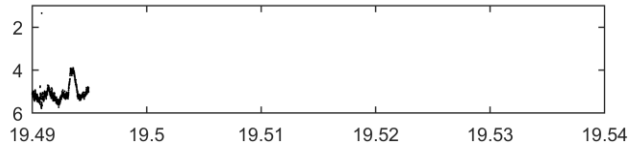
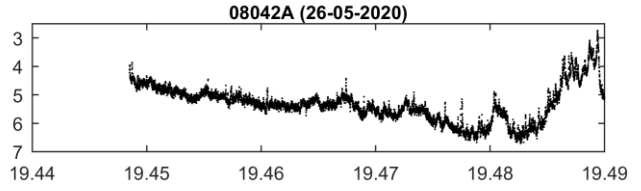
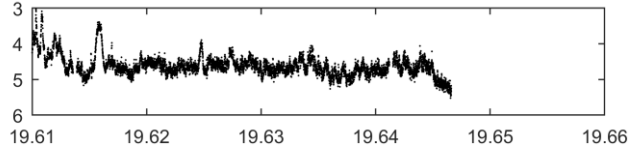
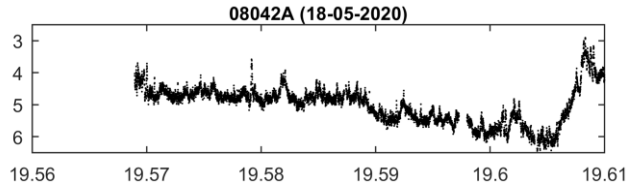
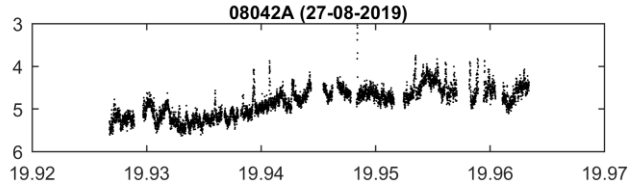
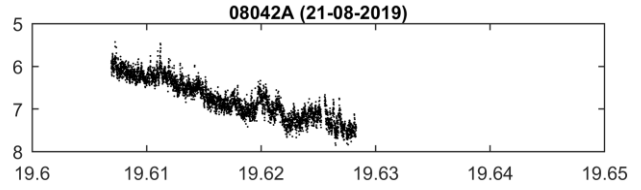
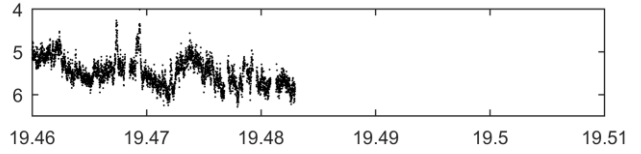
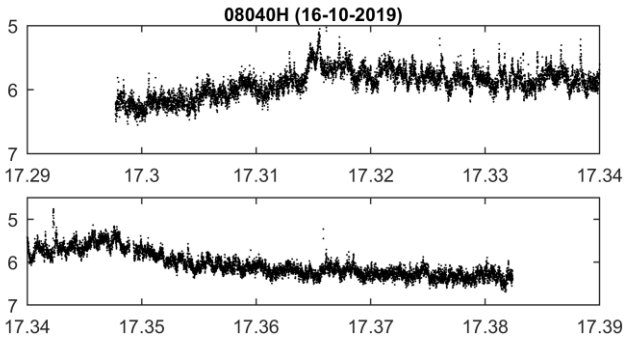
NORAD ID: 33105
Int'l Code: 2008-032A
Dimensions: box+2 panels
~3m high
Initial orbit:
Perigee: 1329 km
Apogee: 1335 km
Inclination: 66.04°
Period: 112.3 min
Eccentricity: 0.0004
Launch date: 2008-06-20
Source: France (FR)



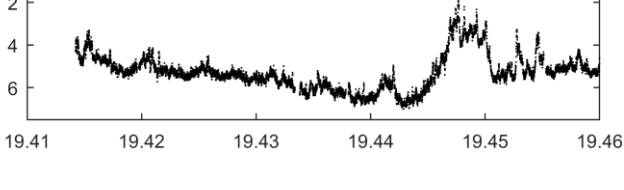
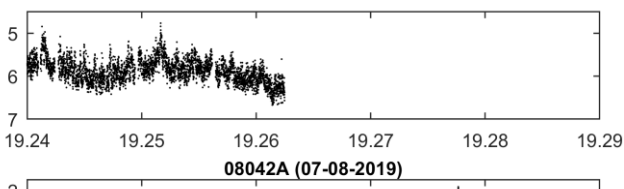
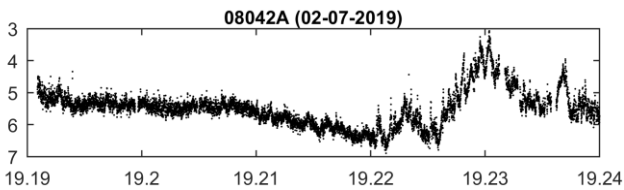
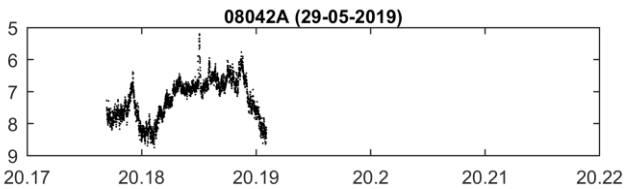
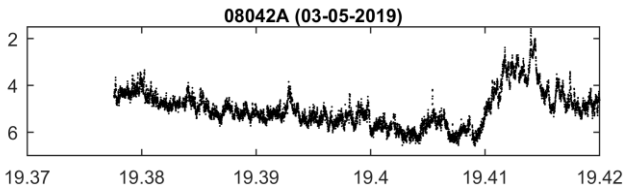
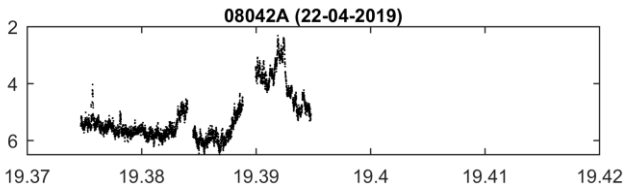
DNEPR (2nd stage) (R-36M2 DS)

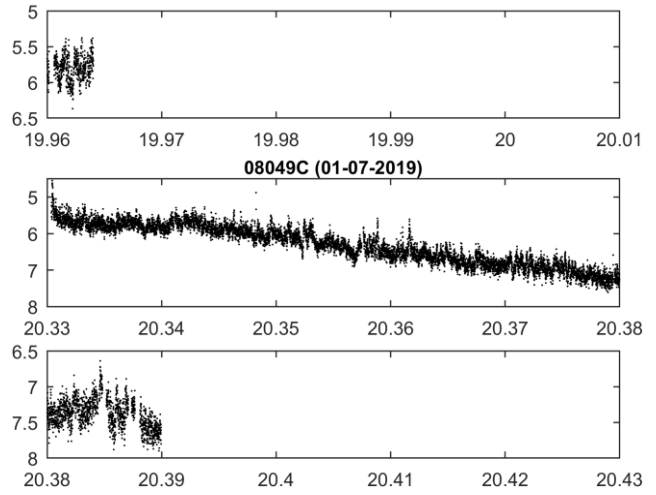
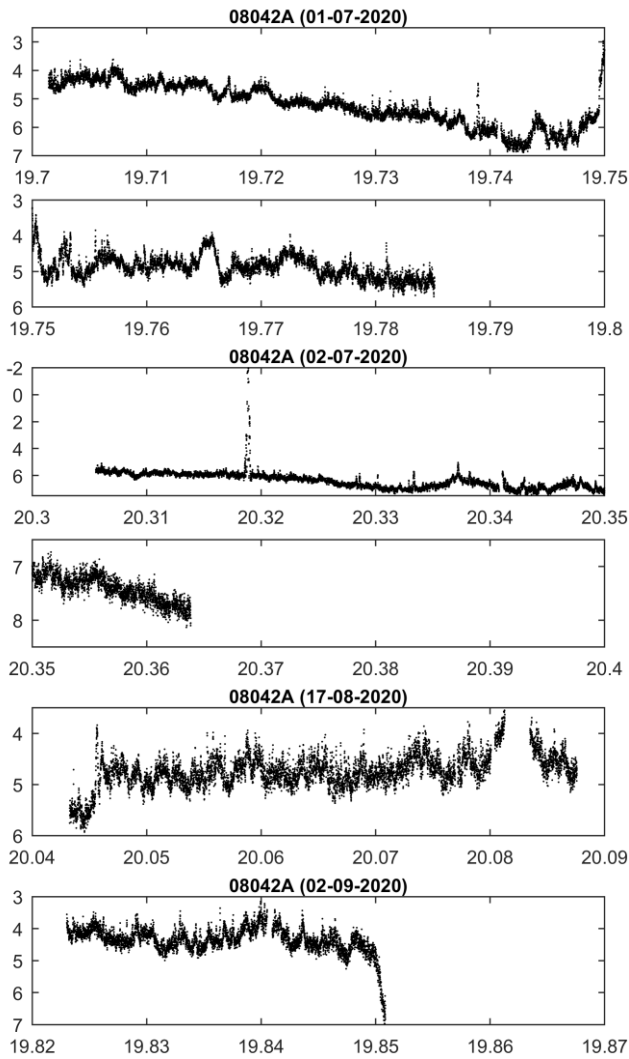
NORAD ID: 33319
Int'l Code: 2008-040H
Dimensions: drum 1m long, 3m dia
Initial orbit:
Perigee: 616 km
Apogee: 1348 km
Inclination: 97.9°
Period: 104.74 min
Eccentricity: 0.04978
Launch date: 2008-08-29
Source: Commonwealth of Independent States (former USSR) (CIS)





GEOEYE 1
 NORAD ID: 33331
 Int'l Code: 2008-042A
 Dimensions:
 cylindrical + 2 panels
 Initial orbit:
 Perigee: 668 km
 Apogee: 687 km
 Inclination: 98.13°
 Period: 98.32 min
 Eccentricity: 0.001
 Launch date: 2008-09-06
 Source: United States (US)





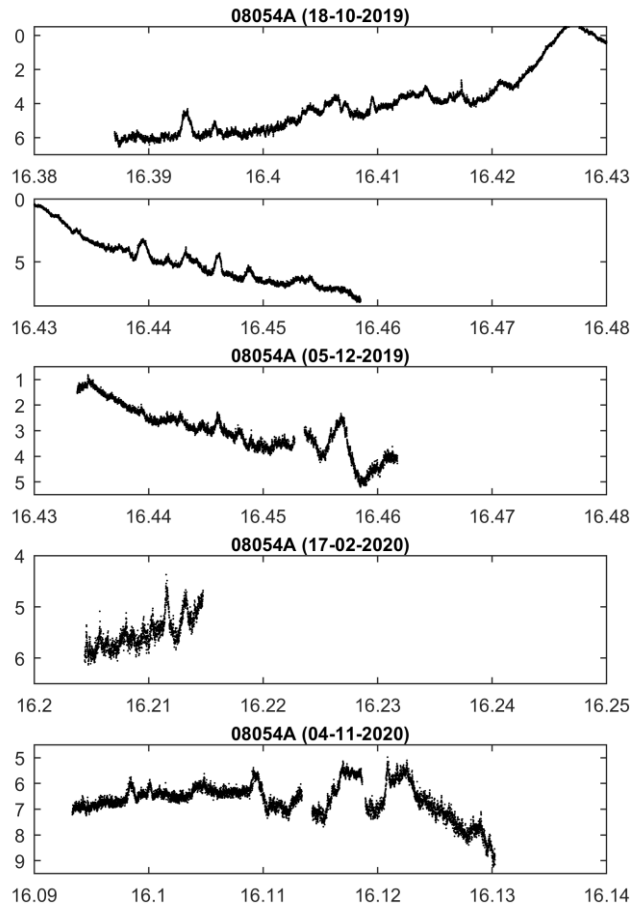
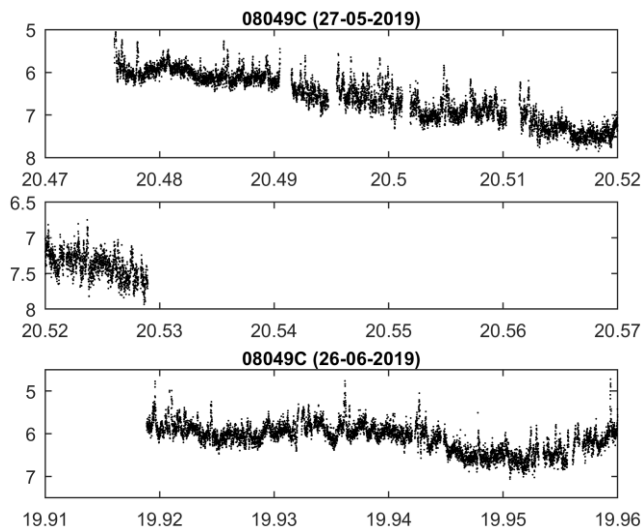
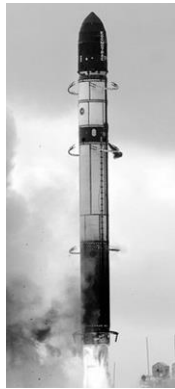
SKYMED 3 (COSMO 3)

NORAD ID: 33412
 Int'l Code: 2008-054A
 Dimensions: box +2 panels
 Initial orbit:
 Perigee: 621 km
 Apogee: 624 km
 Inclination: 97.8°
 Period: 97.17 min
 Eccentricity: 0.0002
 Launch date: 2008-10-25
 Source: Italy (IT)



DNEPR PLUME SHIELD (GDS)

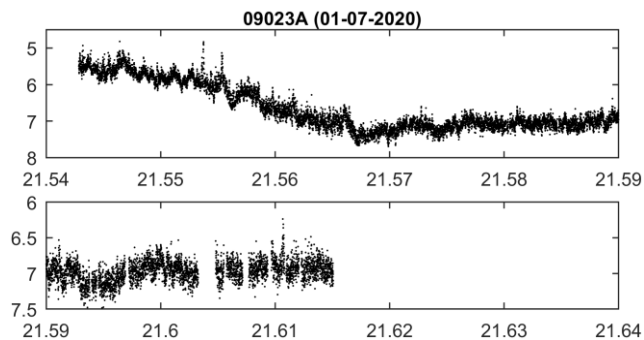
NORAD ID: 33398
 Int'l Code: 2008-049C
 Dimensions:
 Initial orbit:
 Perigee: 645 km
 Apogee: 688 km
 Inclination: 98.80°
 Period: 98.08 min
 Eccentricity: 0.003
 Launch date: 2008-10-01
 Source: Commonwealth of Independent States (former USSR) (CIS)



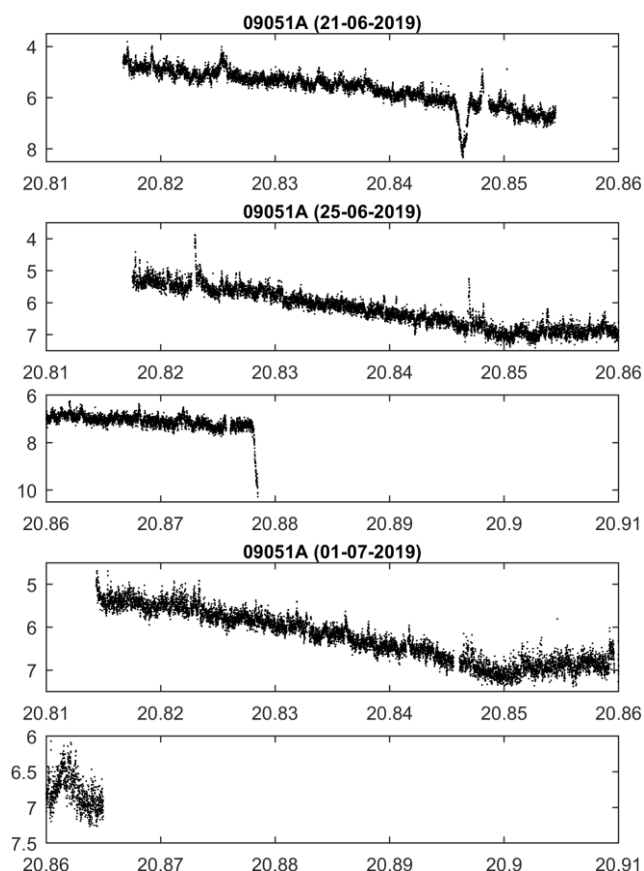
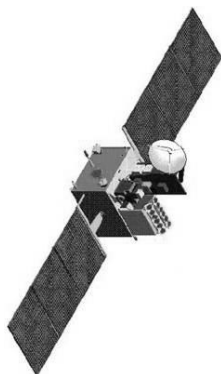
STSS ATRR (USA 205)

NORAD ID: 34903
 Int'l Code: 2009-023A
 Dimensions: box + 2 panels
 Initial orbit:
 Perigee: 866 km

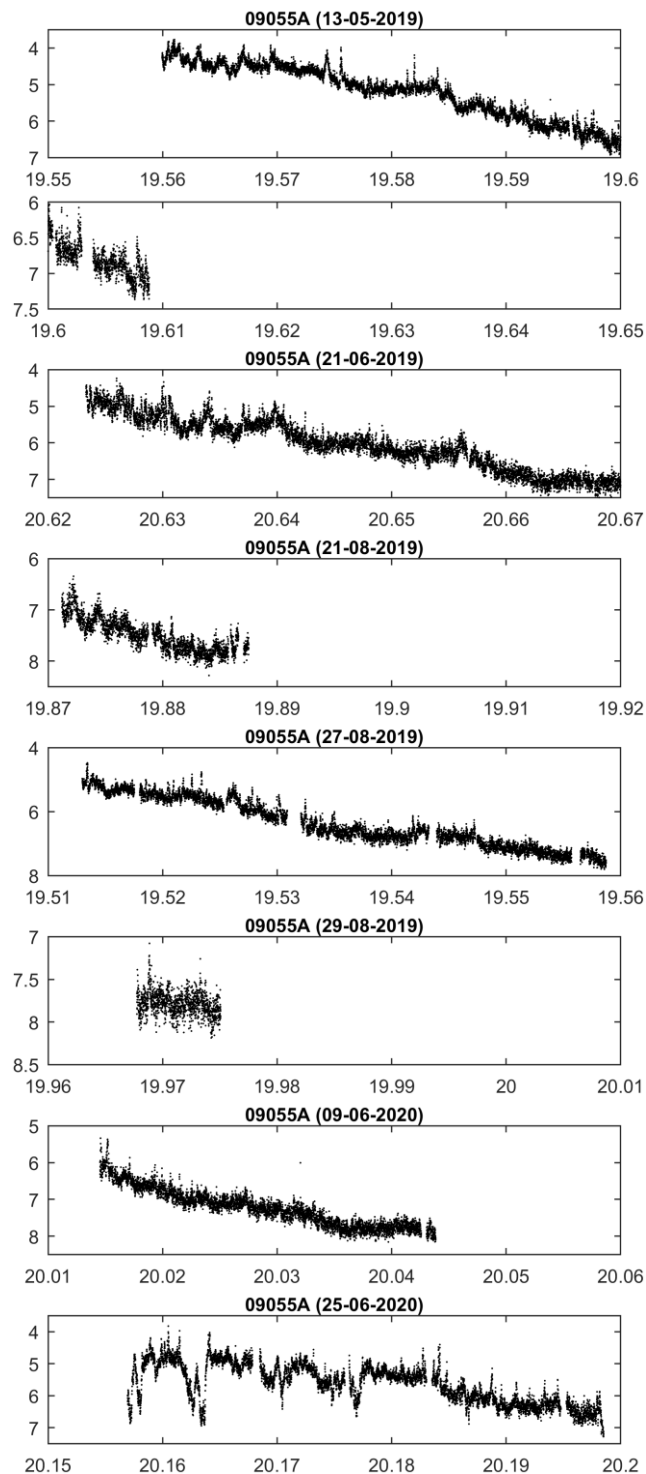
Apogee: 879 km
 Inclination: 98.92°
 Period: 102.40min
 Eccentricity: 0.0009
 Launch date: 2009-05-05
 Source: United States (US)

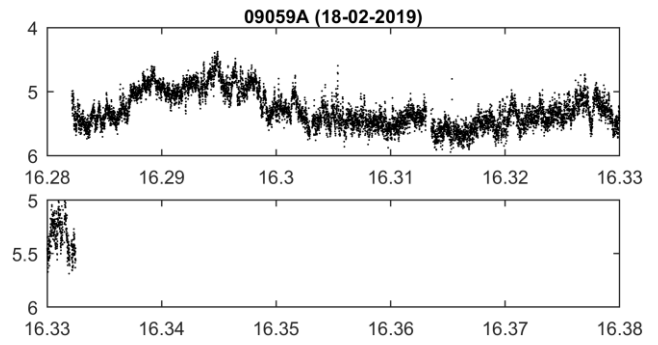
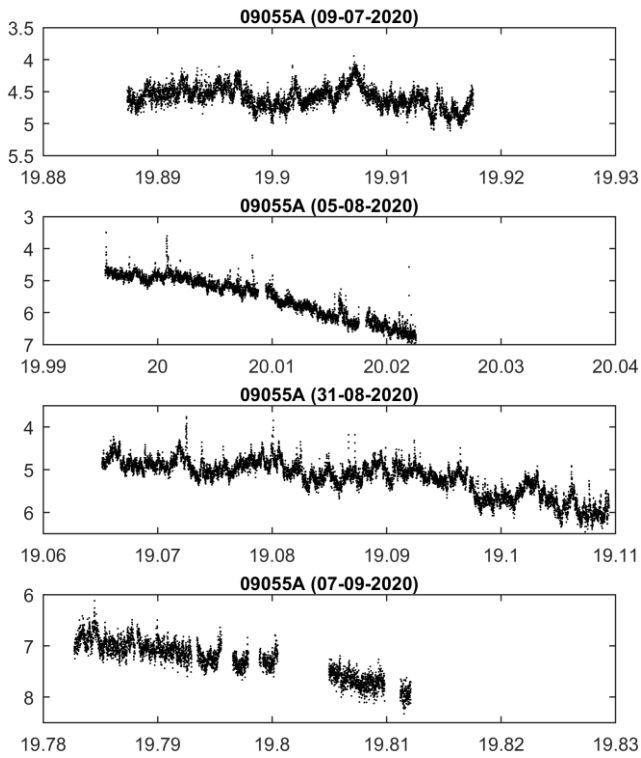


OCEANSAT 2
 NORAD ID: 35931
 Int'l Code: 2009-051A
 Dimensions:
 Initial orbit:
 Perigee: 715 km
 Apogee: 724 km
 Inclination: 98.34°
 Period: 99.18min
 Eccentricity: 0.006
 Launch date: 2009-09-23
 Source: India (IND)



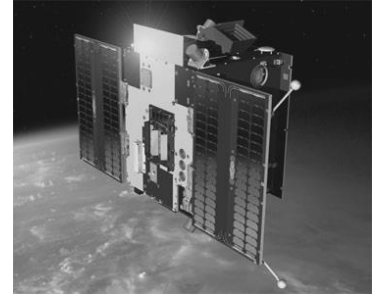
WORLDVIEW 2
 NORAD ID: 35946
 Int'l Code: 2009-055A
 Dimensions:
 Initial orbit:
 Perigee: 758 km
 Apogee: 766 km
 Inclination: 98.59°
 Period: 100.08 min
 Eccentricity: 0.0006
 Launch date: 2009-10-08
 Source: United States (US)





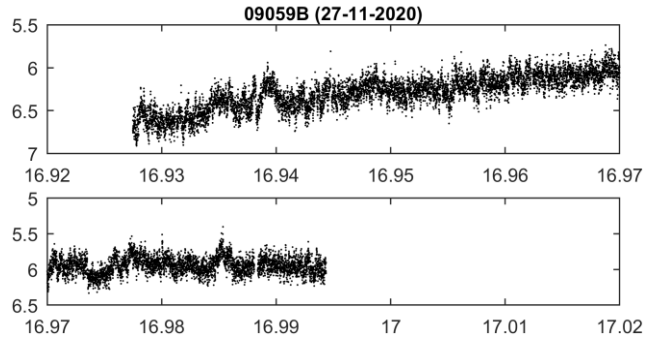
PROBA 2

NORAD ID: 36037
 Int'l Code: 2009-059B
 Dimensions:
 Initial orbit:
 Perigee: 710 km
 Apogee: 727 km
 Inclination: 98.3°
 Period: 99.17 min
 Eccentricity: 0.001
 Launch date: 2009-11-02
 Source: European Space Agency (ESA)



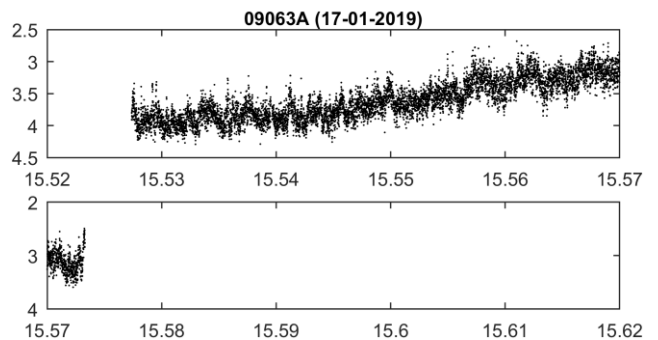
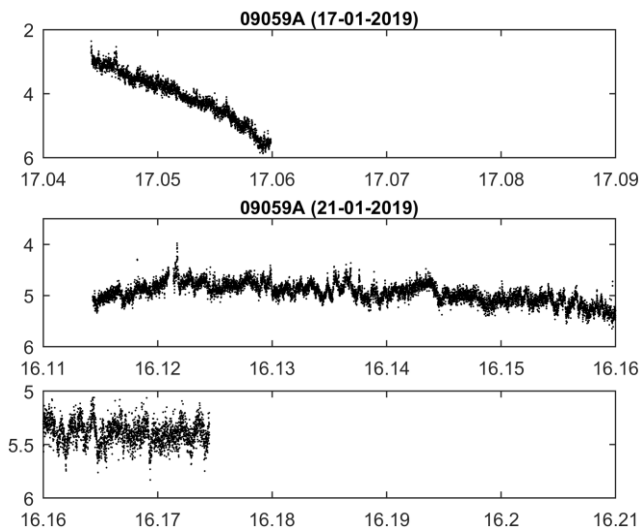
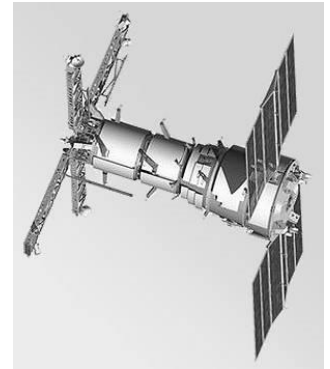
SMOS

NORAD ID: 36036
 Int'l Code: 2009-059A
 Dimensions: box + 3 panels
 Initial orbit:
 Perigee: 758 km
 Apogee: 760 km
 Inclination: 98.45°
 Period: 100.02 min
 Eccentricity: 0.0002
 Launch date: 2009-11-02
 Source: European Space Agency (ESA)



COSMOS 2455

(Lotos-S #1)
 NORAD ID: 36095
 Int'l Code: 2009-063A
 Dimensions:
 Initial orbit:
 Perigee: 199 km
 Apogee: 904 km
 Inclination: 67.17°
 Period: 95.68 min
 Eccentricity: 0.051
 Launch date: 2009-11-20
 Source: Commonwealth of Independent States (former USSR) (CIS)

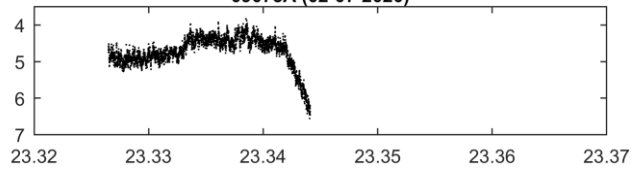


HELIOS 2B

NORAD ID: 36124
Int'l Code: 2009-073A
Dimensions: box + 1 panel
Initial orbit:
Perigee: 679 km
Apogee: 682 km
Inclination: 98.10°
Period: 98.37min
Eccentricity: 0.0002
Launch date: 2009-12-18
Source: France (FR)



09073A (02-07-2020)

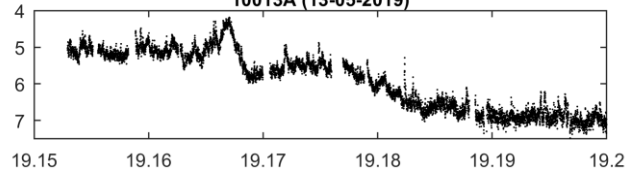


CRYOSAT 2

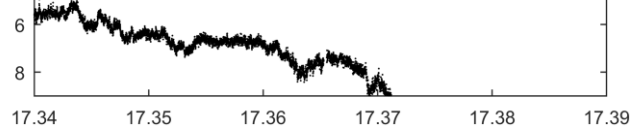
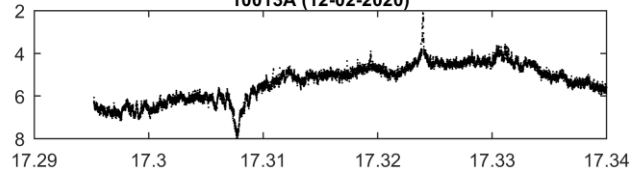
NORAD ID: 36508
Int'l Code: 2010-013A
Dimensions: box + roof
4.6m long, 2.4m wide, 2.2m high
Initial orbit:
Perigee: 710 km
Apogee: 726 km
Inclination: 92.02°
Period: 99.15 min
Eccentricity: 0.001
Launch date: 2010-04-08
Source: European Space Agency (ESA)



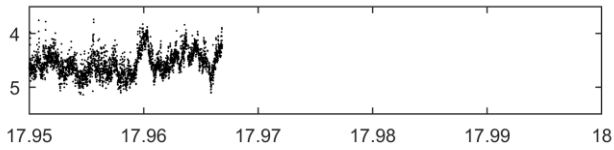
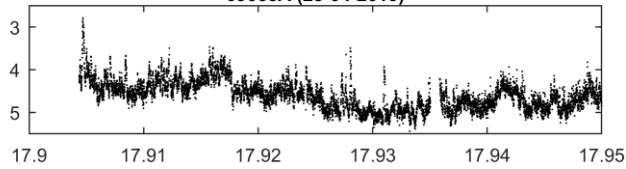
10013A (13-05-2019)



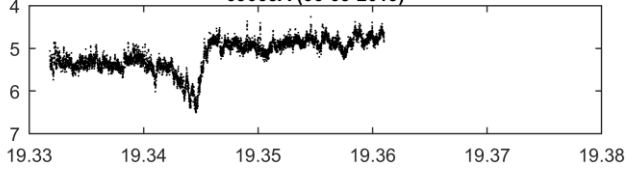
10013A (12-02-2020)



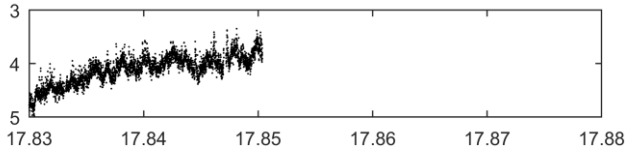
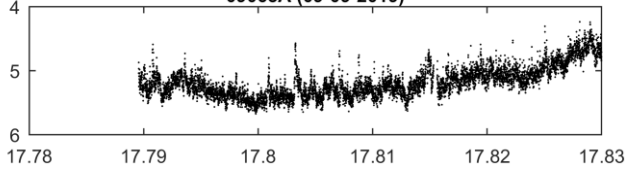
09063A (25-04-2019)



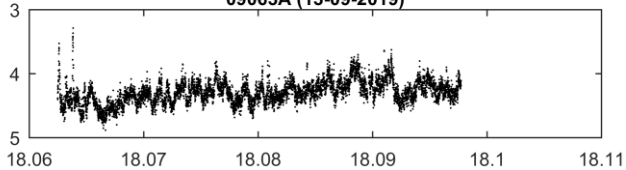
09063A (06-09-2019)



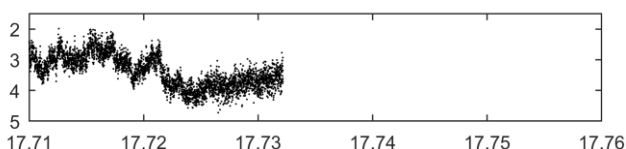
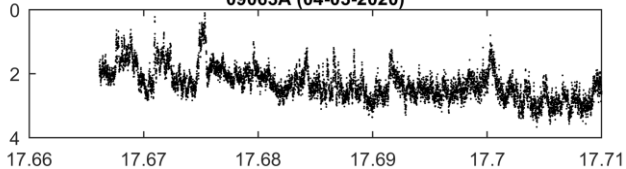
09063A (09-09-2019)



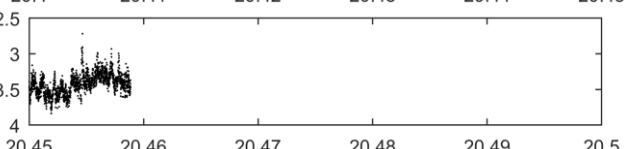
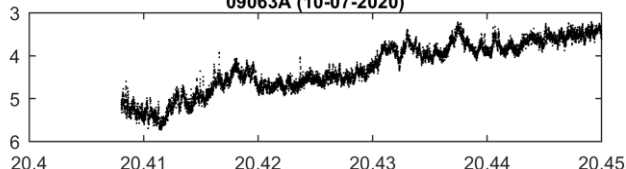
09063A (13-09-2019)



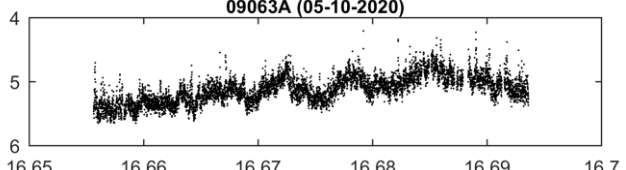
09063A (04-03-2020)

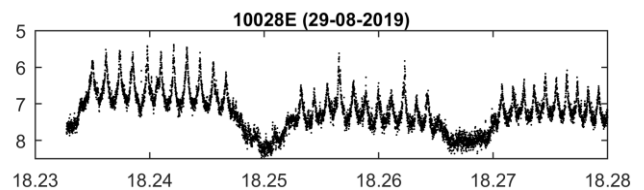
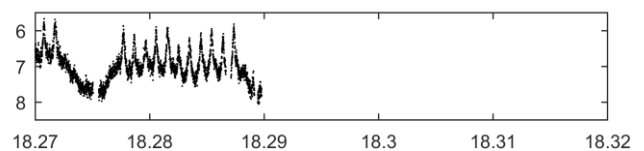
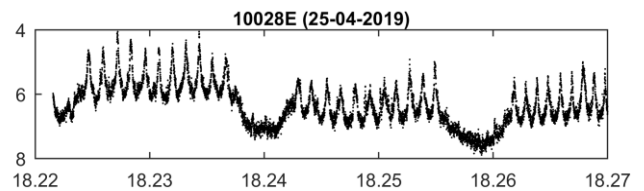
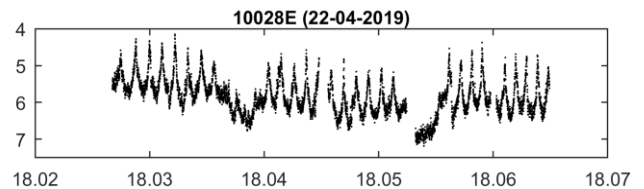
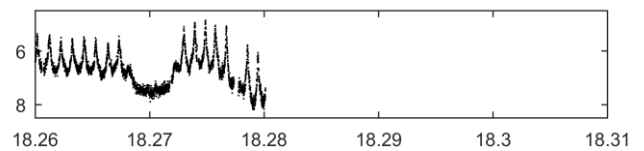
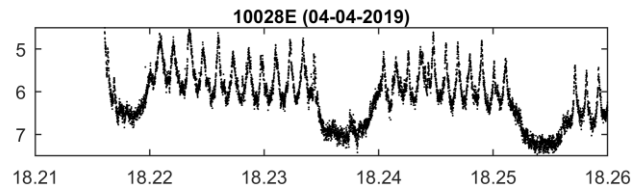
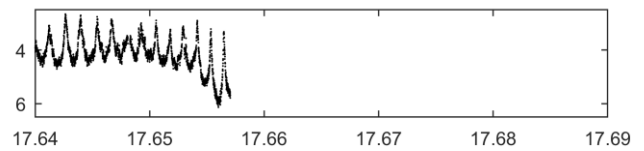
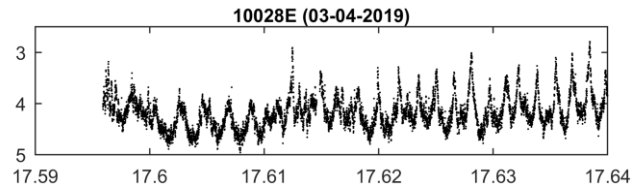
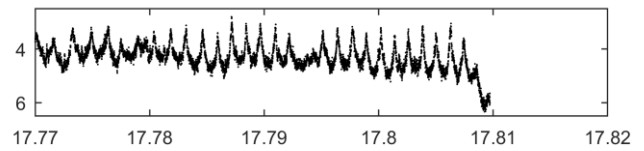
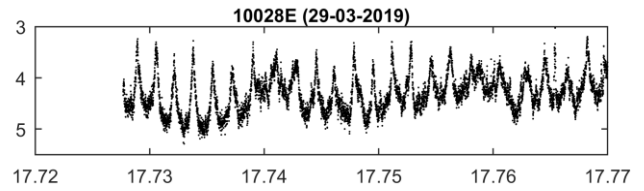
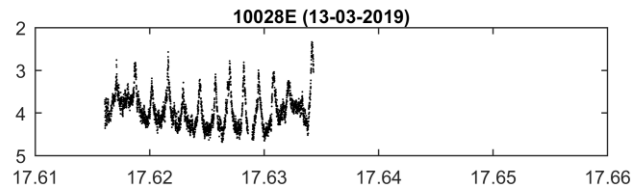
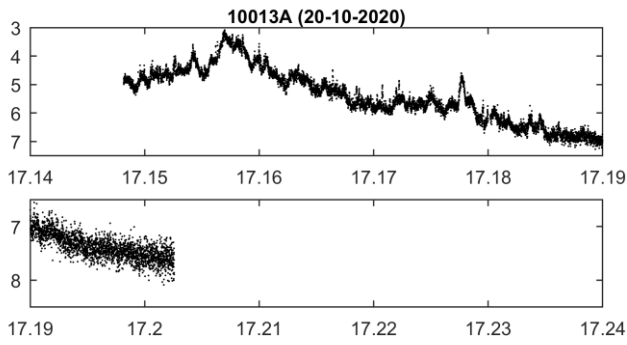


09063A (10-07-2020)



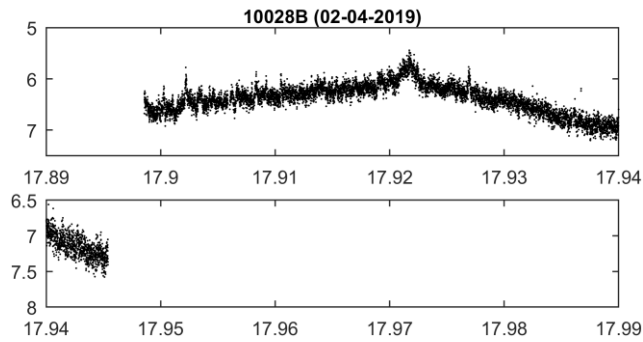
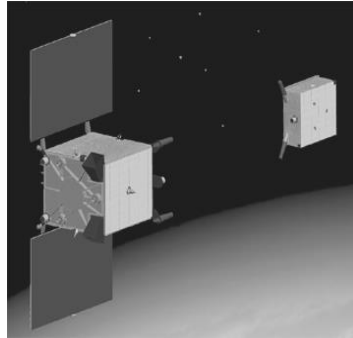
09063A (05-10-2020)





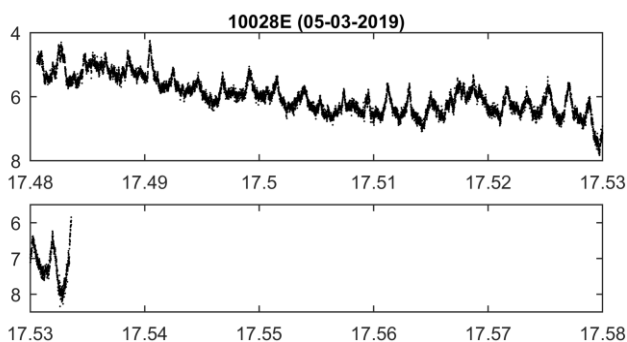
PRISMA (MANGO)

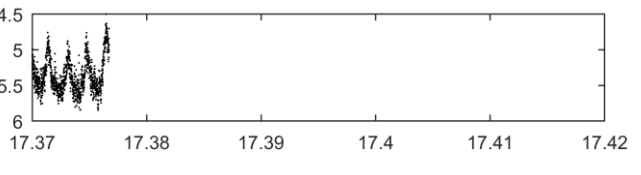
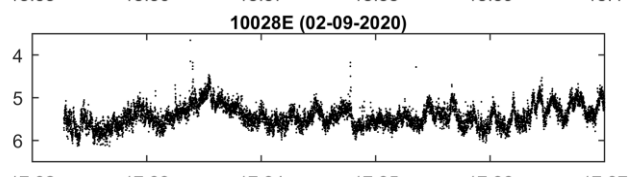
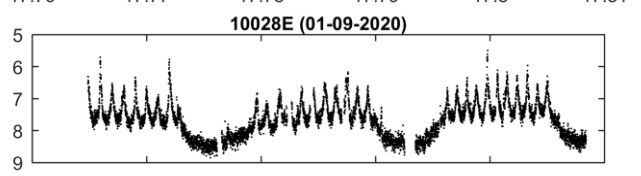
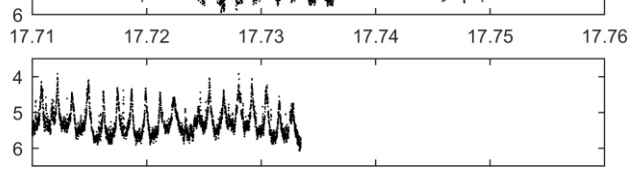
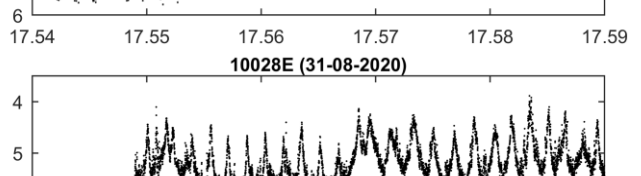
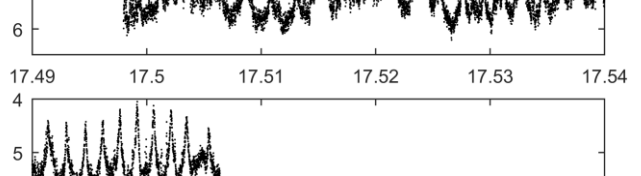
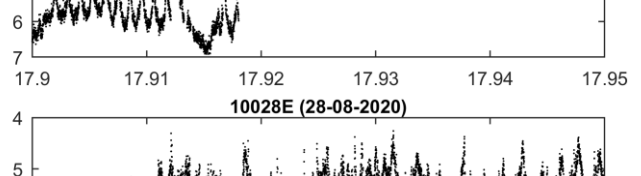
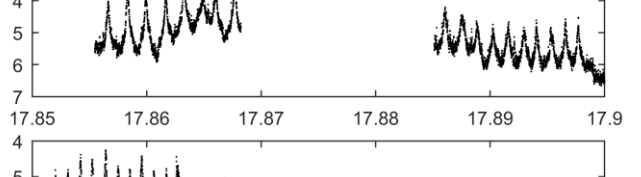
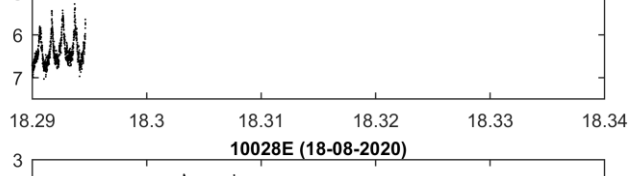
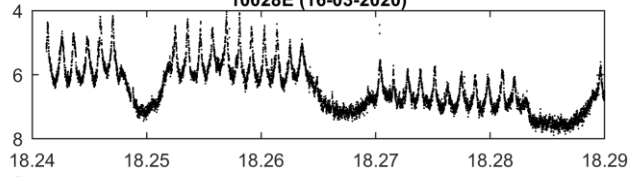
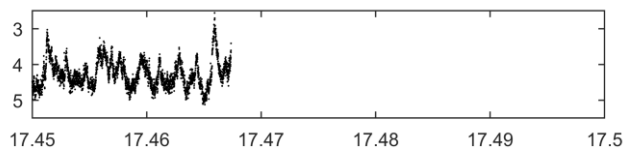
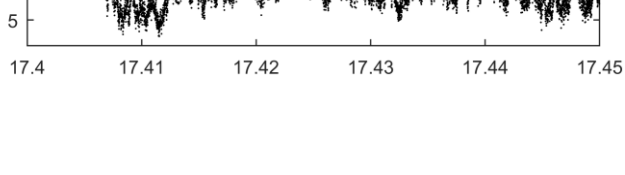
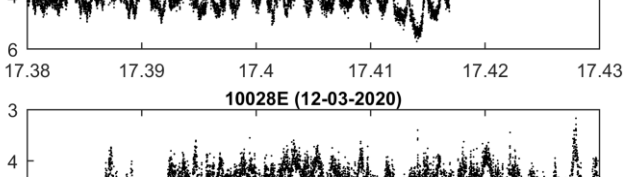
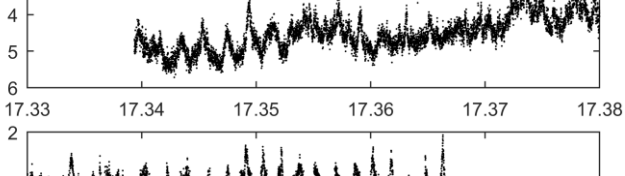
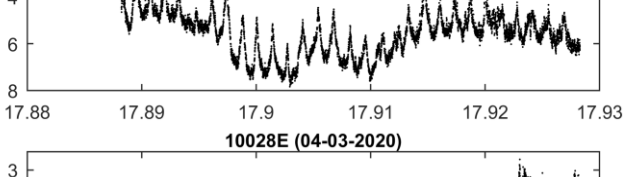
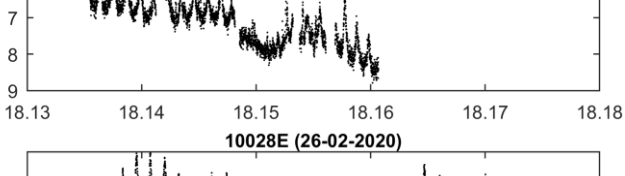
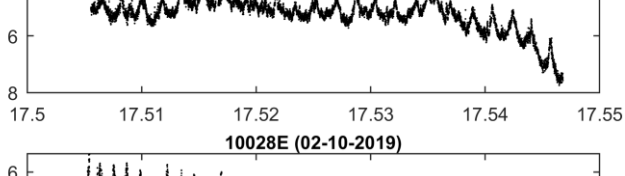
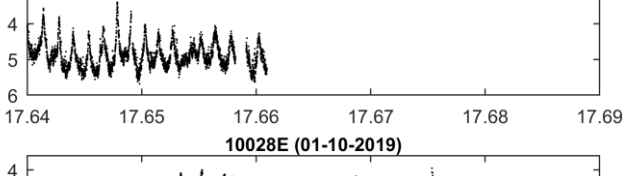
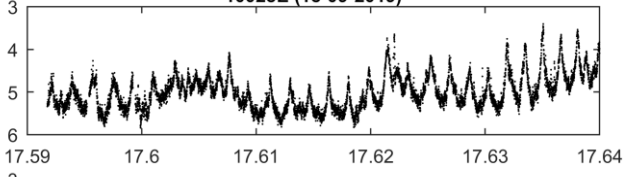
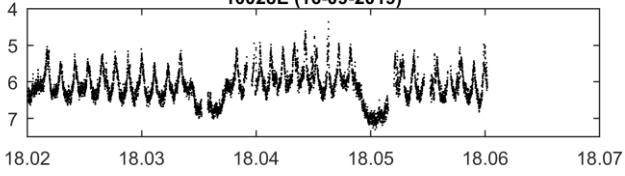
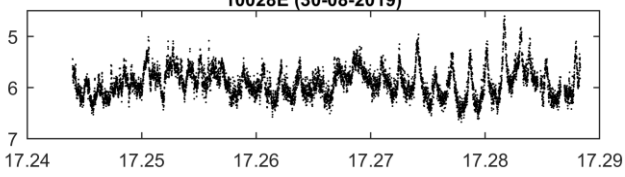
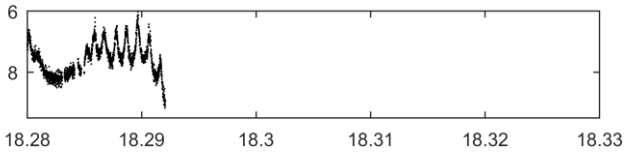
NORAD ID: 36599
 Int'l Code: 2010-028B
 Dimensions: box
 0.75m x 0.75m x 0.80m
 2 panels 26.00m span
 Initial orbit:
 Perigee: 725 km
 Apogee: 785 km
 Inclination: 98.28°
 Period: 99.93 min
 Eccentricity: 0.004
 Launch date: 2010-06-15
 Source: Sweden (SWED)

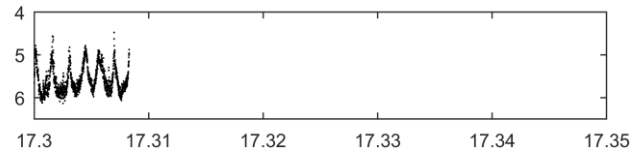
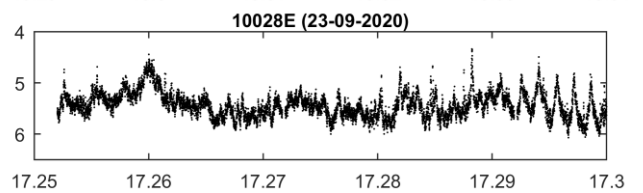
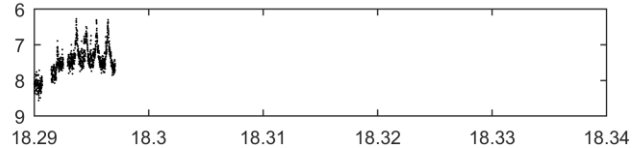
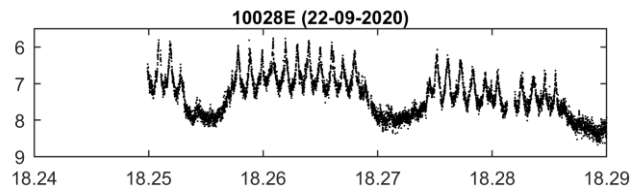
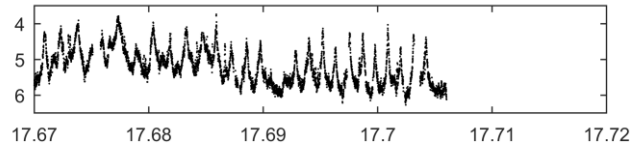
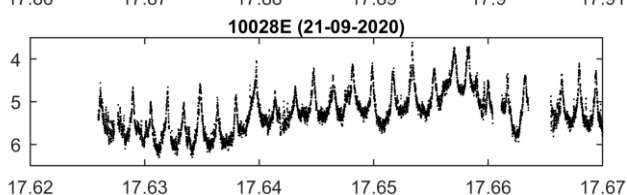
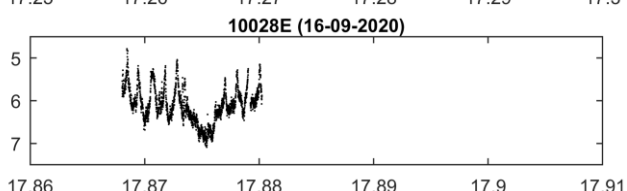
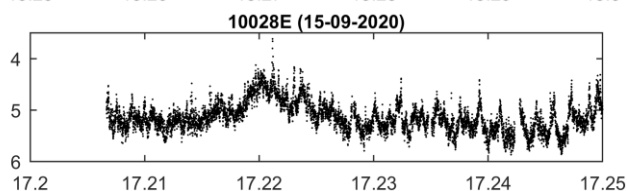
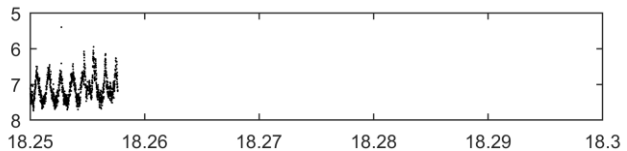
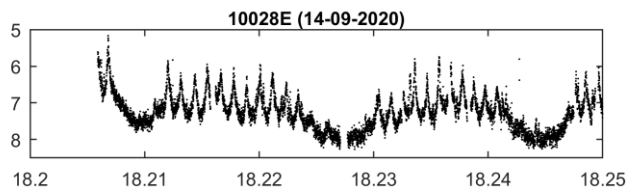
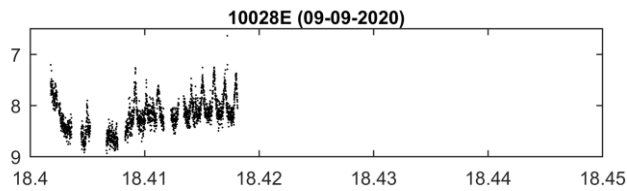
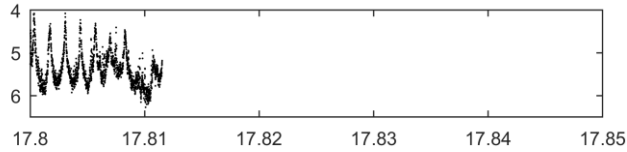
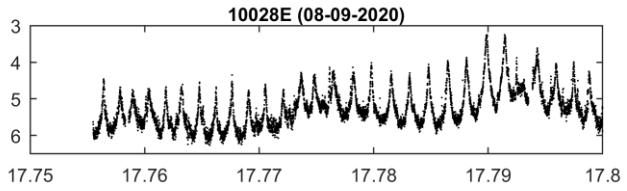
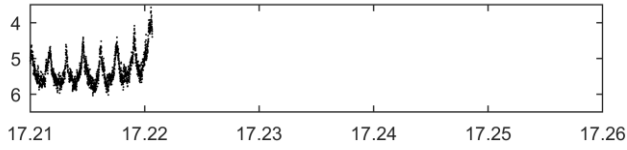
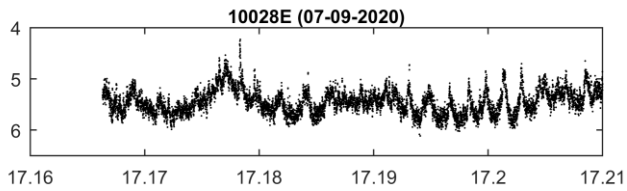


SL-24 DEB

NORAD ID: 36602
 Int'l Code: 2010-028E
 Dimensions:
 Initial orbit:
 Perigee: 725 km
 Apogee: 785 km
 Inclination: 98.28°
 Period: 99.93 min
 Eccentricity: 0.004
 Launch date: 2010-06-15
 Source: Commonwealth of Independent States (former USSR)
 (CIS)

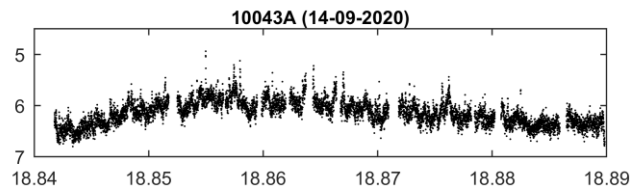






COSMOS 2467

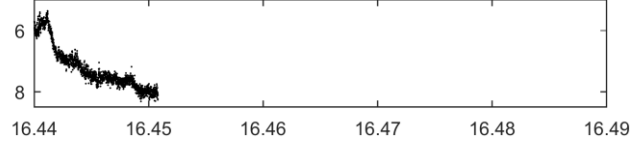
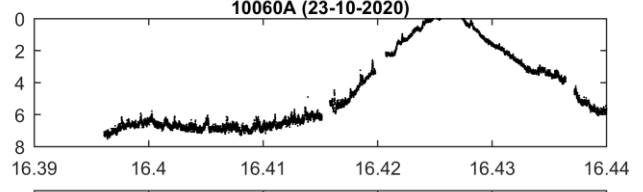
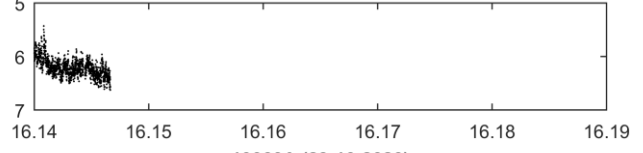
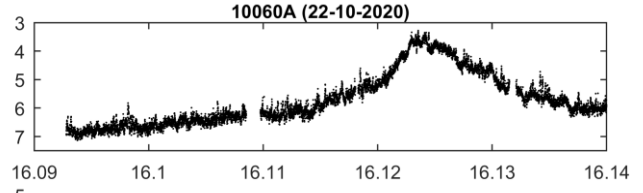
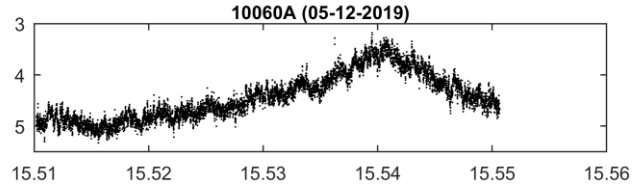
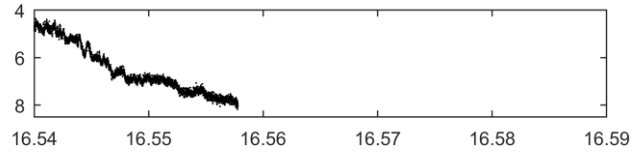
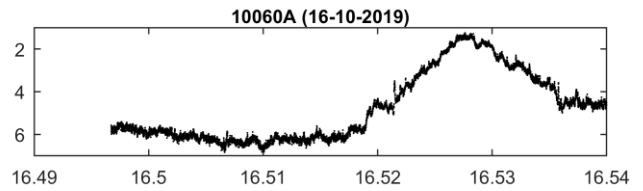
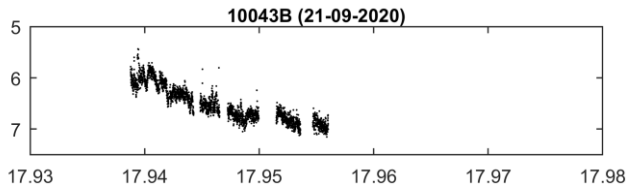
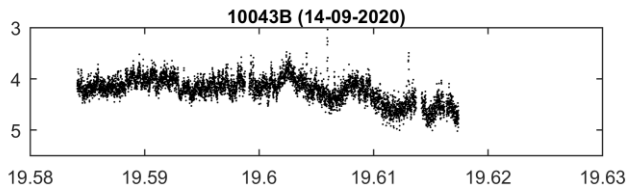
NORAD ID: 37152
 Int'l Code: 2010-043A
 Dimensions: cylindrical + gravity
 boom 1.6m high, 0.8m dia
 Initial orbit:
 Perigee: 1496 km
 Apogee: 1506 km
 Inclination: 82.46°
 Period: 116.00min
 Eccentricity: 0.0006
 Launch date: 2010-09-08
 Source: Commonwealth of Independent States (former USSR) (CIS)



STRELA 3

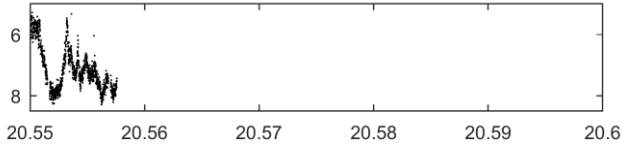
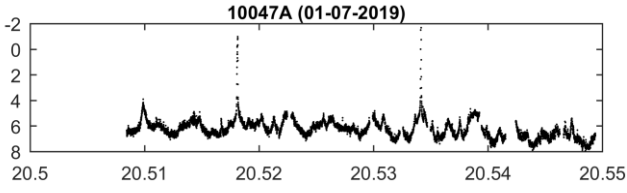
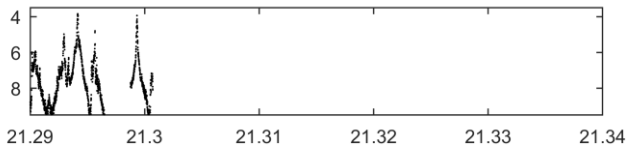
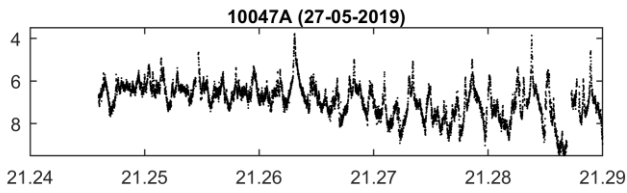
NORAD ID: 37153
 Int'l Code: 2010-043B
 Dimensions: cylindrical + gravity
 boom 1.6m high, 0.8m dia
 Initial orbit:
 Perigee: 1497 km
 Apogee: 1509 km
 Inclination: 82.45°
 Period: 116.05min
 Eccentricity: 0.0008
 Launch date: 2010-09-08
 Source: Commonwealth of Independent States (former USSR) (CIS)





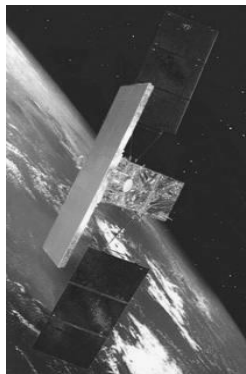
YAOGAN 11

NORAD ID: 37165
 Int'l Code: 2010-047A
 Dimensions: box + 2 panels
 Initial orbit:
 Perigee: 627 km
 Apogee: 657 km
 Inclination: 98.01°
 Period: 97.57min
 Eccentricity: 0.002
 Launch date: 2010-09-22
 Source: People's Republic of China (PRC)



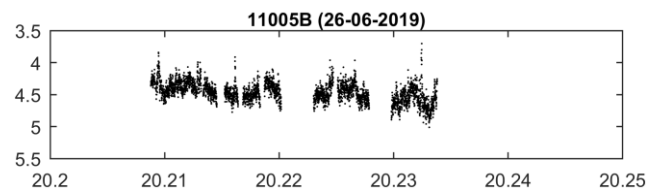
SKYMED 4 (COSMO 4)

NORAD ID: 37216
 Int'l Code: 2010-060A
 Dimensions: box + 2 panels + SAR antenna
 Initial orbit:
 Perigee: 612 km
 Apogee: 614 km
 Inclination: 97.86°
 Period: 96.97 min
 Eccentricity: 0.0002
 Launch date: 2010-11-06
 Source: Italy (IT)



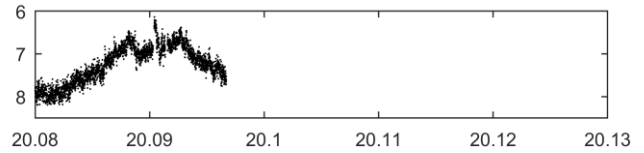
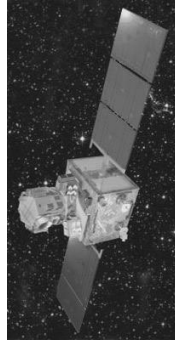
SL-19 R/B (Rokot-KM 3rd stage) (KOSMOS 2470 (GEO-IK-2 1) ROKET)

NORAD ID: 37363
 Int'l Code: 2011-005B
 Dimensions: cylinder 3m long, 2.5m dia
 Initial orbit:
 Perigee: 318 km
 Apogee: 1050 km
 Inclination: 99.46°
 Period: 98.43 min
 Eccentricity: 0.052
 Launch date: 2011-02-01
 Source: Commonwealth of Independent States (former USSR) (CIS)

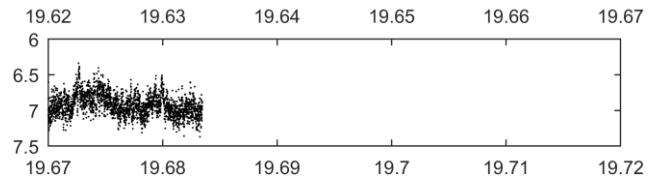
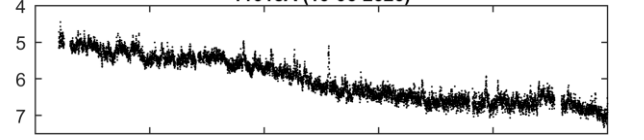


RESOURCESAT 2

NORAD ID: 37387
Int'l Code: 2011-015A
Dimensions: box + 2 panels
Initial orbit:
Perigee: 821 km
Apogee: 823 km
Inclination: 98.78°
Period: 101.33 min
Eccentricity: 0.0002
Launch date: 2011-04-20
Source: India (IND)

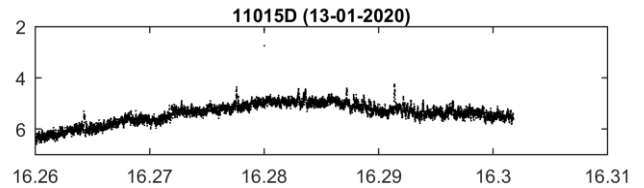
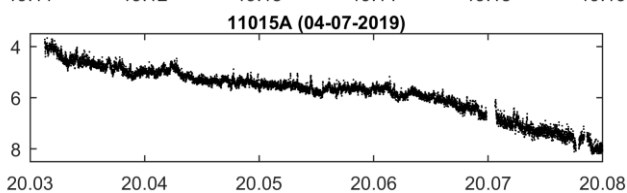
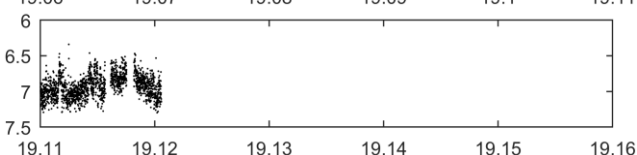
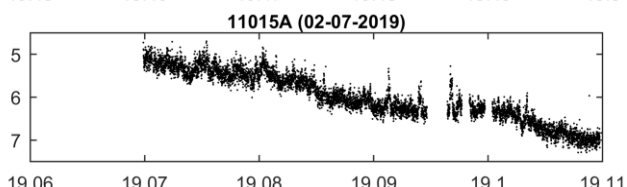
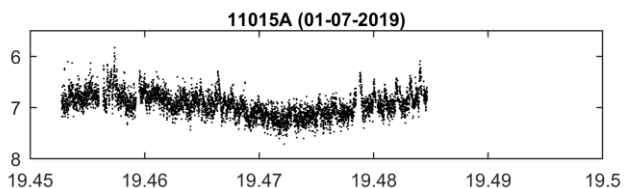
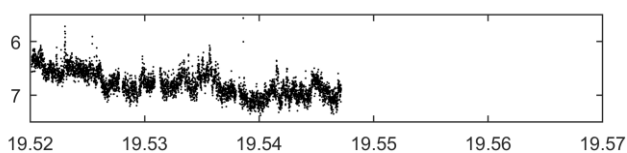
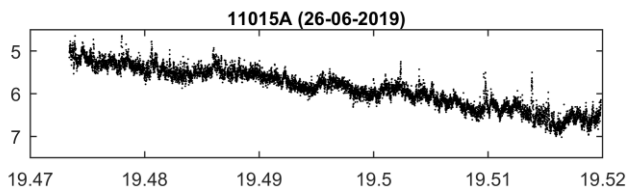
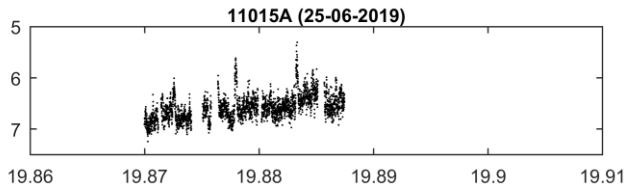
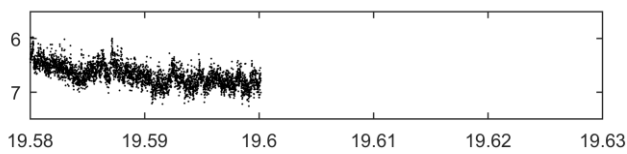
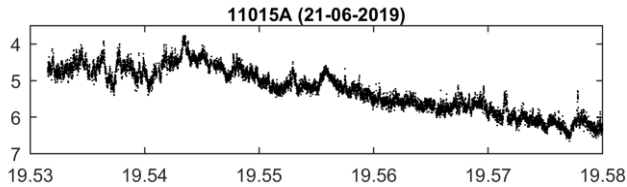


11015A (10-06-2020)



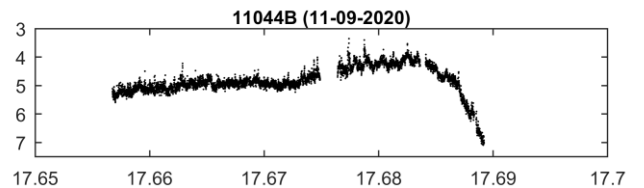
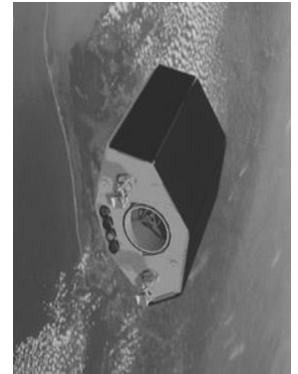
PSLV R/B (4th stage)

NORAD ID: 37390
Int'l Code: 2011-015D
Dimensions: cylinder 2.6m long, 2.8m dia
Initial orbit:
Perigee: 789 km
Apogee: 816 km
Inclination: 98.66°
Period: 100.92 min
Eccentricity: 0.002
Launch date: 2011-04-20
Source: India (IND)



NIGERIASAT 2

NORAD ID: 37789
Int'l Code: 2011-044B
Dimensions: 7-sided box
1.061m high, 0.815m width,
0.899m length
Initial orbit:
Perigee: 697 km
Apogee: 724 km
Inclination: 98.28°
Period: 99 min
Eccentricity: 0.002
Launch date: 2011-08-17
Source: Nigeria (NIG)



SICH 2

NORAD ID: 37794

Int'l Code: 2011-044G

Dimensions: box + 4 panels

Initial orbit:

Perigee: 684 km

Apogee: 702 km

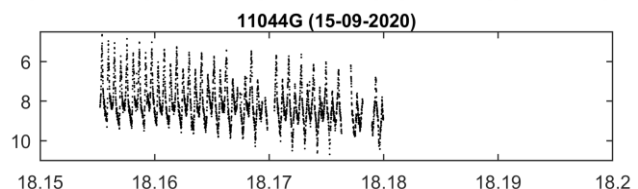
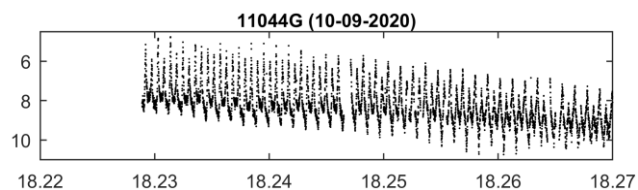
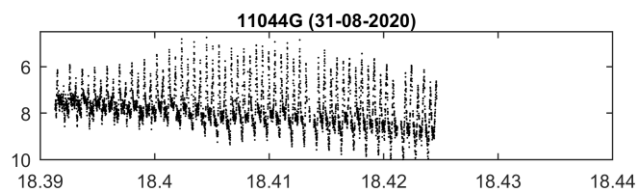
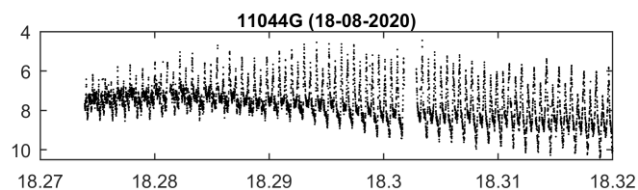
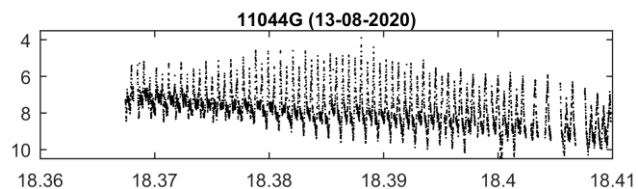
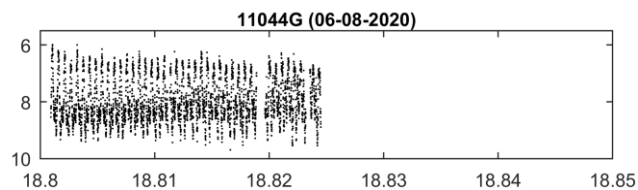
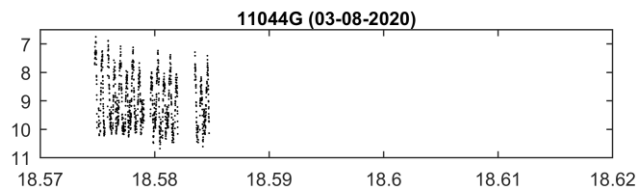
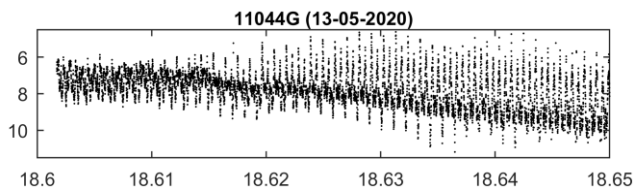
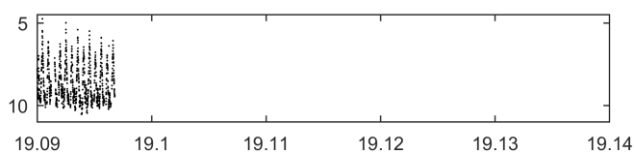
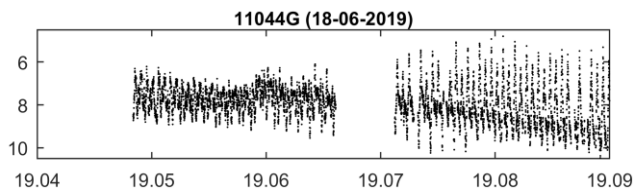
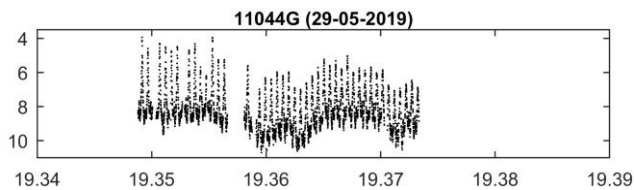
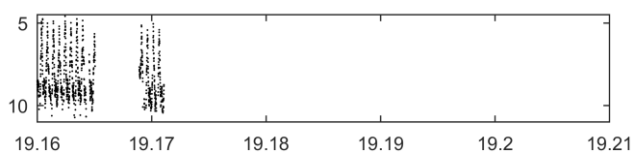
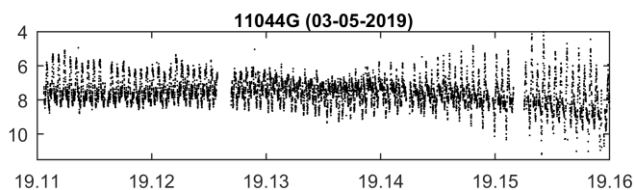
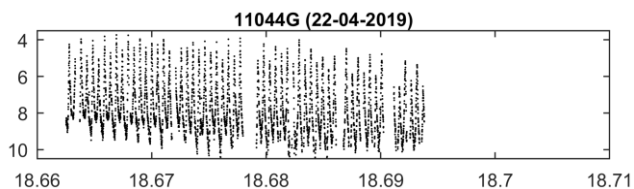
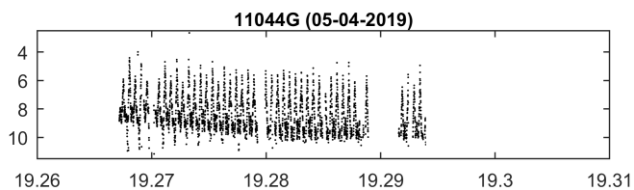
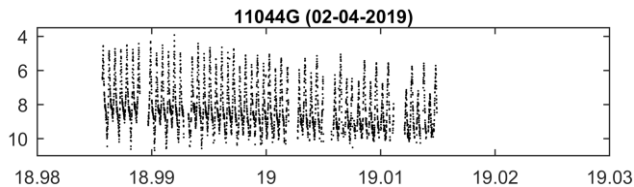
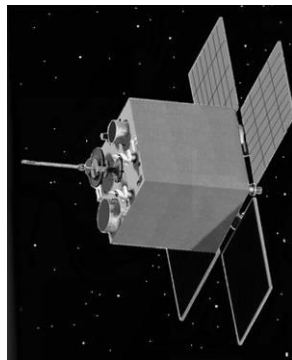
Inclination: 98.26°

Period: 98.63 min

Eccentricity: 0.001

Launch date: 2011-08-17

Source: Ukraine (UA)



SL-24 DEB (Fragment of Satellite)

NORAD ID: 37796

Int'l Code: 2011-044J

Dimensions:

Initial orbit:

Perigee: 692 km

Apogee: 710 km

Inclination: 98.26°

Period: 98.78 min

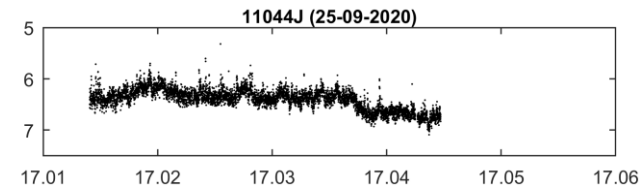
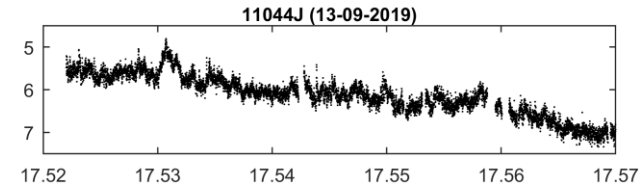
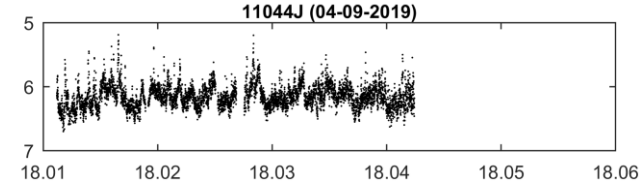
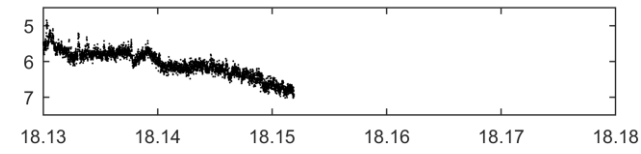
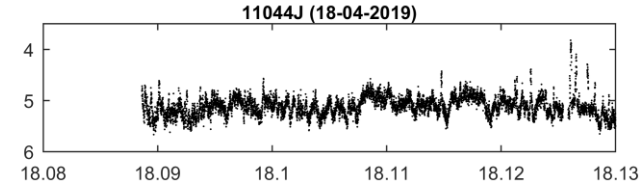
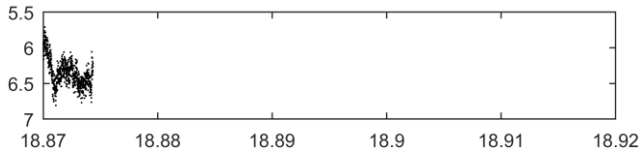
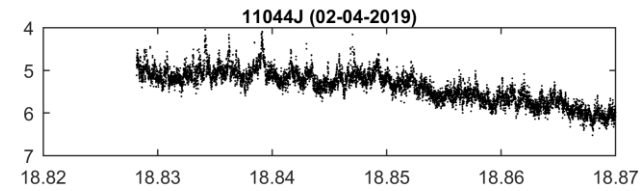
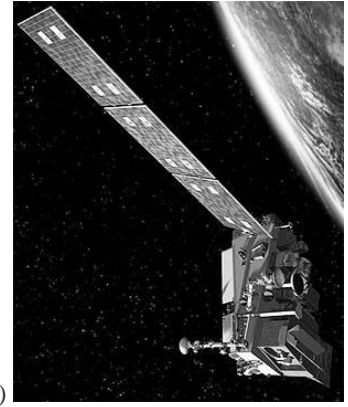
Eccentricity: 0.001

Launch date: 2011-08-17

Source: Commonwealth of Independent States (former USSR) (CIS)

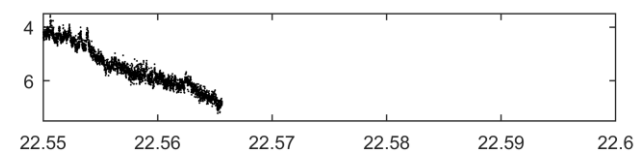
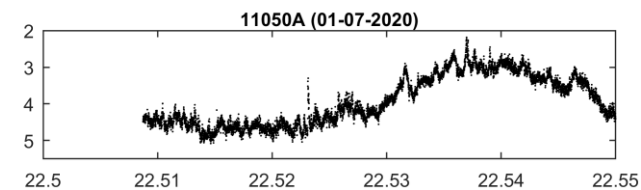
NPP (SUOMI NPP)

NORAD ID: 37849
Int'l Code: 2011-061A
Dimensions: box + panel
3.96m long 2.59m x 2.59m
Initial orbit:
Perigee: 816 km
Apogee: 819 km
Inclination: 98.71°
Period: 101.25min
Eccentricity: 0.0002
Launch date: 2011-10-28
Source: United States (US)

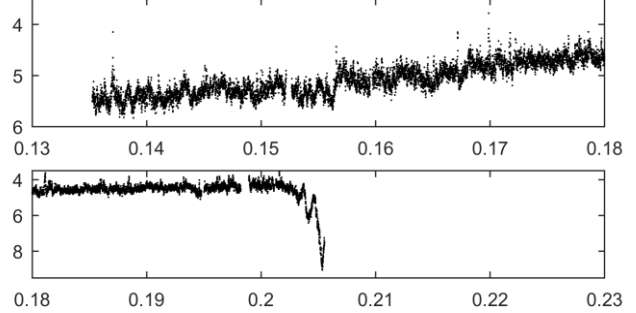


IGS 6A

NORAD ID: 37813
Int'l Code: 2011-050A
Dimensions:
Initial orbit:
Perigee: 585 km
Apogee: 588 km
Inclination: 97.69°
Period: 96.41min
Eccentricity: 0.00025
Launch date: 2011-09-23
Source: Japan (JPN)

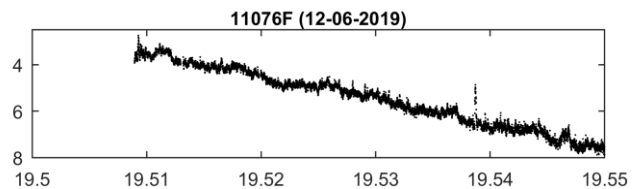
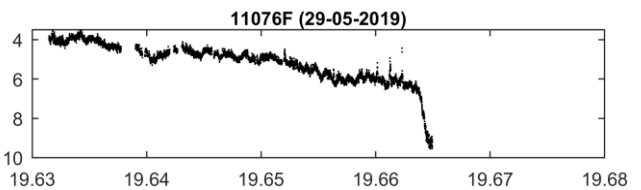
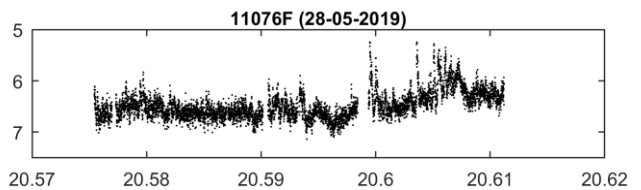
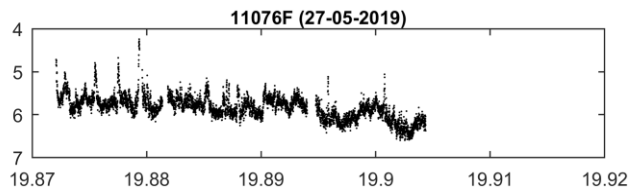
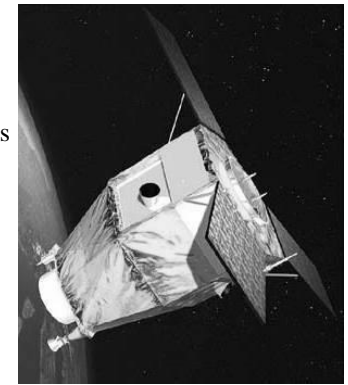


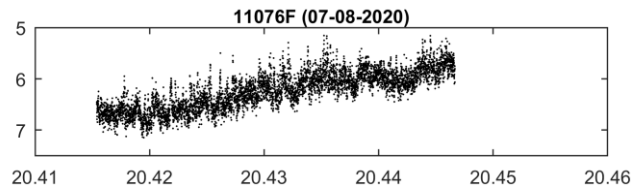
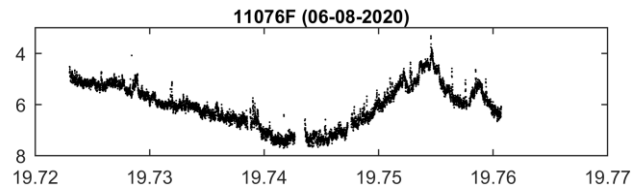
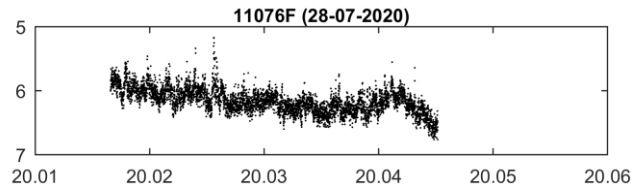
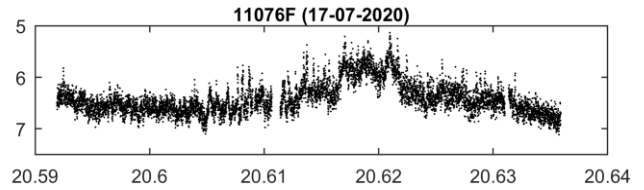
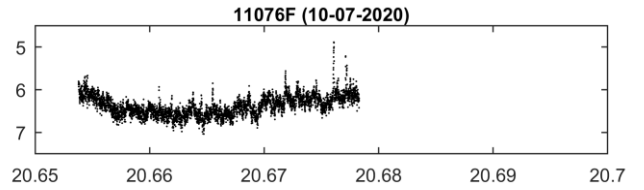
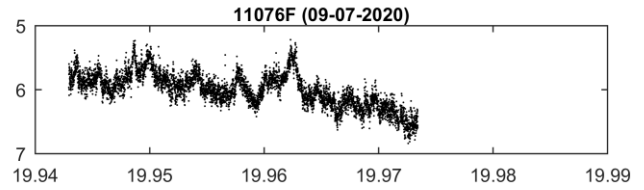
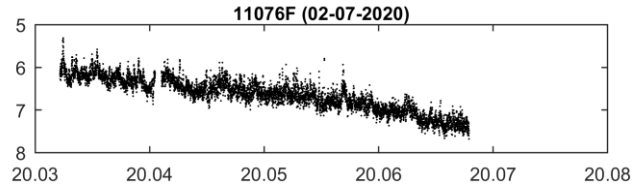
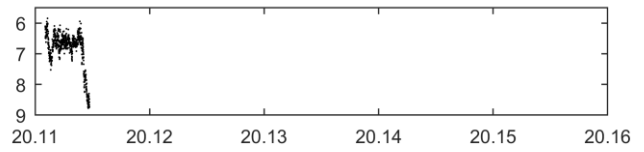
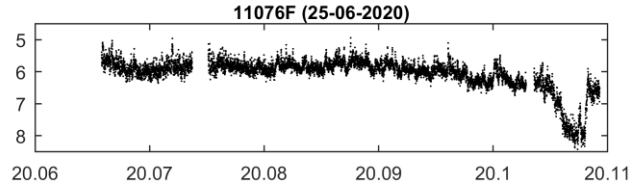
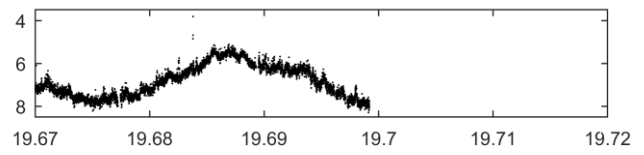
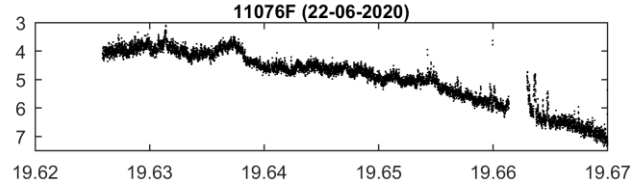
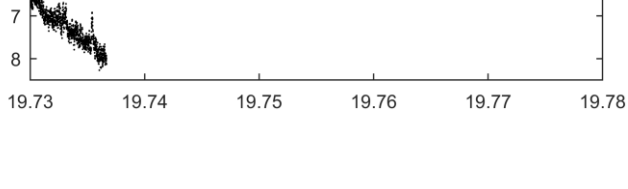
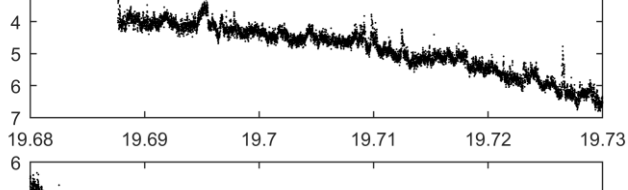
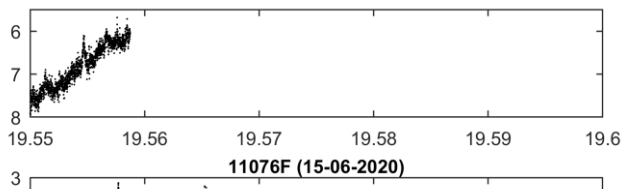
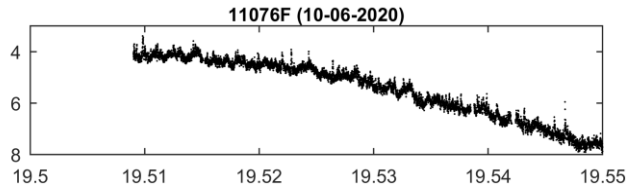
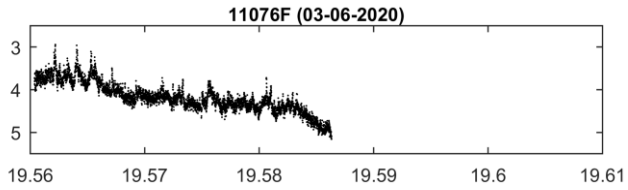
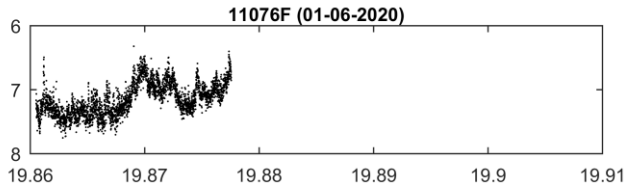
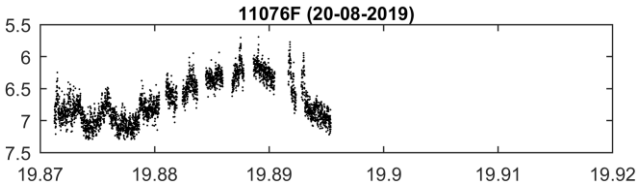
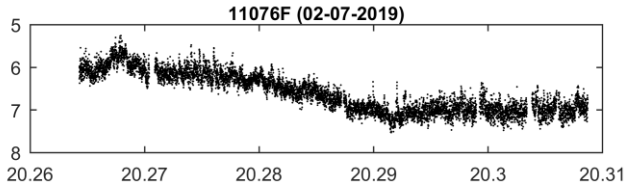
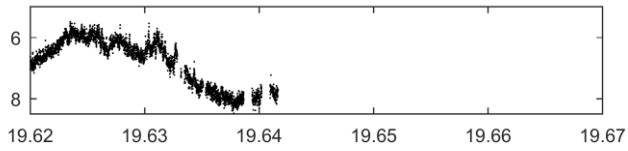
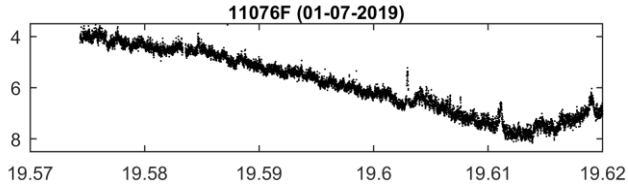
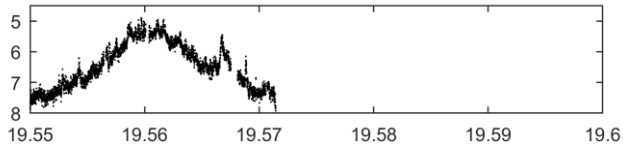
11061A (02-07-2020)

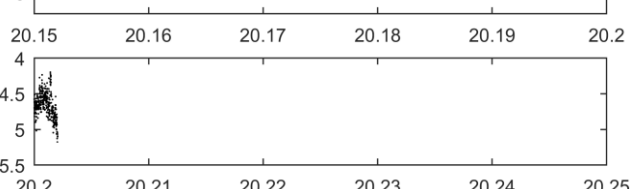
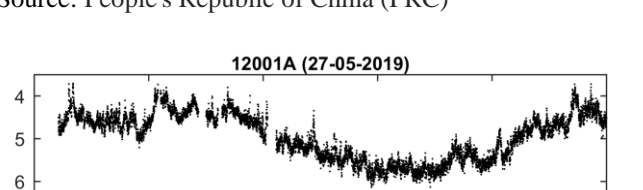
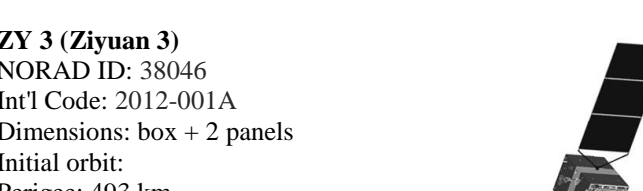
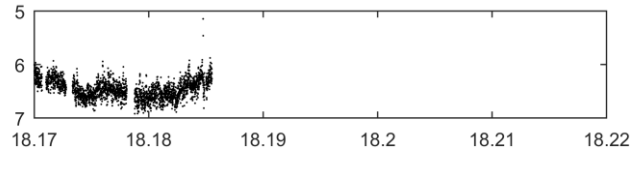
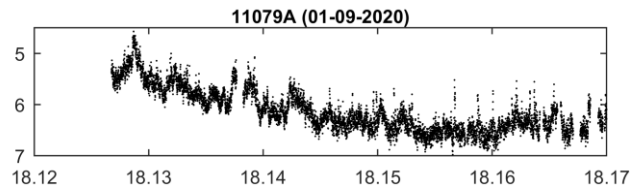
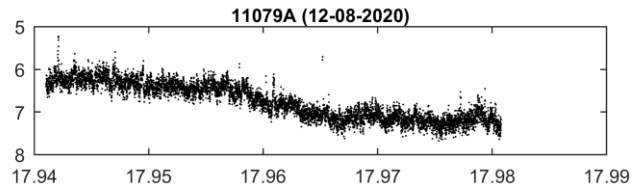
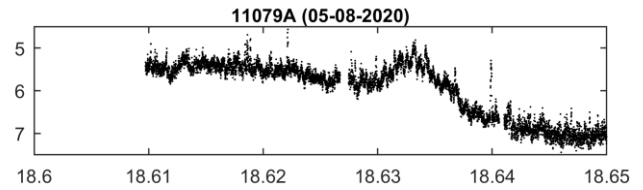
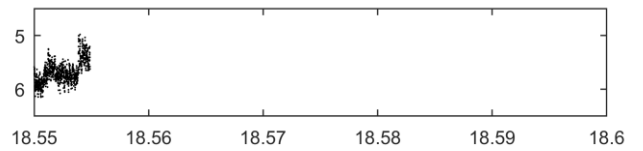
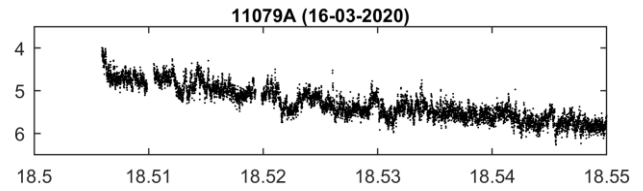
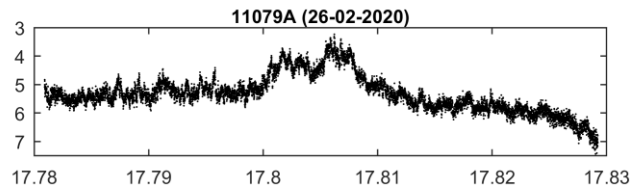
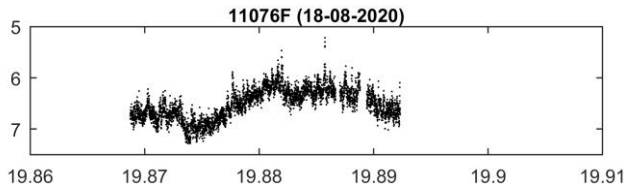
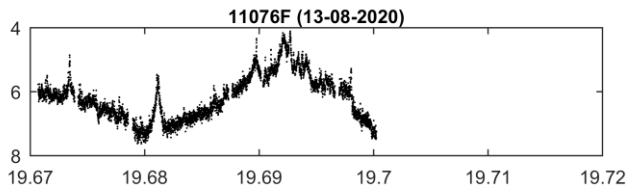


PLEIADES 1A

NORAD ID: 38012
Int'l Code: 2011-076F
Dimensions:
hexagon cylinder + 3 panels
Initial orbit:
Perigee: 596 km
Apogee: 612 km
Inclination: 97.99°
Period: 96.77min
Eccentricity: 0.001
Launch date: 2011-12-17
Source: France (FR)







ZIYUAN 1-2C

NORAD ID: 38038

Int'l Code: 2011-079A

Dimensions:

Initial orbit:

Perigee: 761 km

Apogee: 769 km

Inclination: 98.55°

Period: 100.15min

Eccentricity: 0.0006

Launch date: 2011-12-22

Source: People's Republic of China (PRC)



ZY 3 (Ziyuan 3)

NORAD ID: 38046

Int'l Code: 2012-001A

Dimensions: box + 2 panels

Initial orbit:

Perigee: 493 km

Apogee: 502 km

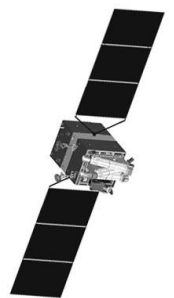
Inclination: 97.48°

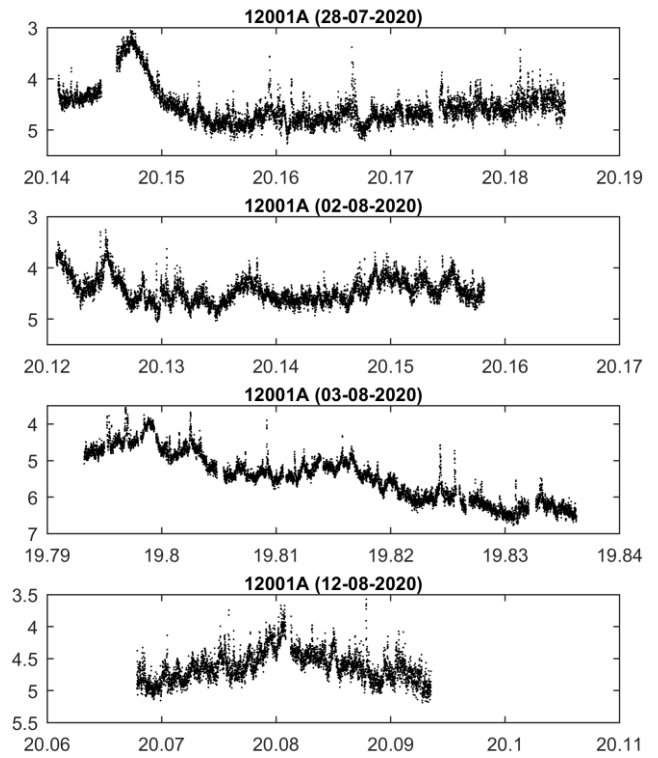
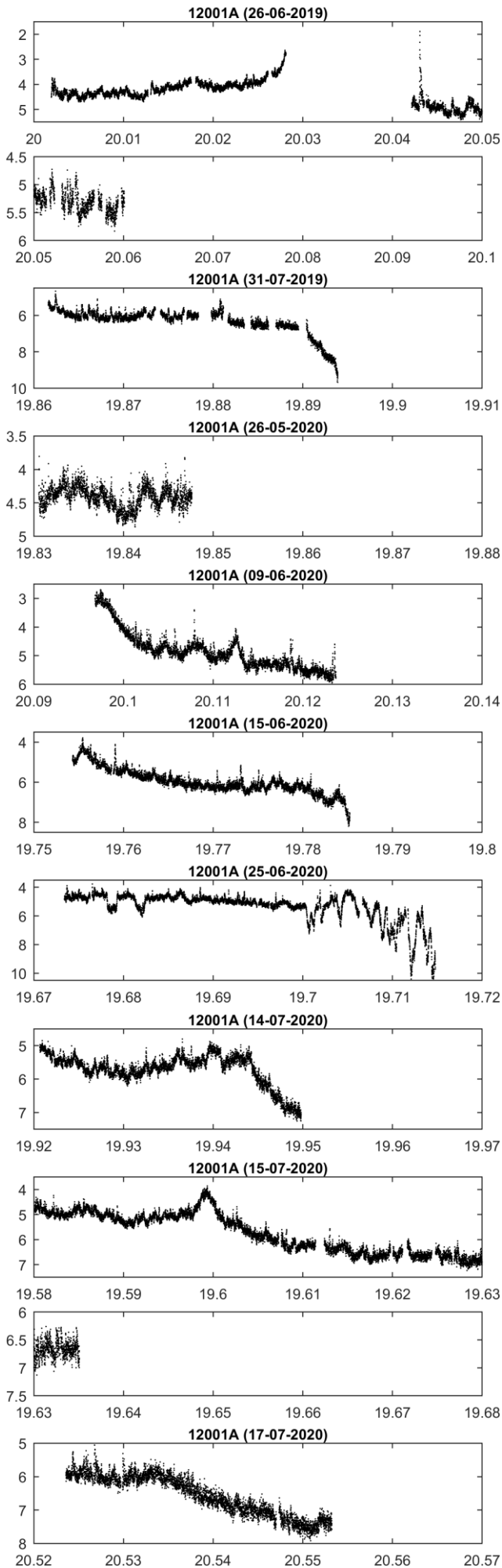
Period: 94.57 min

Eccentricity: 0.0006

Launch date: 2012-01-09

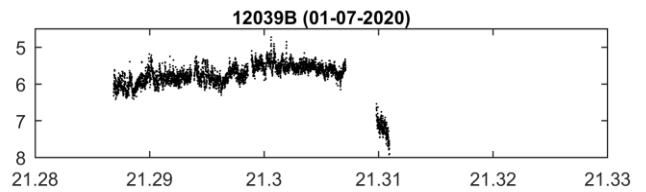
Source: People's Republic of China (PRC)





BKA

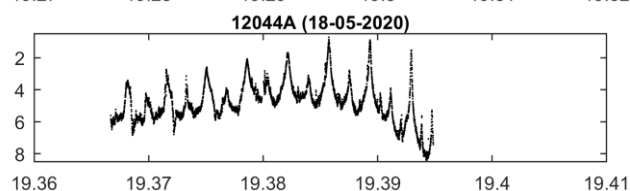
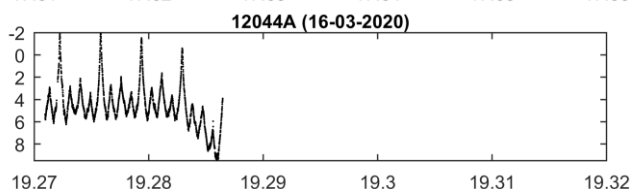
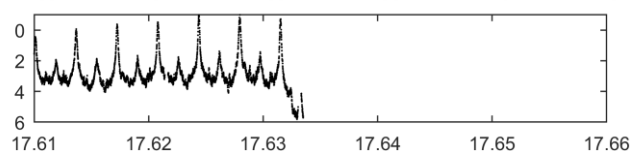
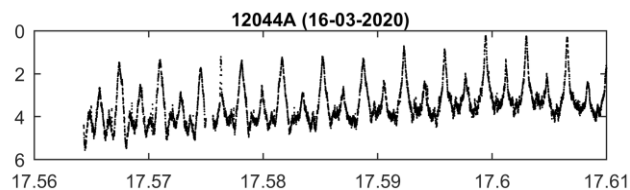
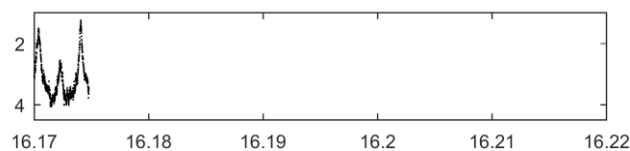
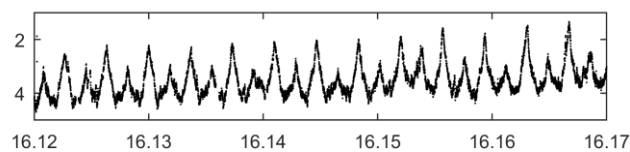
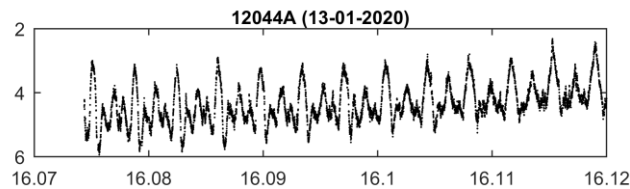
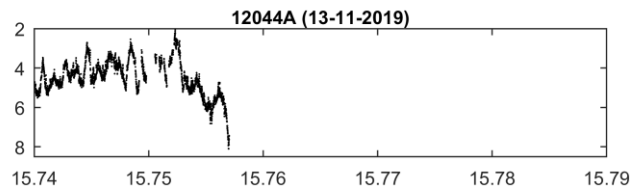
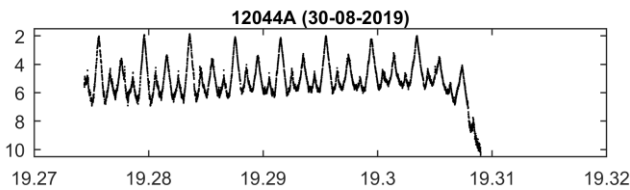
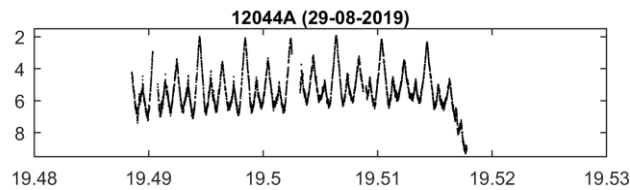
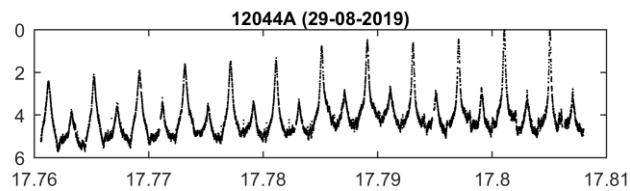
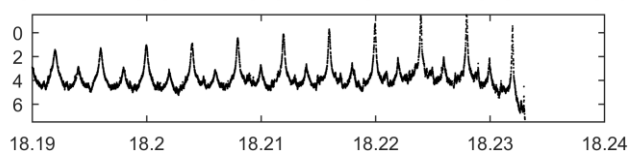
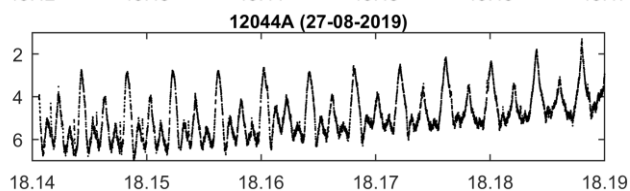
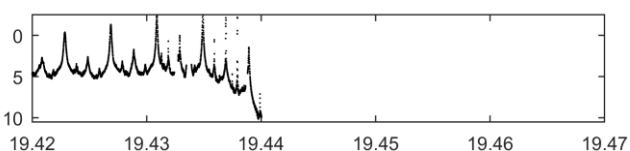
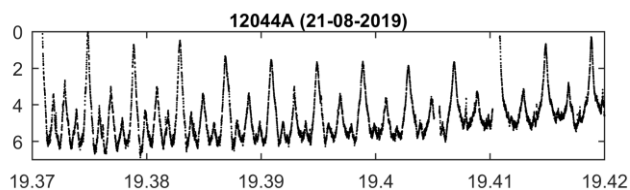
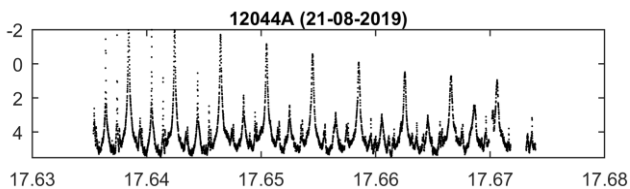
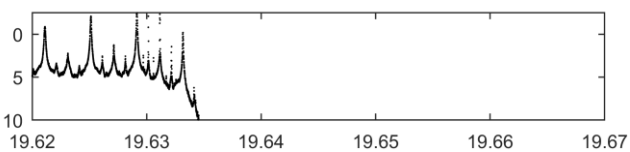
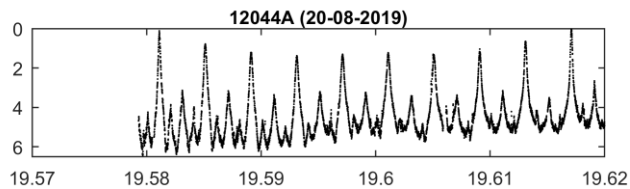
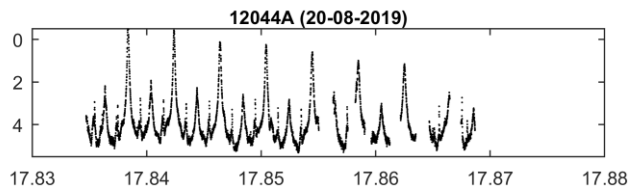
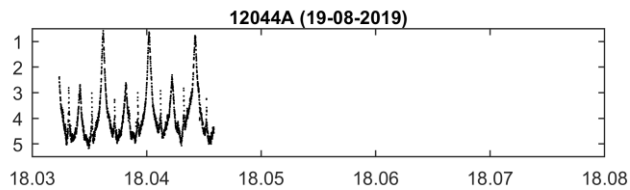
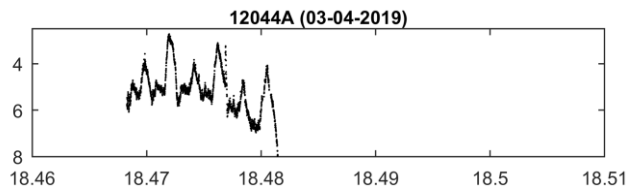
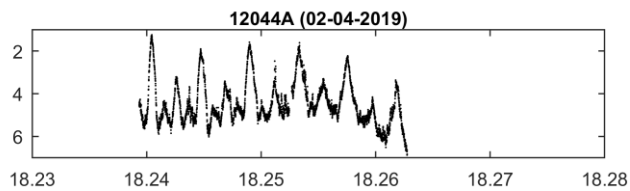
NORAD ID: 38708
 Int'l Code: 2012-039B
 Dimensions: box +2 panels 0.90m x 0.75m
 Initial orbit:
 Perigee: 504 km
 Apogee: 507 km
 Inclination: 97.49°
 Period: 94.73min
 Eccentricity: 0.0002
 Launch date: 2012-07-22
 Source: Belarus (BELA)

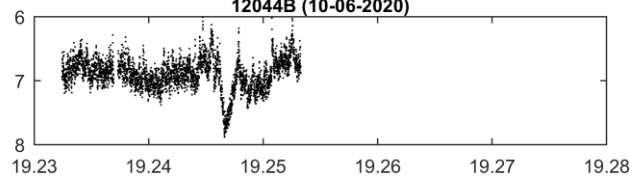
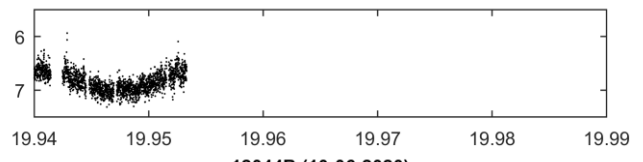
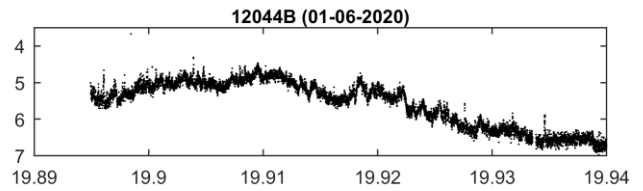
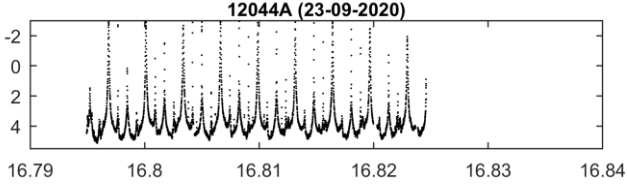
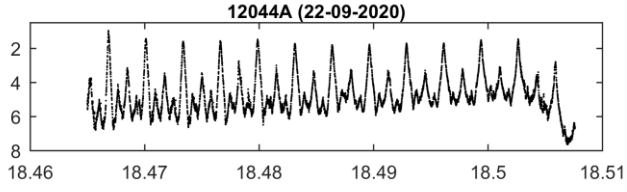
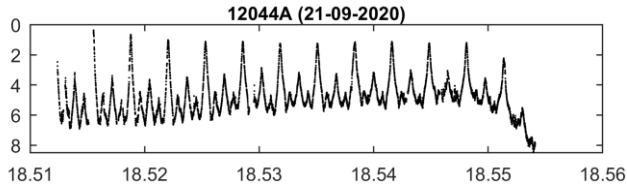
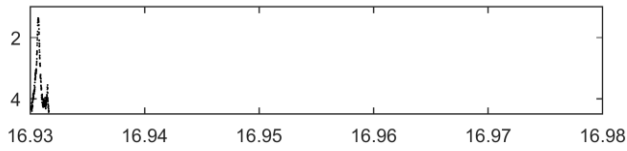
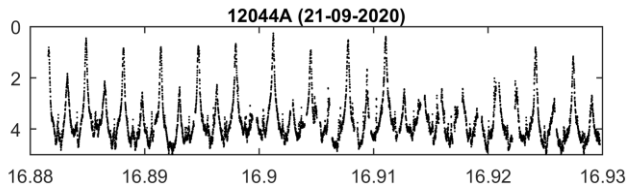
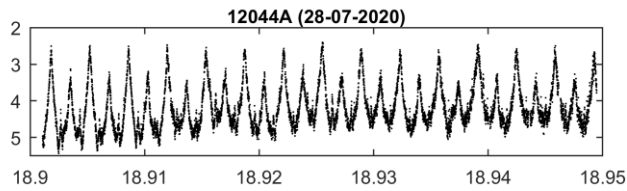


TELKOM 3

NORAD ID: 38744
 Int'l Code: 2012-044A
 Dimensions:
 Initial orbit:
 Perigee: 266 km
 Apogee: 5013 km
 Inclination: 49.92°
 Period: 142.05 min
 Eccentricity: 0.263
 Launch date: 2012-08-06
 Source: Indonesia (INDO)







BREEZE-M R/B (Proton-M)

NORAD ID: 38746

Int'l Code: 2012-044C

Dimensions: stubby cylinder

2.62m long, ~2.4m dia

Initial orbit:

Perigee: 266 km

Apogee: 5015 km

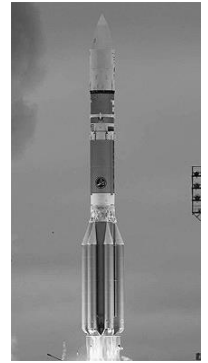
Inclination: 49.91°

Period: 142.07 min

Eccentricity: 0.263

Launch date: 2012-08-06

Source: Commonwealth of Independent States (former USSR) (CIS)



EXPRESS MD2

NORAD ID: 38745

Int'l Code: 2012-044B

Dimensions: box + 2 panels

Initial orbit:

Perigee: 266 km

Apogee: 5013 km

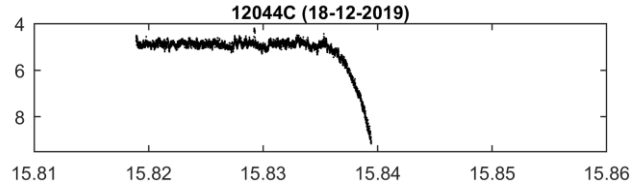
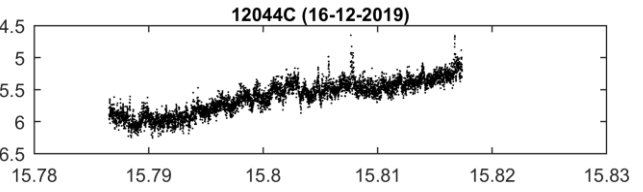
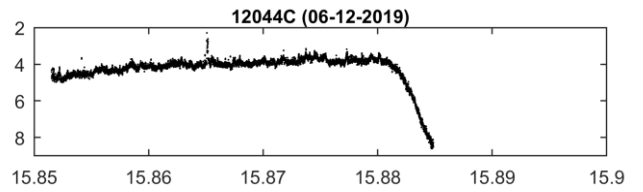
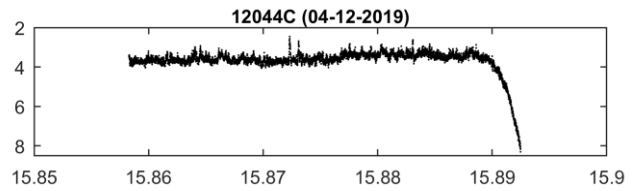
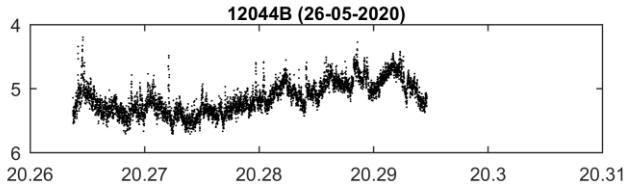
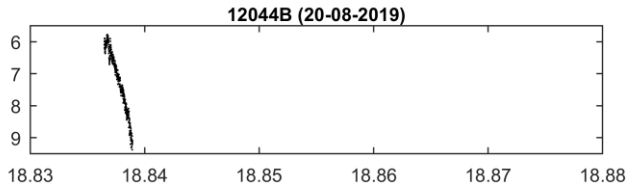
Inclination: 49.91°

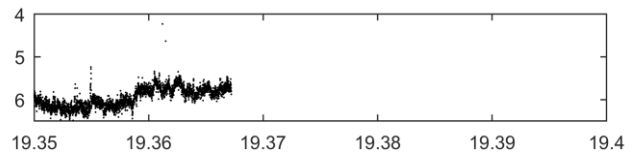
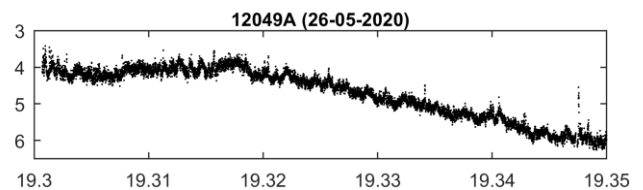
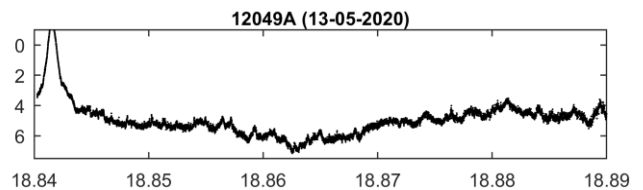
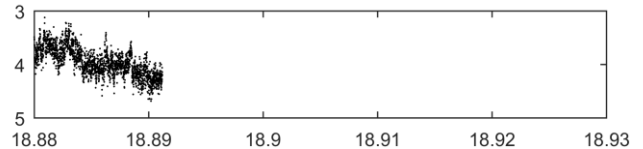
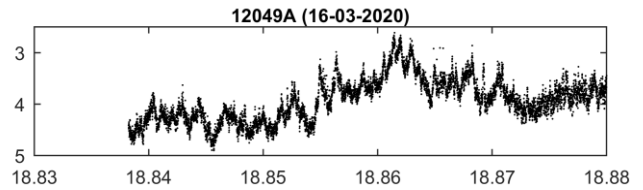
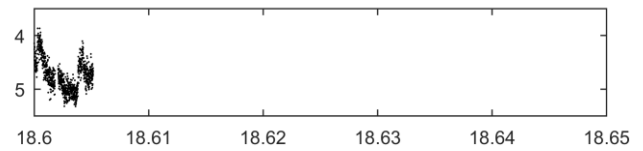
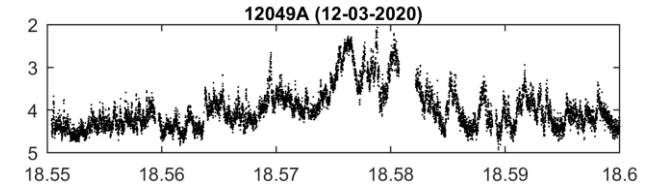
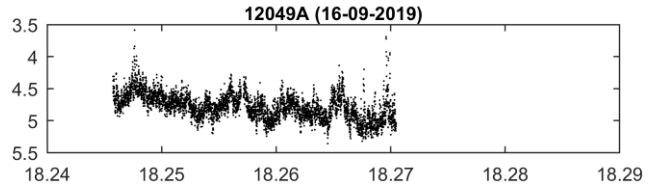
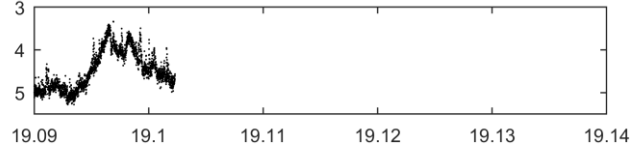
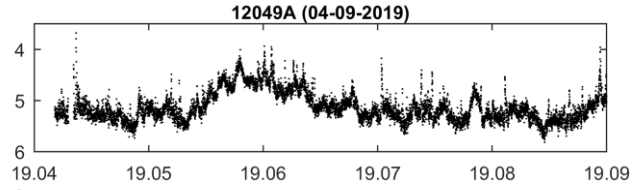
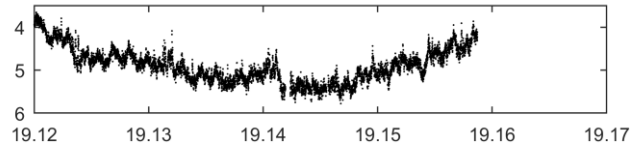
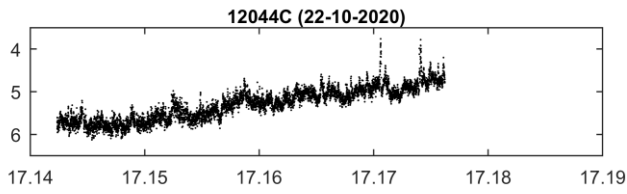
Period: 142.03 min

Eccentricity: 0.263

Launch date: 2012-08-06

Source: Commonwealth of Independent States (former USSR) (CIS)





METOP-B

NORAD ID: 38771

Int'l Code: 2012-049A

Dimensions: box + panel

6.3m x 2.5m x 2.5m,

8m x 5m panel, 17.6m span

Initial orbit:

Perigee: 796 km

Apogee: 808 km

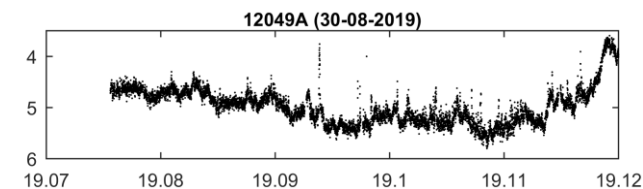
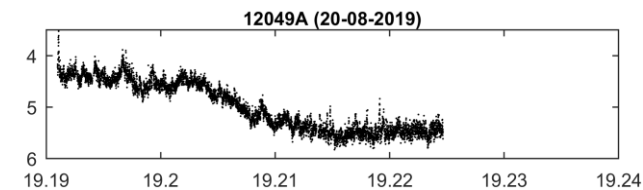
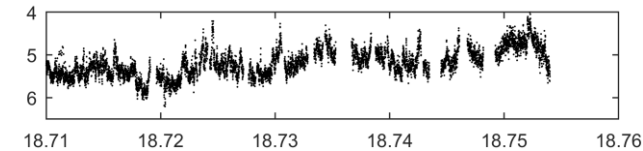
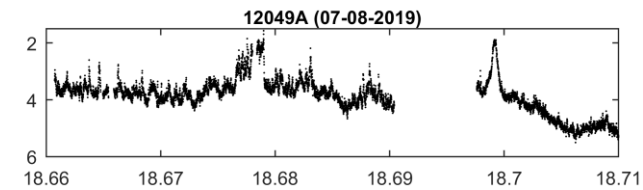
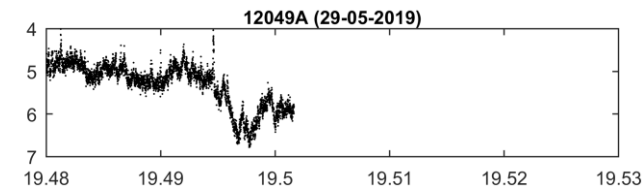
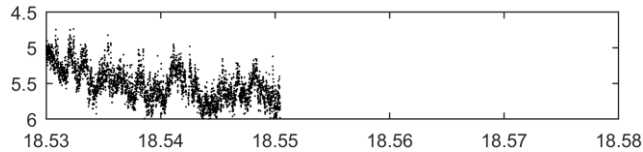
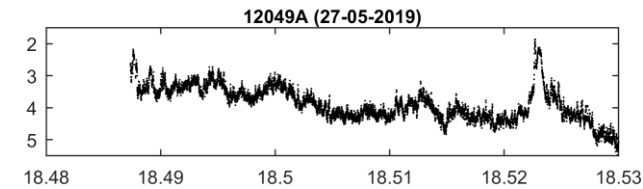
Inclination: 98.73°

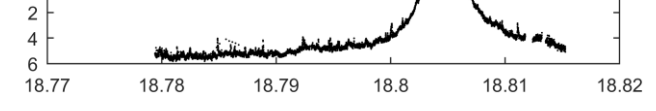
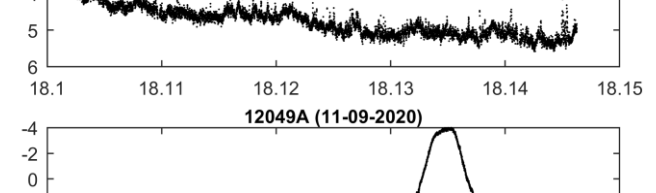
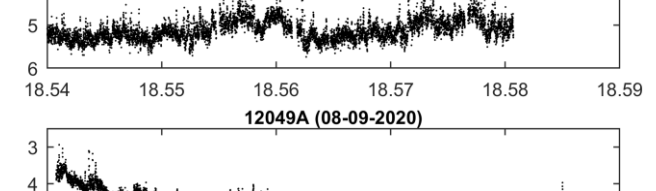
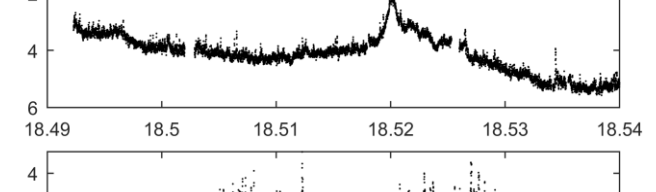
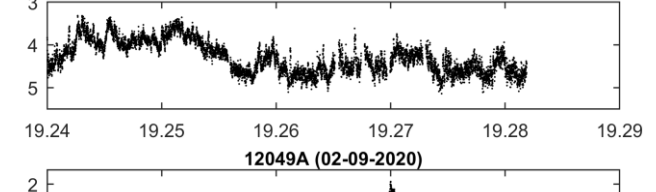
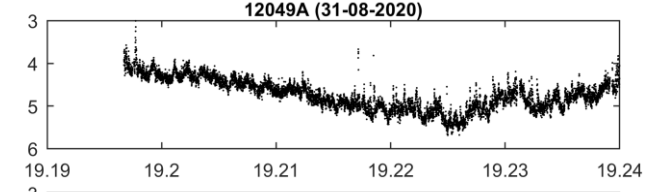
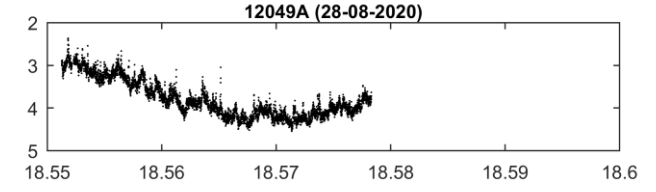
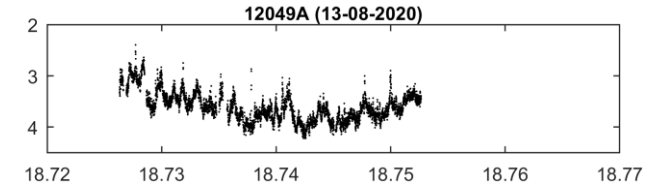
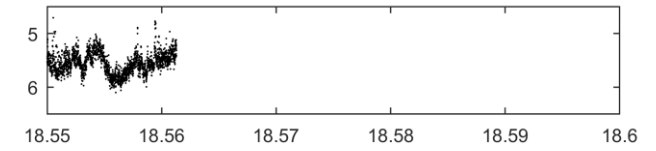
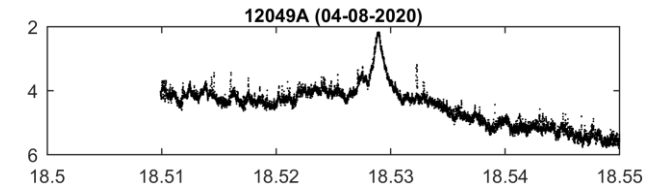
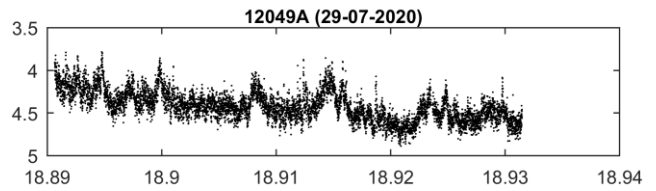
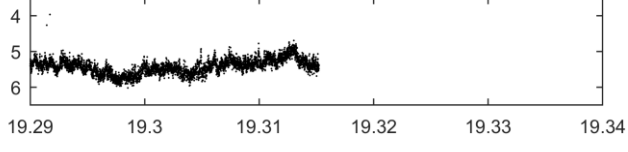
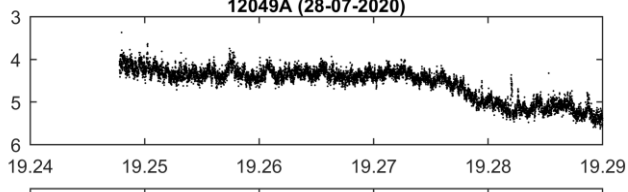
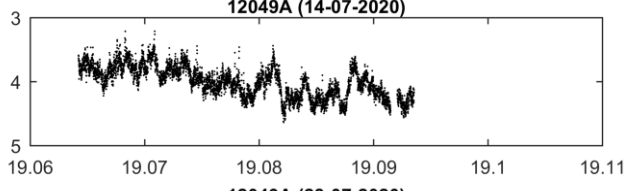
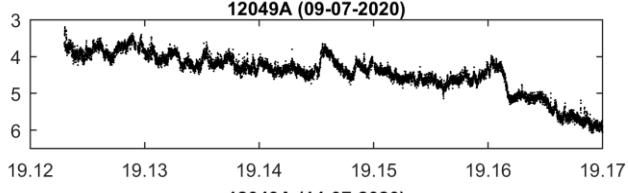
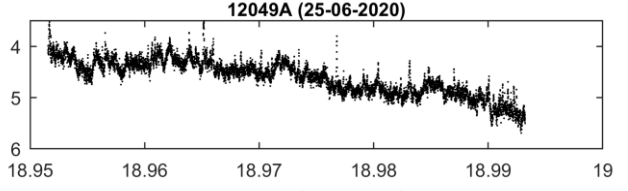
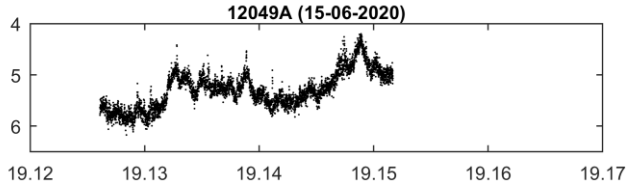
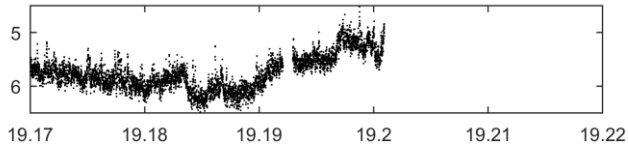
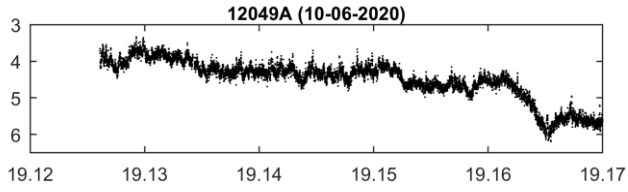
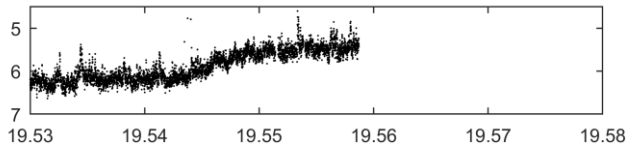
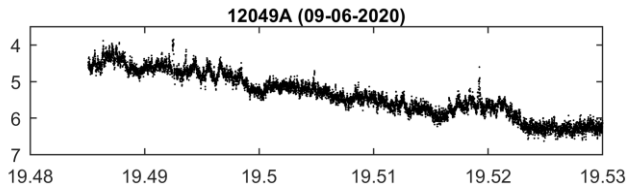
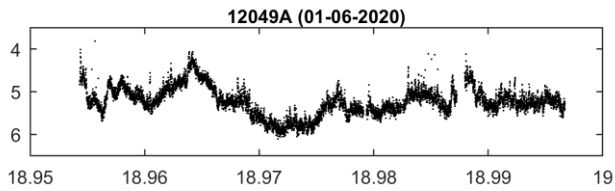
Period: 100.92min

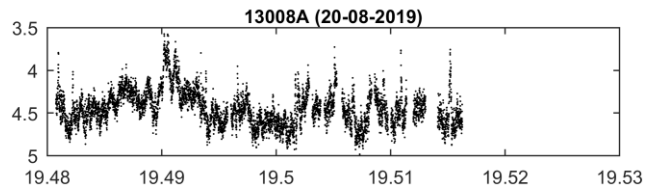
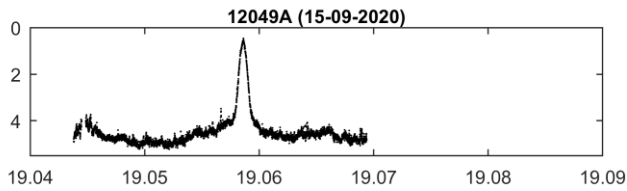
Eccentricity: 0.0008

Launch date: 2012-09-17

Source: European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT)







COSMOS 2484

(STRELA-3M)

NORAD ID: 39059

Int'l Code: 2013-001C

Dimensions:

Initial orbit:

Perigee: 1480 km

Apogee: 1503 km

Inclination: 82.50°

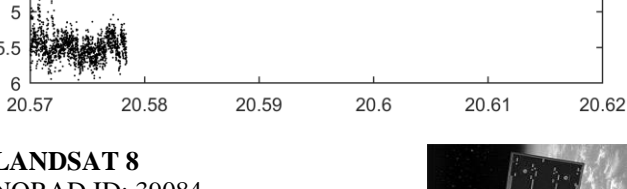
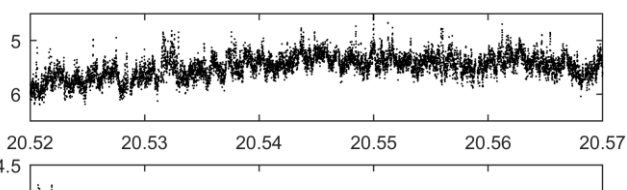
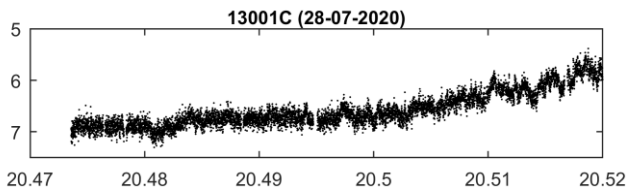
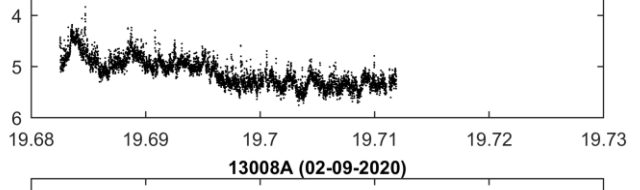
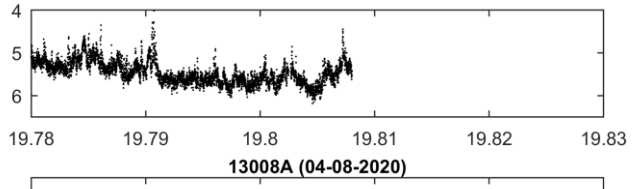
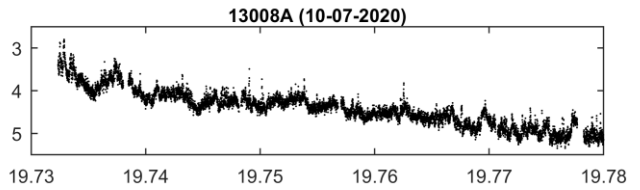
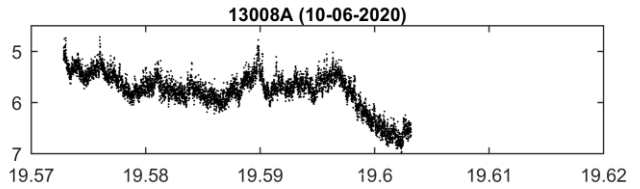
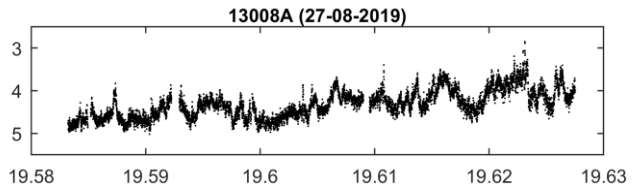
Period: 115.80min

Eccentricity: 0.001

Launch date: 2013-01-15

Source: Commonwealth of

Independent States (former USSR) (CIS)



LANDSAT 8

NORAD ID: 39084

Int'l Code: 2013-008A

Dimensions: box + panel 9 m span

Initial orbit:

Perigee: 667 km

Apogee: 684 km

Inclination: 98.25°

Period: 98.25 min

Eccentricity: 0.001

Launch date: 2013-02-11

Source: United States (US)



SARAL 1

NORAD ID: 39086

Int'l Code: 2013-009A

Dimensions: box + 2 panels

Initial orbit:

Perigee: 776 km

Apogee: 784 km

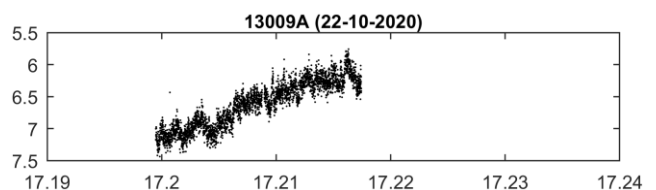
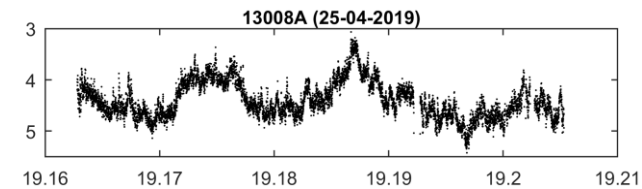
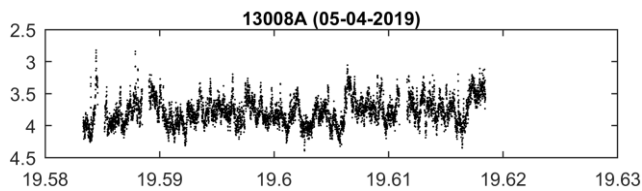
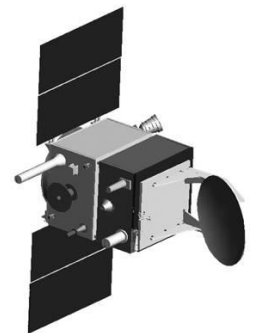
Inclination: 98.52°

Period: 100.45 min

Eccentricity: 0.0006

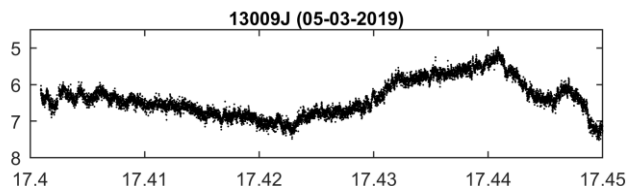
Launch date: 2013-02-25

Source: India (IND)



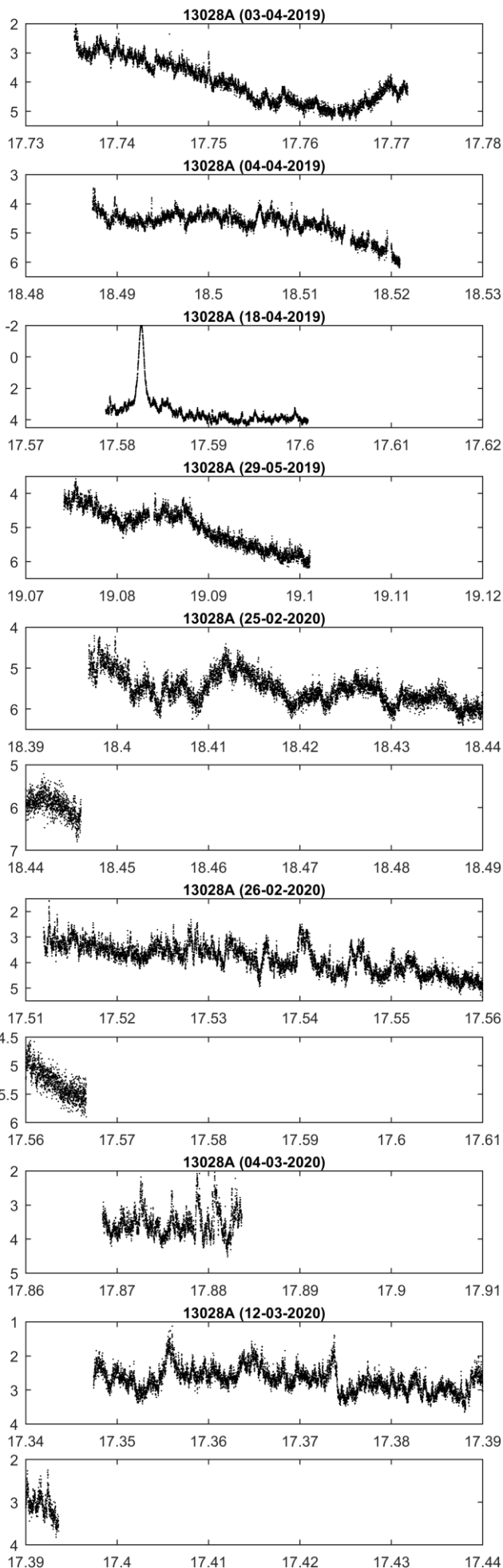
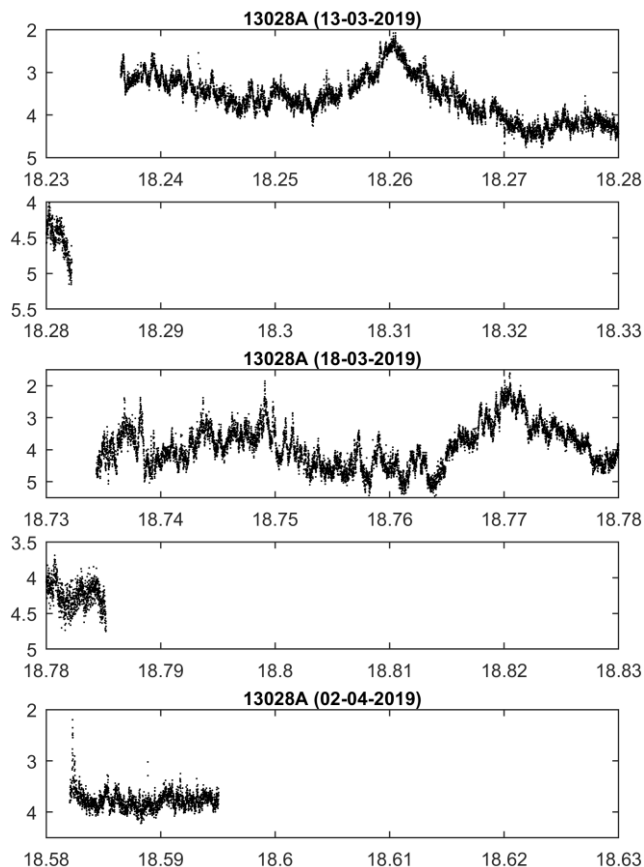
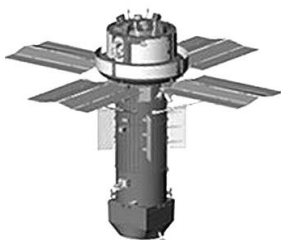
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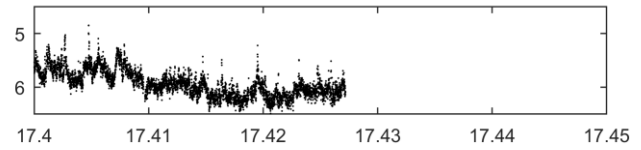
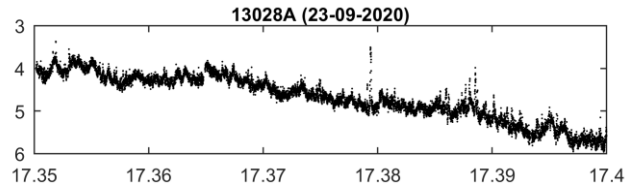
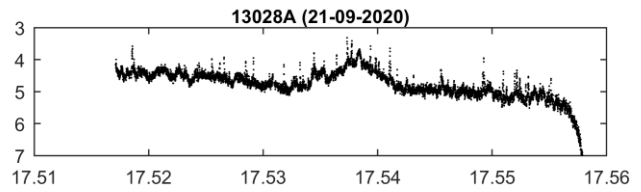
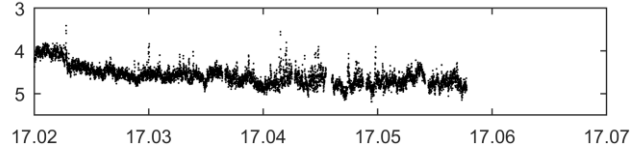
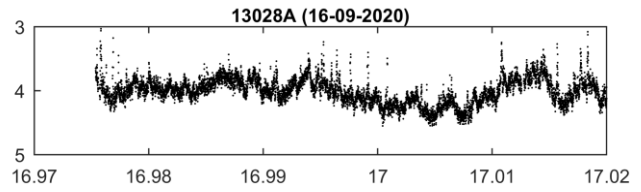
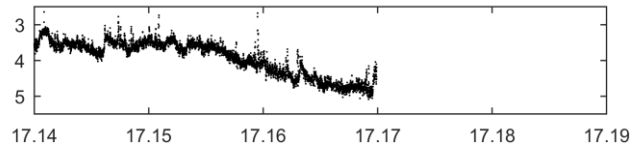
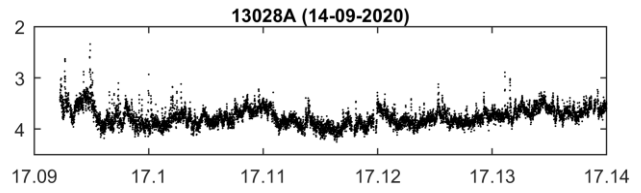
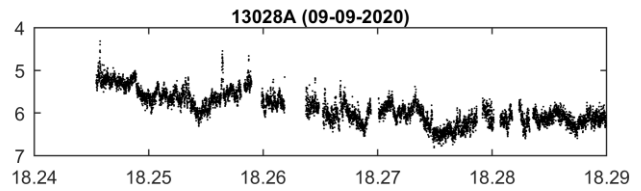
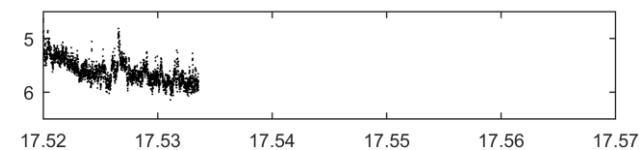
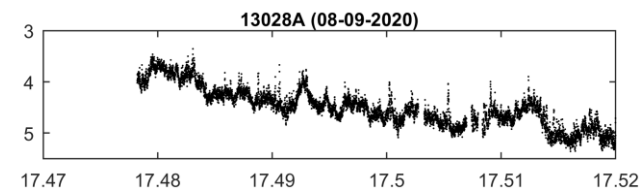
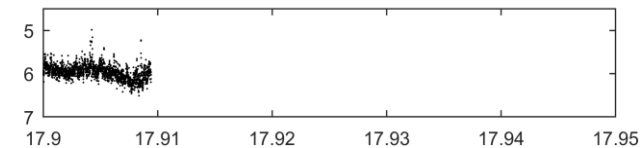
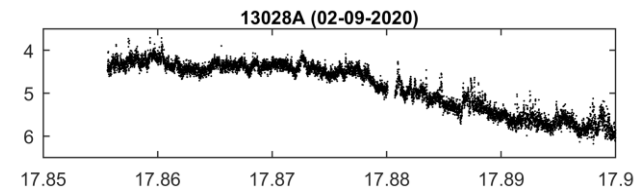
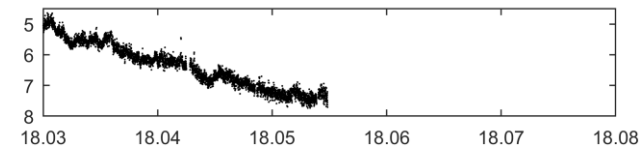
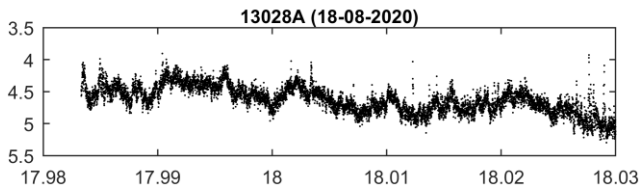
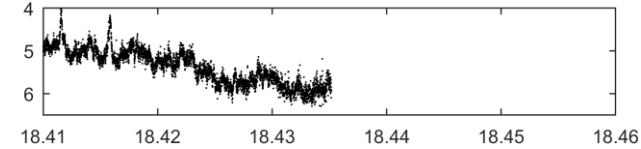
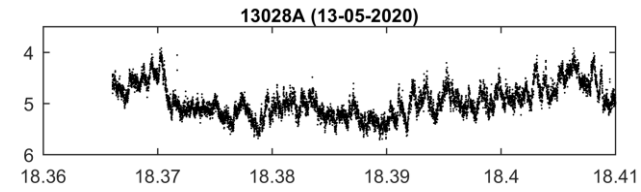
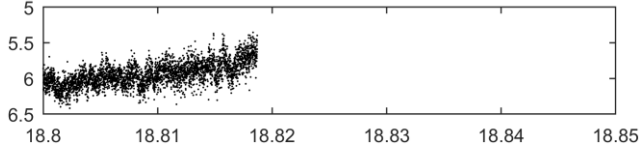
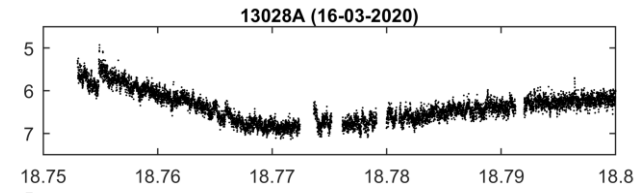
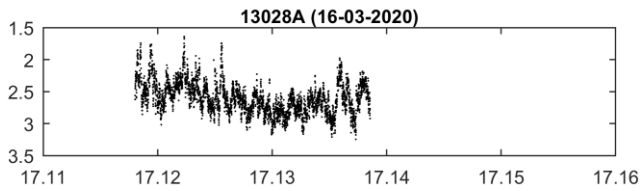
NORAD ID: 39094
Int'l Code: 2013-009J
Dimensions: bowl
Initial orbit:
Perigee: 770 km
Apogee: 783 km
Inclination: 98.61°
Period: 100.38 min
Eccentricity: 0.0009
Launch date: 2013-02-25
Source: India (IND)



COSMOS 2486

(PERSONA 2) (KVARTS 2)
NORAD ID: 39177
Int'l Code: 2013-028A
Dimensions: cylinder
+ 2 panels
Initial orbit:
Perigee: 711 km
Apogee: 732 km
Inclination: 98.2°
Period: 99.2 min
Eccentricity: 0.00148
Launch date: 2013-06-07
Source: Commonwealth of Independent States (former USSR) (CIS)





RESURS P1

NORAD ID: 39186

Int'l Code: 2013-030A

Dimensions: cylinder + 2 panels

Initial orbit:

Perigee: 246 km

Apogee: 455 km

Inclination: 97.29°

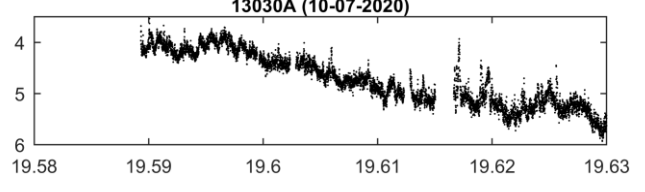
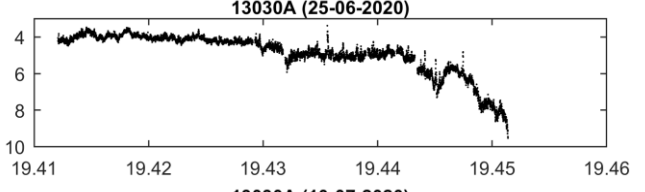
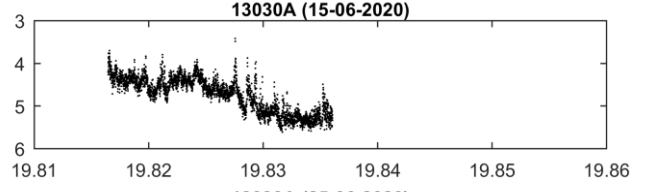
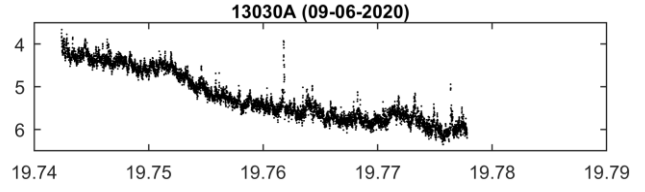
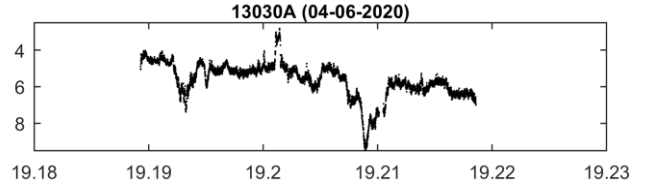
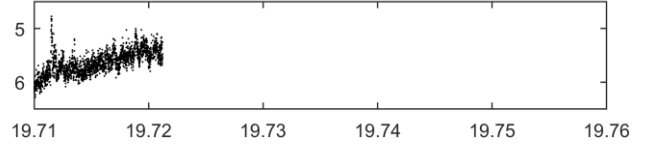
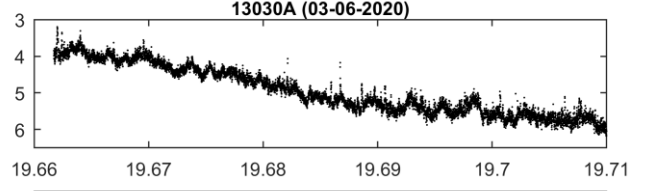
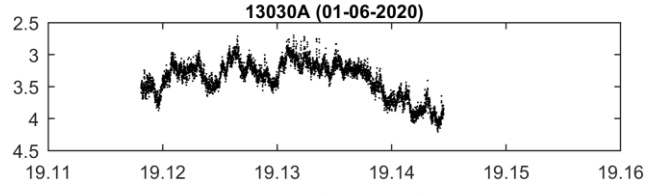
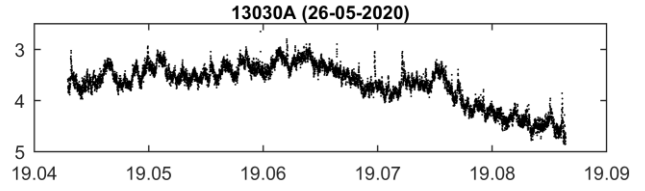
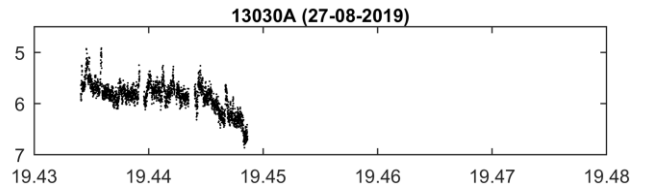
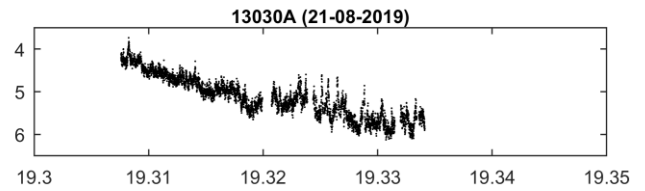
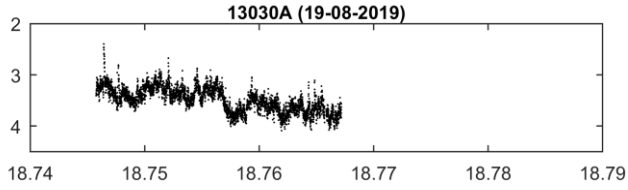
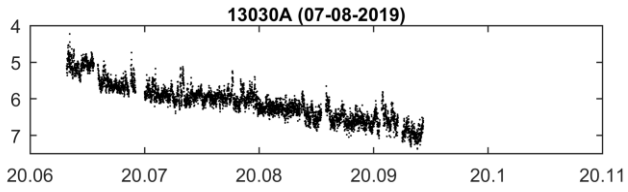
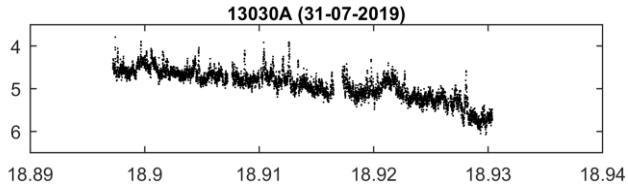
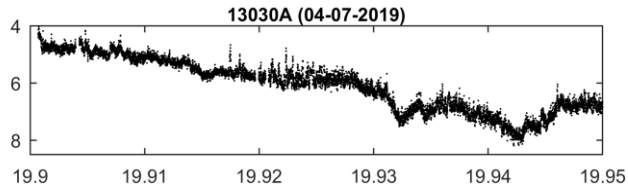
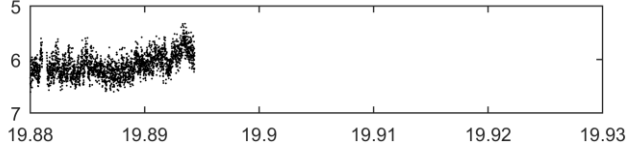
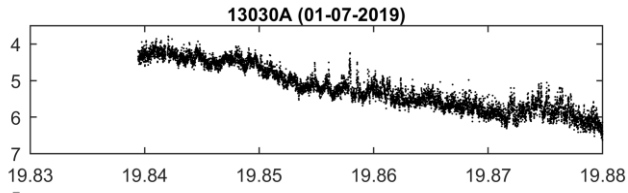
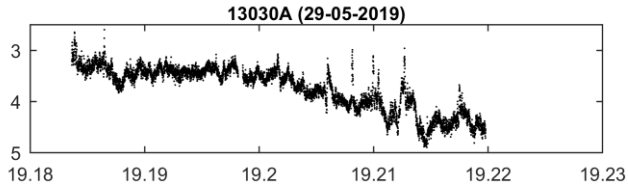
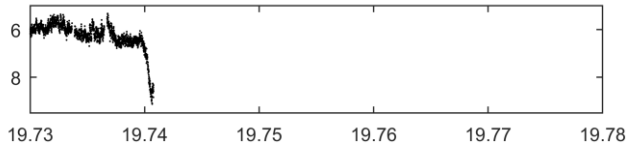
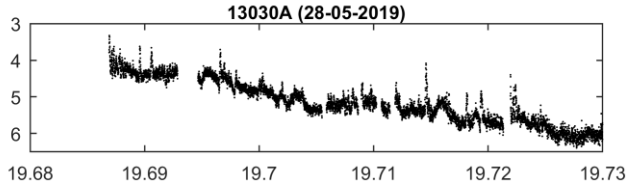
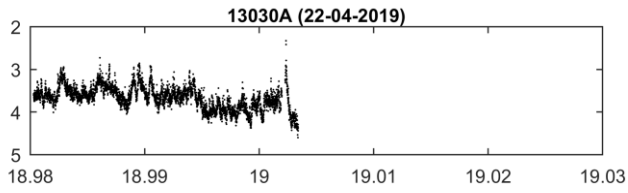
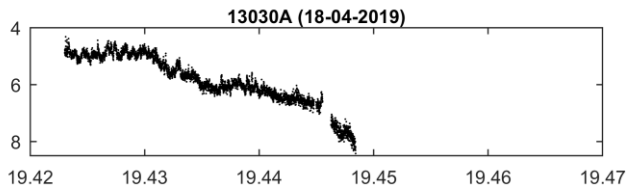
Period: 91.55 min

Eccentricity: 0.016

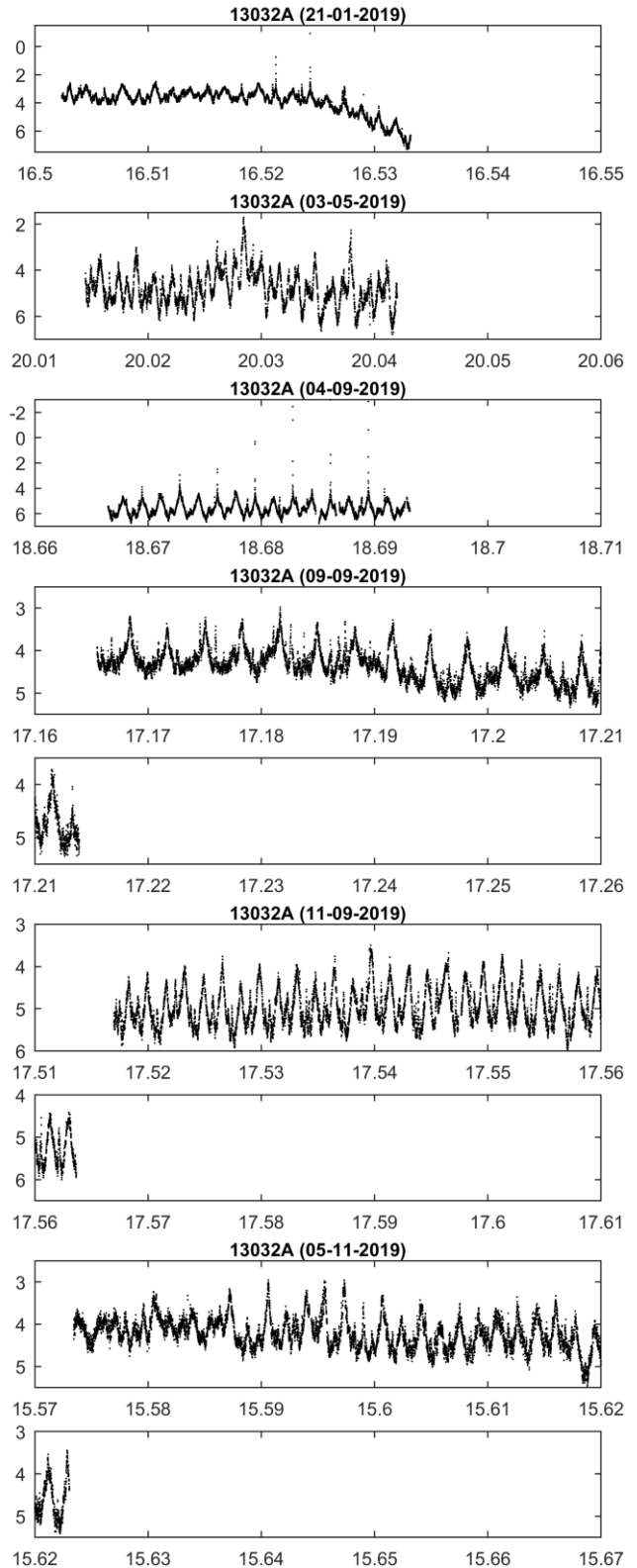
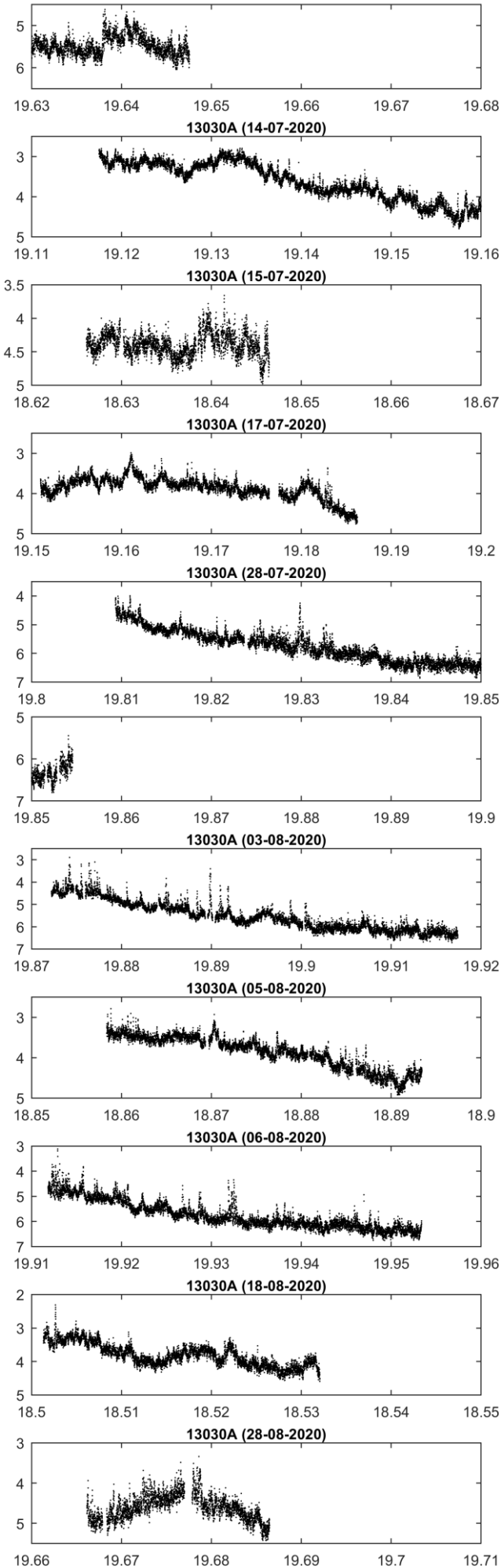
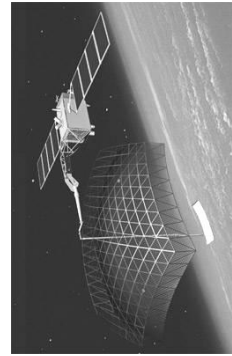
Launch date: 2013-06-25

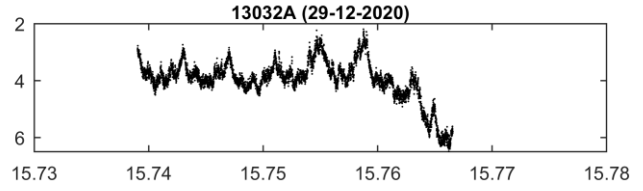
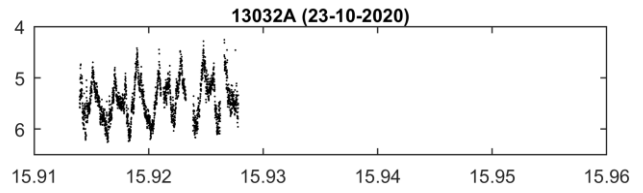
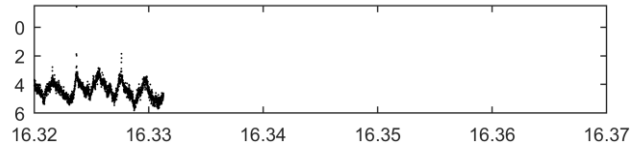
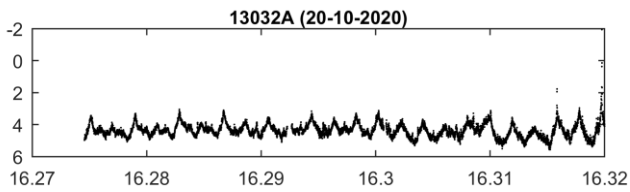
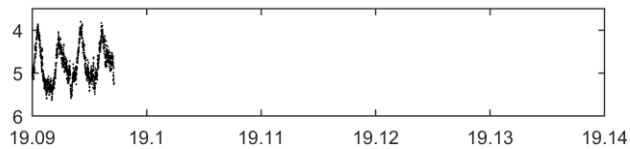
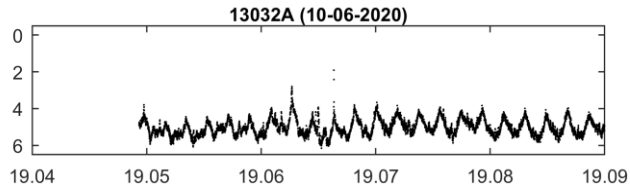
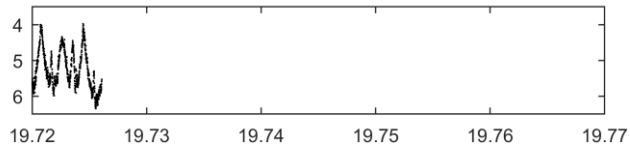
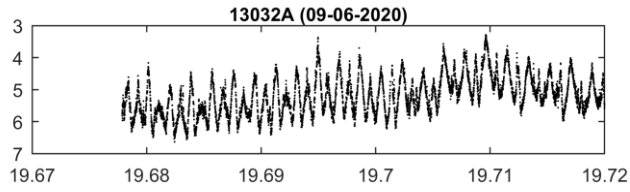
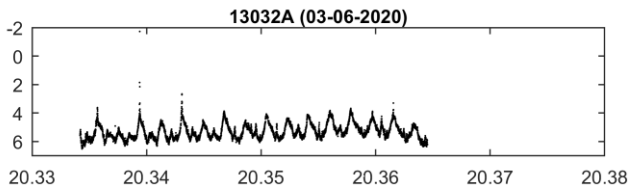
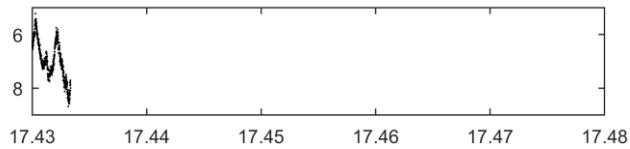
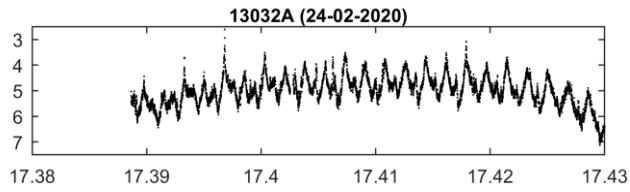
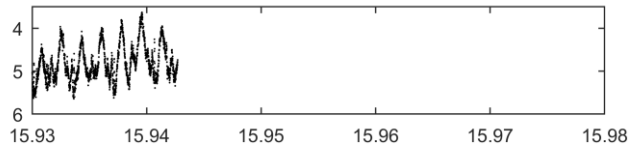
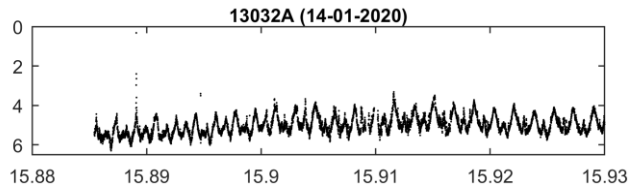
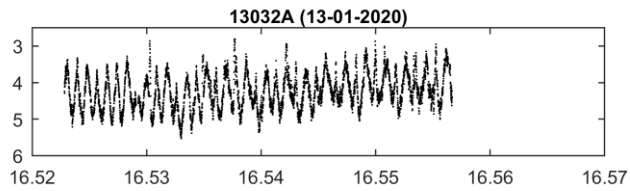
Source: Commonwealth of Independent States (former USSR) (CIS)





COSMOS 2487
(Kondor #1)
 NORAD ID: 39194
 Int'l Code: 2013-032A
 Dimensions:
 Initial orbit:
 Perigee: 453 km
 Apogee: 544 km
 Inclination: 74.90°
 Period: 94.92 min
 Eccentricity: 0.007
 Launch date: 2013-06-27
 Source: Commonwealth of Independent States (former USSR)
 (CIS)





IRIS (SMEX 12)

NORAD ID: 39197

Int'l Code: 2013-033A

Dimensions: cylinder + 2 panels

3.17m x 1.82m x 5.45m

Initial orbit:

Perigee: 620 km

Apogee: 663 km

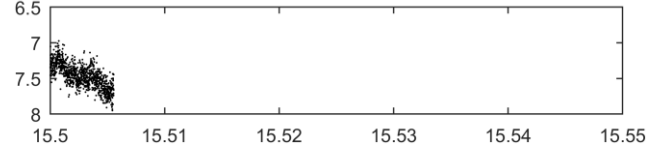
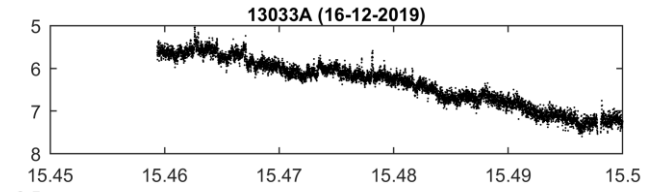
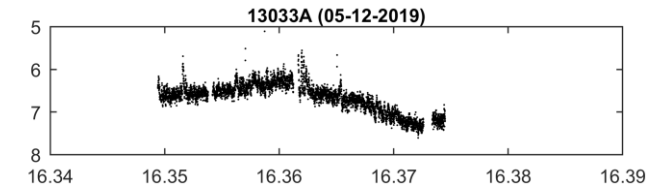
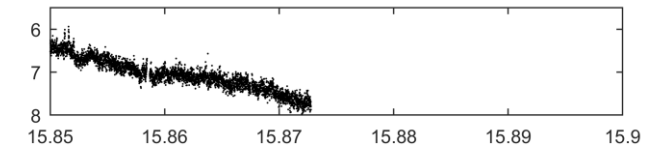
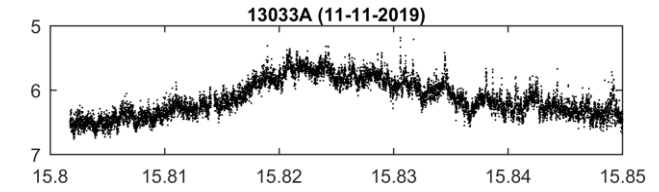
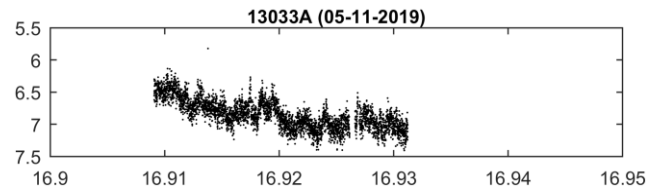
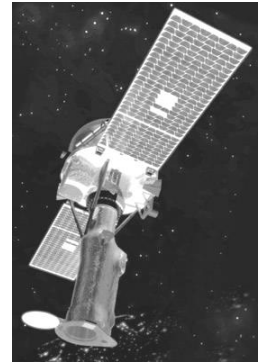
Inclination: 97.91°

Period: 97.55 min

Eccentricity: 0.003

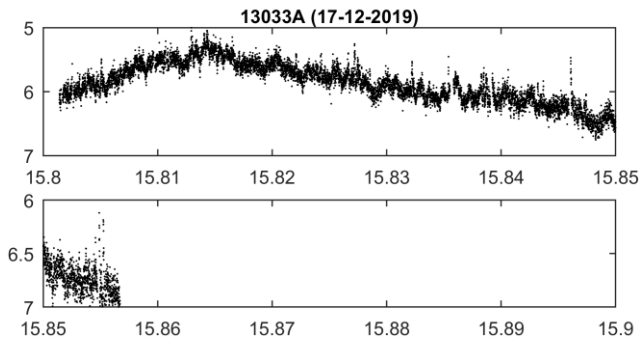
Launch date: 2013-06-28

Source: United States (US)



KOMPSAT 5 (Arirang 5)

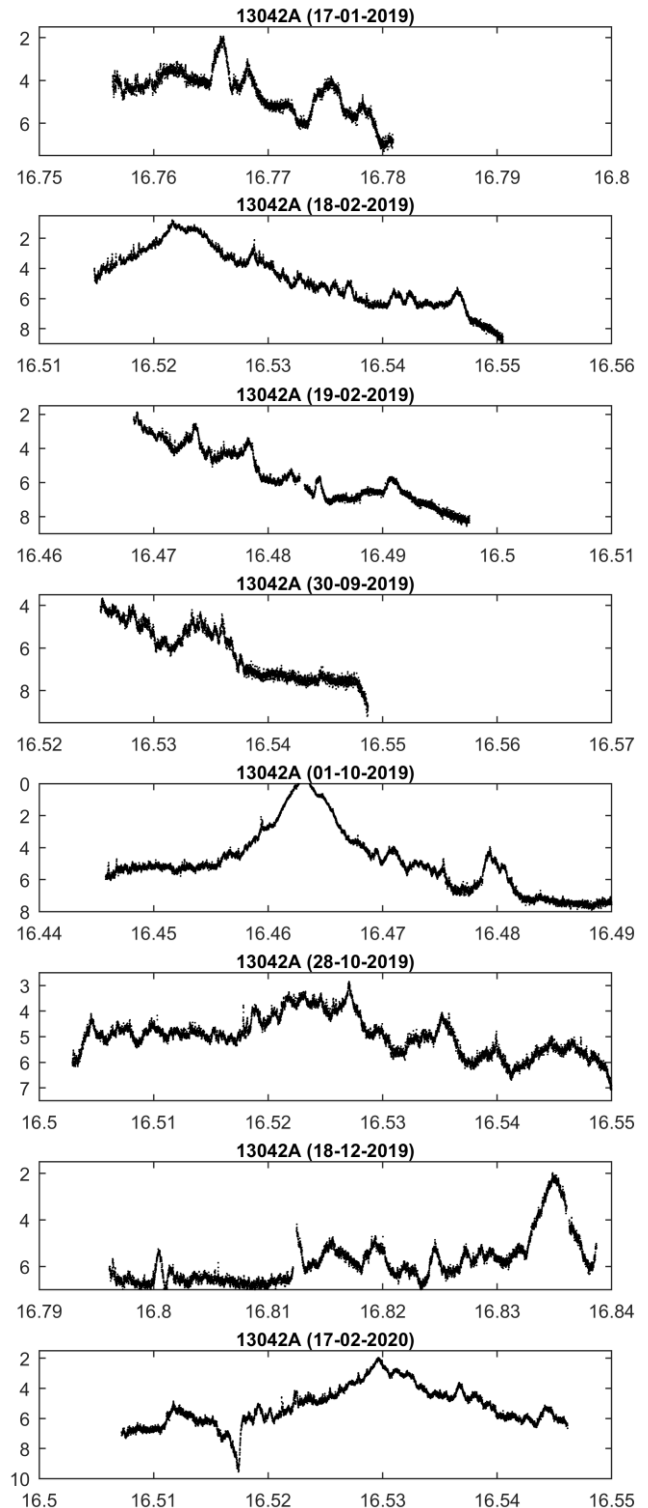
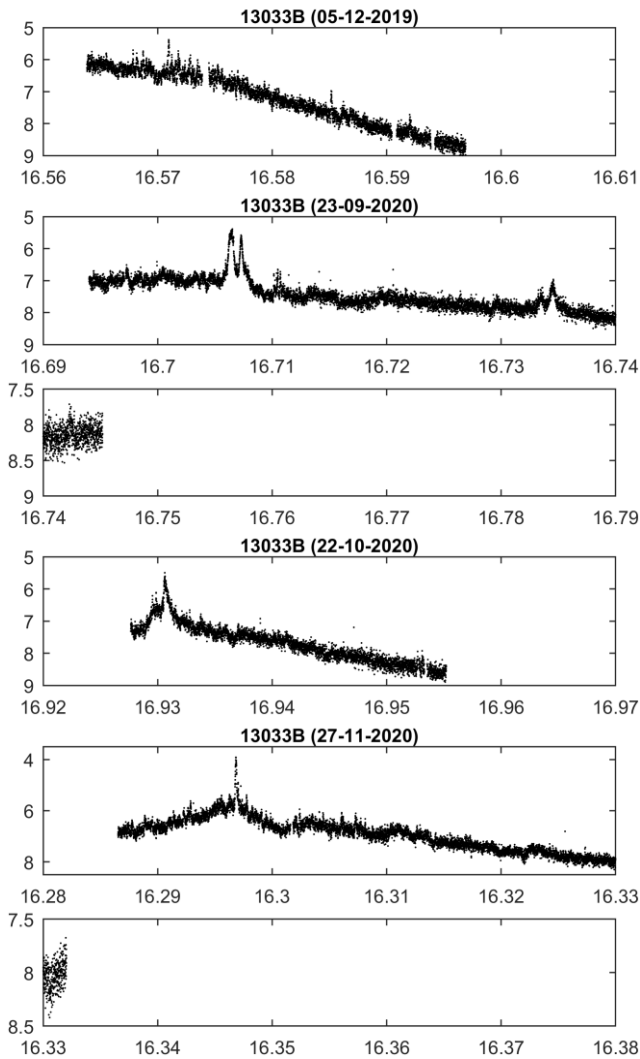
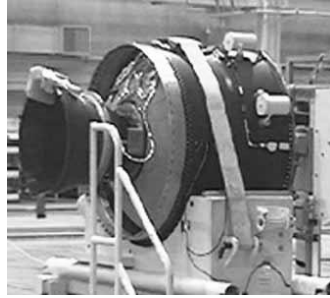
NORAD ID: 39227
 Int'l Code: 2013-042A
 Dimensions: octagonal cylinder
 +2 panels + radar panel
 Initial orbit:
 Perigee: 533 km
 Apogee: 552 km
 Inclination: 97.6°
 Period: 95.48 min
 Eccentricity: 0.001
 Launch date: 2013-08-22
 Source: South Korea (SKOR)

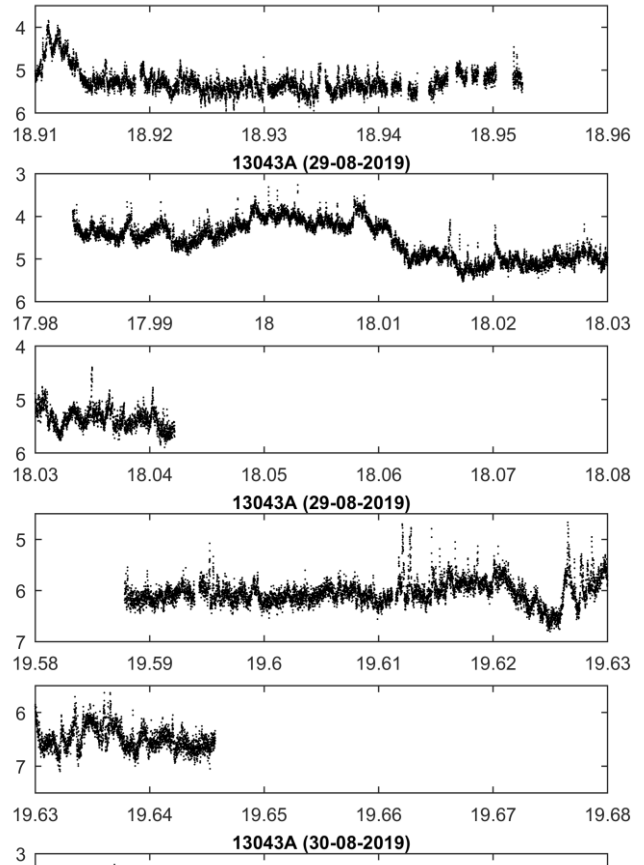
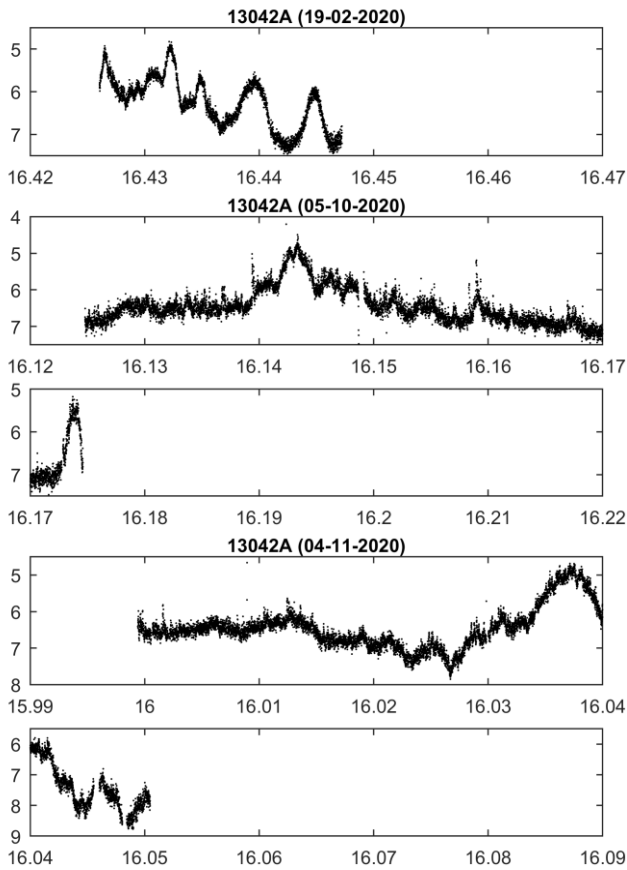


PEGASUS-XL (3rdstage)

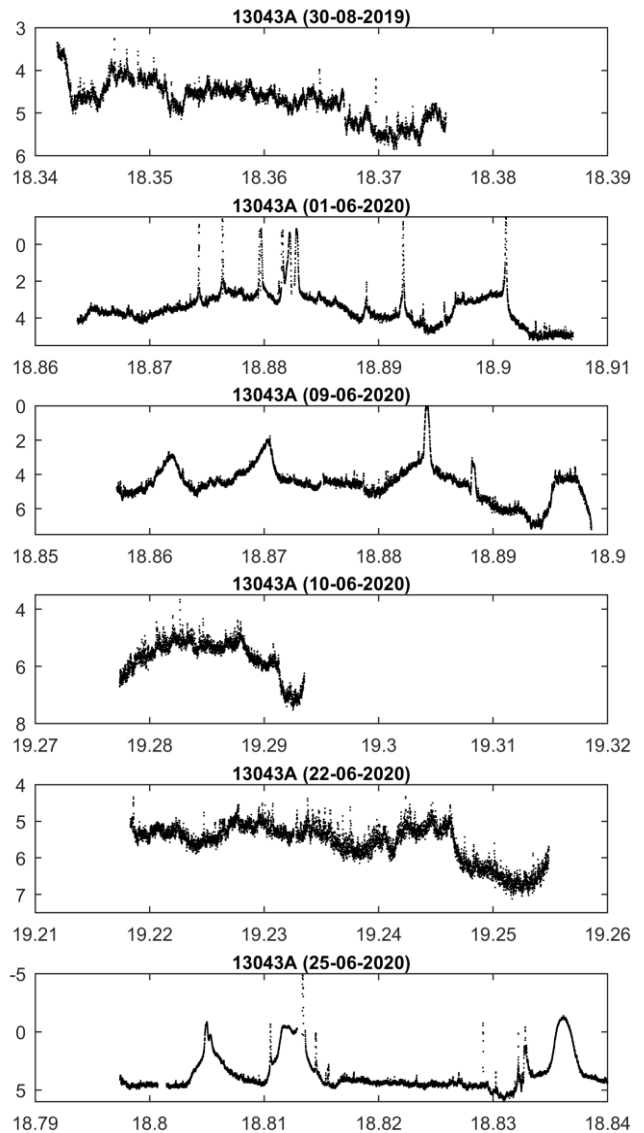
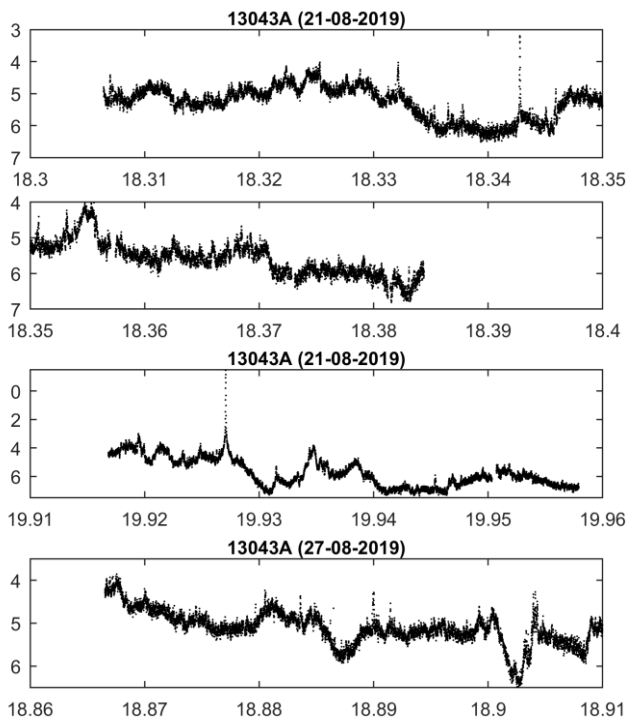
(Orion 38)

NORAD ID: 39198
 Int'l Code: 2013-033B
 Dimensions: cylinder
 1.34 m long, 0.97 m dia
 Initial orbit:
 Perigee: 620 km
 Apogee: 656 km
 Inclination: 97.91°
 Period: 97.48 min
 Eccentricity: 0.003
 Launch date: 2013-06-28
 Source: United States (US)





NROL-65 (USA 245)
 NORAD ID: 39232
 Int'l Code: 2013-043A
 Dimensions: stubby cylinder
 Initial orbit:
 Perigee: 263 km
 Apogee: 989 km
 Inclination: 97.94°
 Period: 97.23 min
 Eccentricity: 0.052
 Launch date: 2013-08-28
 Source: United States (US)



SWARM B (FM-2)

(Earth Explorer 5)

NORAD ID: 39451

Int'l Code: 2013-067A

Dimensions: trapezoidal + boom

9.1m x 1.5m x 0.85m, 4m long

Initial orbit:

Perigee: 490 km

Apogee: 501 km

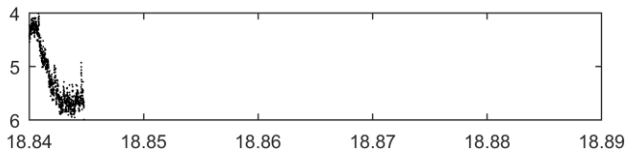
Inclination: 87.55°

Period: 94.52 min

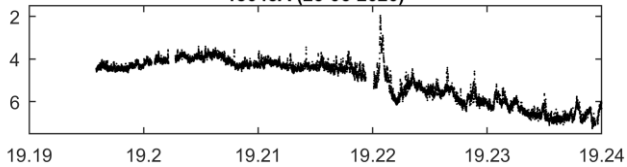
Eccentricity: 0.0008

Launch date: 2013-11-22

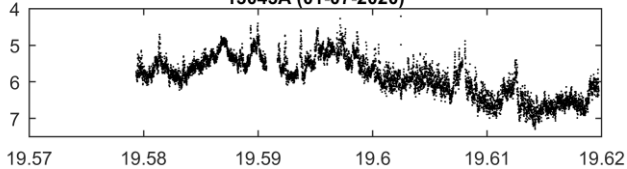
Source: European Space Agency (ESA)



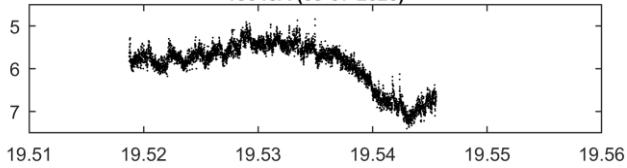
13043A (26-06-2020)



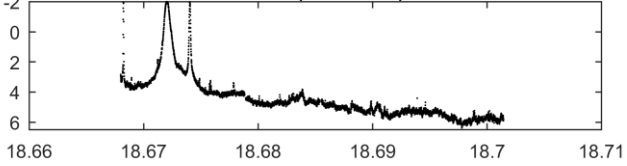
13043A (01-07-2020)



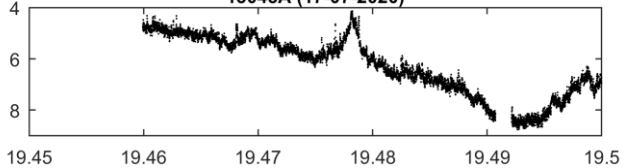
13043A (09-07-2020)



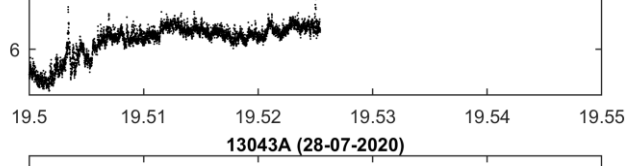
13043A (15-07-2020)



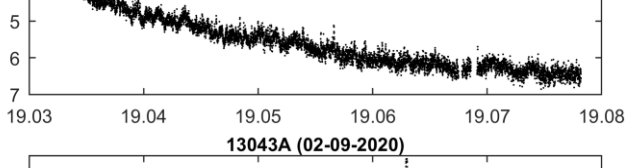
13043A (17-07-2020)



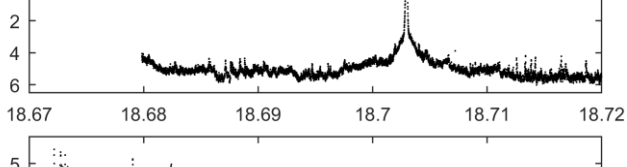
13043A (28-07-2020)



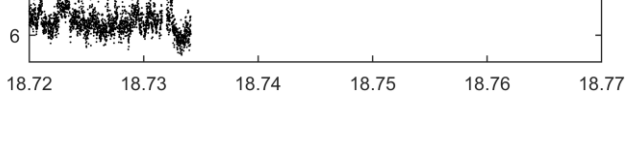
13043A (02-09-2020)



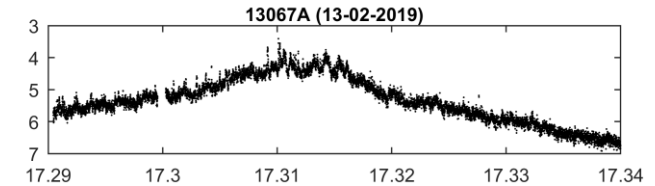
13043A (02-09-2020)



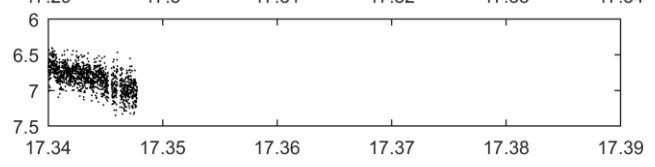
13043A (02-09-2020)



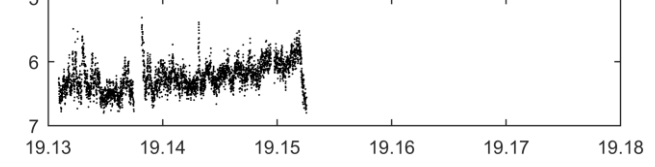
13043A (02-09-2020)



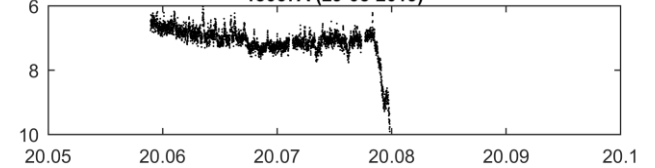
13067A (13-02-2019)



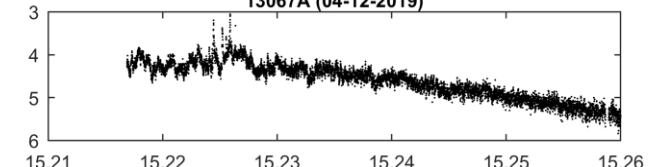
13067A (27-05-2019)



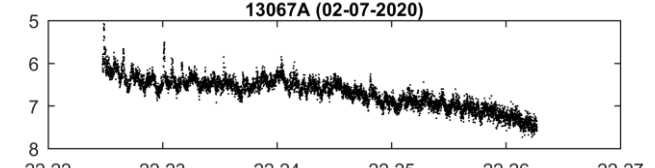
13067A (29-05-2019)



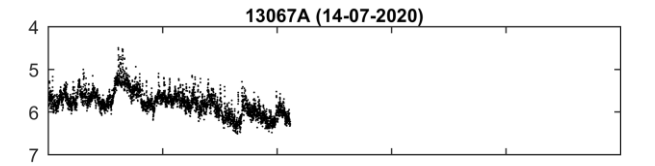
13067A (04-12-2019)



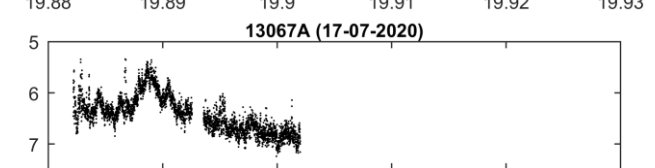
13067A (02-07-2020)



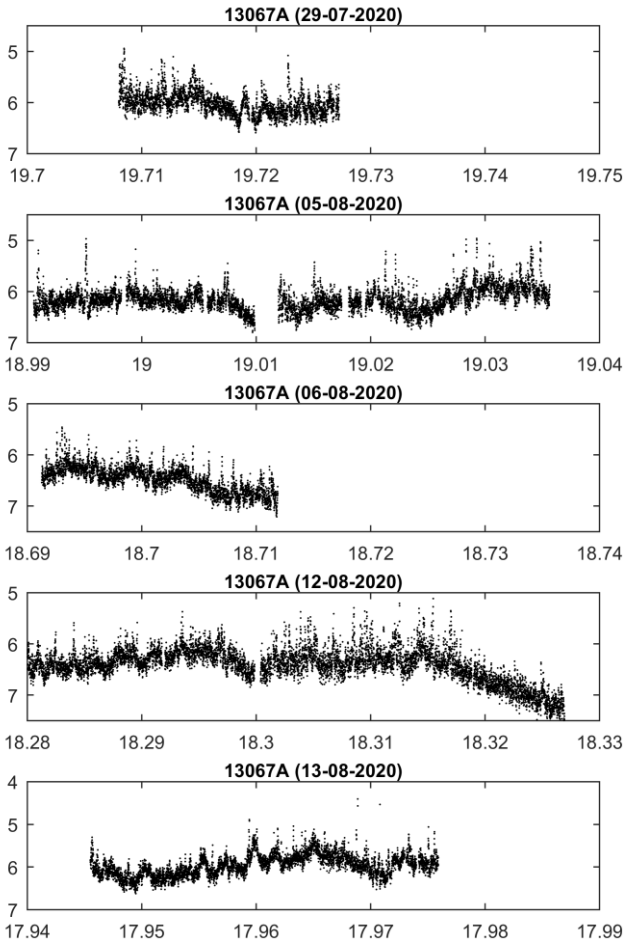
13067A (14-07-2020)



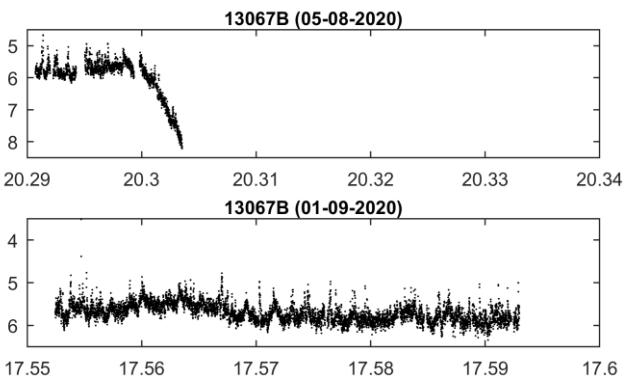
13067A (17-07-2020)



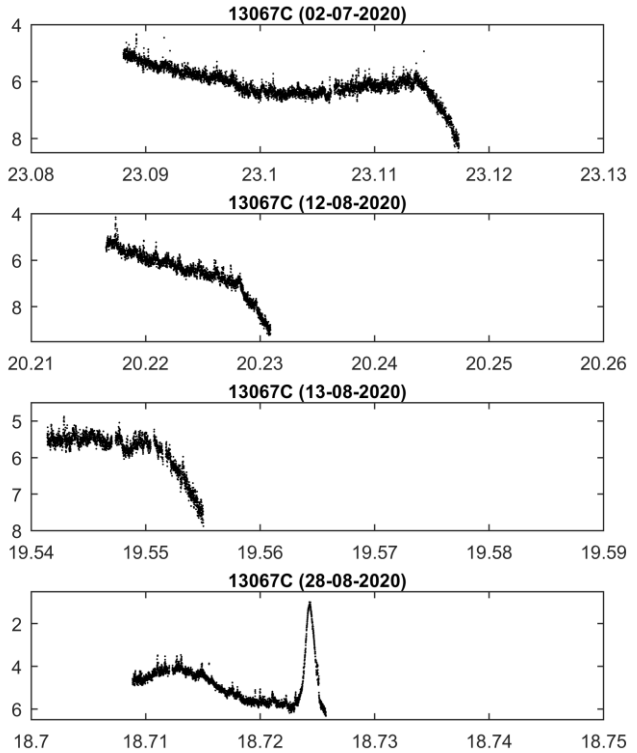
13067A (17-07-2020)



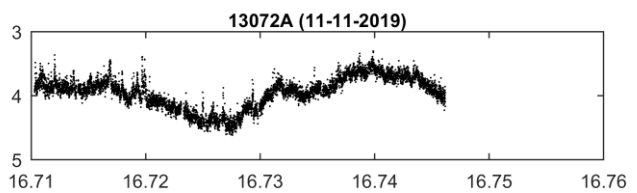
SWARM A (FM-1)
(Earth Explorer 5)
 NORAD ID: 39452
 Int'l Code: 2013-067B
 Dimensions: trapezoidal + boom
 9.1m x 1.5m x 0.85m, 4m long
 Initial orbit:
 Perigee: 489 km
 Apogee: 501 km
 Inclination: 87.55°
 Period: 94.52 min
 Eccentricity: 0.0009
 Launch date: 2013-11-22
 Source: European Space Agency
 (ESA)



SWARM C (FM-3)
(Earth Explorer 5)
 NORAD ID: 39453
 Int'l Code: 2013-067C
 Dimensions: trapezoidal + boom
 9.1m x 1.5m x 0.85m, 4m long
 Initial orbit:
 Perigee: 490 km
 Apogee: 501 km
 Inclination: 87.55°
 Period: 94.52 min
 Eccentricity: 0.0008
 Launch date: 2013-11-22
 Source: European Space Agency
 (ESA)



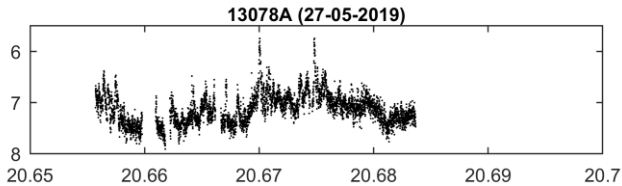
FIA-RADAR 3
(NROL-39, USA 247, TOPAZ 3)
 NORAD ID: 39462
 Int'l Code: 2013-072A
 Dimensions:
 Initial orbit:
 Perigee: 1075 km
 Apogee: 1089 km
 Inclination: 123.00°
 Period: 106.88min
 Eccentricity: 0.0009
 Launch date: 2013-12-06
 Source: United States (US)



COSMOS 2493 (SKRL 756-1)

Calibration sphere

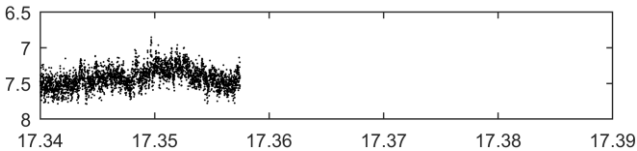
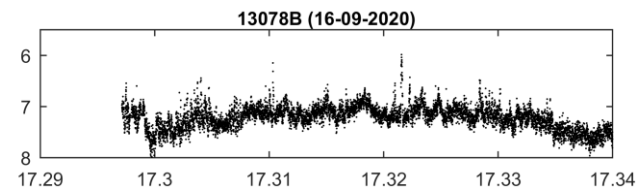
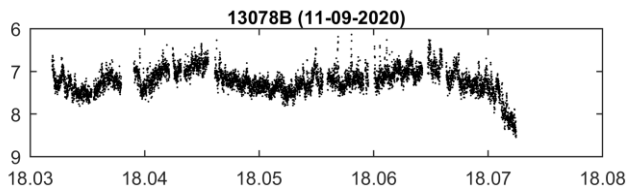
NORAD ID: 39490
 Int'l Code: 2013-078A
 Dimensions: sphere
 Initial orbit:
 Perigee: 599 km
 Apogee: 625 km
 Inclination: 82.42°
 Period: 96.93min
 Eccentricity: 0.002
 Launch date: 2013-12-28
 Source: Commonwealth of Independent States (former USSR) (CIS)



COSMOS 2494 (SKRL 756-2)

Calibration sphere

NORAD ID: 39491
 Int'l Code: 2013-078B
 Dimensions: sphere
 Initial orbit:
 Perigee: 595 km
 Apogee: 625 km
 Inclination: 82.43°
 Period: 96.90min
 Eccentricity: 0.002
 Launch date: 2013-12-28
 Source: Commonwealth of Independent States (former USSR) (CIS)



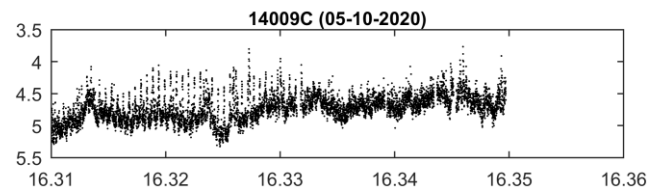
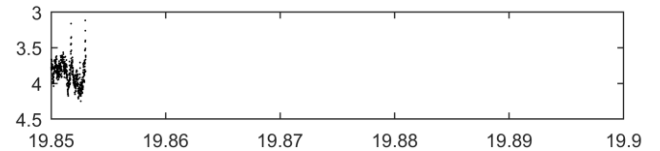
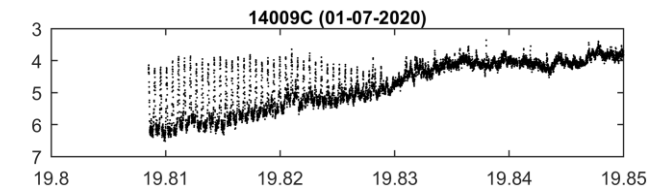
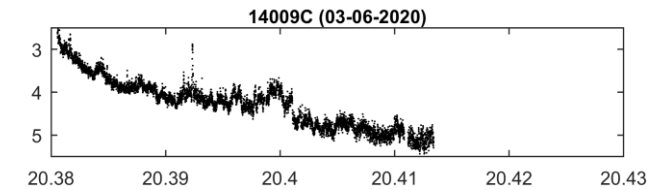
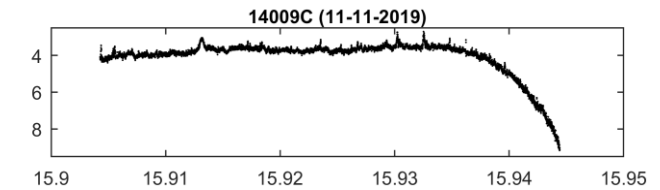
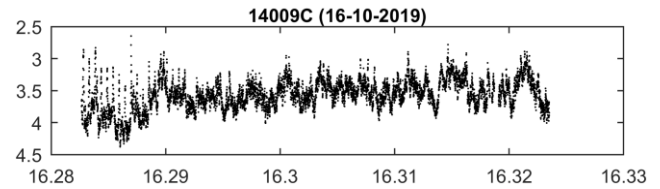
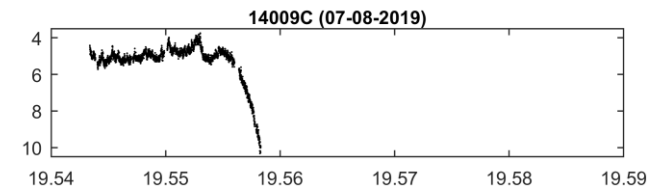
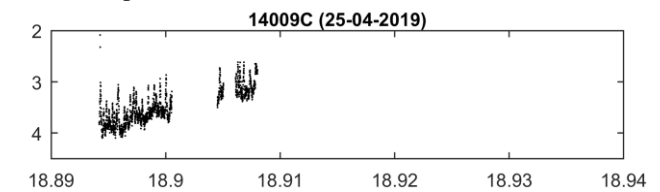
GPM

NORAD ID: 39574
 Int'l Code: 2014-009C
 Dimensions: box + 2 panels
 6.5m x 4.9m, 11.6m span
 Initial orbit:
 Perigee: 380 km
 Apogee: 384 km
 Inclination: 65.01°
 Period: 92.18 min
 Eccentricity: 0.0003



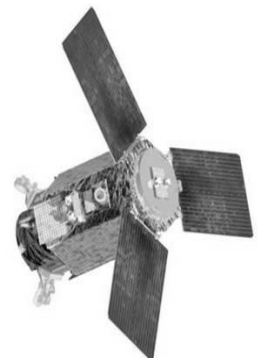
Launch date: 2014-02-27

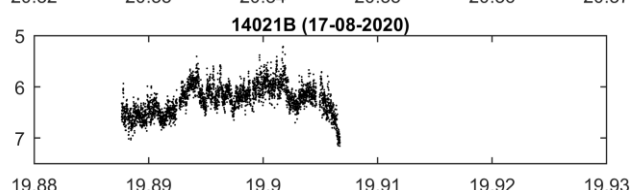
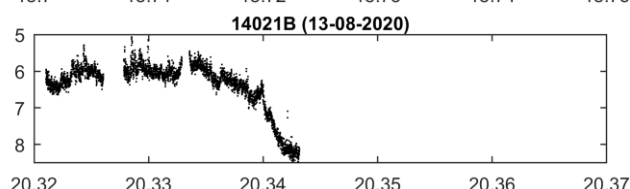
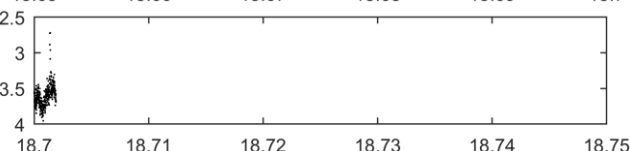
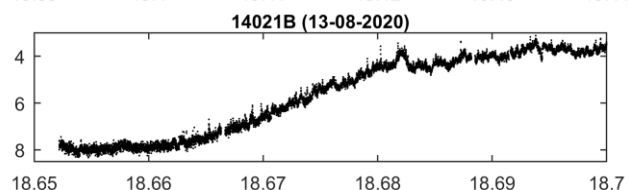
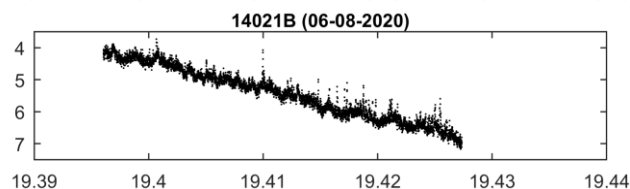
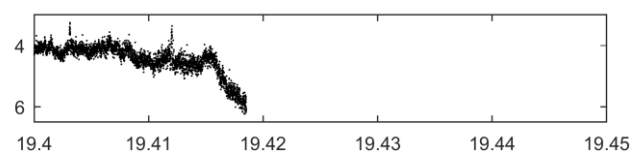
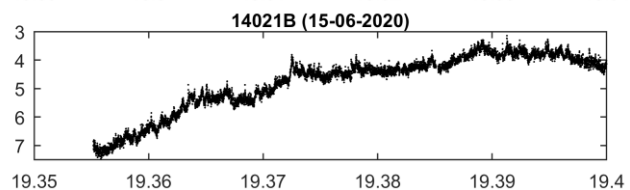
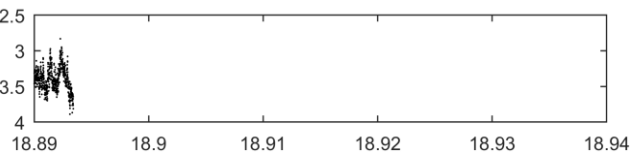
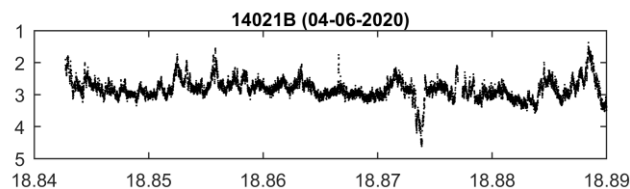
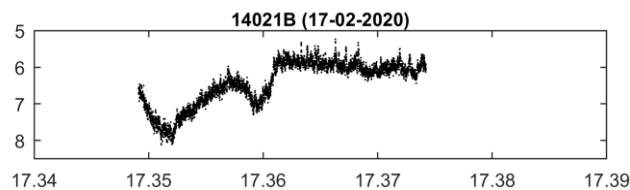
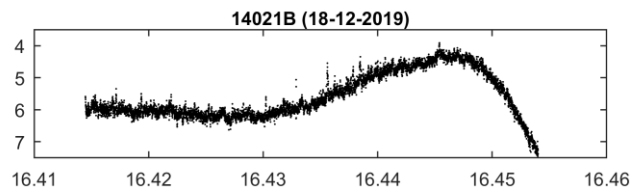
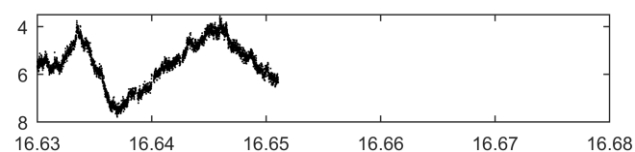
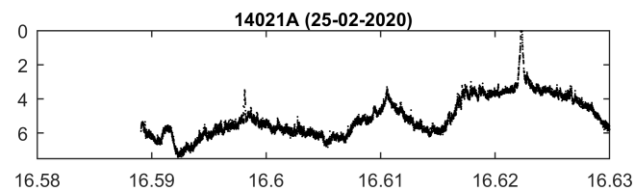
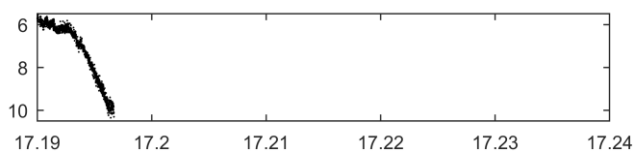
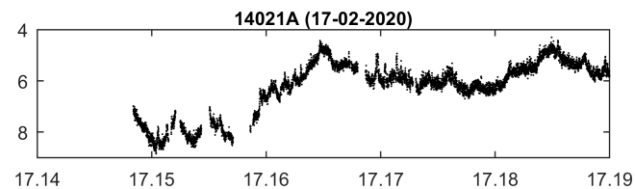
Source: Japan (JPN)



EGYPTSAT 2 (MIRSAT 2)

NORAD ID: 39678
 Int'l Code: 2014-021A
 Dimensions: hexagonal cylinder
 + 3 panels
 Initial orbit:
 Perigee: 436 km
 Apogee: 702 km
 Inclination: 51.60°
 Period: 96.05 min
 Eccentricity: 0.019
 Launch date: 2014-04-16
 Source: Egypt (EGYP)





SL-4 R/B (SOYUZ-U 3rd stage)

NORAD ID: 39679

Int'l Code: 2014-021B

Dimensions: cylinder 8.1m long,

2.66m dia

Initial orbit:

Perigee: 434 km

Apogee: 695 km

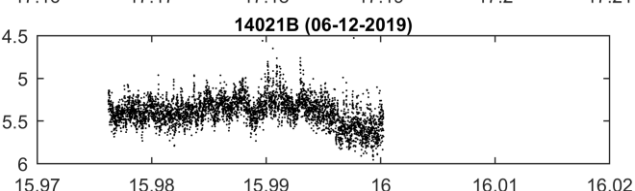
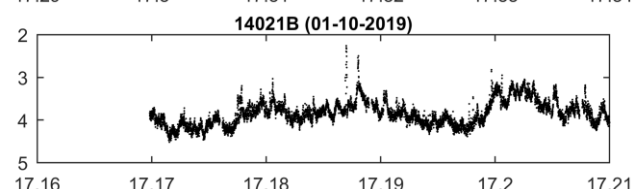
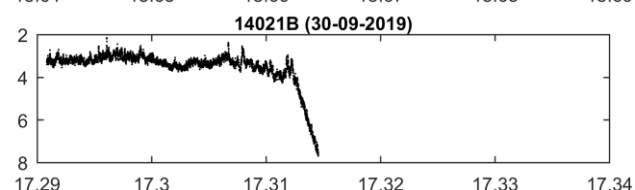
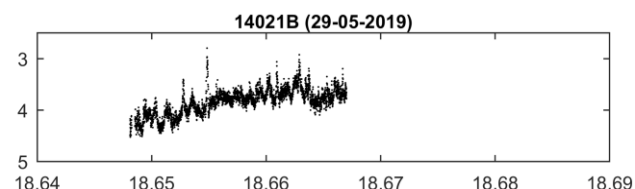
Inclination: 51.61°

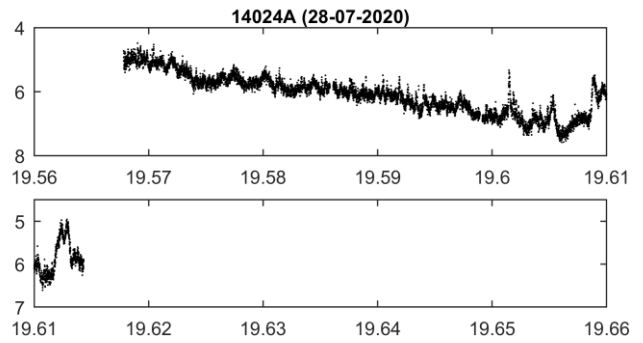
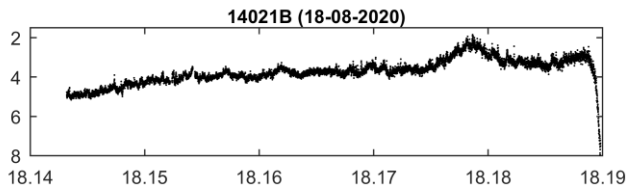
Period: 95.97 min

Eccentricity: 0.019

Launch date: 2014-04-16

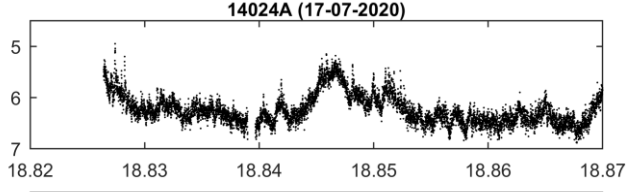
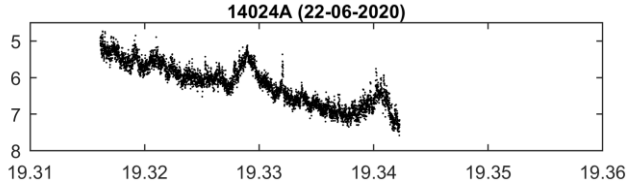
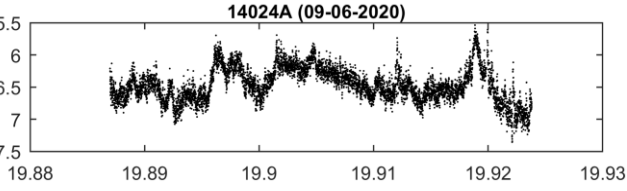
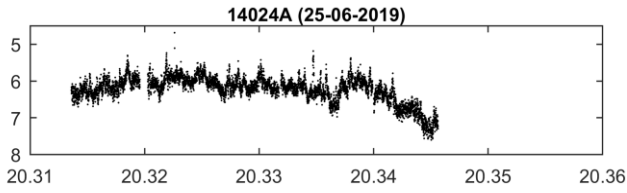
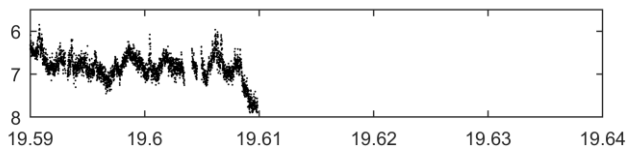
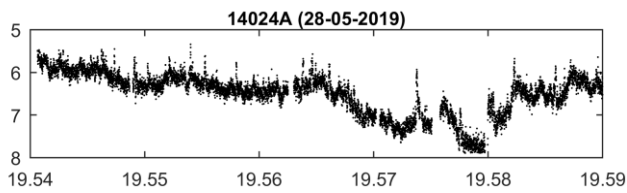
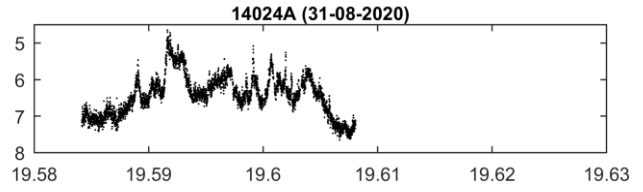
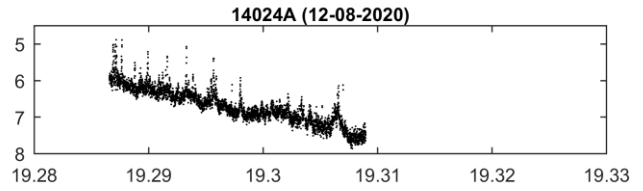
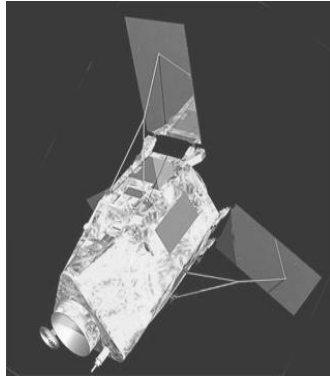
Source: Commonwealth of Independent States (former USSR) (CIS)





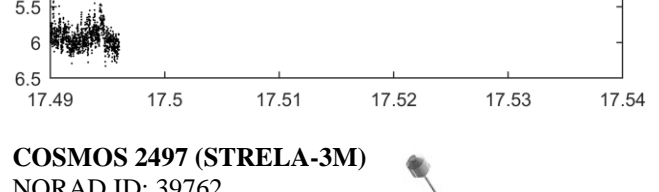
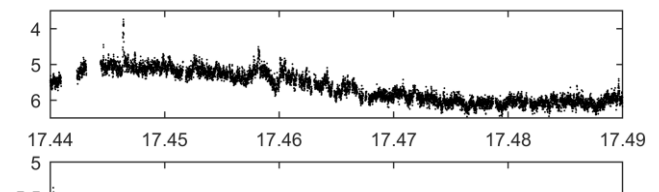
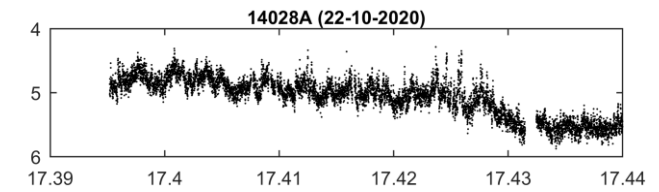
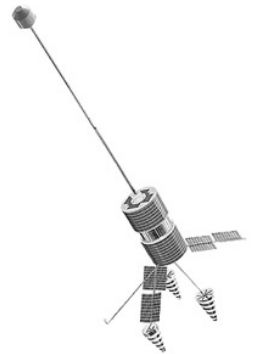
KAZEOSAT 1 (DZZ-HR)

NORAD ID: 39731
 Int'l Code: 2014-024A
 Dimensions: hexagonal box
 3.7m long + 3 panels
 Initial orbit:
 Perigee: 750 km
 Apogee: 753 km
 Inclination: 98.53°
 Period: 99.85 min
 Eccentricity: 0.0003
 Launch date: 2014-04-30
 Source: Kazakhstan (KAZ)



COSMOS 2496 (STRELA-3M)

NORAD ID: 39761
 Int'l Code: 2014-028A
 Dimensions: cylinder +2 panels
 ~1.80m high
 Initial orbit:
 Perigee: 1481 km
 Apogee: 1509 km
 Inclination: 82.44°
 Period: 115.87min
 Eccentricity: 0.002
 Launch date: 2014-05-23
 Source: Commonwealth of Independent States (former USSR) (CIS)

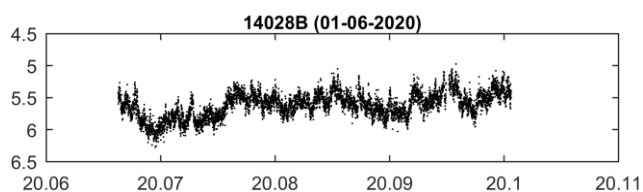


COSMOS 2497 (STRELA-3M)

NORAD ID: 39762
 Int'l Code: 2014-028B
 Dimensions: cylinder +2 panels
 ~1.80m high
 Initial orbit:
 Perigee: 1476 km
 Apogee: 1504 km
 Inclination: 82.43°
 Period: 115.77min

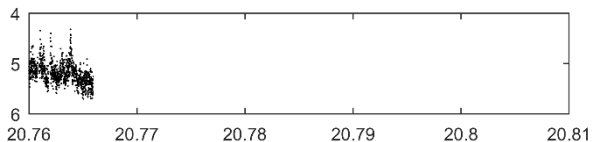
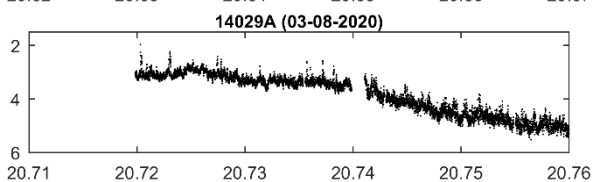
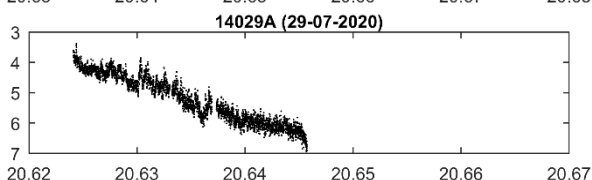
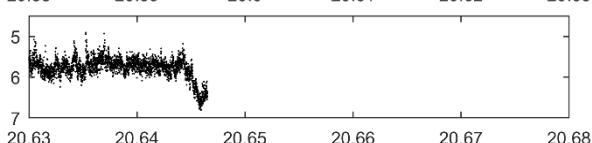
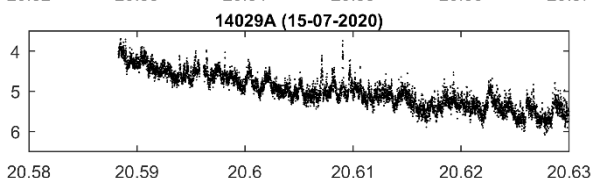
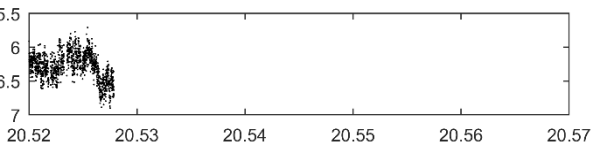
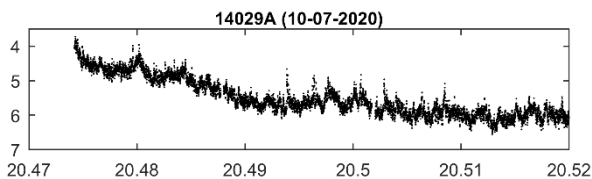
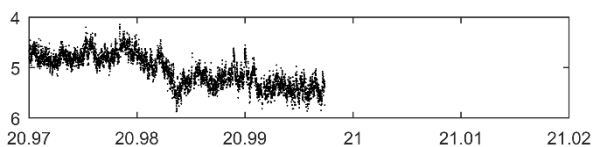
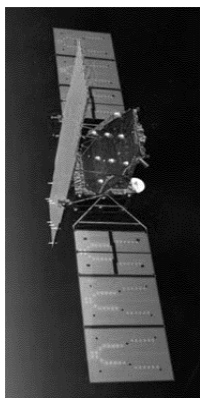


Eccentricity: 0.002
 Launch date: 2014-05-23
 Source: Commonwealth of Independent States (former USSR)
 (CIS)



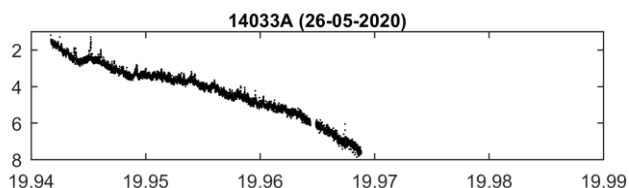
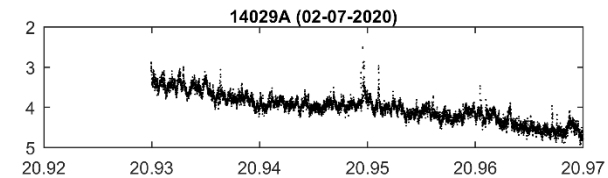
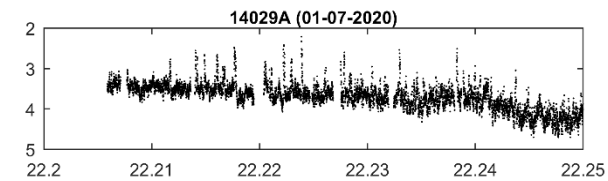
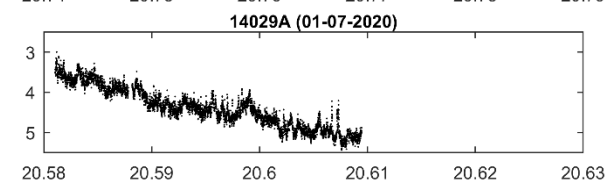
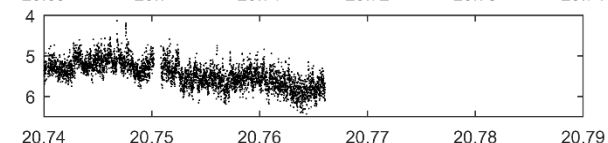
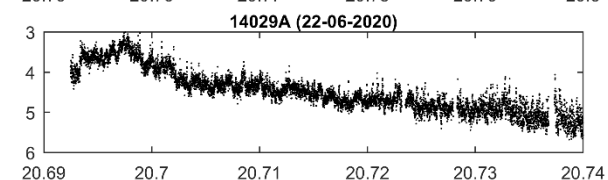
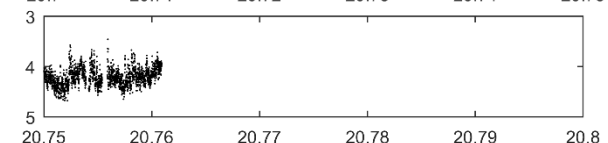
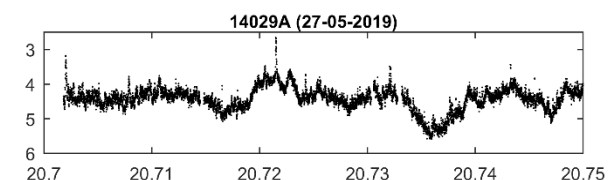
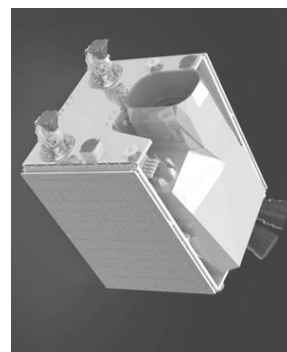
ALOS 2

NORAD ID: 39766
 Int'l Code: 2014-029A
 Dimensions: triangular box 3.7m high +
 2 panels 16.5m span + radar panel 2.9m x
 9.9m
 Initial orbit:
 Perigee: 629 km
 Apogee: 635 km
 Inclination: 97.88°
 Period: 97.35 min
 Eccentricity: 0.0004
 Launch date: 2014-05-24
 Source: Japan (JPN)



**KazEOSat 2
 (DZZ-MR, MRES)**

NORAD ID: 40010
 Int'l Code: 2014-033A
 Dimensions: box 0.70m x
 0.80m x 0.90m
 Initial orbit:
 Perigee: 604 km
 Apogee: 635 km
 Inclination: 97.99°
 Period: 97.10 min
 Eccentricity: 0.002
 Launch date: 2014-06-19
 Source: Kazakhstan (KAZ)



SL-24 R/B (Dnepr 3rd stage)

NORAD ID: 40047

Int'l Code: 2014-033AP

Dimensions:

Initial orbit:

Perigee: 601 km

Apogee: 7404 km

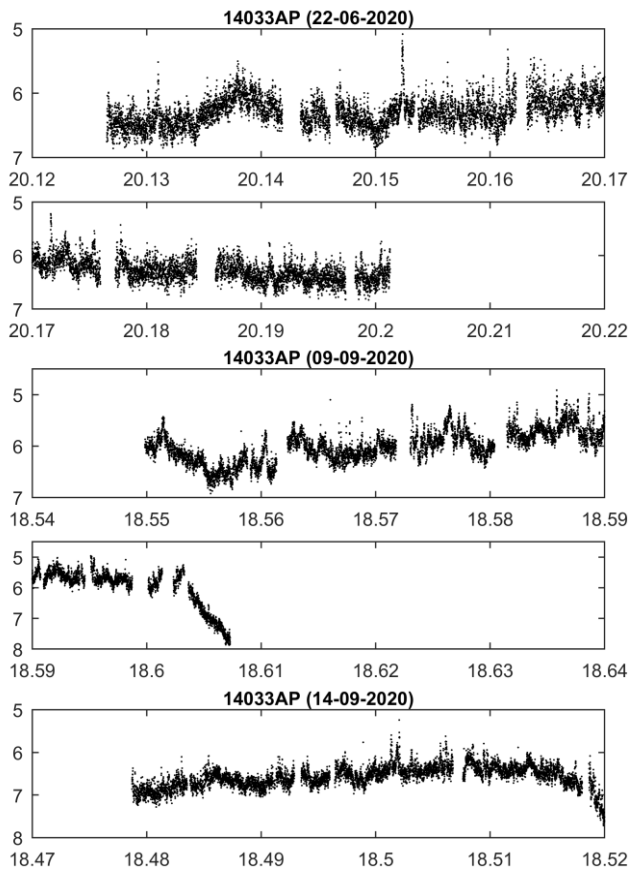
Inclination: 97.9°

Period: 105.68 min

Eccentricity: 0.057

Launch date: 2014-06-19

Source: Commonwealth of Independent States (former USSR) (CIS)



METEOR M2

NORAD ID: 40069

Int'l Code: 2014-037A

Dimensions: cylinder + 2 panels
+ SAR ant.

Initial orbit:

Perigee: 818 km

Apogee: 827 km

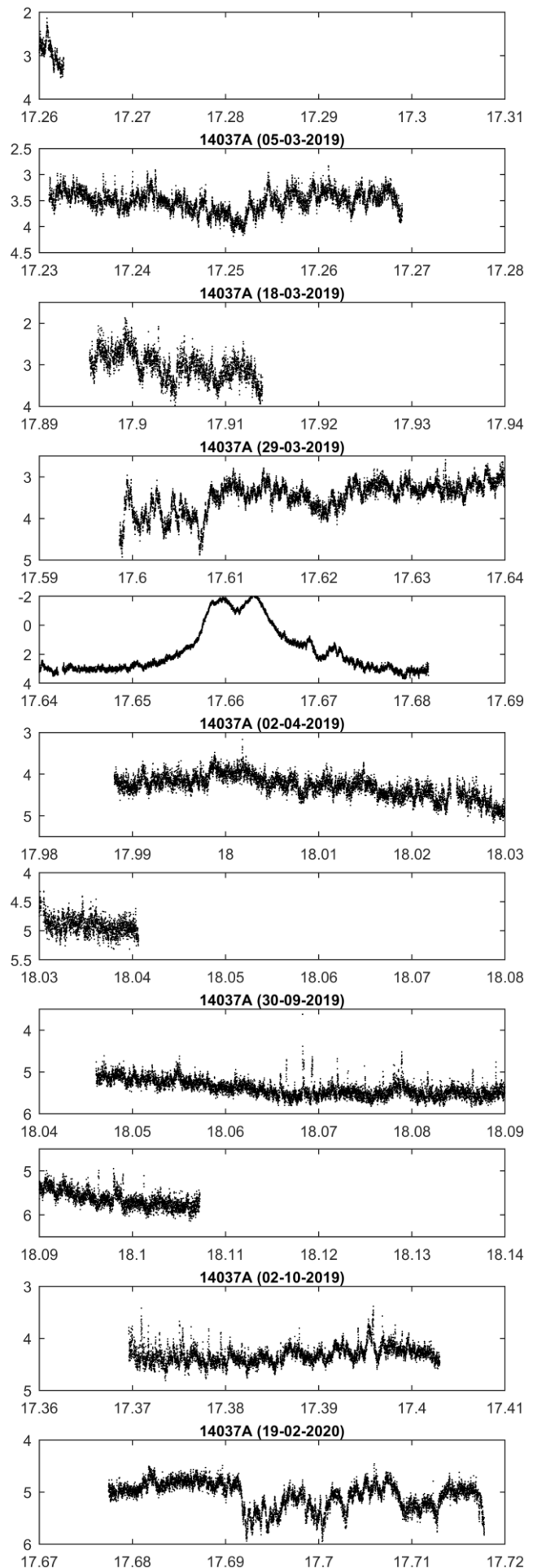
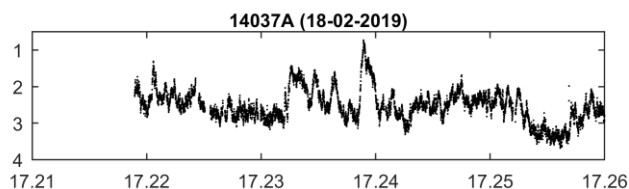
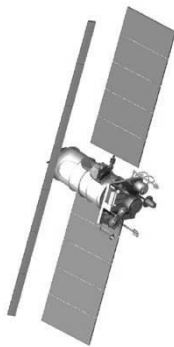
Inclination: 98.80°

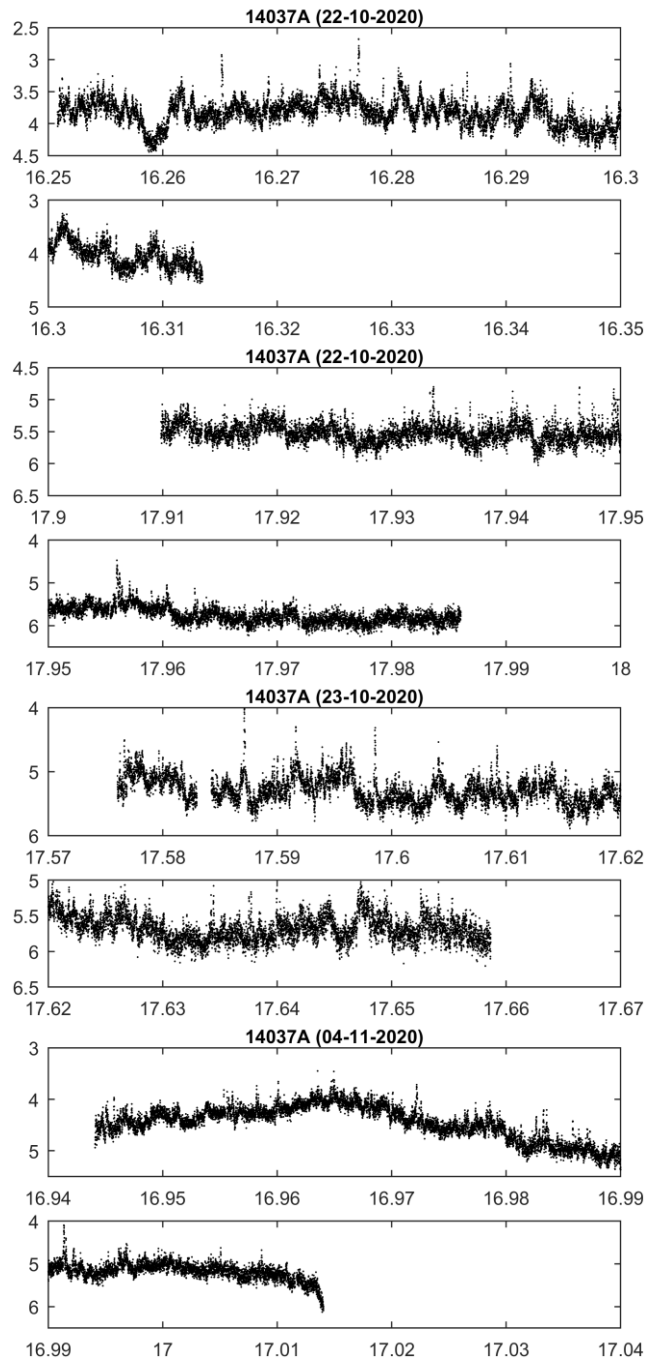
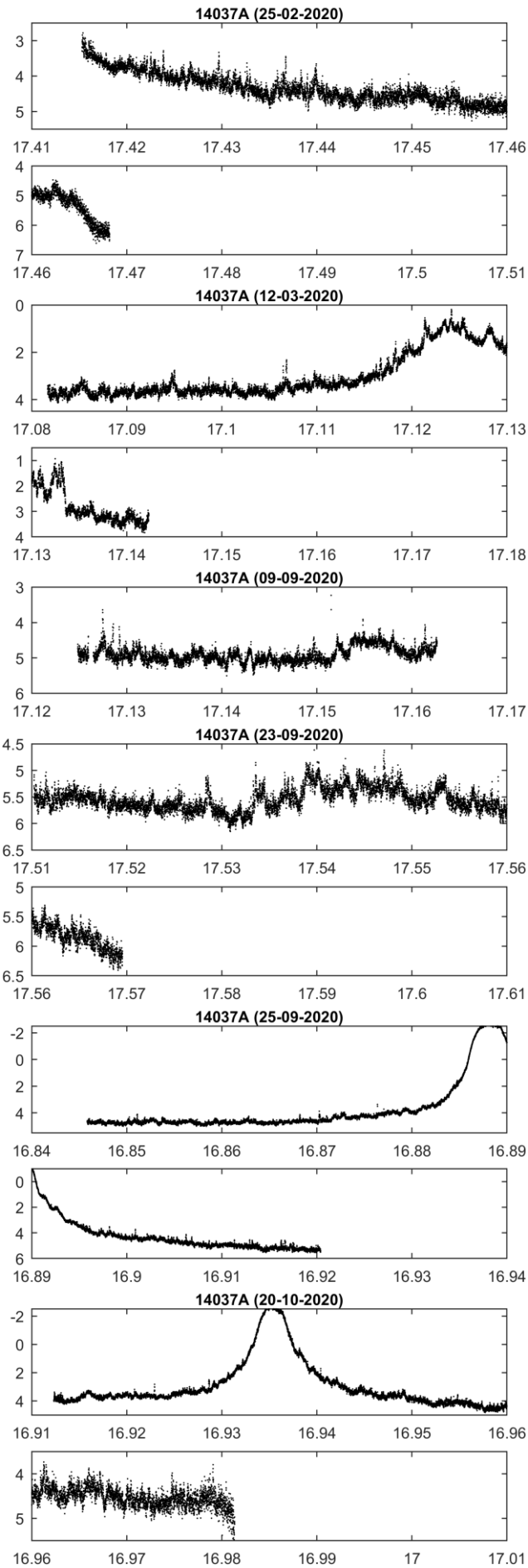
Period: 101.35 min

Eccentricity: 0.0007

Launch date: 2014-07-08

Source: Commonwealth of Independent States (former USSR) (CIS)





MKA PN2 (RELEK)

NORAD ID: 40070

Int'l Code: 2014-037B

Dimensions: triangular box +3 panels

Initial orbit:

Perigee: 623 km

Apogee: 819 km

Inclination: 98.38°

Period: 99.22 min

Eccentricity: 0.014

Launch date: 2014-07-08

Source: Commonwealth of Independent States (former USSR) (CIS)



WORLDVIEW-3 (WV-3)

NORAD ID: 40115

Int'l Code: 2014-048A

Dimensions: box + cylinder + 2 panels 5.7m high 2.5m wide 7.1m span

Initial orbit:

Perigee: 609 km

Apogee: 611 km

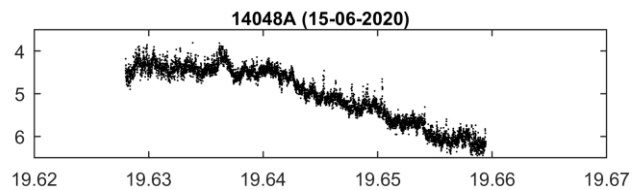
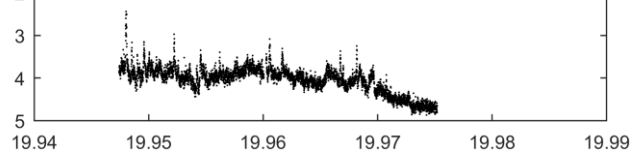
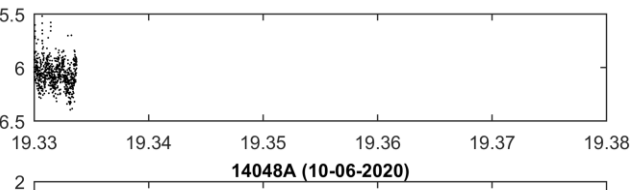
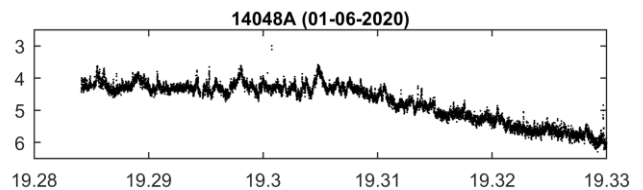
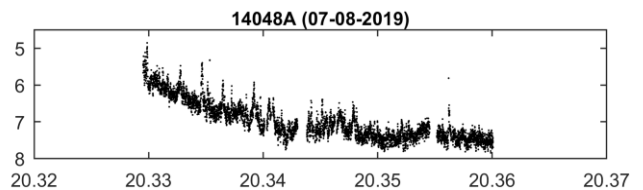
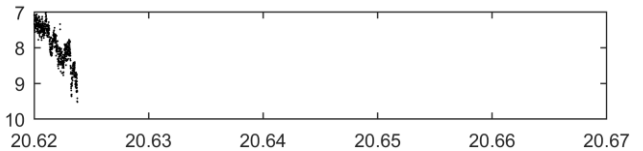
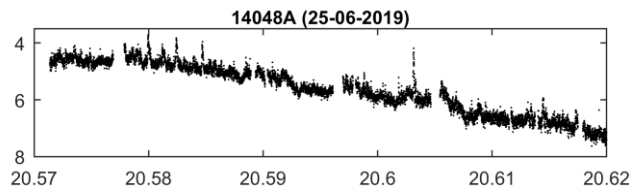
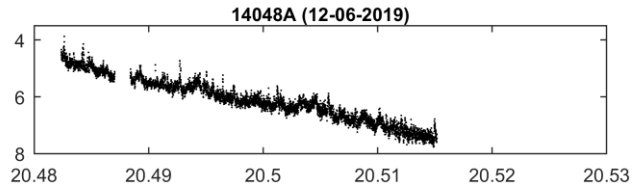
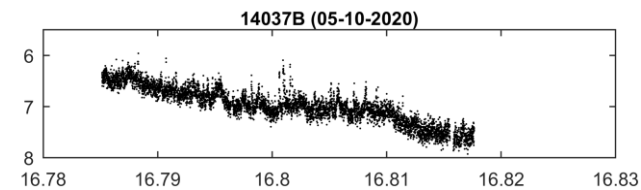
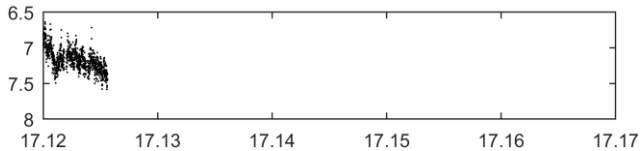
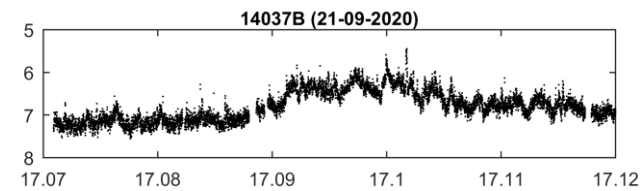
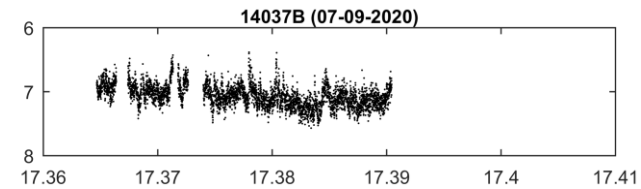
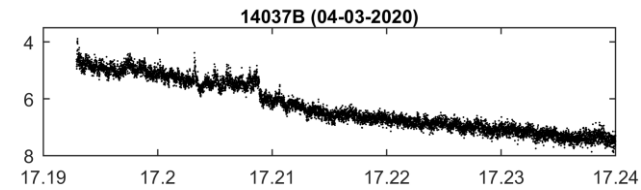
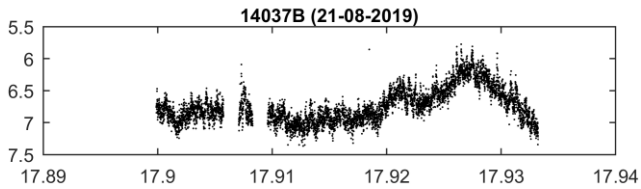
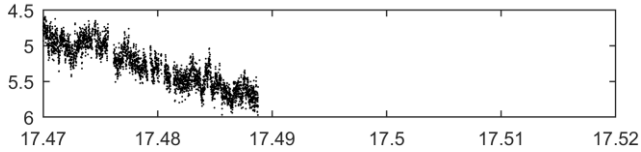
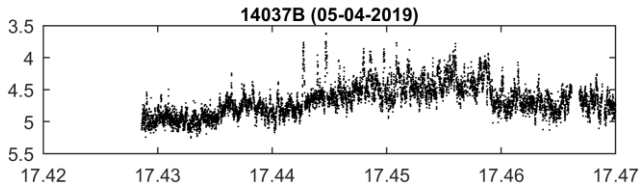
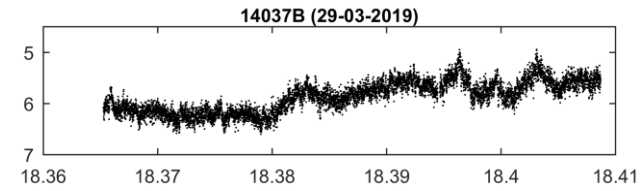
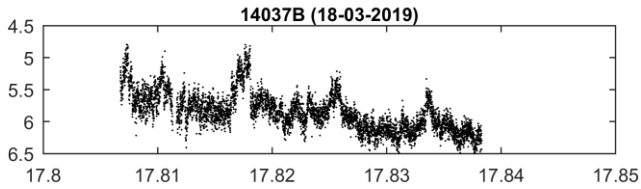
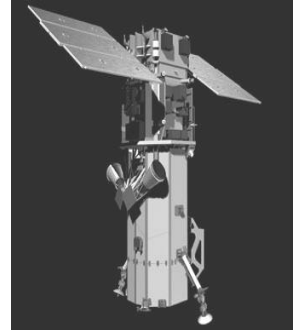
Inclination: 97.99°

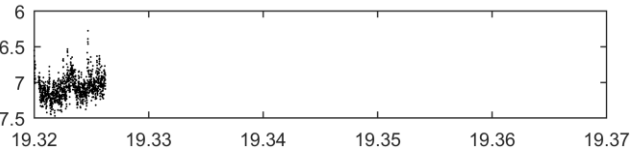
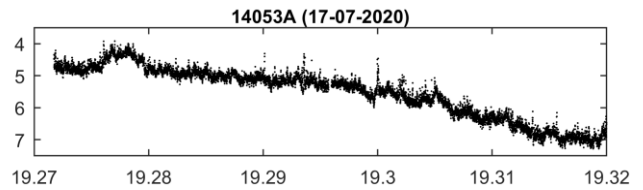
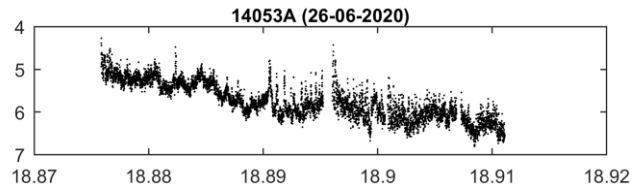
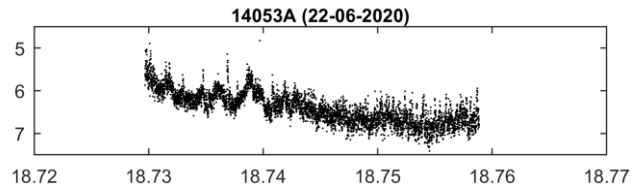
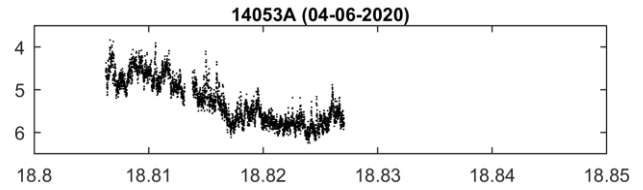
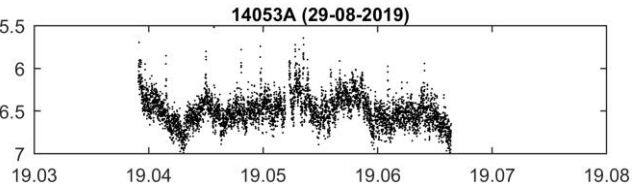
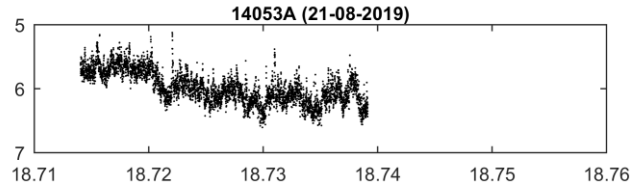
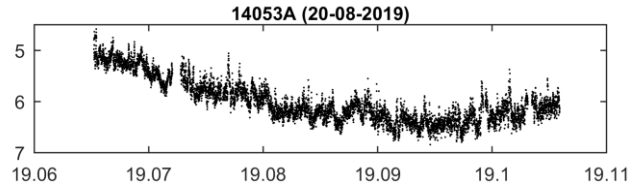
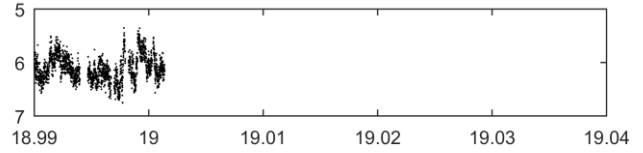
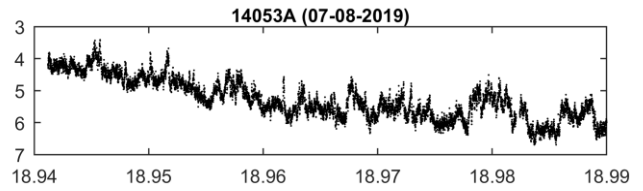
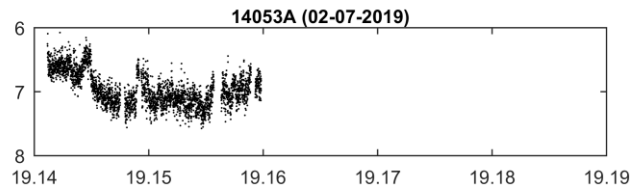
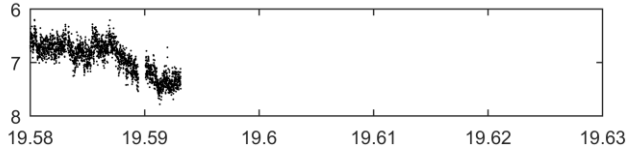
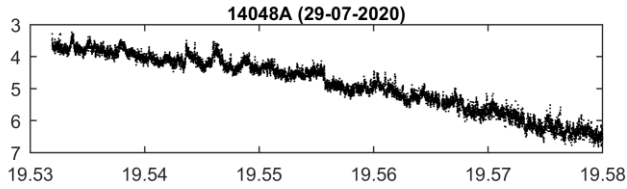
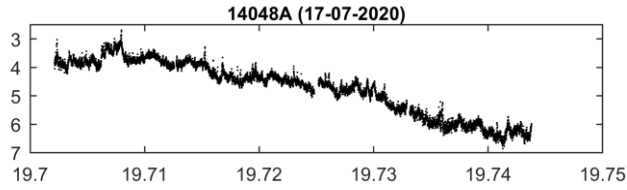
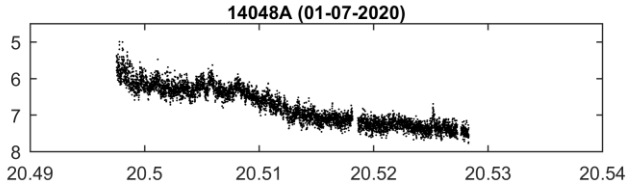
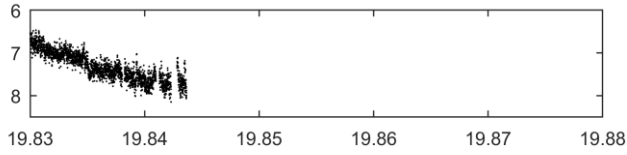
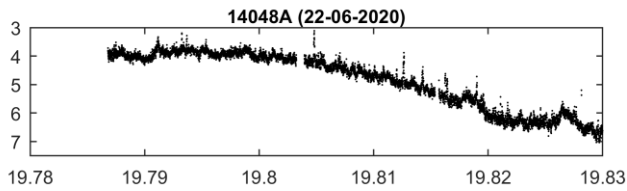
Period: 96.90 min

Eccentricity: 0.0002

Launch date: 2014-08-13

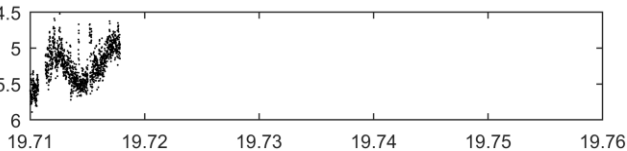
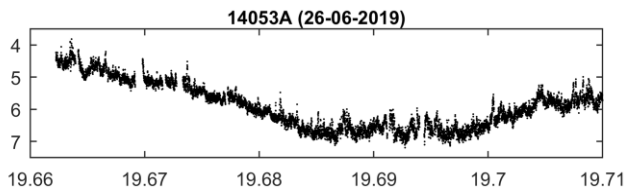
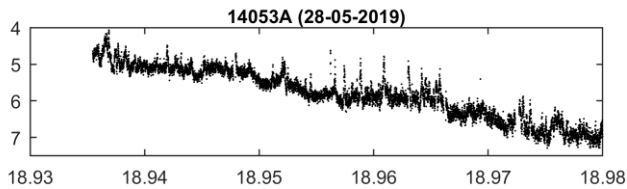
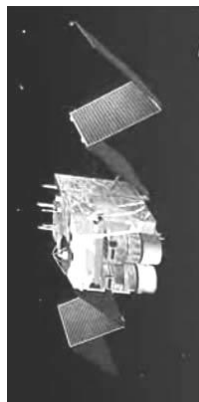
Source: United States (US)

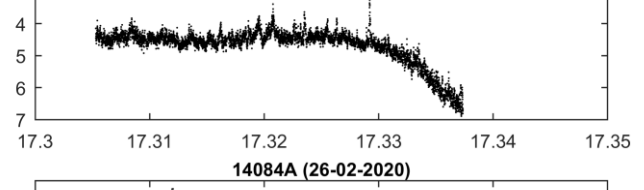
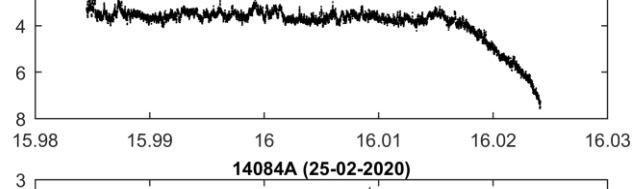
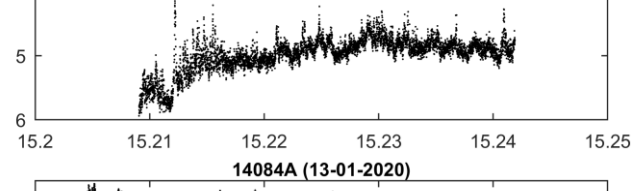
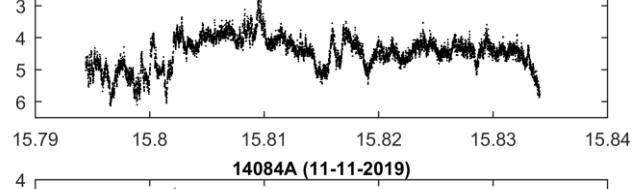
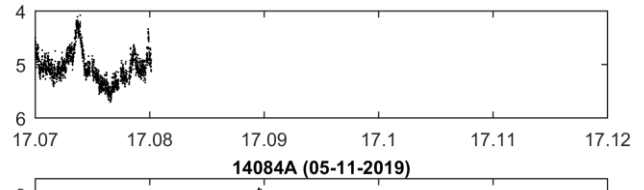
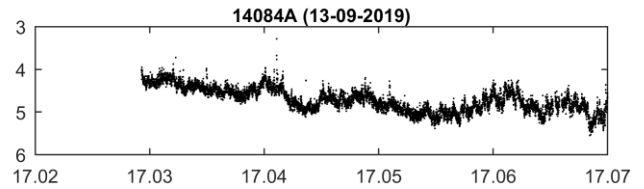
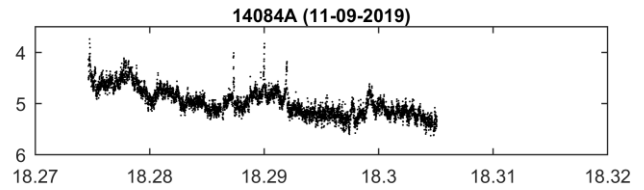
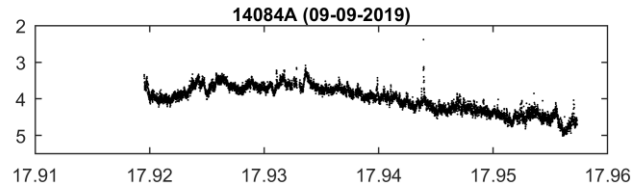
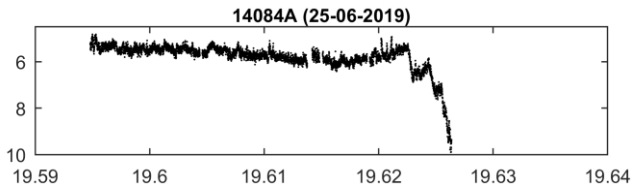
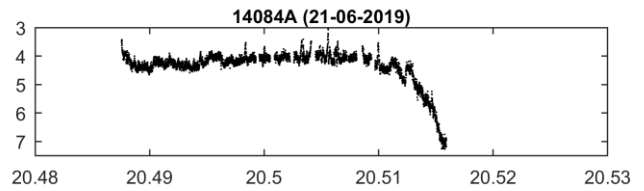
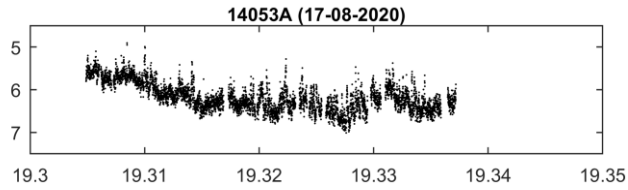
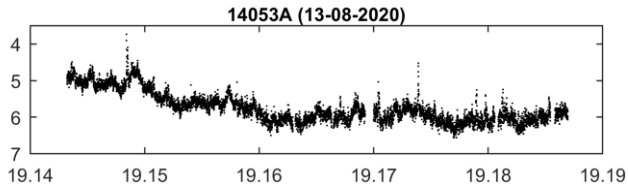
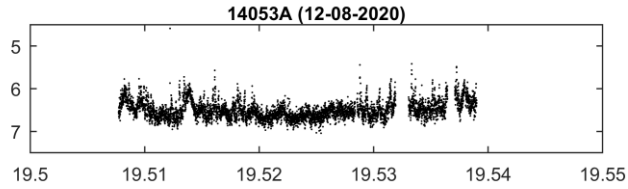
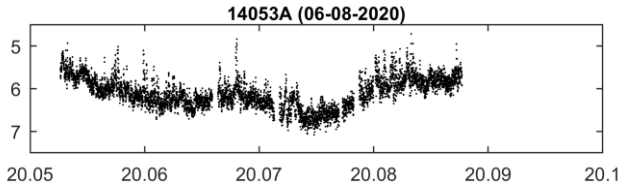
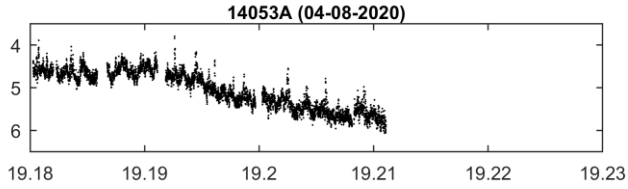
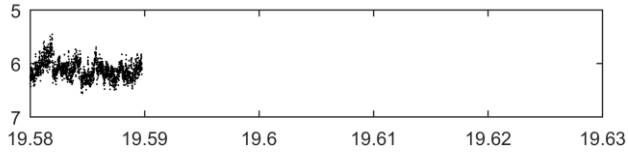
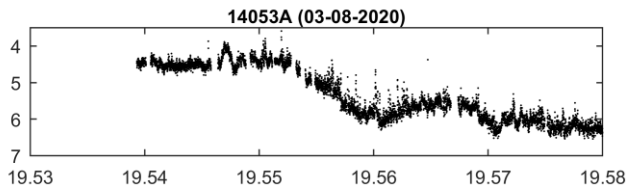




YAOGAN 21

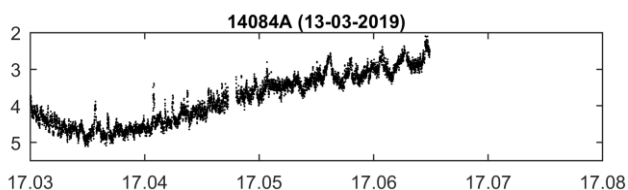
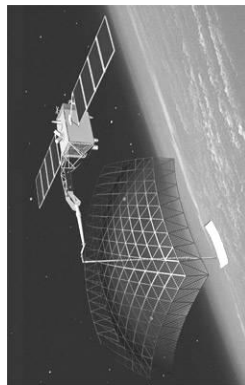
NORAD ID: 40143
 Int'l Code: 2014-053A
 Dimensions: box + 2 panels
 Initial orbit:
 Perigee: 475 km
 Apogee: 493 km
 Inclination: 97.42°
 Period: 94.28min
 Eccentricity: 0.001
 Launch date: 2014-09-08
 Source: People's Republic of China (PRC)

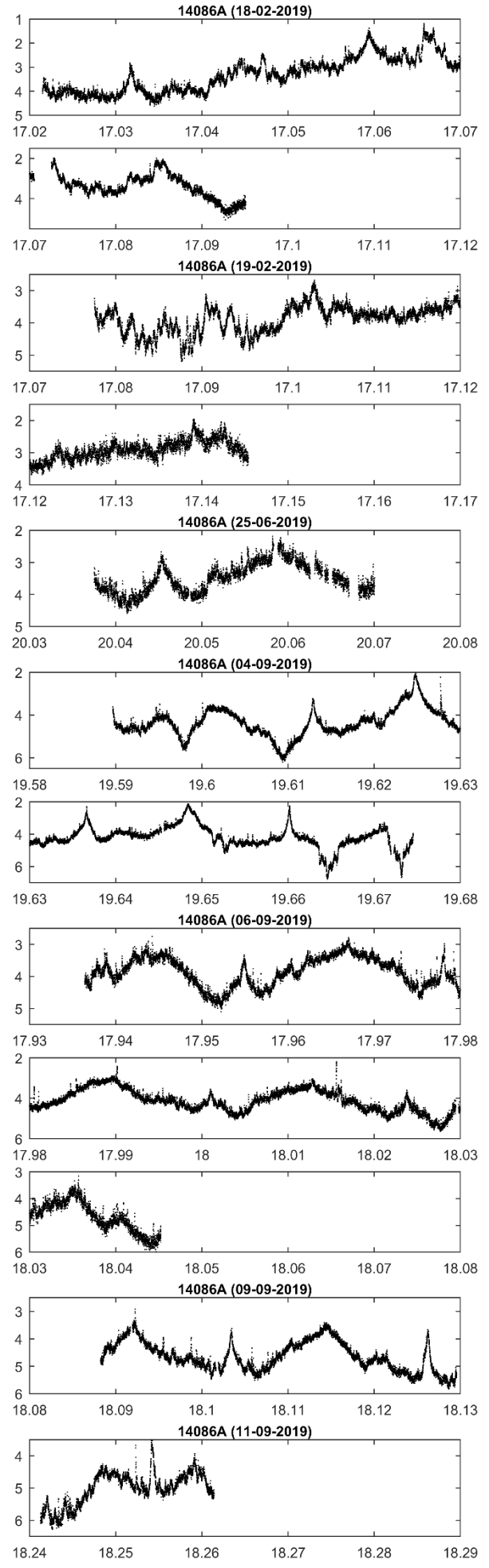
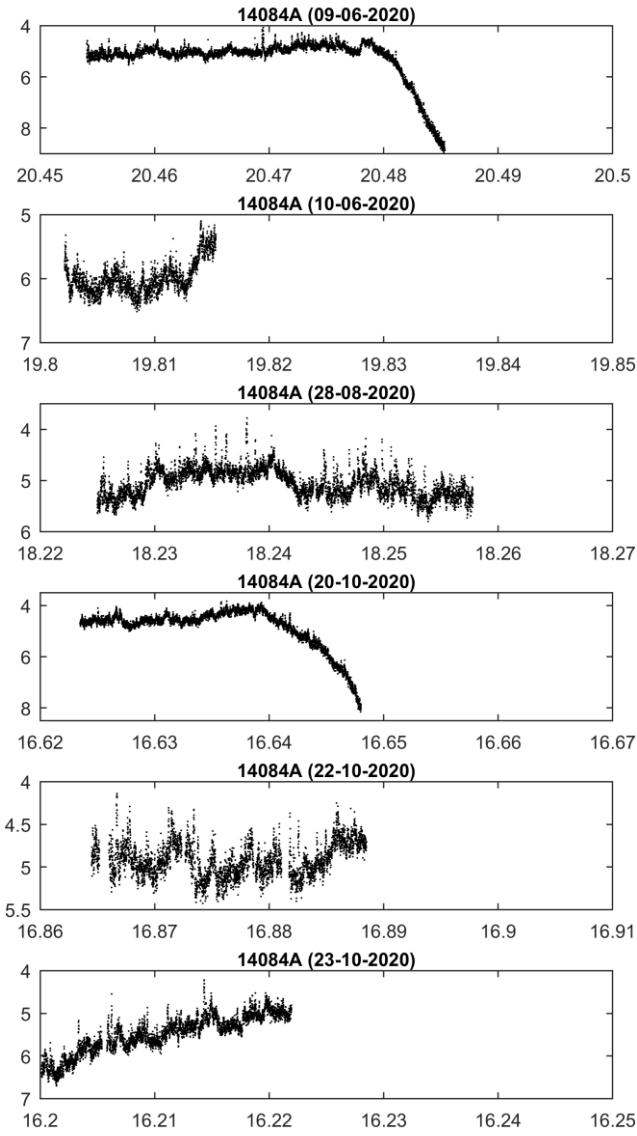




KONDOR E

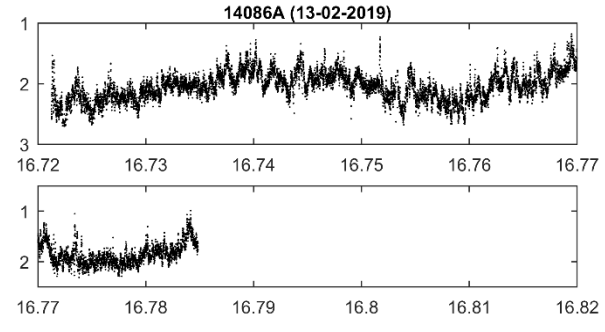
NORAD ID: 40353
 Int'l Code: 2014-084A
 Dimensions: box + 2 panels
 + mesh dish 6m dia
 Initial orbit:
 Perigee: 498 km
 Apogee: 501 km
 Inclination: 74.75°
 Period: 94.62 min
 Eccentricity: 0.0002
 Launch date: 2014-12-18
 Source: South Africa (SAFR)

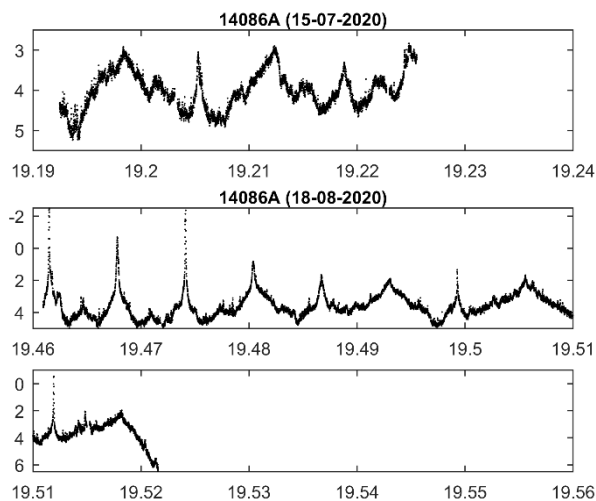
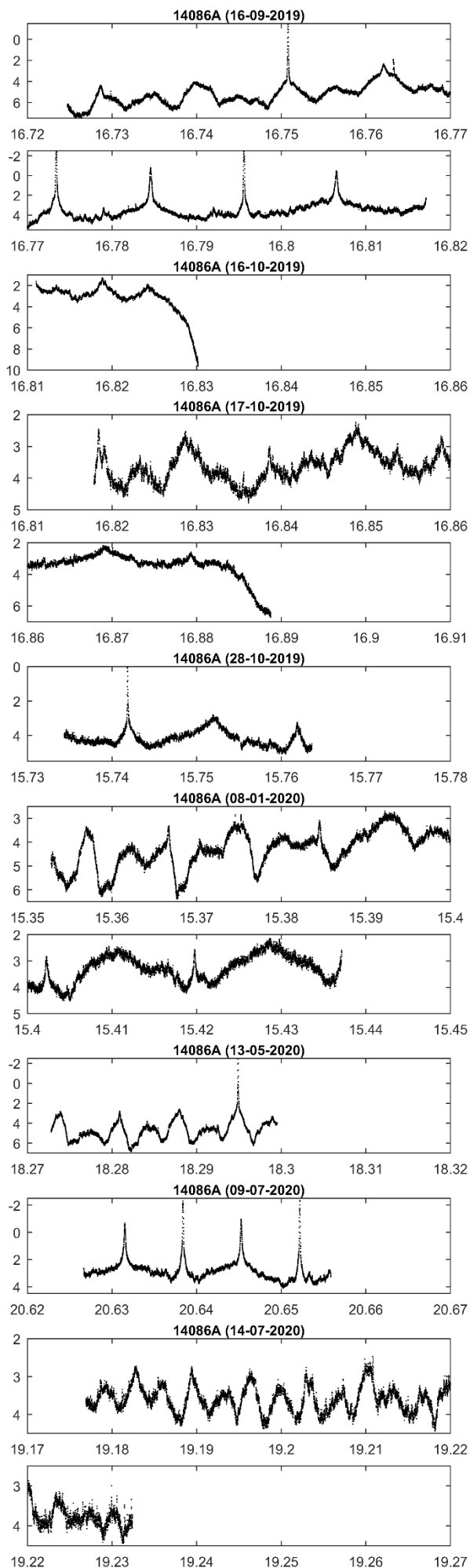




COSMOS 2502 (LOTOS-S1 #1)

NORAD ID: 40358
 Int'l Code: 2014-086A
 Dimensions: cone-cylinder + 4 panels
 ~7m long 2.7m maxdia
 Initial orbit:
 Perigee: 238 km
 Apogee: 869 km
 Inclination: 67.14°
 Period: 95.73 min
 Eccentricity: 0.046
 Launch date: 2014-12-25
 Source: Commonwealth of Independent States (former USSR)
 (CIS)





RESURS P2

NORAD ID: 40360

Int'l Code: 2014-087A

Dimensions: cone-cylinder +2 panels
7.93m long, 2.72m dia, 13m span

Initial orbit:

Perigee: 190 km

Apogee: 428 km

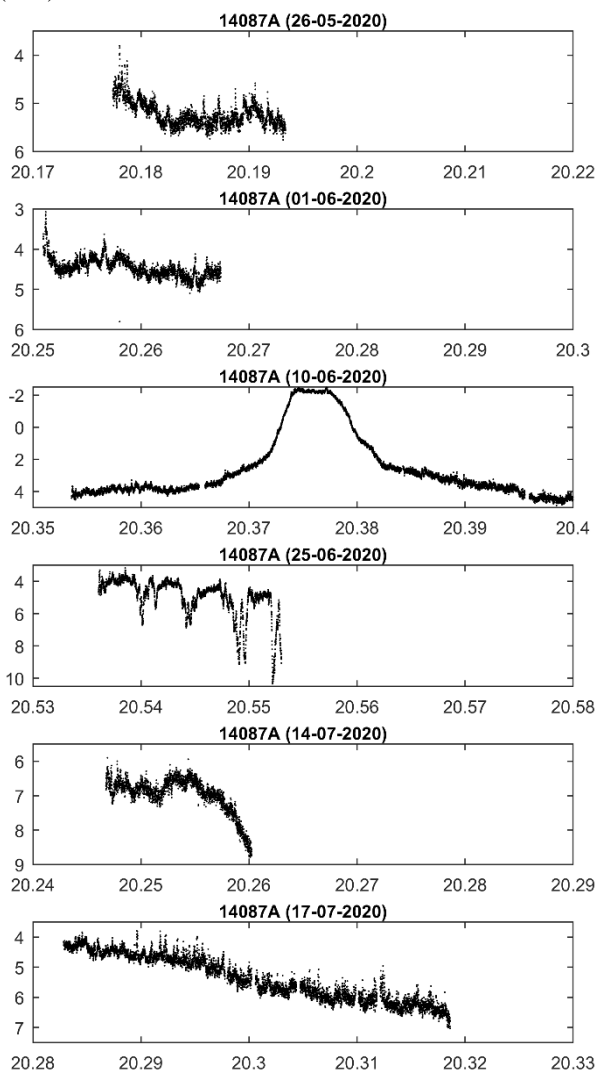
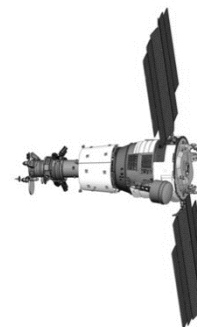
Inclination: 97.29°

Period: 90.70 min

Eccentricity: 0.018

Launch date: 2014-12-26

Source: Commonwealth of Independent States (former USSR) (CIS)



IGS 9

NORAD ID: 40381

Int'l Code: 2015-004A

Dimensions:

Initial orbit:

Perigee: 481 km

Apogee: 484 km

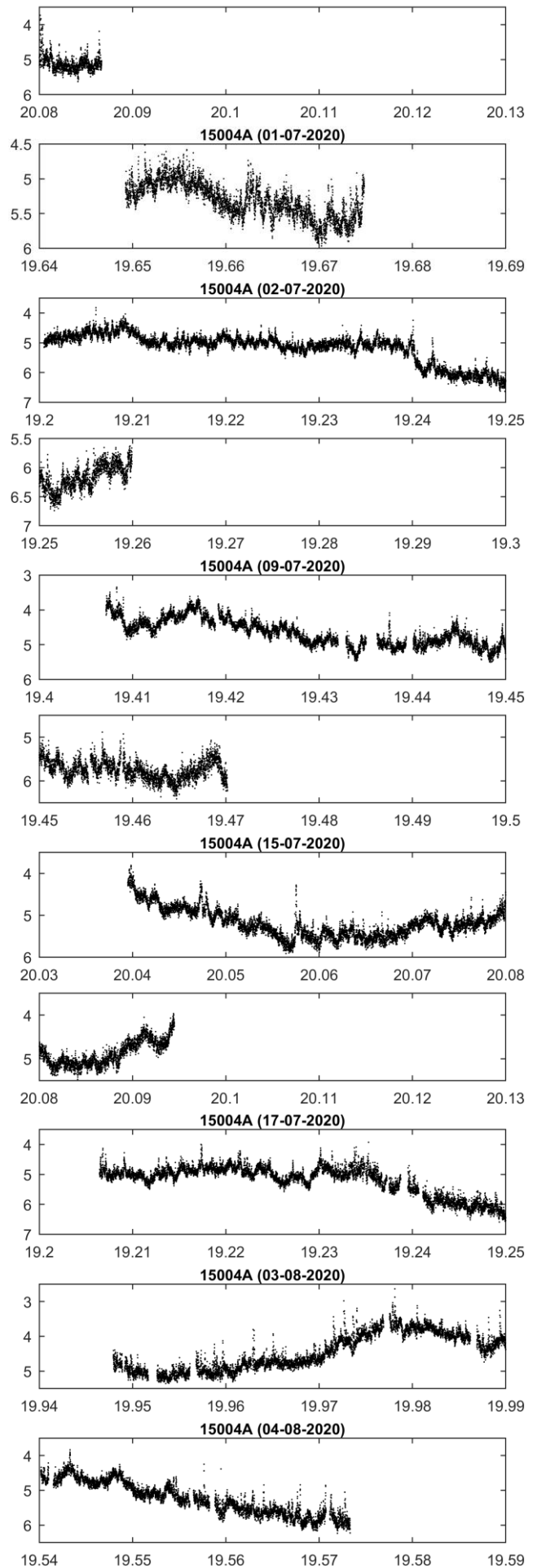
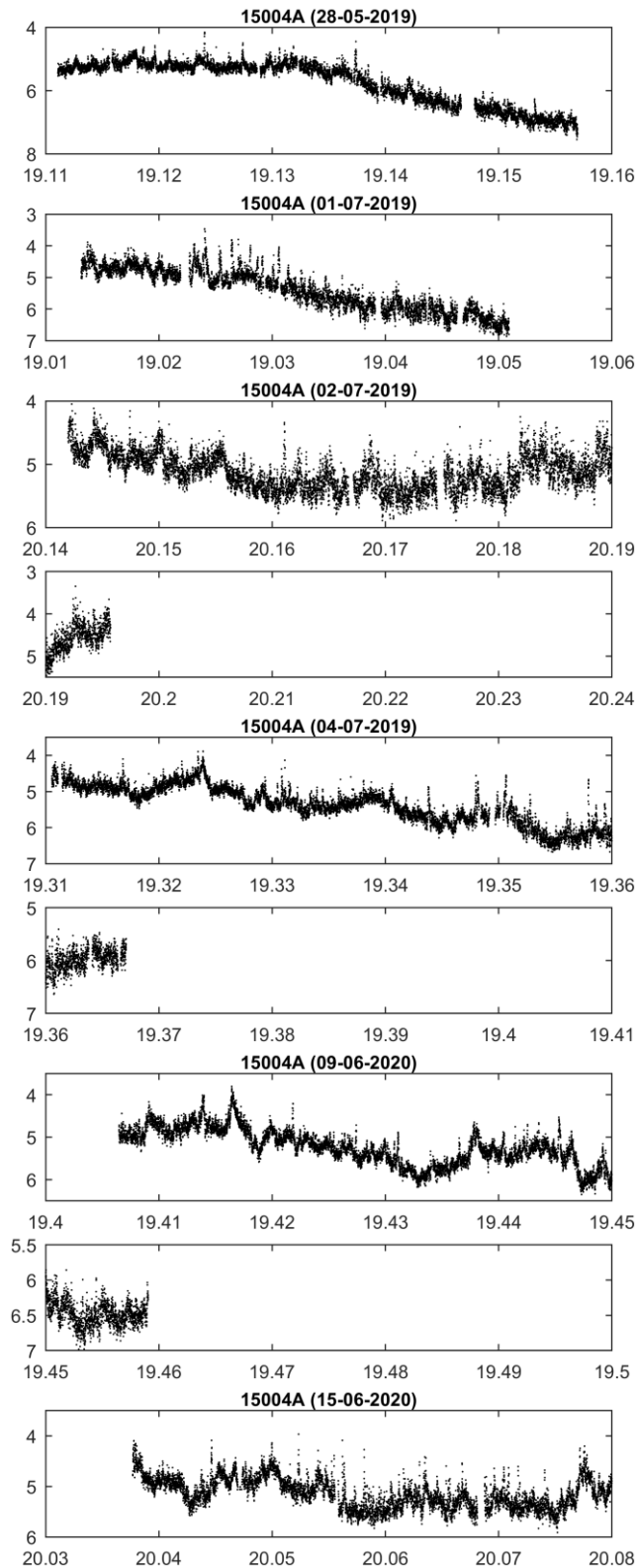
Inclination: 97.35°

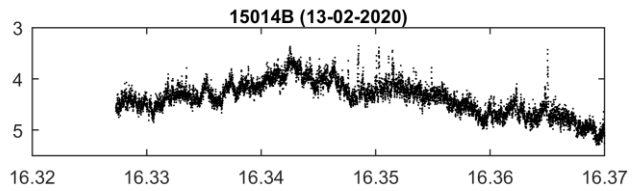
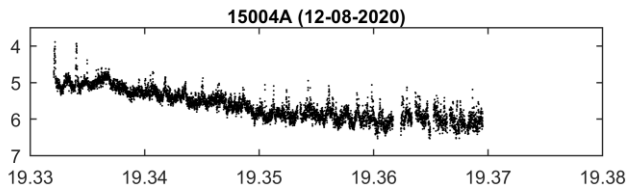
Period: 94.25min

Eccentricity: 0.0002

Launch date: 2015-02-01

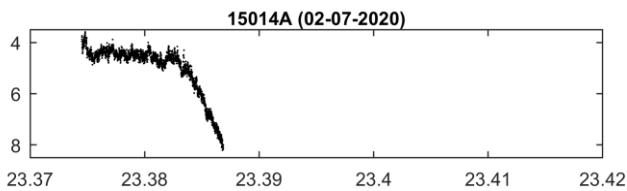
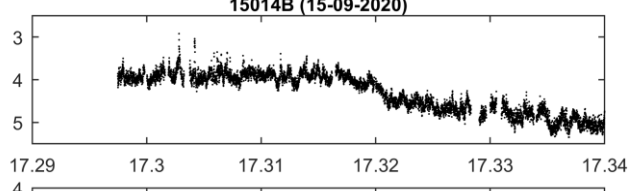
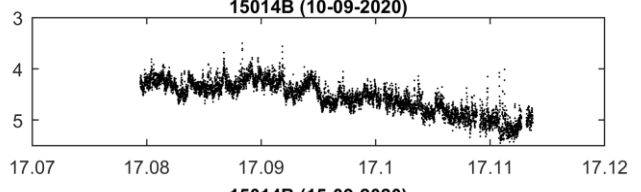
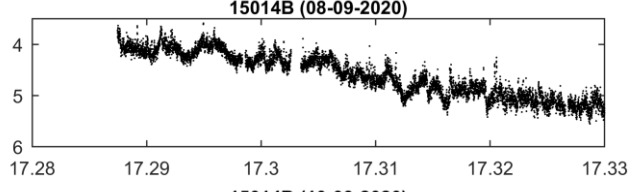
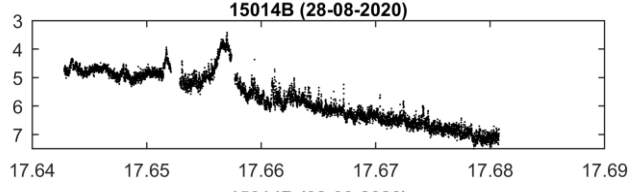
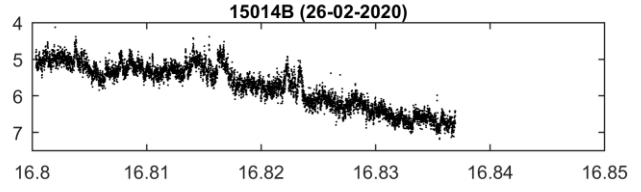
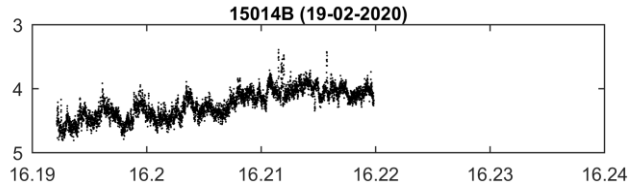
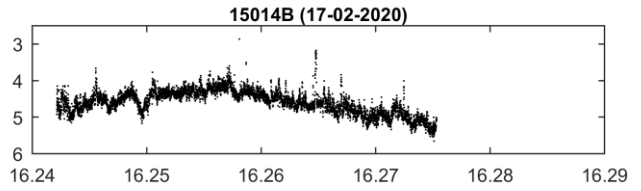
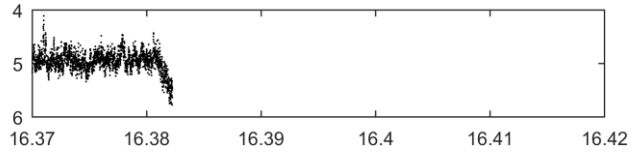
Source: Japan (JPN)





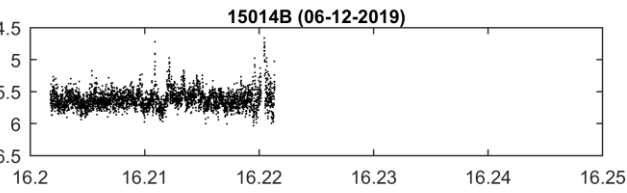
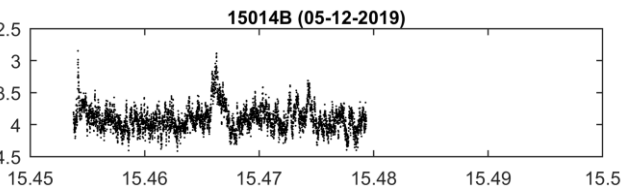
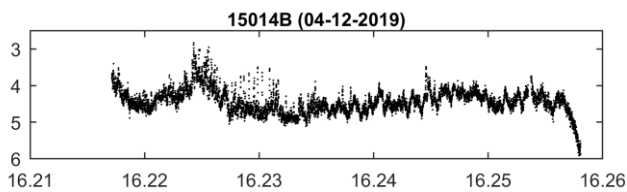
KOMPSAT 3A

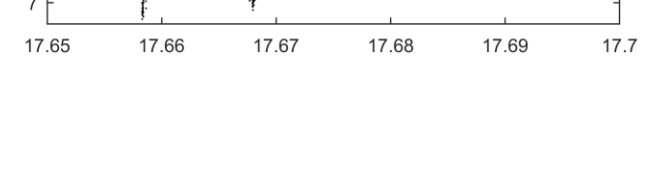
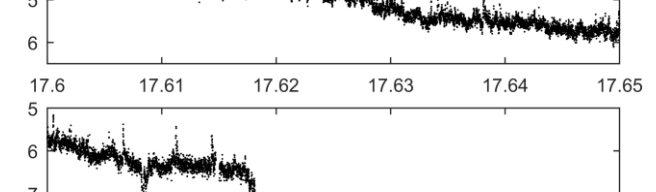
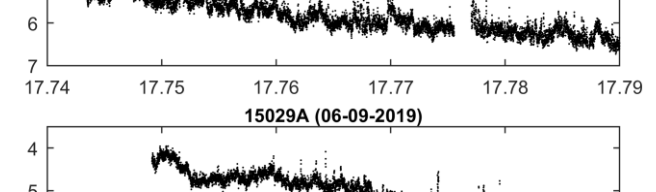
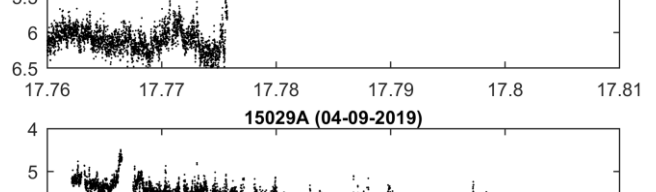
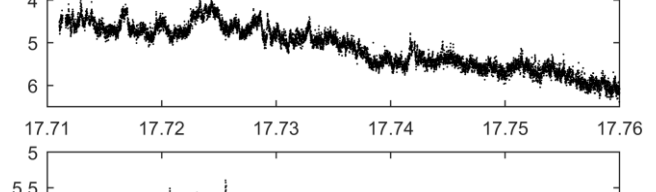
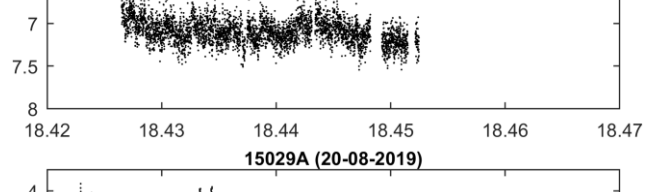
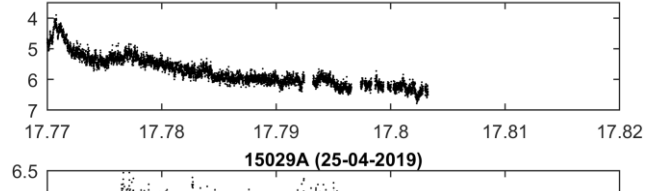
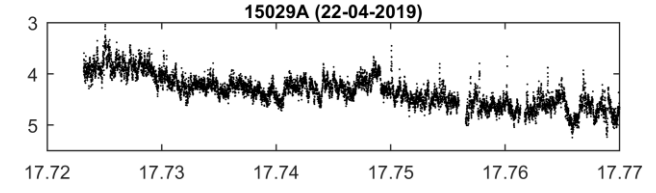
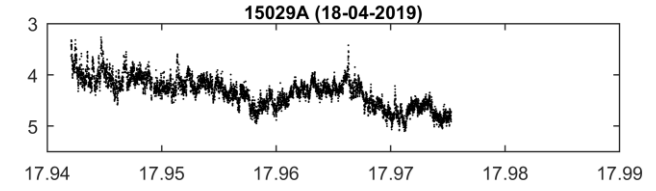
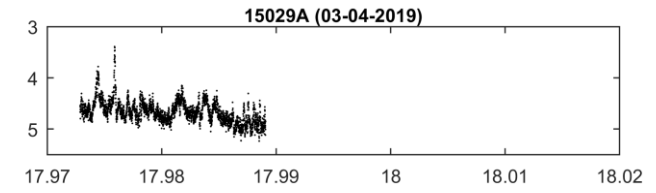
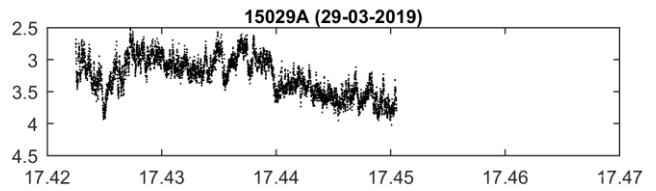
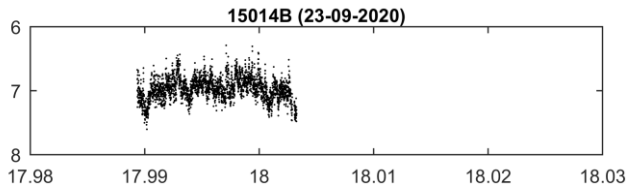
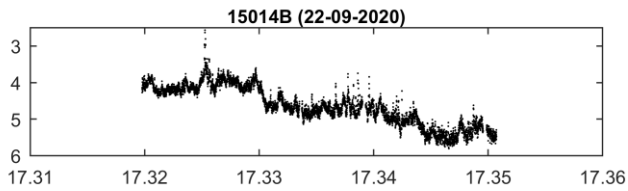
NORAD ID: 40536
 Int'l Code: 2015-014A
 Dimensions: hexagonal box + cylinder + 3 panels
 3.5m long 2.0m dia
 ~7m span
 Initial orbit:
 Perigee: 526 km
 Apogee: 540 km
 Inclination: 97.51°
 Period: 95.32min
 Eccentricity: 0.001
 Launch date: 2015-03-25
 Source: South Korea (SKOR)



SL-24 DEB (FRAGMENT)

NORAD ID: 40537
 Int'l Code: 2015-014B
 Dimensions:
 Initial orbit:
 Perigee: 499 km
 Apogee: 535 km
 Inclination: 97.50°
 Period: 94.97min
 Eccentricity: 0.003
 Launch date: 2015-03-25
 Decay date: 2021-06-16
 Source: Commonwealth of Independent States (former USSR) (CIS)





COSMOS 2506

(Kvarts, Persona 1)

NORAD ID: 40699

Int'l Code: 2015-029A

Dimensions: cone-cylinder +
4 panels 6.5m long 2.7m dia

Initial orbit:

Perigee: 186 km

Apogee: 703 km

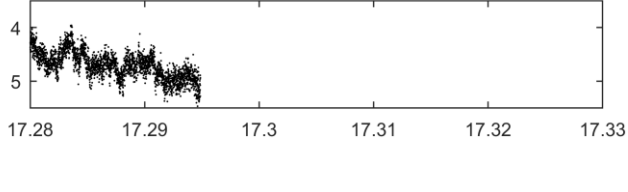
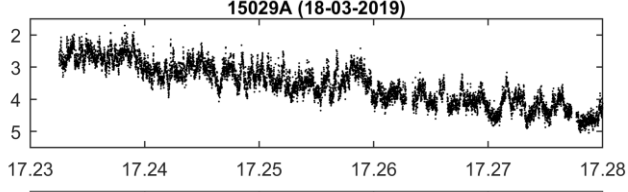
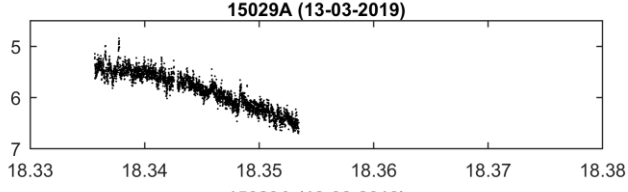
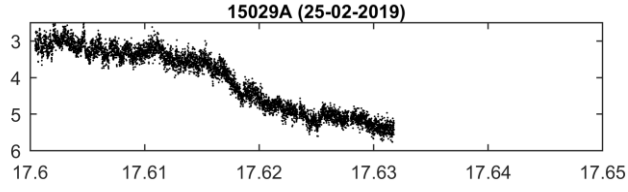
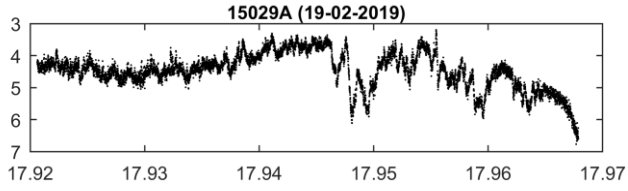
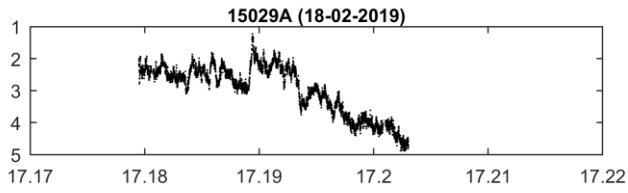
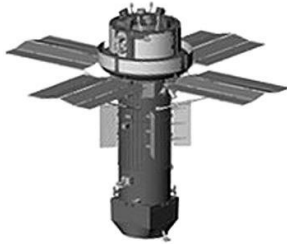
Inclination: 98.31°

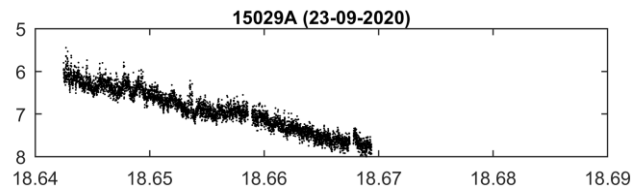
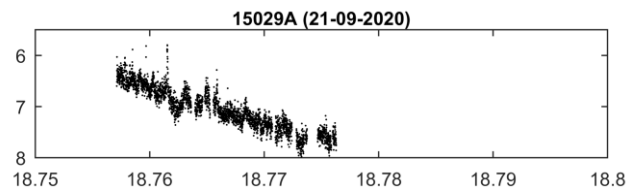
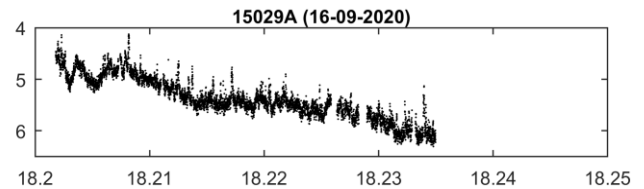
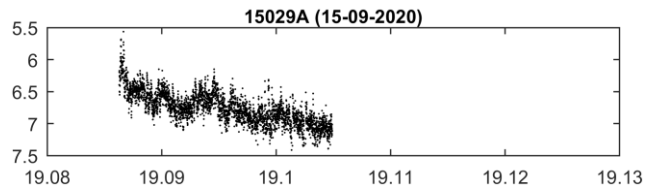
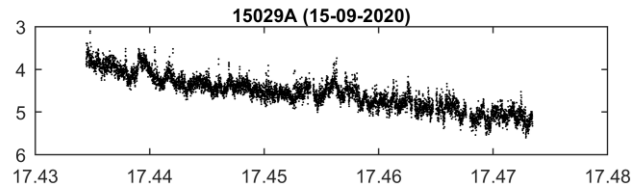
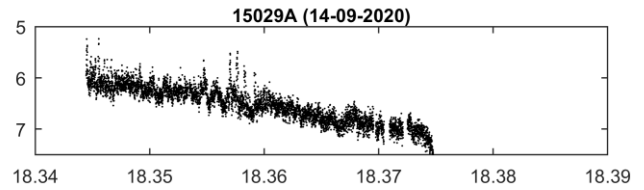
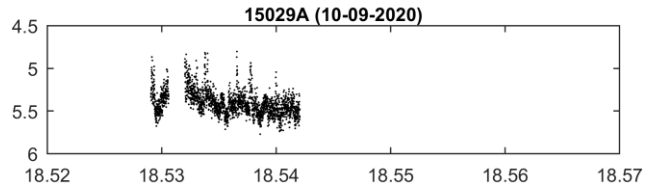
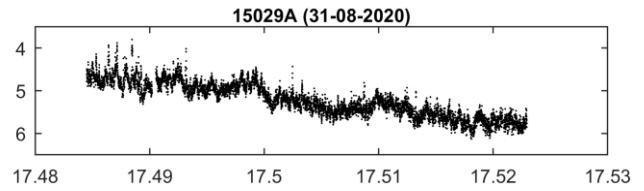
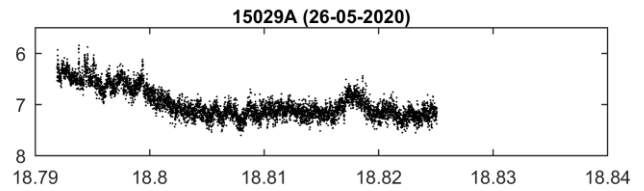
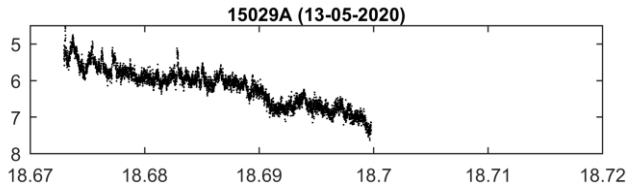
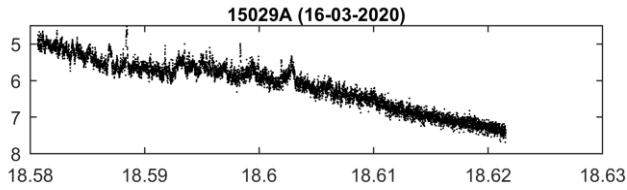
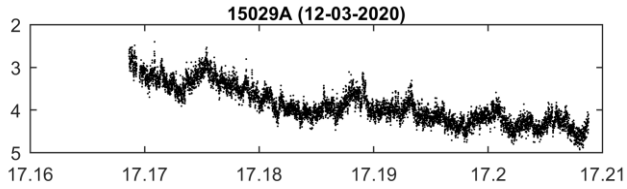
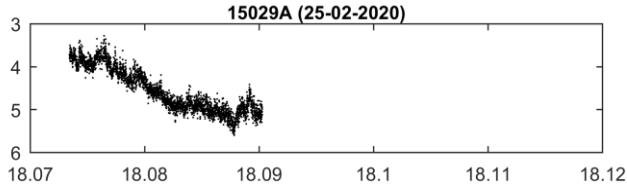
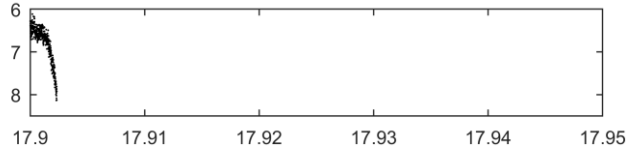
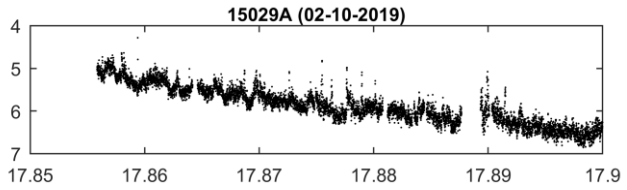
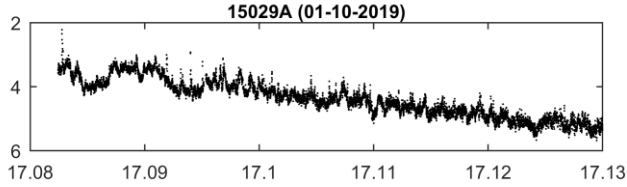
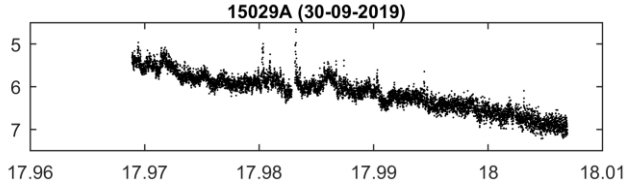
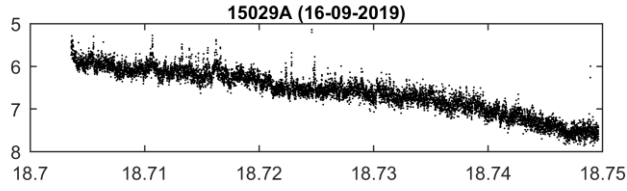
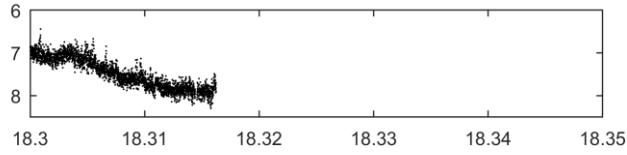
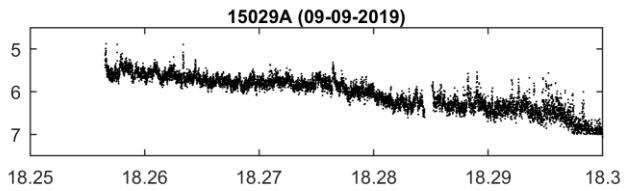
Period: 93.48 min

Eccentricity: 0.038

Launch date: 2015-06-23

Source: Commonwealth of Independent States (former USSR)
(CIS)





CZ-4C (3rd stage)

NORAD ID: 40879

Int'l Code: 2015-040B

Dimensions: cylinder 4.9m long,
2.9m dia

Initial orbit:

Perigee: 1064 km

Apogee: 1204 km

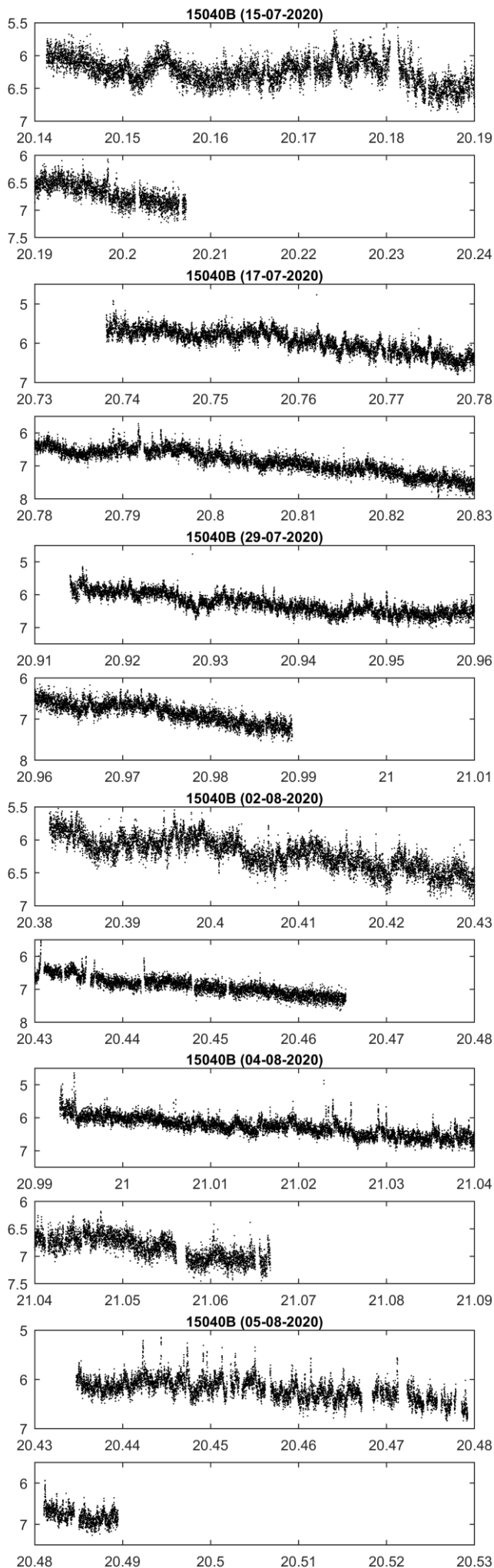
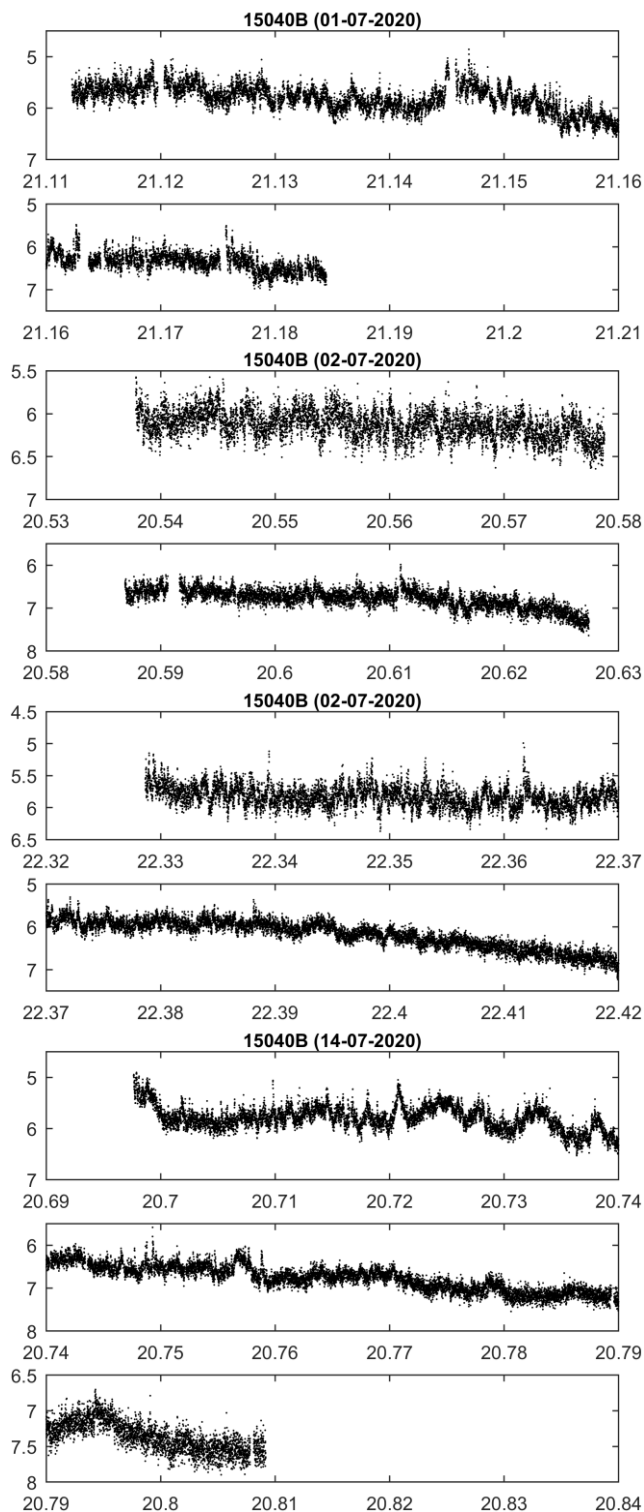
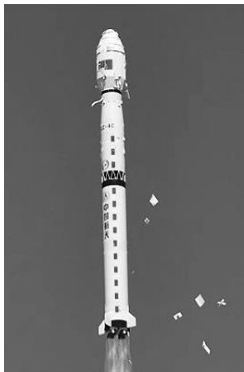
Inclination: 100.45°

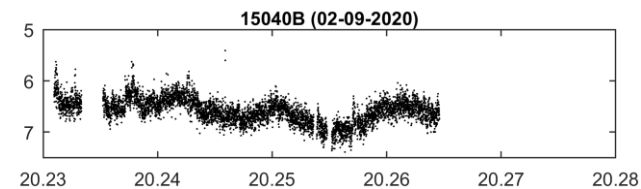
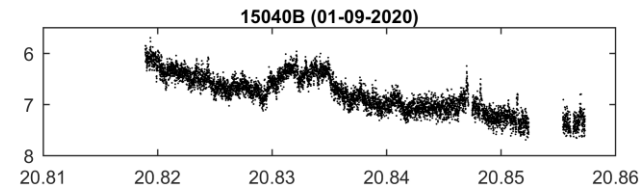
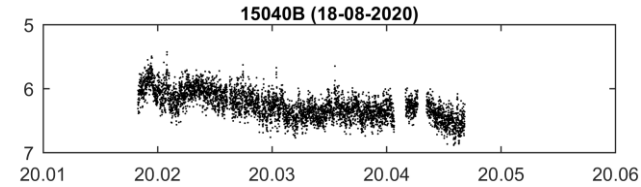
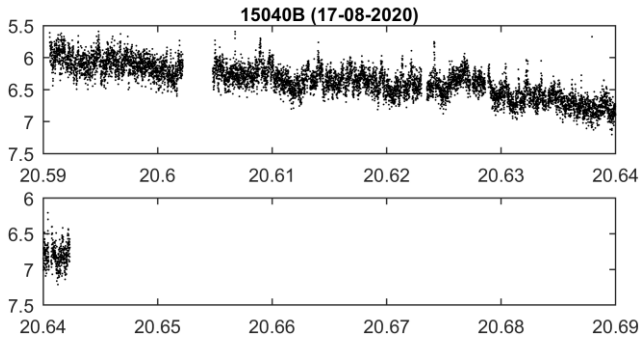
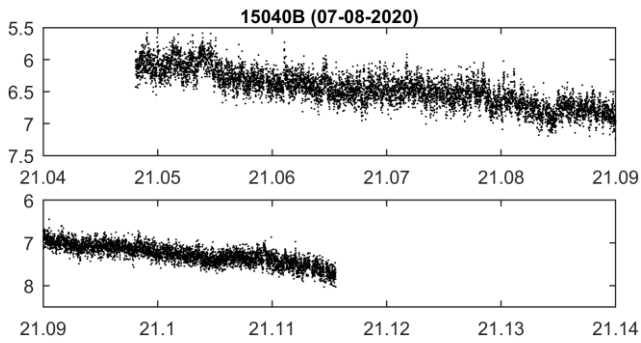
Period: 108.00min

Eccentricity: 0.009

Launch date: 2015-08-27

Source: People's Republic of China (PRC)





COSMOS 2508

(STRELA-3M)

NORAD ID: 40921

Int'l Code: 2015-050B

Dimensions: cylinder + 3 panels

+2 cone antennae ~ 2m long

Initial orbit:

Perigee: 1494 km

Apogee: 1507 km

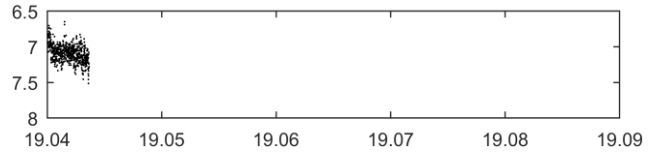
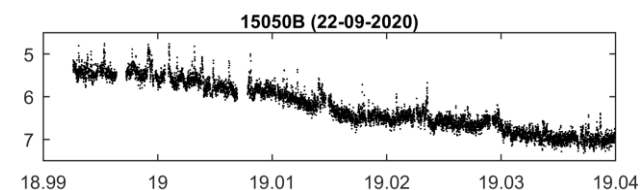
Inclination: 82.50°

Period: 116.00min

Eccentricity: 0.0008

Launch date: 2015-09-23

Source: Commonwealth of Independent States (former USSR) (CIS)



JASON 3

NORAD ID: 41240

Int'l Code: 2016-002A

Dimensions: box + 2 panels

~3m x 1m x 1m, 10 span

Initial orbit:

Perigee: 1295 km

Apogee: 1320 km

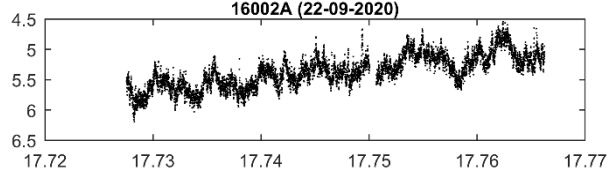
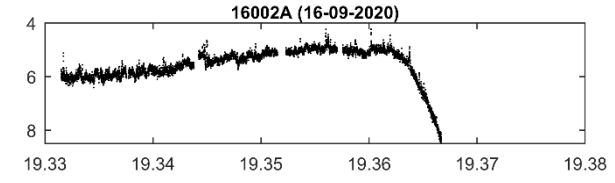
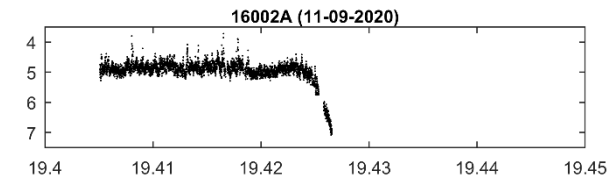
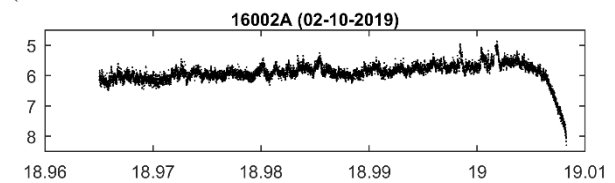
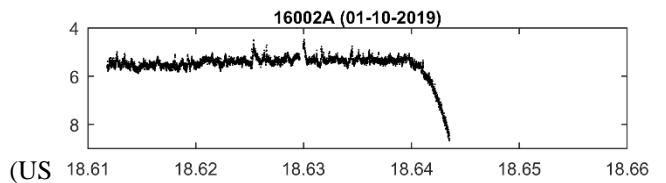
Inclination: 66.05°

Period: 111.75 min

Eccentricity: 0.002

Launch date: 2016-01-17

Source: United States



FIA-RADAR 4

(NROL-45, USA 267)

NORAD ID: 41334

Int'l Code: 2016-010A

Dimensions:

Initial orbit:

Perigee: 1075 km

Apogee: 1086 km

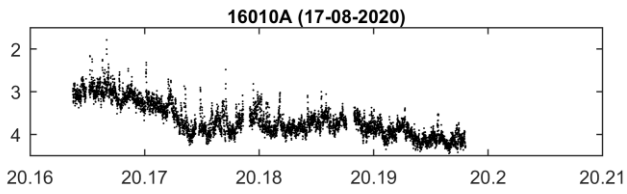
Inclination: 122.99°

Period: 103.85 min

Eccentricity: 0.0007

Launch date: 2016-02-10

Source: United States (US)



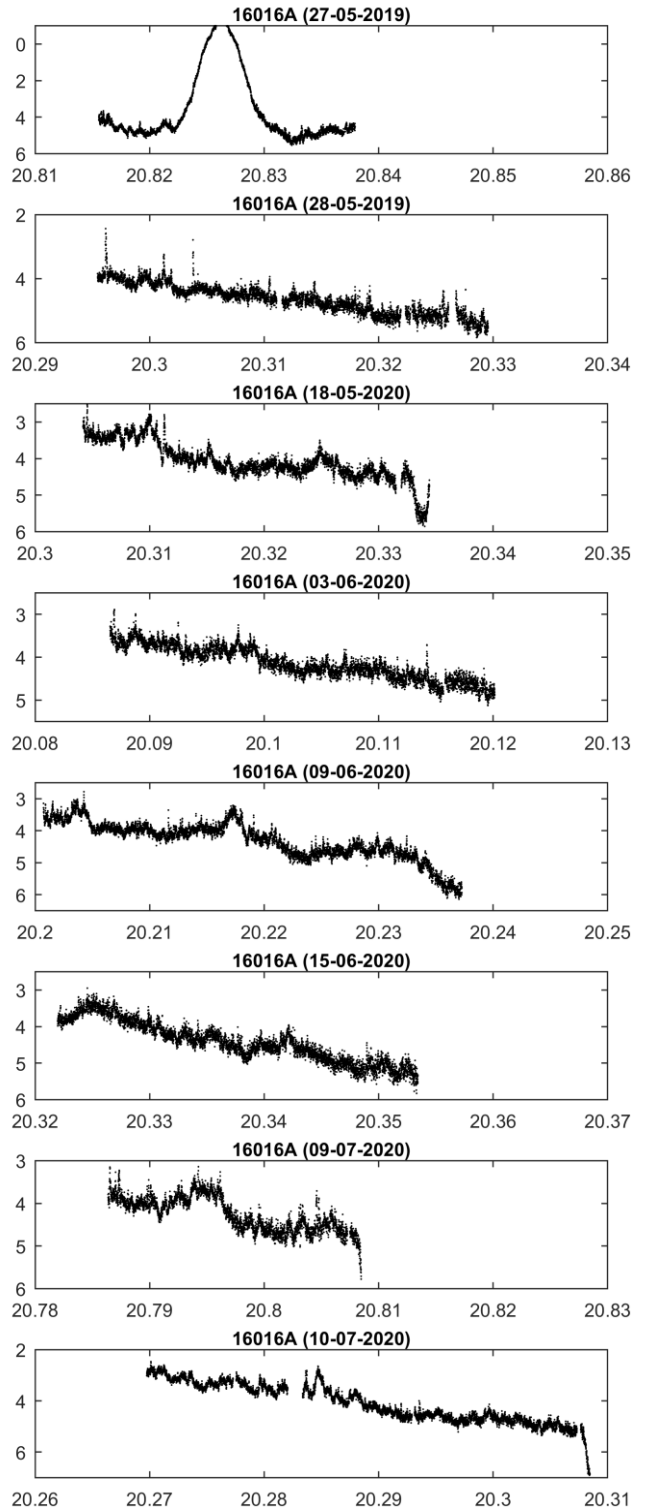
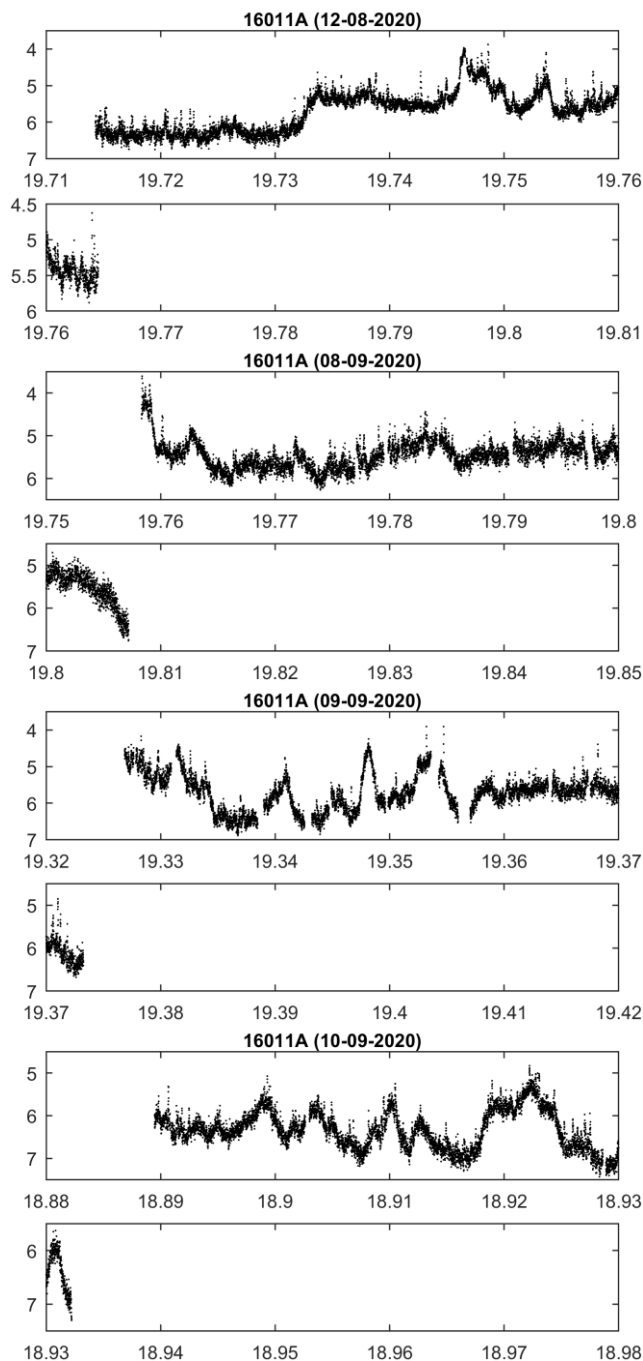
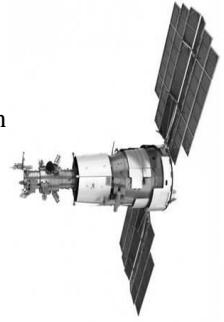
SENTINEL-3A

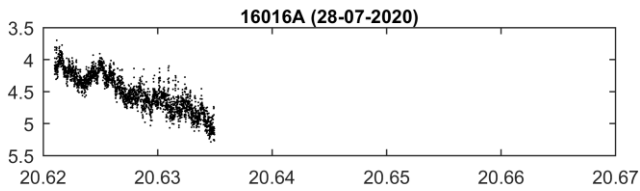
NORAD ID: 41335
 Int'l Code: 2016-011A
 Dimensions: box + panel
 2.20m x 2.21m x 3.71m, 10.5m²
 Initial orbit:
 Perigee: 801 km
 Apogee: 804 km
 Inclination: 98.62°
 Period: 100.93 min
 Eccentricity: 0.0002
 Launch date: 2016-02-16
 Source: European Space Agency (ESA)



RESURS P3

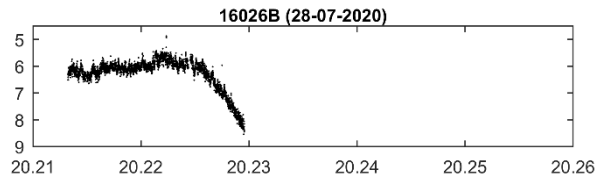
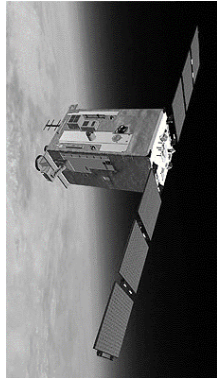
NORAD ID: 41386
 Int'l Code: 2016-016A
 Dimensions: cone-cylinder +2 panels
 7.93m long, 2.72m maxdia, ~13m span
 Initial orbit:
 Perigee: 279 km
 Apogee: 452 km
 Inclination: 97.29°
 Period: 91.85 min
 Eccentricity: 0.013
 Launch date: 2016-03-13
 Source: Commonwealth of Independent States (former USSR) (CIS)





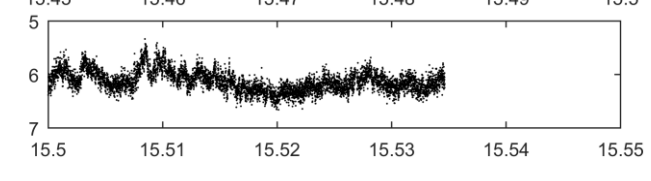
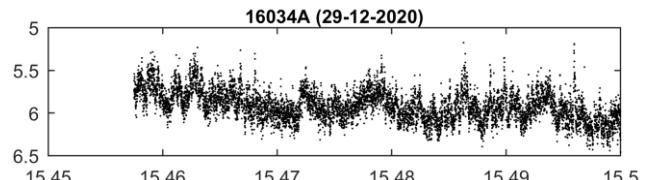
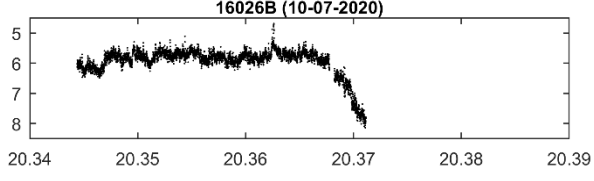
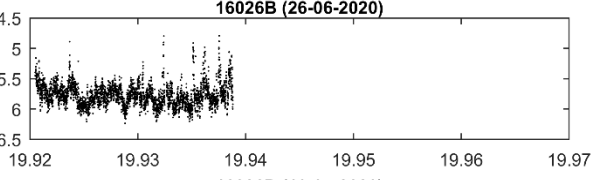
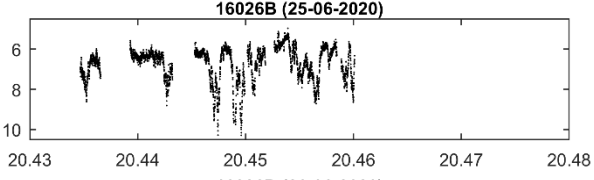
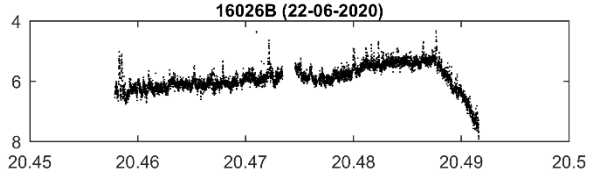
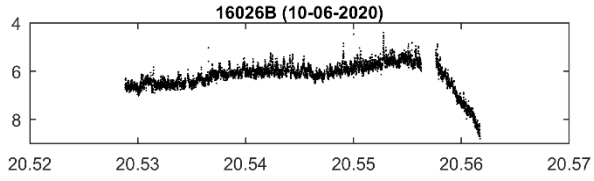
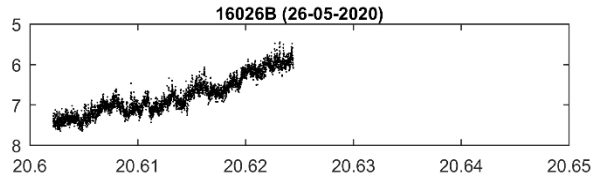
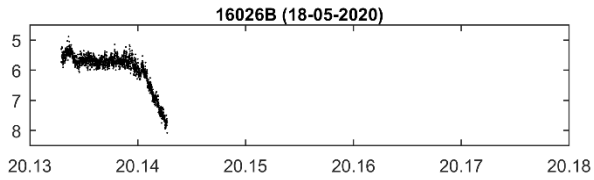
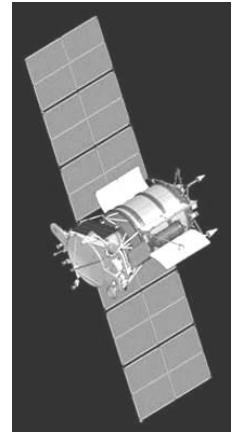
AIST 2D (RS 48)

NORAD ID: 41465
 Int'l Code: 2016-026B
 Dimensions: box + 2 panels
 ~2m long x ~1m x ~1m, ~7m span
 Initial orbit:
 Perigee: 470 km
 Apogee: 486 km
 Inclination: 97.27°
 Period: 94.17 min
 Eccentricity: 0.001
 Launch date: 2016-04-28
 Source: Commonwealth of Independent States (former USSR) (CIS)

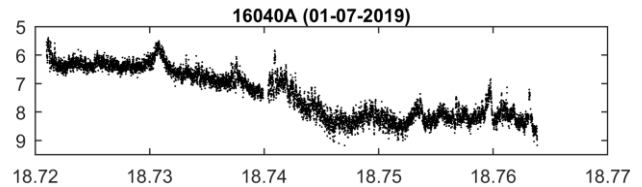
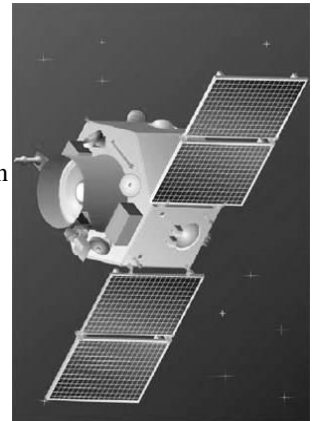


COSMOS 2517 (GEO-1K 2-2)

NORAD ID: 41579
 Int'l Code: 2016-034A
 Dimensions: cylinder + 2 panels
 ~4m long, 1.3m dia
 Initial orbit:
 Perigee: 935 km
 Apogee: 963 km
 Inclination: 99.27°
 Period: 104.03 min
 Eccentricity: 0.002
 Launch date: 2016-06-04
 Source: Commonwealth of Independent States (former USSR) (CIS)



CARTOSAT-2C
 NORAD ID: 41599
 Int'l Code: 2016-040A
 Dimensions: hexagonal bus + 2 panels
 2.5m long, 2.4m dia, ~5m span
 Initial orbit:
 Perigee: 500 km
 Apogee: 518 km
 Inclination: 97.50°
 Period: 94.82 min
 Eccentricity: 0.001
 Launch date: 2016-06-22
 Source: India (IND)



TIANGONG-2

NORAD ID: 41765

Int'l Code: 2016-057A

Dimensions: 2 cylinders + 2 panels

10.4m long (7.1m + 3.3m),

3.35m + 2.8m dia, 17m span

Initial orbit:

Perigee: 197 km

Apogee: 333 km

Inclination: 42.79°

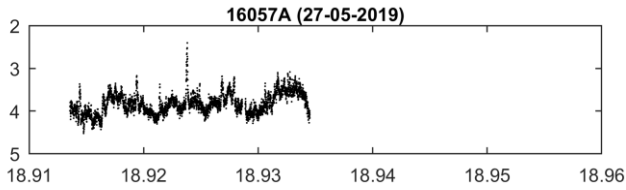
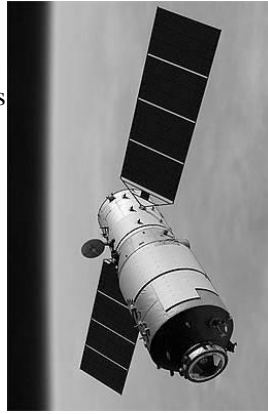
Period: 89.82 min

Eccentricity: 0.010

Launch date: 2016-09-15

Decay date: 2019-07-19

Source: People's Republic of China (PRC)



CZ-11 R/B

(Fragment?)

NORAD ID: 41847

Int'l Code: 2016-066G

Dimensions:

Initial orbit:

Perigee: 503 km

Apogee: 995 km

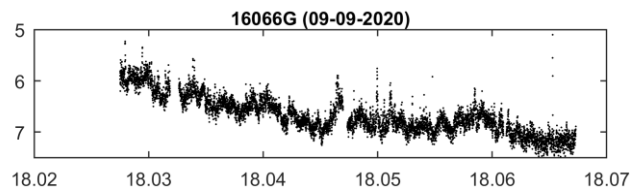
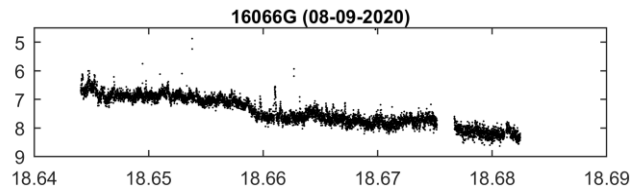
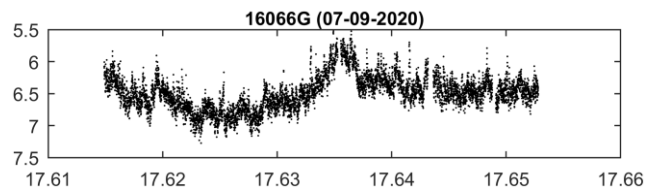
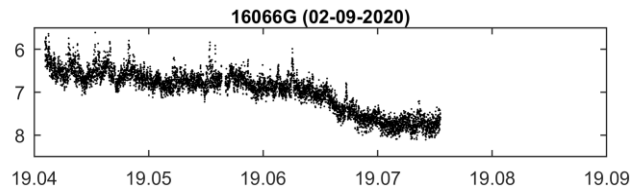
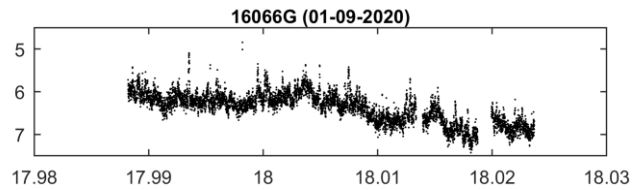
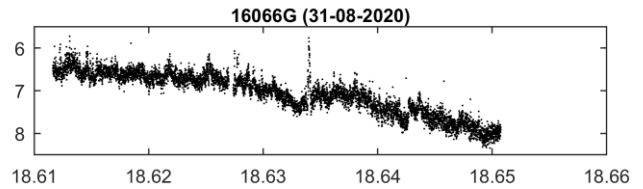
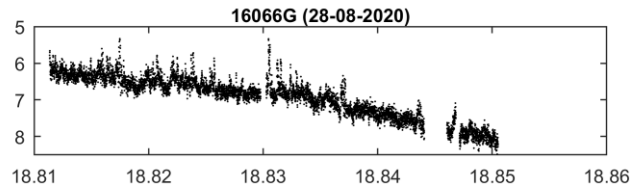
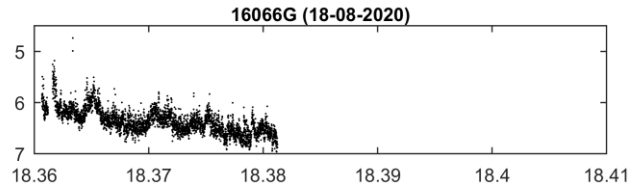
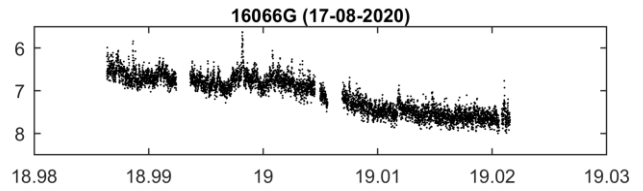
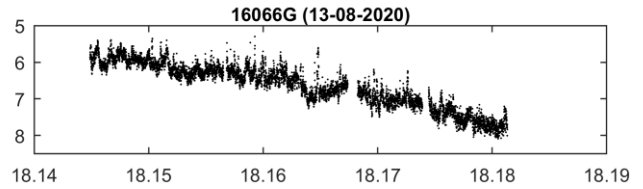
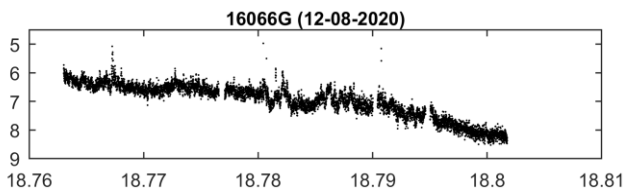
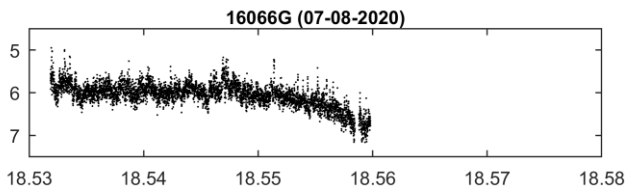
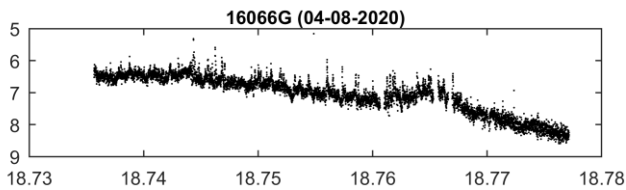
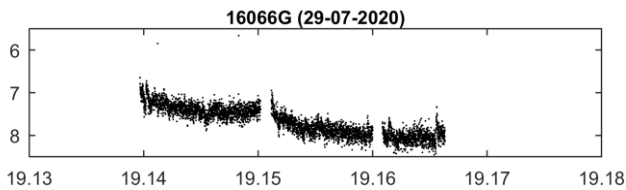
Inclination: 98.78°

Period: 99.80 min

Eccentricity: 0.035

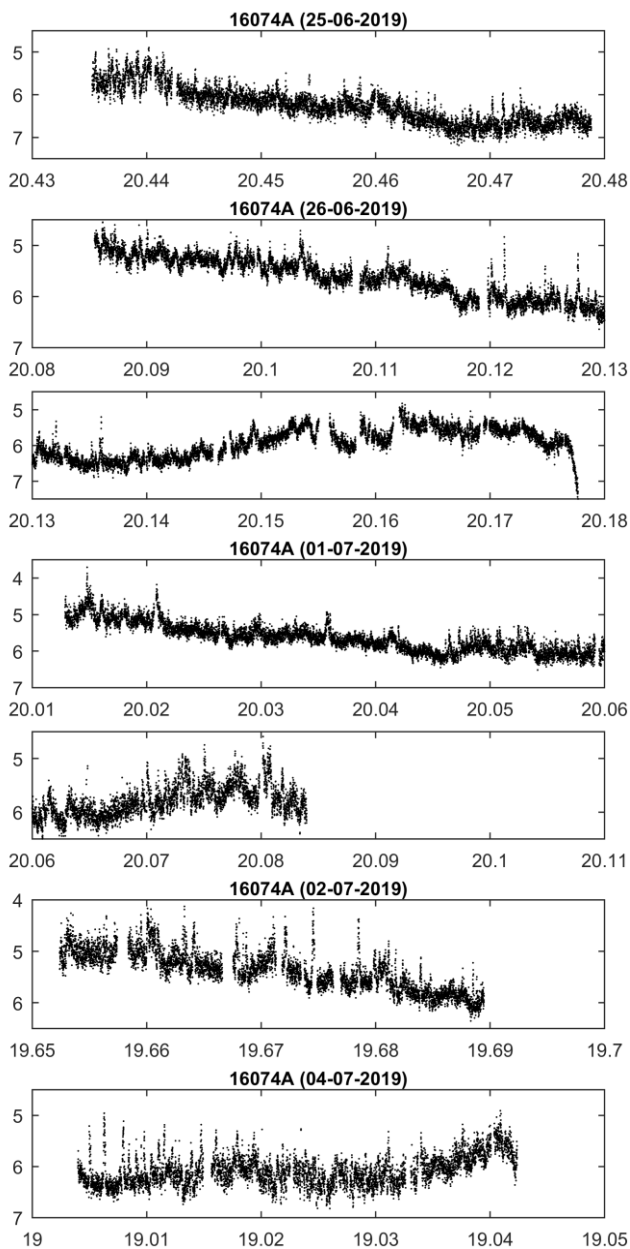
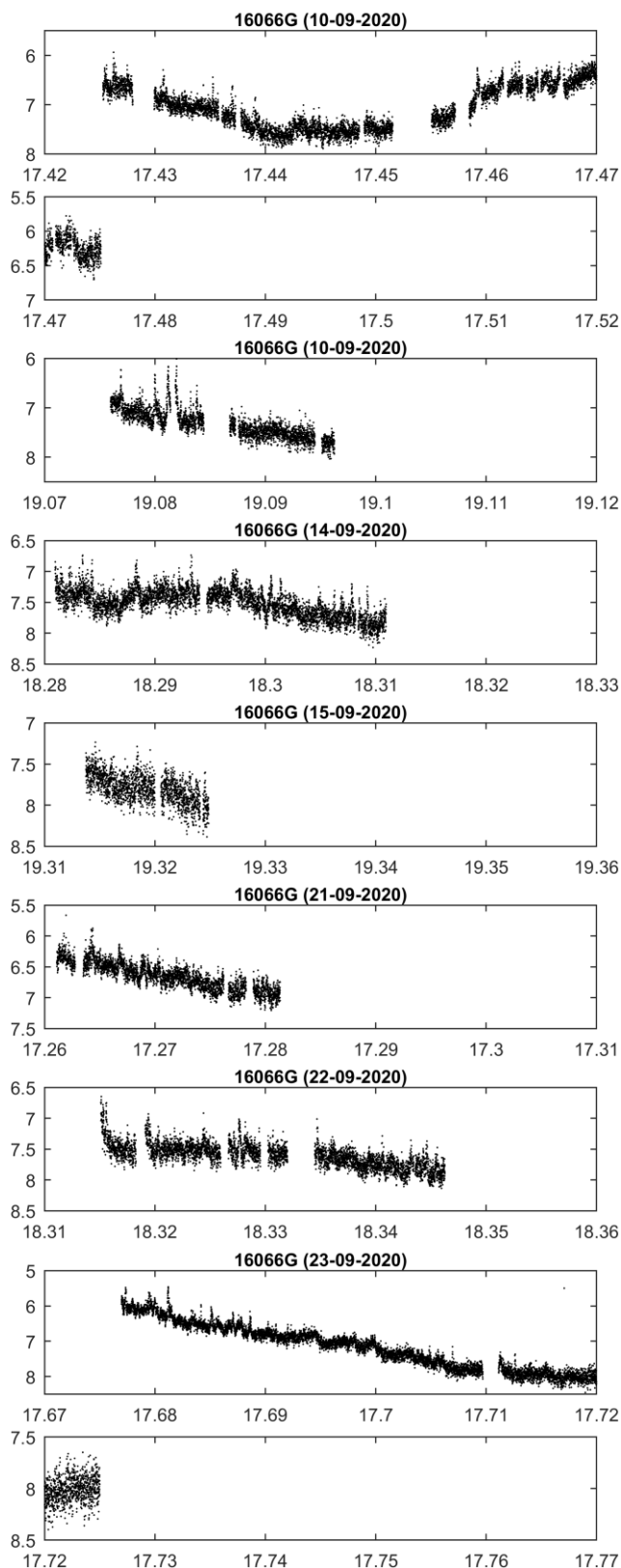
Launch date: 2016-11-09

Source: People's Republic of China (PRC)



Launch date: 2016-12-07

Source: India (IND)



RESOURCESAT 2A

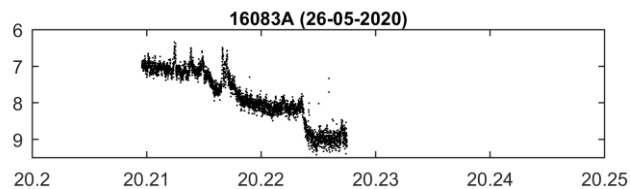
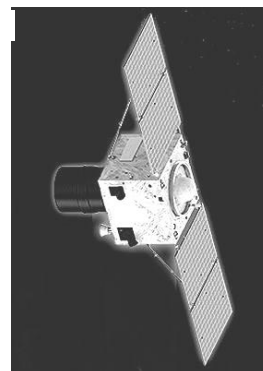
NORAD ID: 41877
 Int'l Code: 2016-074A
 Dimensions: box + hexagon drum +2 panels
 2.1m long, 2m dia, ~10.5m span
 Initial orbit:
 Perigee: 814 km
 Apogee: 830 km
 Inclination: 98.73°
 Period: 101.35 min
 Eccentricity: 0.001

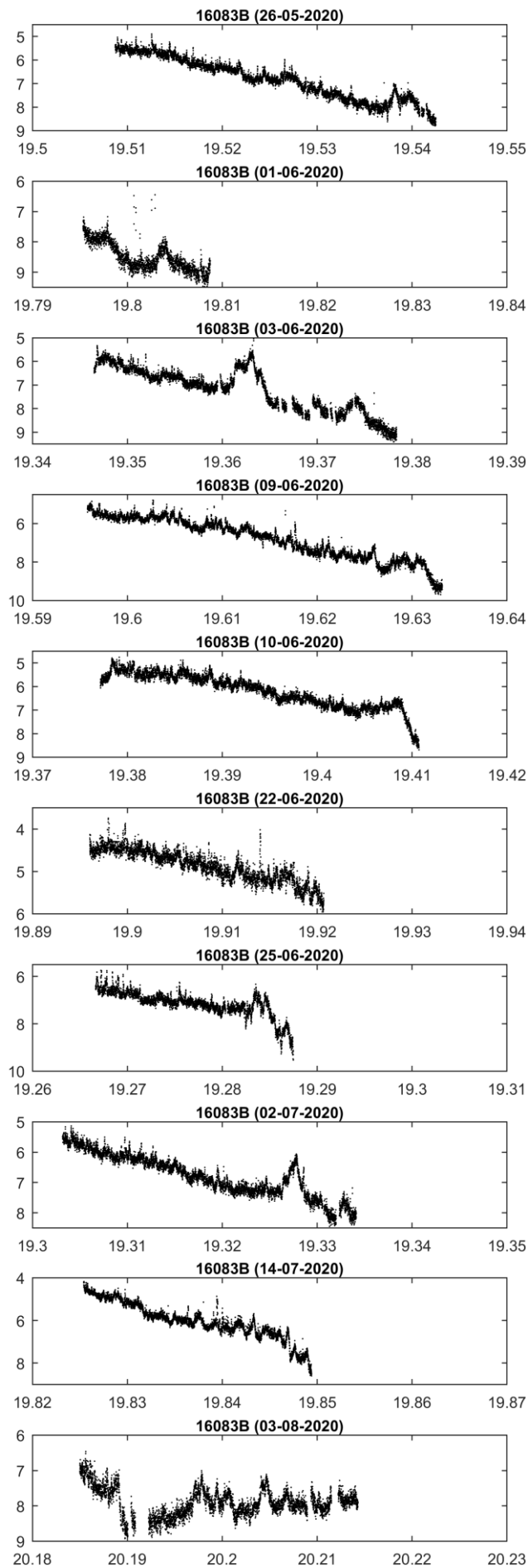
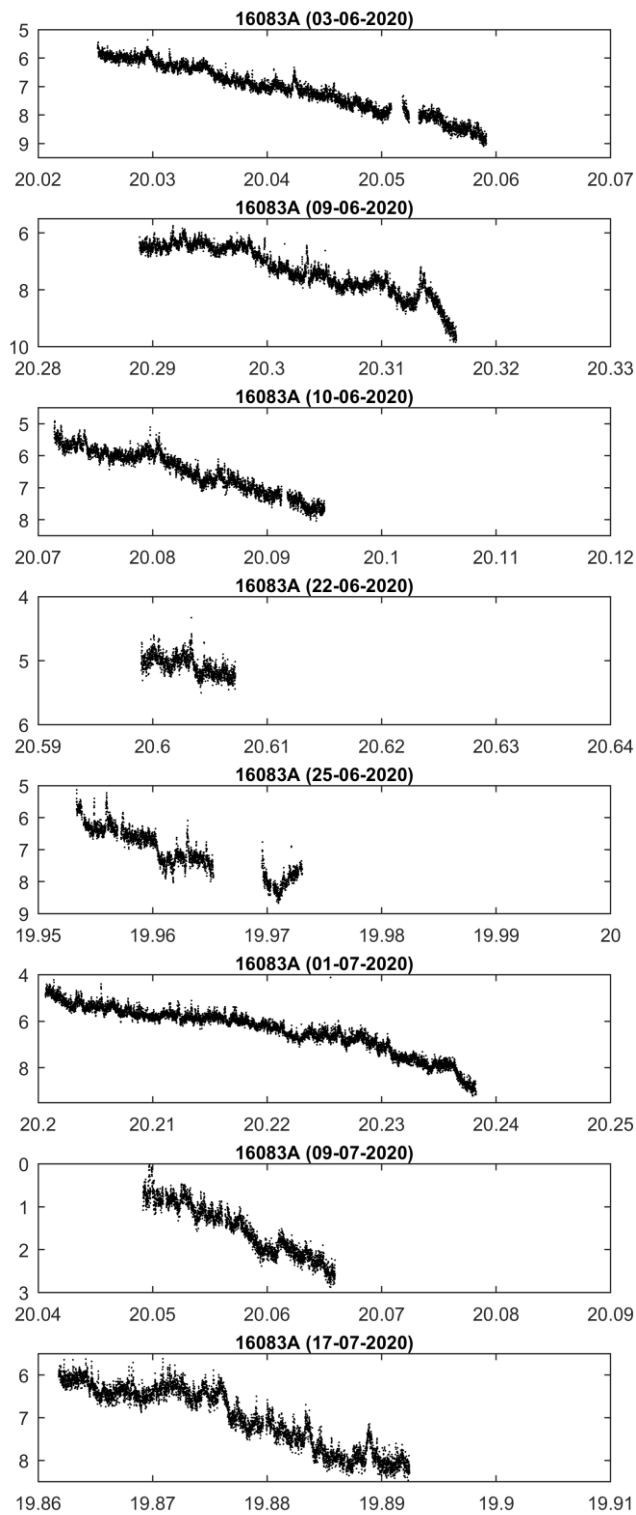


SUPERVIEW-1 01

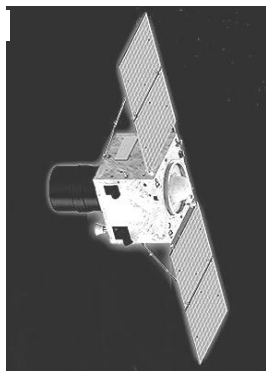
(GAOJING-1 01)

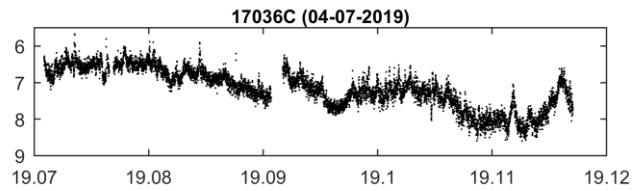
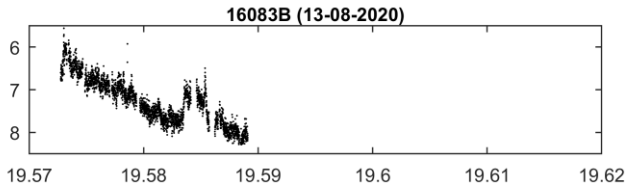
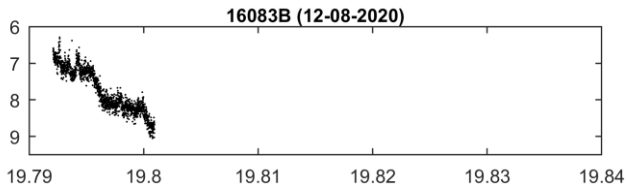
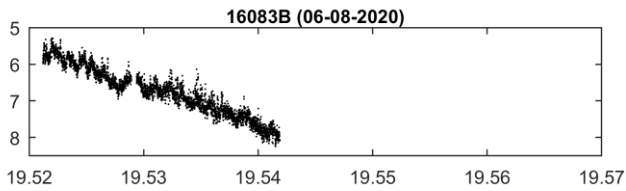
NORAD ID: 41907
 Int'l Code: 2016-083A
 Dimensions: box + 2 panels
 Initial orbit:
 Perigee: 213 km
 Apogee: 523 km
 Inclination: 97.58°
 Period: 91.92 min
 Eccentricity: 0.023
 Launch date: 2016-12-28
 Source: People's Republic of China (PRC)





SUPERVIEW-1 02
(GAOJING-1 02)
 NORAD ID: 41908
 Int'l Code: 2016-083B
 Dimensions: box + 2 panels
 Initial orbit:
 Perigee: 212 km
 Apogee: 524 km
 Inclination: 97.59°
 Period: 91.92 min
 Eccentricity: 0.023
 Launch date: 2016-12-28
 Source: People's Republic of China (PRC)





COSMOS 2519

NORAD ID: 42798

Int'l Code: 2017-037A

Dimensions:

Initial orbit:

Perigee: 653 km

Apogee: 669 km

Inclination: 98.05°

Period: 97.95 min

Eccentricity: 0.001

Launch date: 2017-06-23

Source: Commonwealth of Independent States (former USSR) (CIS)

CARTOSAT-2D

NORAD ID: 41948

Int'l Code: 2017-008A

Dimensions: 6-sided box + 2 panels
2.5m high, 2.4m dia, ~4m span

Initial orbit:

Perigee: 491 km

Apogee: 508 km

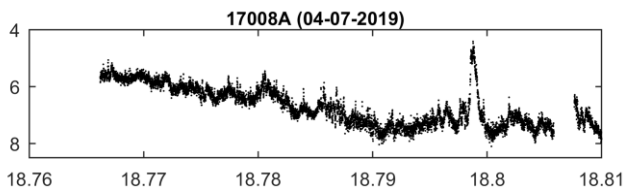
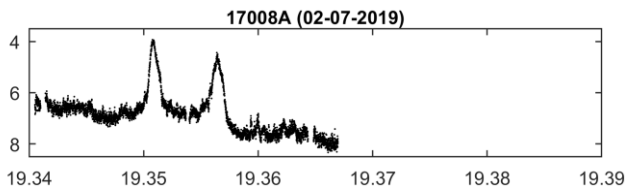
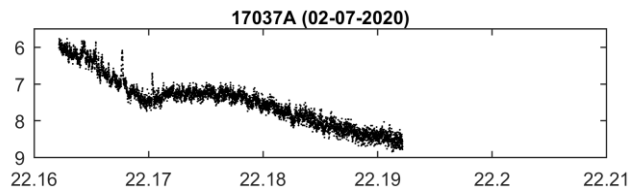
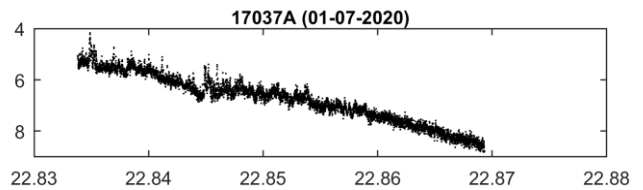
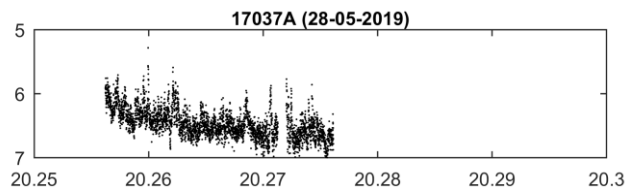
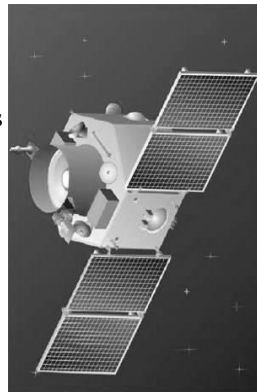
Inclination: 97.51°

Period: 94.62 min

Eccentricity: 0.001

Launch date: 2017-02-15

Source: India (IND)



KANOPUS V-IK

NORAD ID: 42825

Int'l Code: 2017-042A

Dimensions: box + 2 panels

Initial orbit:

Perigee: 505 km

Apogee: 509 km

Inclination: 97.44°

Period: 94.77 min

Eccentricity: 0.0003

Launch date: 2017-07-14

Source: Commonwealth of Independent States (former USSR) (CIS)



CARTOSAT-2E

NORAD ID: 42767

Int'l Code: 2017-036C

Dimensions: hexagonal box + 2 panels
2.5m high, 2.4m dia, ~6m span

Initial orbit:

Perigee: 497 km

Apogee: 518 km

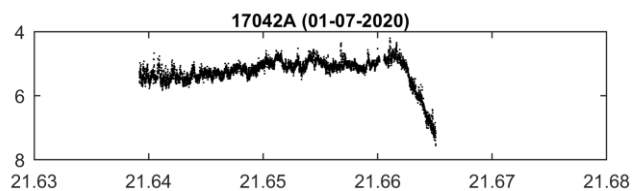
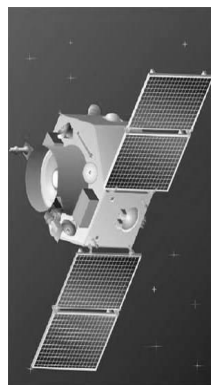
Inclination: 97.45°

Period: 94.77 min

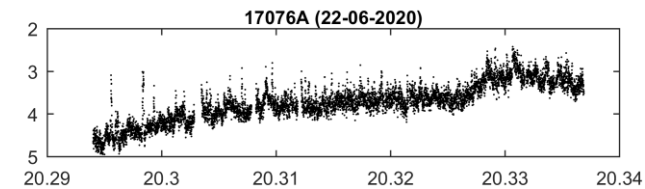
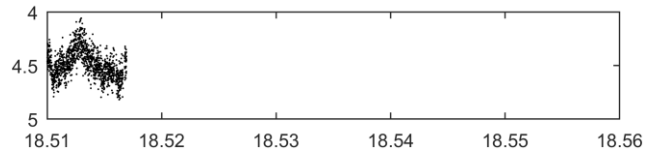
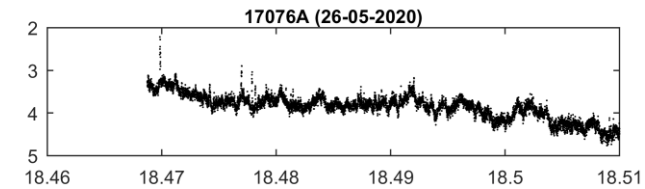
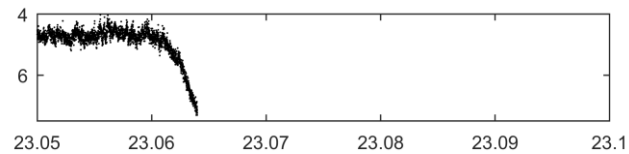
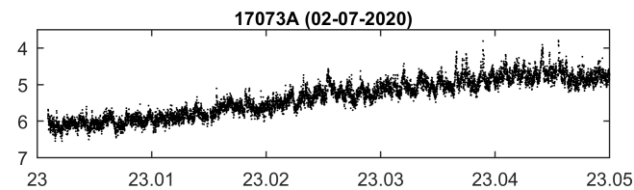
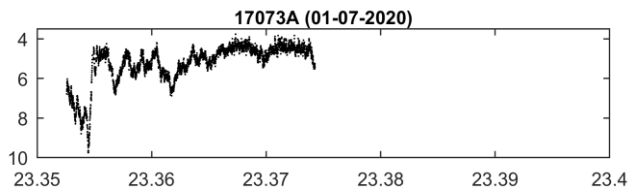
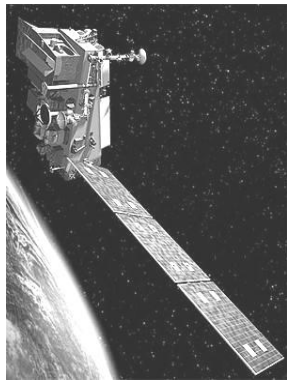
Eccentricity: 0.002

Launch date: 2017-06-23

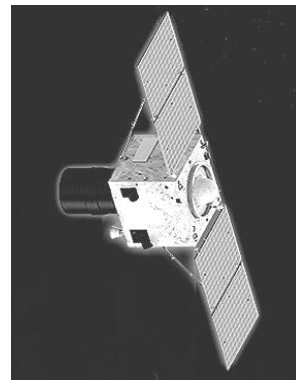
Source: India (IND)



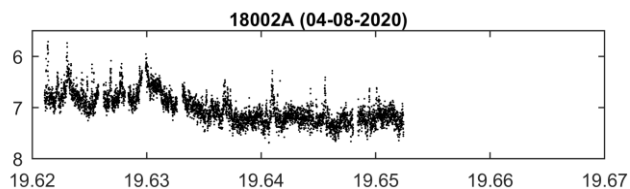
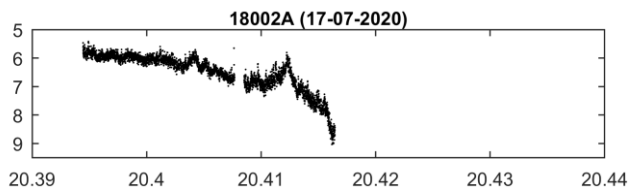
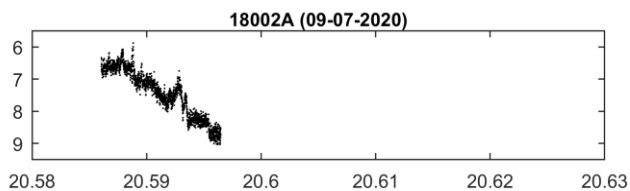
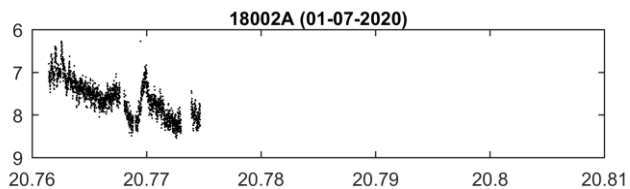
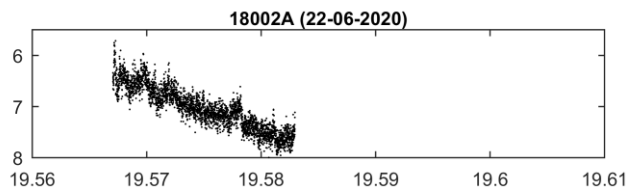
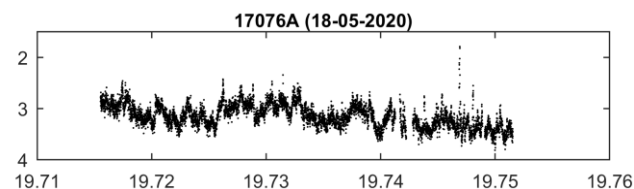
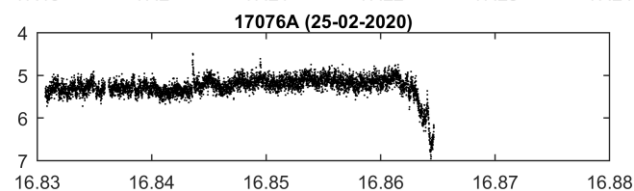
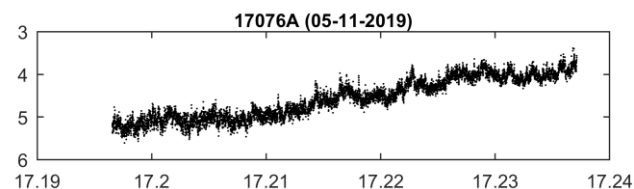
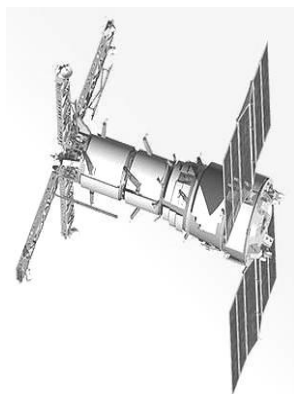
NOAA-20 (JPSS-1)
 NORAD ID: 43013
 Int'l Code: 2017-073A
 Dimensions: box + panel
 4.2m x 1.3m x 1.3m, ~13m span
 Initial orbit:
 Perigee: 816 km
 Apogee: 820 km
 Inclination: 98.71°
 Period: 101.27 min
 Eccentricity: 0.0002
 Launch date: 2017-11-18
 Source: United States (US)



SUPERVIEW-1 03
 NORAD ID: 43099
 Int'l Code: 2018-002A
 Dimensions: box + 2 panels + cylinder
 Initial orbit:
 Perigee: 516 km
 Apogee: 534 km
 Inclination: 97.58°
 Period: 95.13 min
 Eccentricity: 0.001
 Launch date: 2018-01-09
 Source: People's Republic of China (PRC)

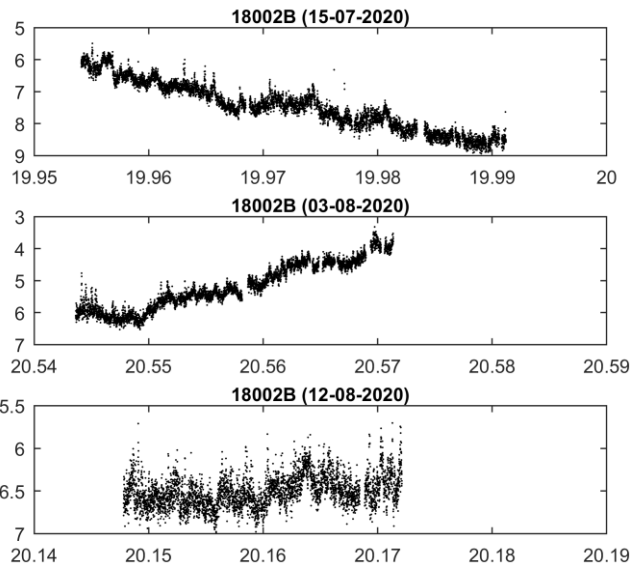
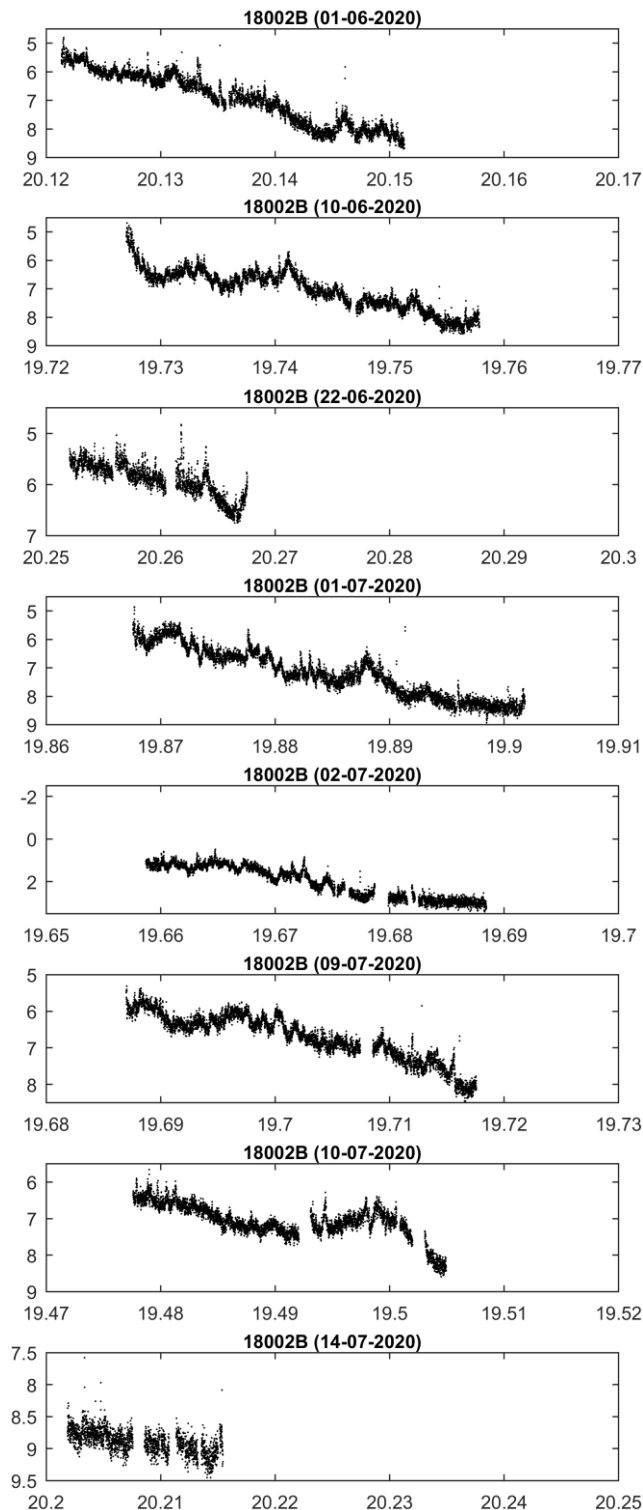
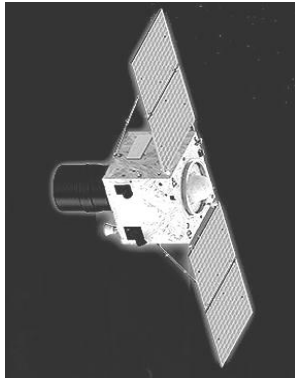


COSMOS 2524 (LOTOS-S1)
 NORAD ID: 43032
 Int'l Code: 2017-076A
 Dimensions: cylinder + 2 panels
 + 4 antenna's
 > 7m long, 2.7m dia
 Initial orbit:
 Perigee: 900 km
 Apogee: 909 km
 Inclination: 67.14°
 Period: 103.08 min
 Eccentricity: 0.0006
 Launch date: 2017-12-02
 Source: Commonwealth of Independent States (former USSR) (CIS)



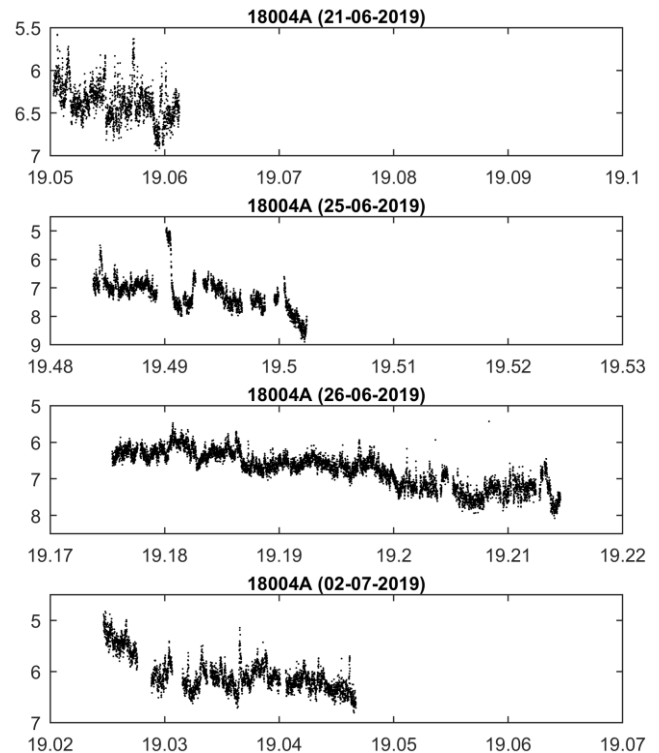
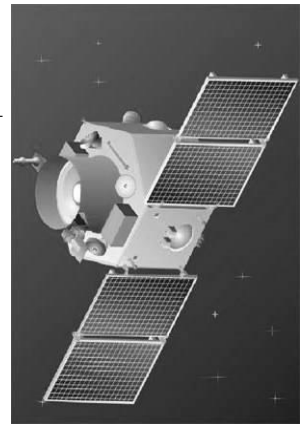
SUPERVIEW-1 04

NORAD ID: 43100
Int'l Code: 2018-002B
Dimensions: box +2 panels + cylinder
Initial orbit:
Perigee: 516 km
Apogee: 535 km
Inclination: 97.58°
Period: 95.15 min
Eccentricity: 0.001
Launch date: 2018-01-09
Source: People's Republic of China (PRC)



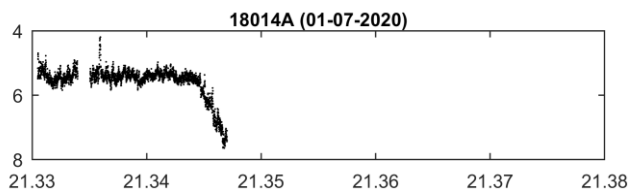
CARTOSAT 2F

NORAD ID: 43111
Int'l Code: 2018-004A
Dimensions: hexagonal box + cylinder +2 panels
2.5m high, 2.4m dia
Initial orbit:
Perigee: 495 km
Apogee: 509 km
Inclination: 97.55°
Period: 94.67 min
Eccentricity: 0.004
Launch date: 2018-01-12
Source: India (IND)



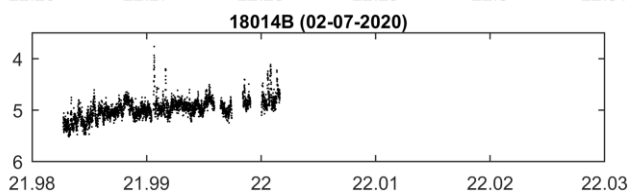
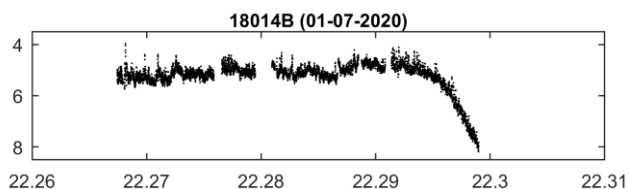
KANOPUS-V 3

NORAD ID: 43180
Int'l Code: 2018-014A
Dimensions: box +2 panels
Initial orbit:
Perigee: 503 km
Apogee: 508 km
Inclination: 97.47°
Period: 94.73 min
Eccentricity: 0.0004
Launch date: 2018-02-01
Source: Commonwealth of Independent States (former USSR) (CIS)



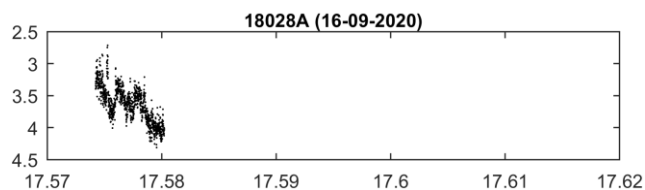
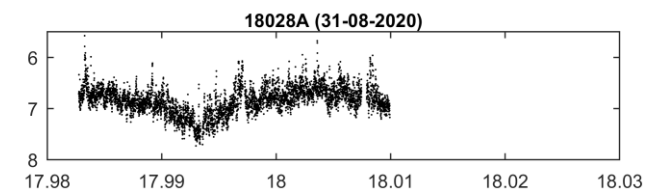
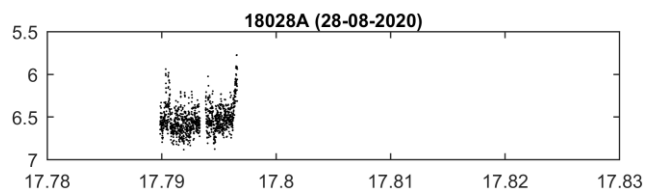
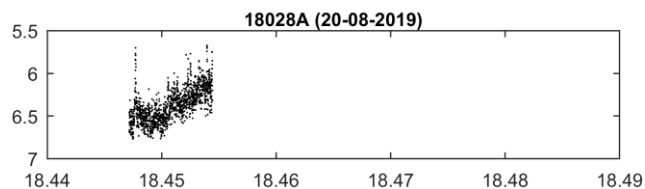
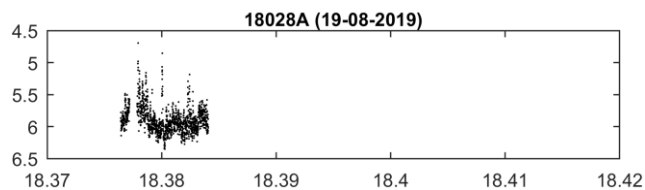
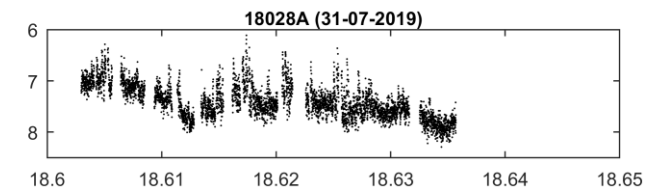
KANOPUS-V 4

NORAD ID: 43181
Int'l Code: 2018-014B
Dimensions: box +2 panels
Initial orbit:
Perigee: 499 km
Apogee: 510 km
Inclination: 97.47°
Period: 94.72 min
Eccentricity: 0.0008
Launch date: 2018-02-01
Source: Commonwealth of Independent States (former USSR) (CIS)



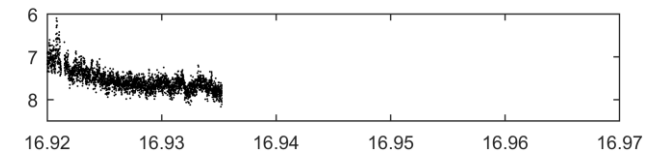
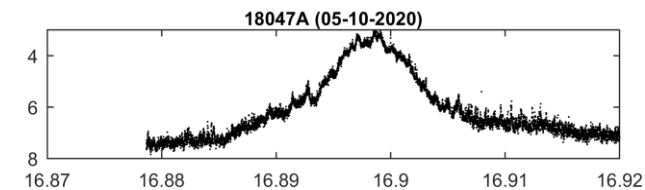
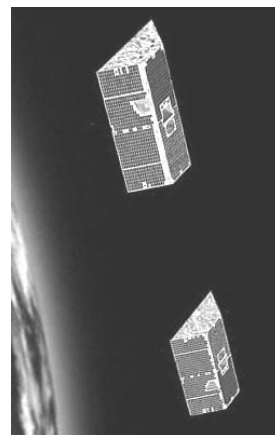
COSMOS 2525 (EMKA)

NORAD ID: 43243
Int'l Code: 2018-028A
Dimensions:
Initial orbit:
Perigee: 315 km
Apogee: 318 km
Inclination: 96.64°
Period: 90.87 min
Eccentricity: 0.0002
Launch date: 2018-03-29
Decay date: 2021-04-01
Source: Commonwealth of Independent States (former USSR) (CIS)



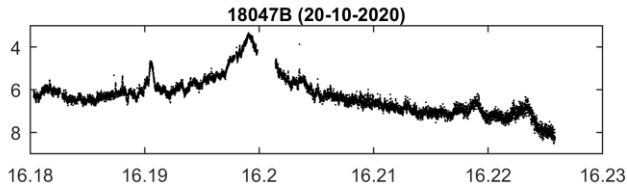
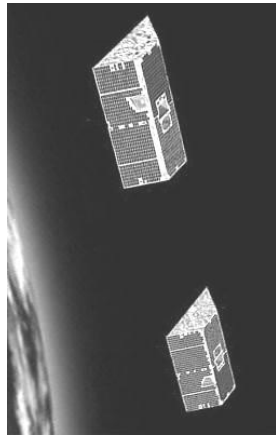
GRACE-FO 1

NORAD ID: 43476
Int'l Code: 2018-047A
Dimensions: trapezoidal box
1.942m width, 3.123m long,
0.720m high
Initial orbit:
Perigee: 483 km
Apogee: 504 km
Inclination: 88.99°
Period: 94.48 min
Eccentricity: 0.002
Launch date: 2018-05-22
Source: United States (US)



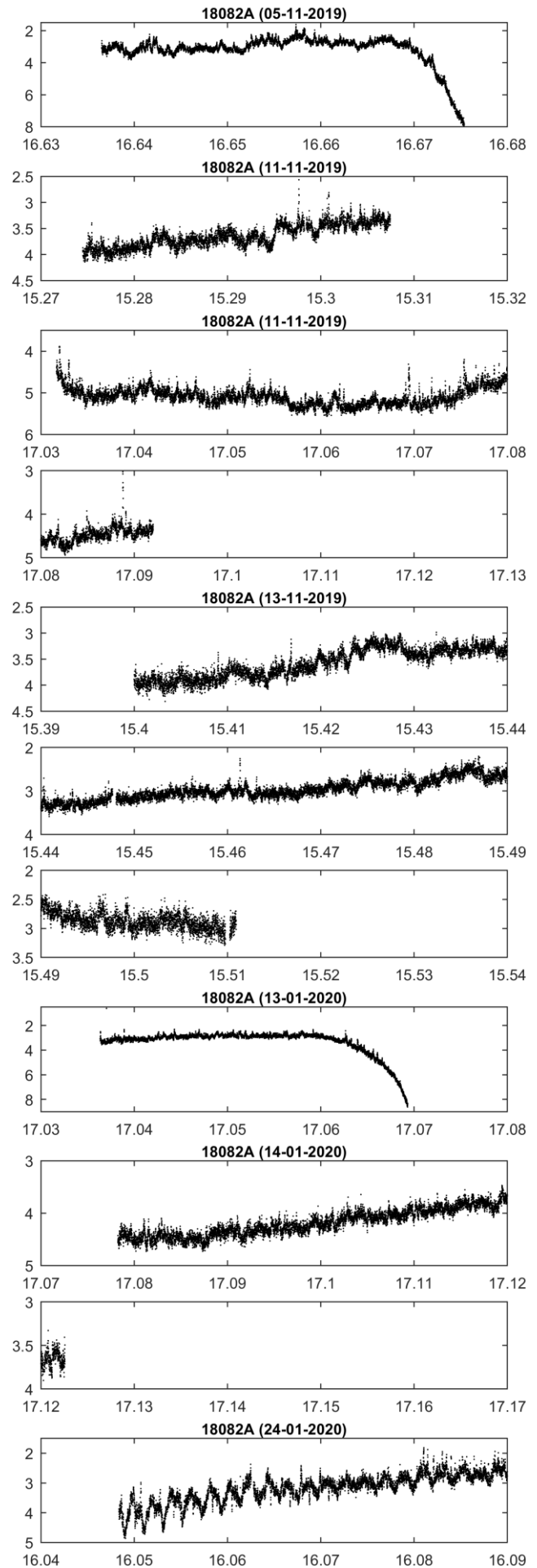
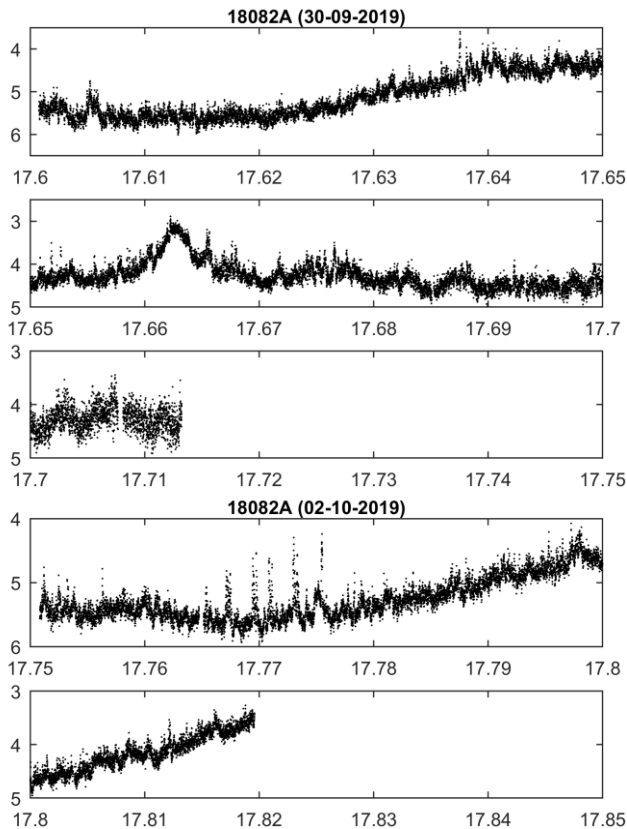
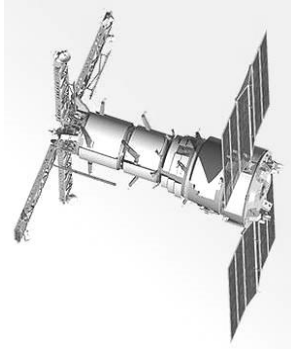
GRACE-FO 2

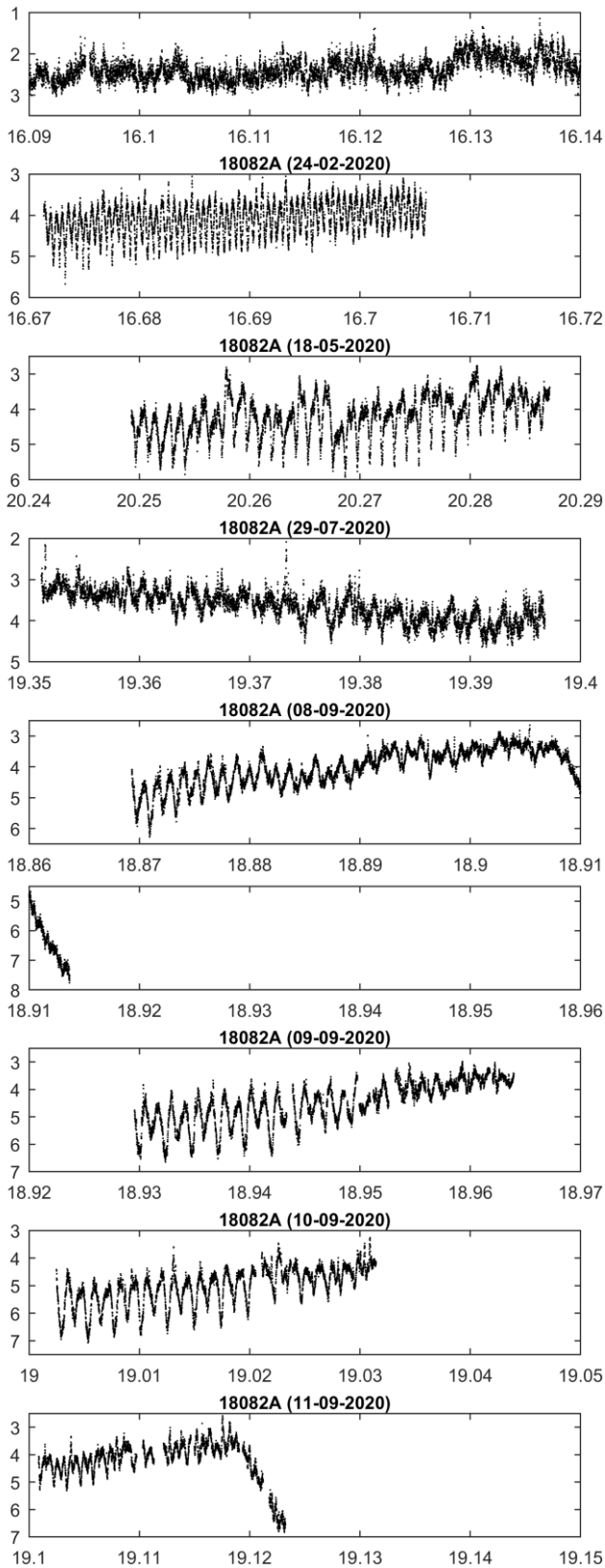
NORAD ID: 43477
Int'l Code: 2018-047B
Dimensions: trapezoidal box
1.942m width, 3.123m long,
0.720m high
Initial orbit:
Perigee: 483 km
Apogee: 504 km
Inclination: 88.99°
Period: 94.48 min
Eccentricity: 0.002
Launch date: 2018-05-22
Source: United States (US)



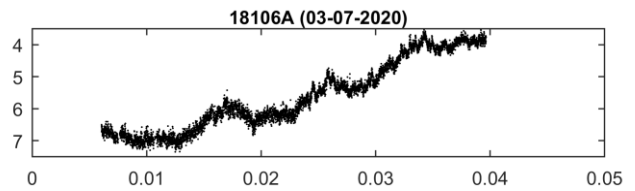
COSMOS 2528 (LOTOS-S1)

NORAD ID: 43657
Int'l Code: 2018-082A
Dimensions:
Initial orbit:
Perigee: 900 km
Apogee: 910 km
Inclination: 67.15°
Period: 103.10 min
Eccentricity: 0.0007
Launch date: 2018-10-25
Source: Commonwealth of
Independent States (former USSR) (CIS)



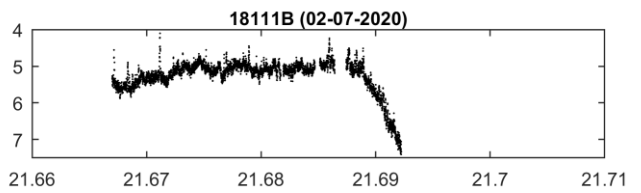
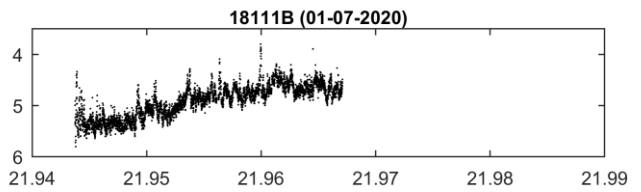


Source: France (FR)



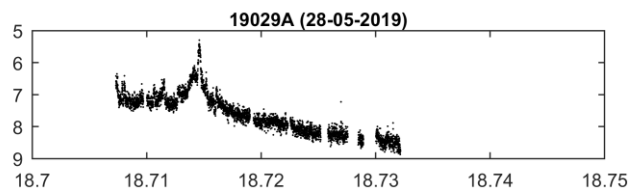
KANOPUS-V 6

NORAD ID: 43877
 Int'l Code: 2018-111B
 Dimensions: box +2 panels
 Initial orbit:
 Perigee: 498 km
 Apogee: 511 km
 Inclination: 97.47°
 Period: 94.72 min
 Eccentricity: 0.0009
 Launch date: 2018-12-27
 Source: Commonwealth of Independent States (former USSR) (CIS)



STARLINK-31

NORAD ID: 44235
 Int'l Code: 2019-029A
 Dimensions: flat-panel + panel
 3.30m x 1.65m x 0.08m,
 8.1m span
 Initial orbit:
 Perigee: 432 km
 Apogee: 442 km
 Inclination: 53.02°
 Period: 93.33 min
 Eccentricity: 0.0007
 Launch date: 2019-05-24
 Decay date: 2020-10-01
 Source: United States (US)



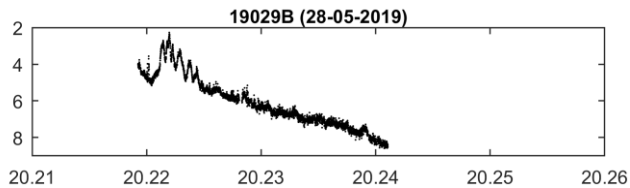
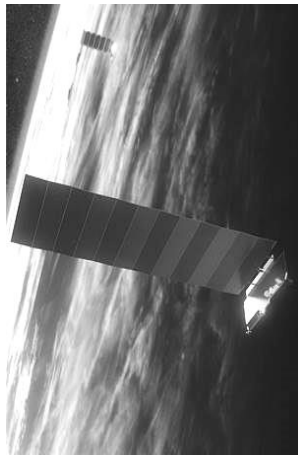
CSO 1

NORAD ID: 43866
 Int'l Code: 2018-106A
 Dimensions: octagonal cylinder + 4 panels
 Initial orbit (2019-04-14):
 Perigee: 799 km
 Apogee: 801 km
 Inclination: 98.6°
 Period: 100.87 min
 Eccentricity: 0.0002
 Launch date: 2018-12-19



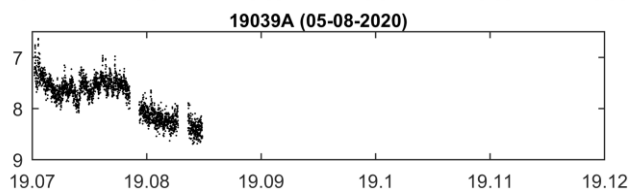
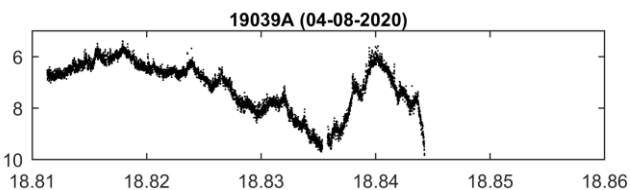
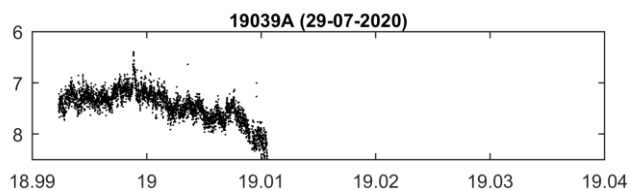
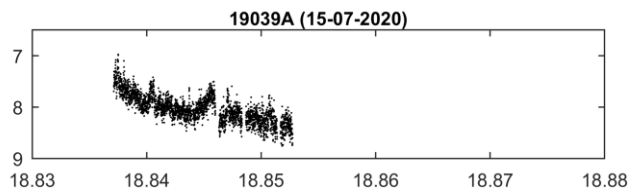
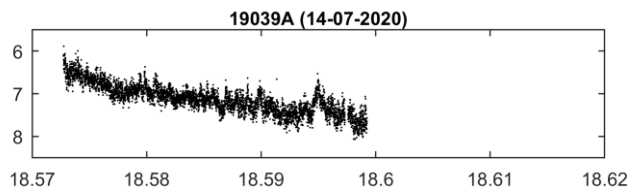
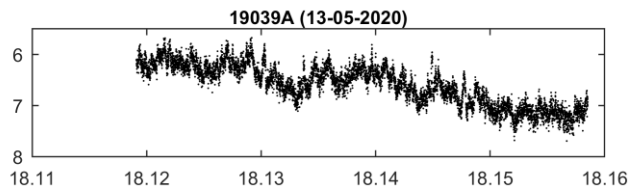
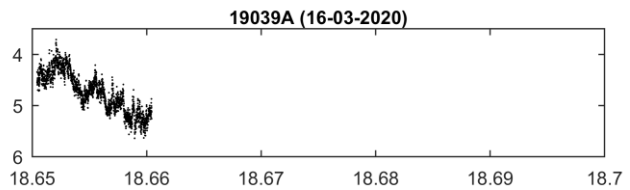
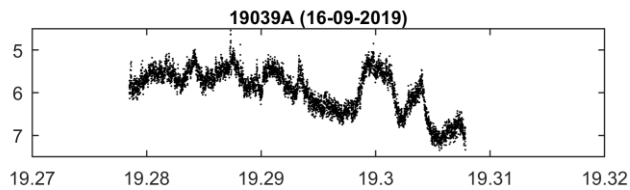
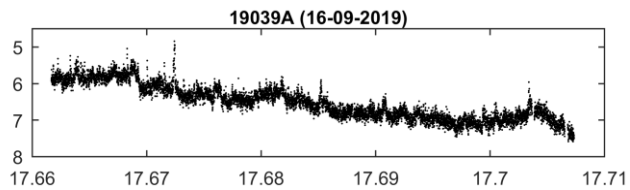
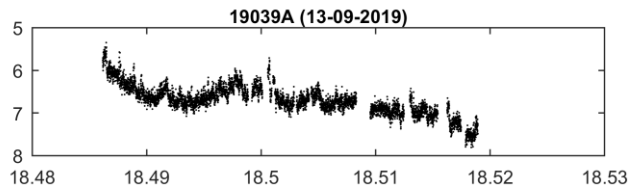
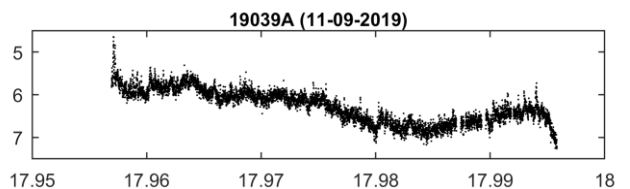
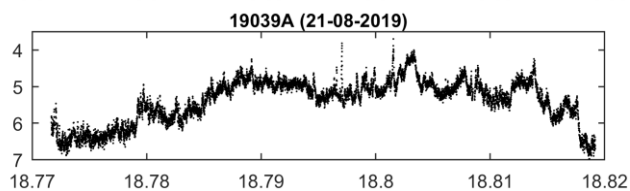
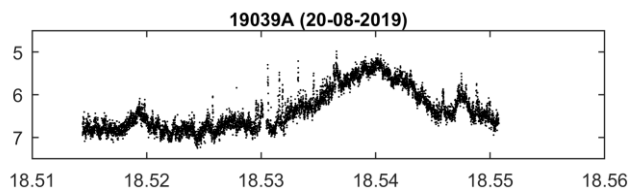
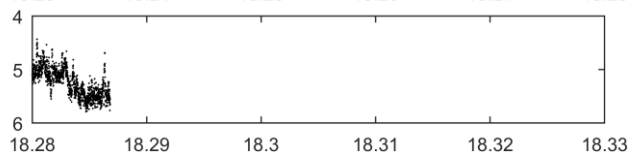
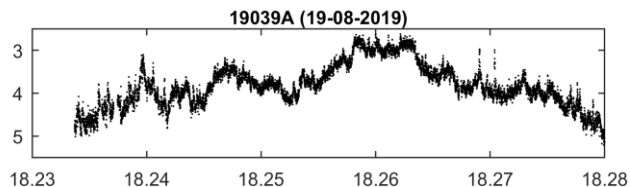
STARLINK-22

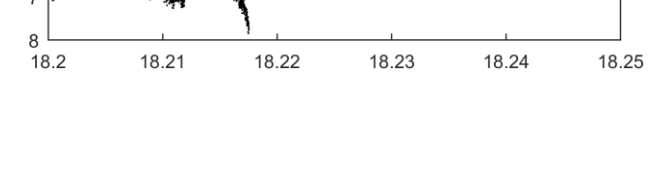
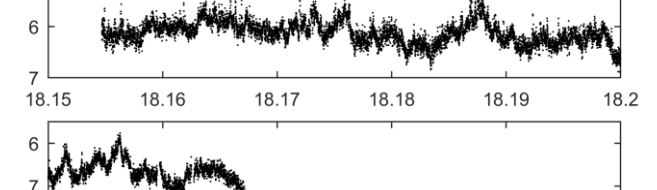
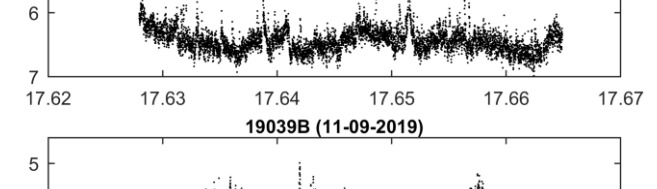
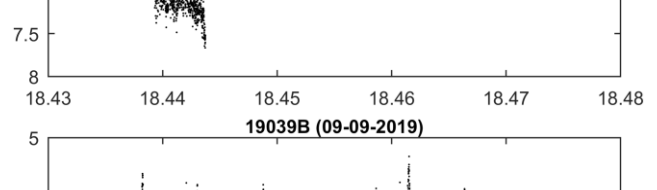
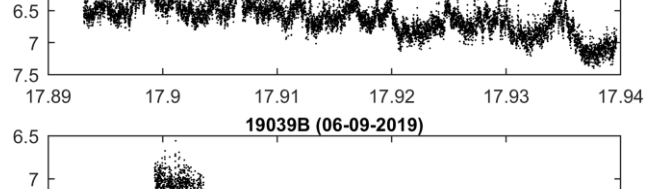
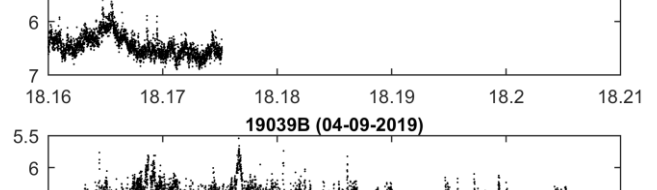
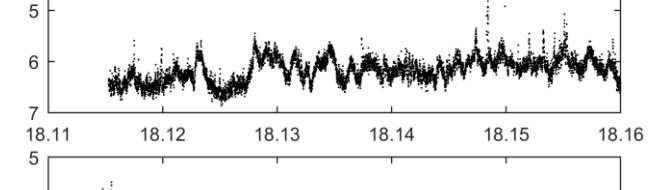
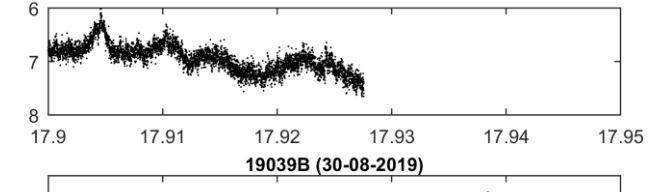
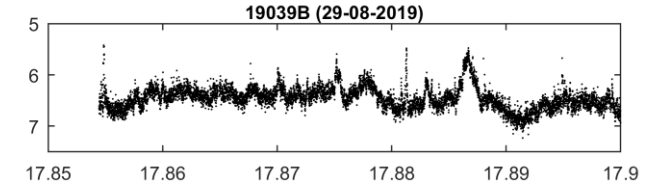
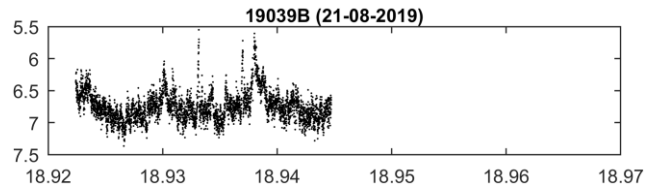
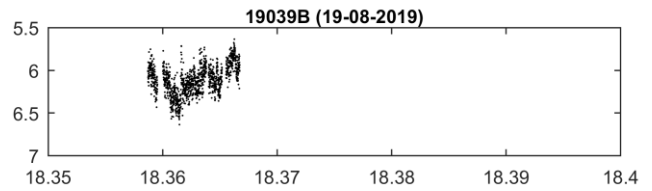
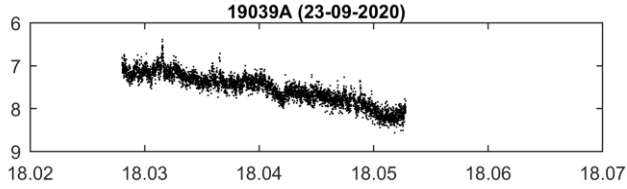
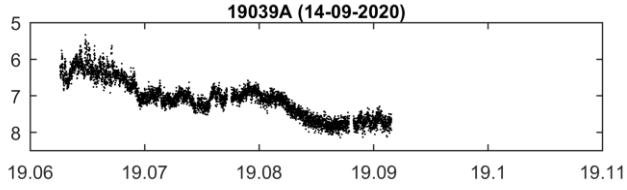
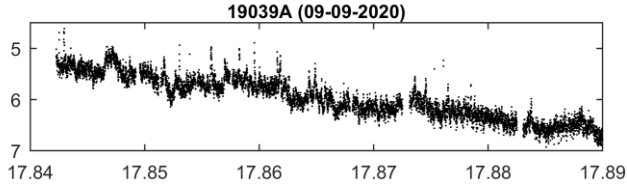
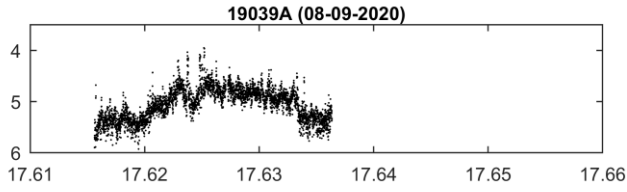
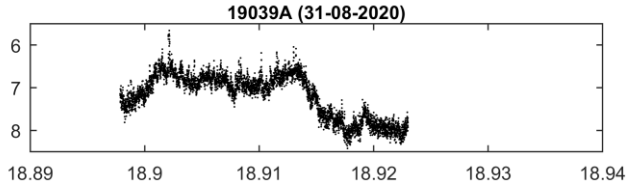
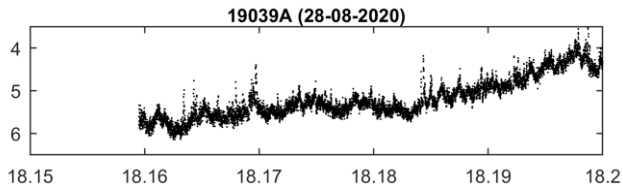
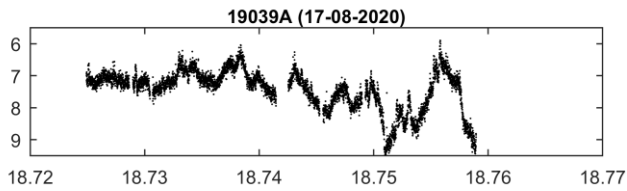
NORAD ID: 44236
Int'l Code: 2019-029B
Dimensions: flat-panel + panel
3.30m x 1.65m x 0.08m,
8.1m span
Initial orbit:
Perigee: 436 km
Apogee: 443 km
Inclination: 53.02°
Period: 93.37 min
Eccentricity: 0.0005
Launch date: 2019-05-24
Decay date: 2020-08-09
Source: United States (US)



COSMOS 2535

NORAD ID: 44421
Int'l Code: 2019-039A
Dimensions:
Initial orbit:
Perigee: 611 km
Apogee: 621 km
Inclination: 97.88°
Period: 97.02 min
Eccentricity: 0.0008
Launch date: 2019-07-10
Source: Commonwealth of Independent States (former USSR)
(CIS)





COSMOS 2536

NORAD ID: 44422

Int'l Code: 2019-039B

Dimensions:

Initial orbit:

Perigee: 611 km

Apogee: 622 km

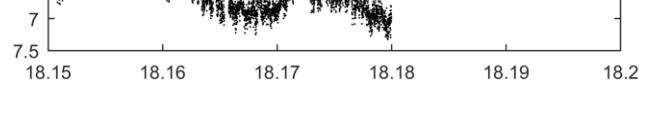
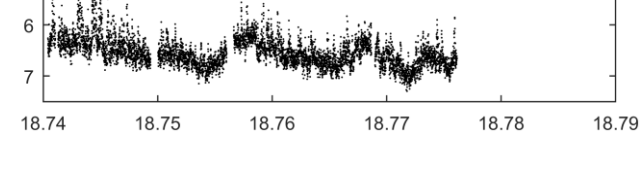
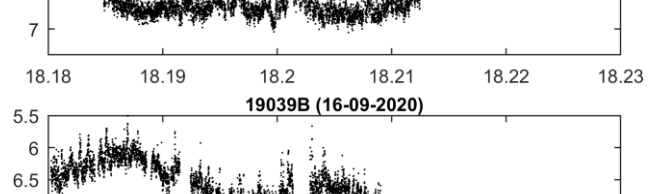
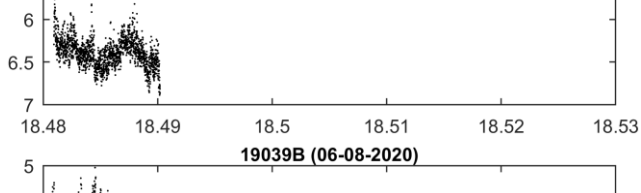
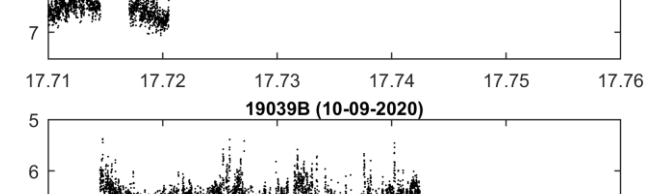
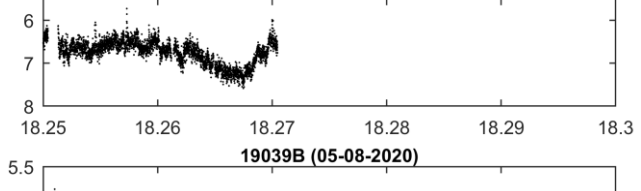
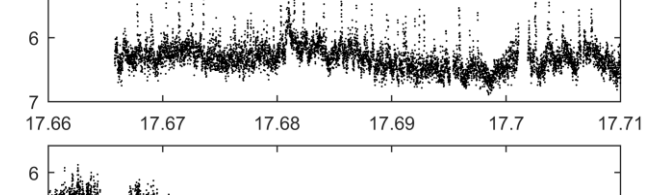
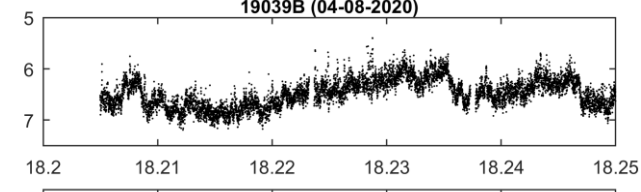
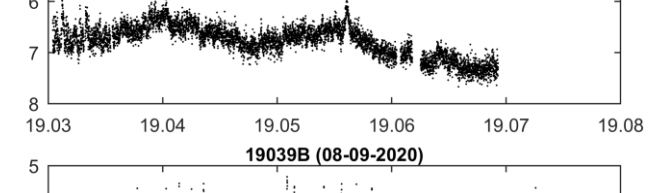
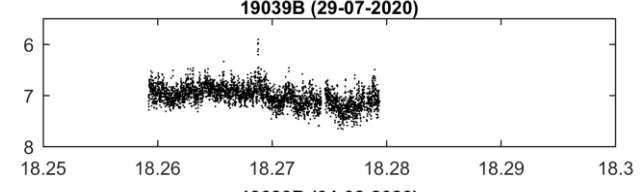
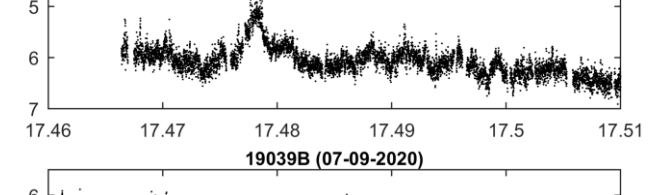
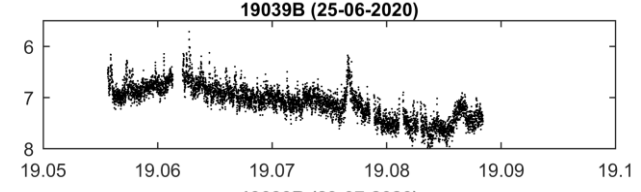
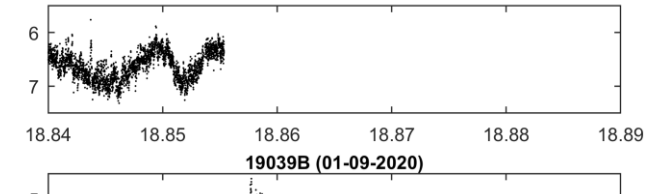
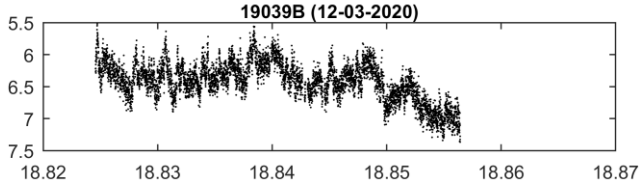
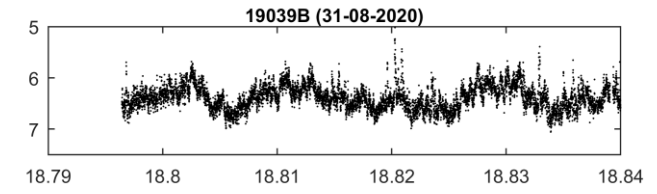
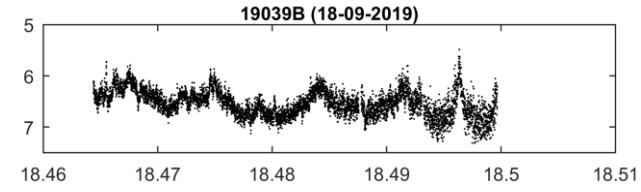
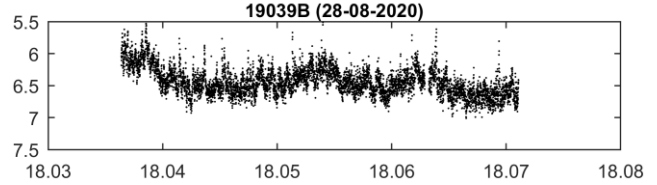
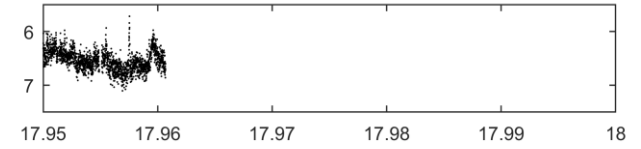
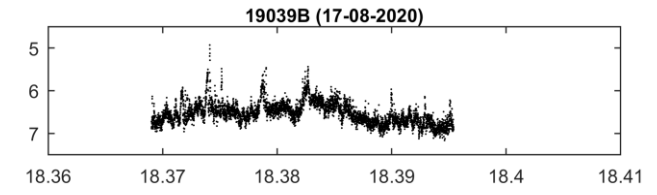
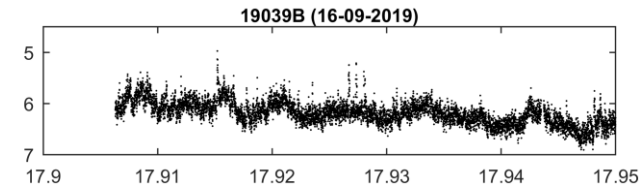
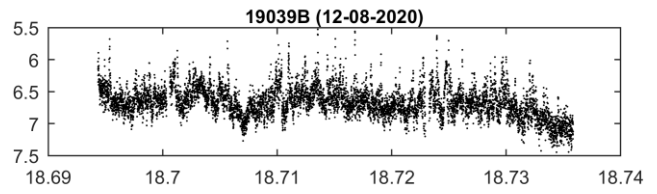
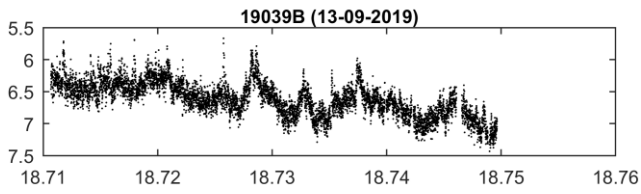
Inclination: 97.87°

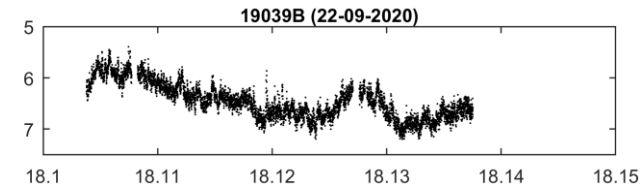
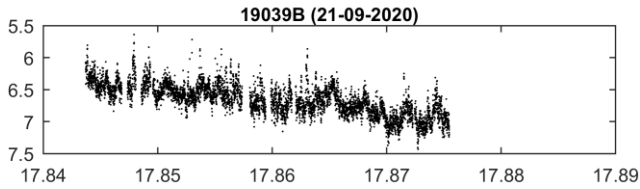
Period: 97.02 min

Eccentricity: 0.0008

Launch date: 2019-07-10

Source: Commonwealth of Independent States (former USSR)
(CIS)





COSMOS 2537

NORAD ID: 44423

Int'l Code: 2019-039C

Dimensions:

Initial orbit:

Perigee: 611 km

Apogee: 623 km

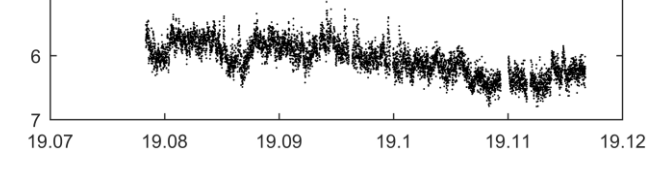
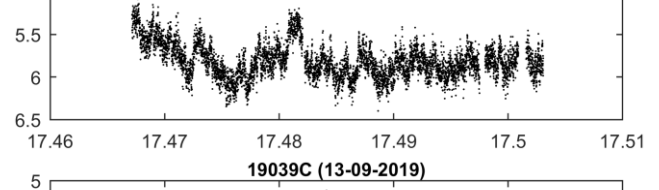
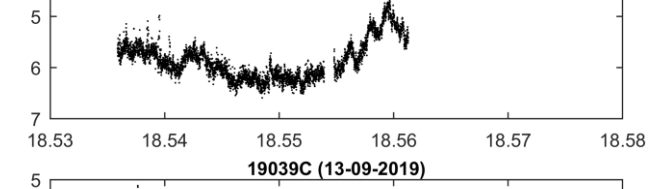
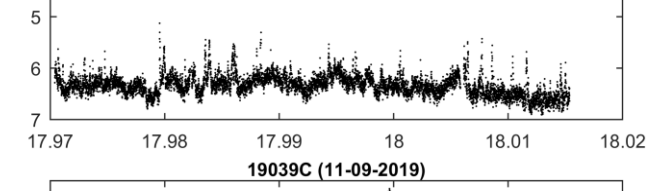
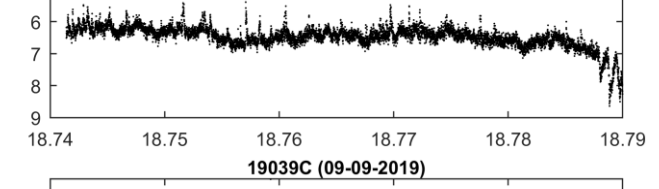
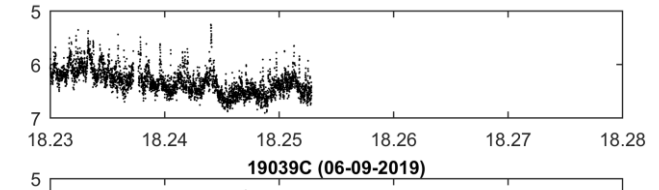
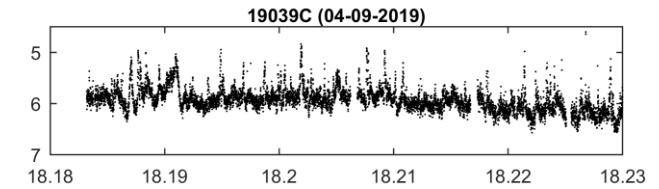
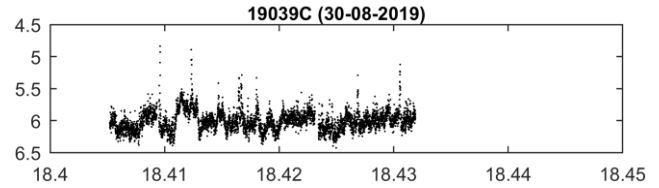
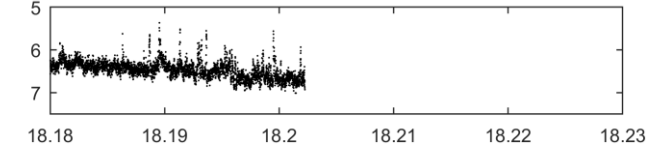
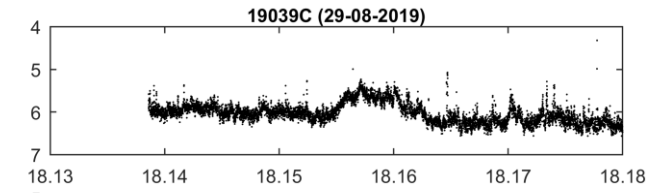
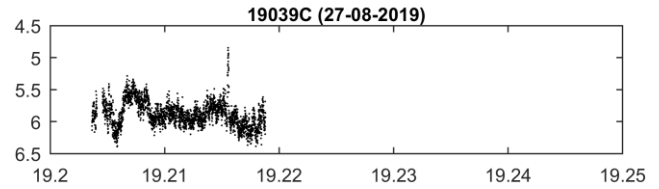
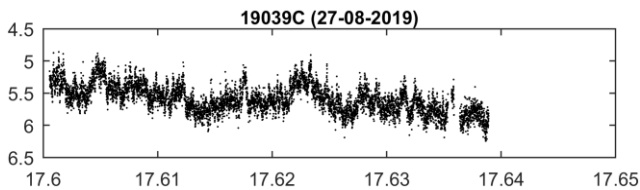
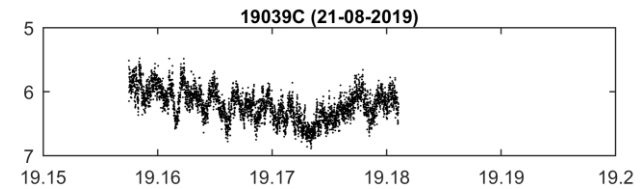
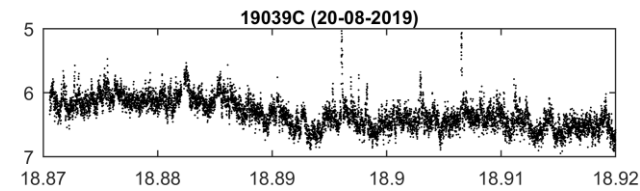
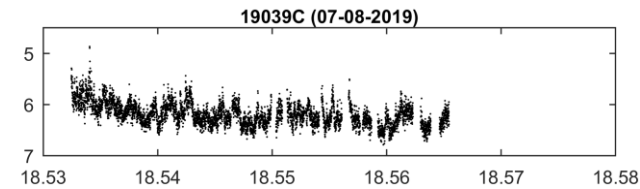
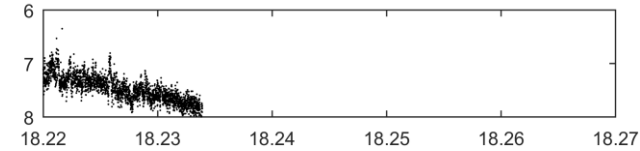
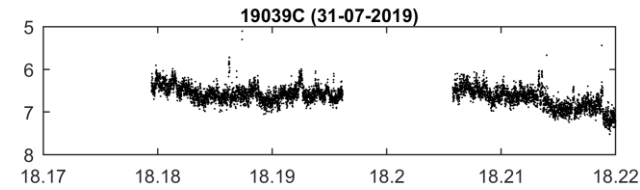
Inclination: 97.88°

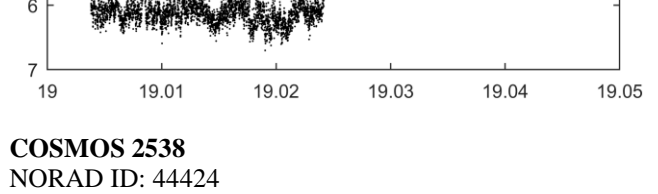
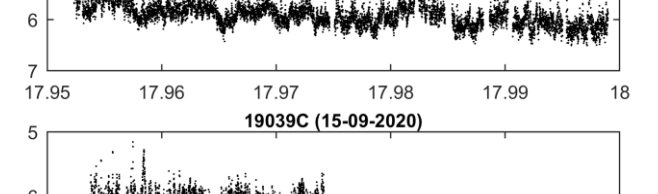
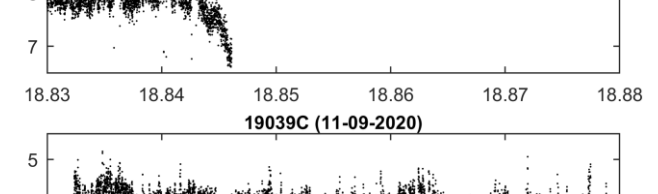
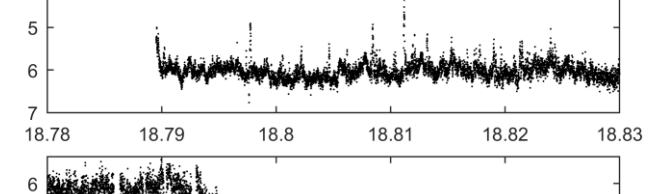
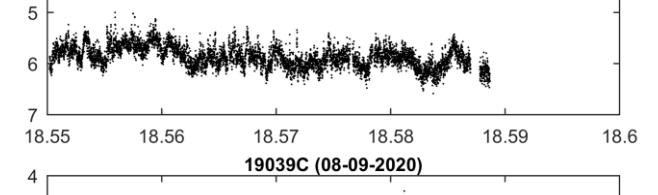
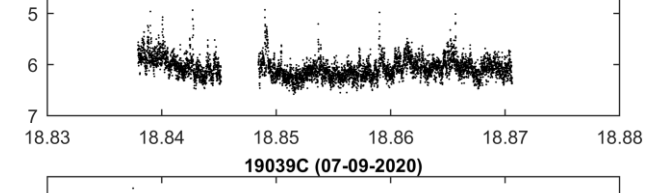
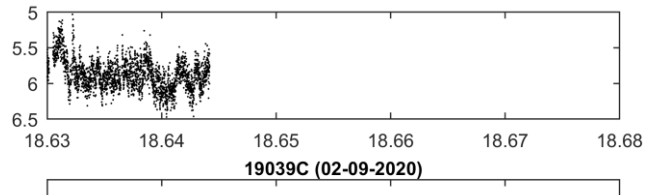
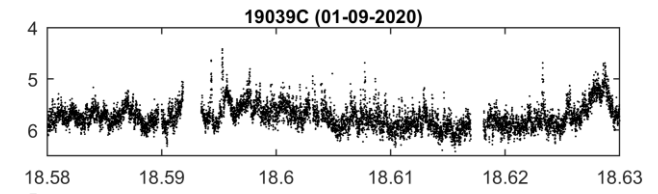
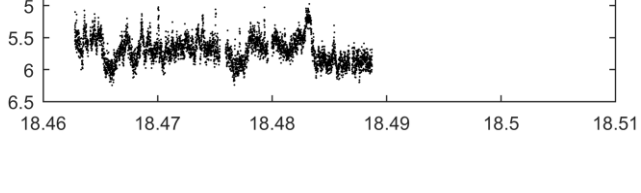
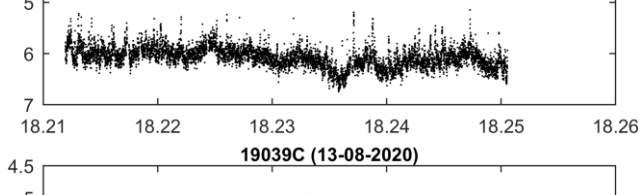
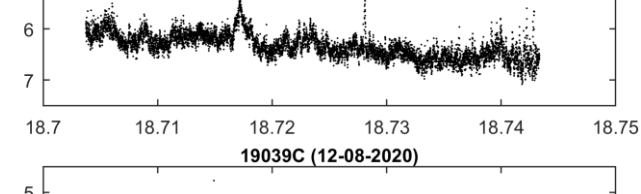
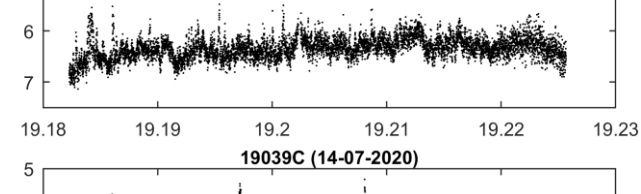
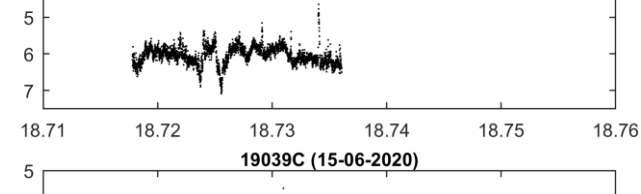
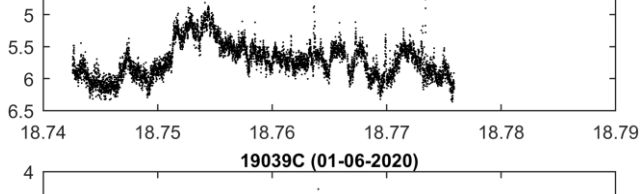
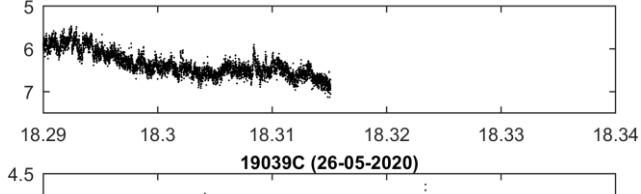
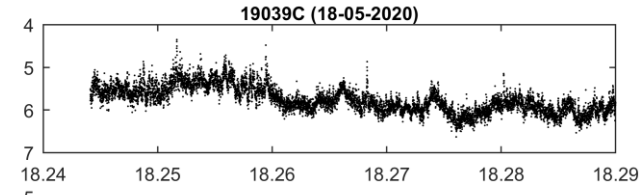
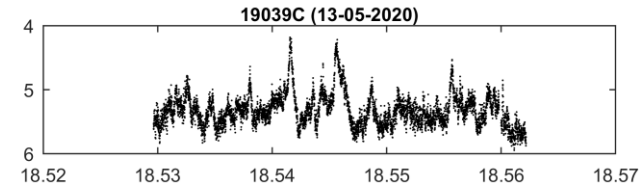
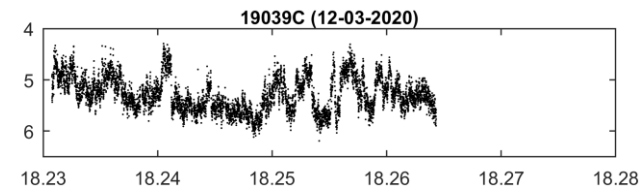
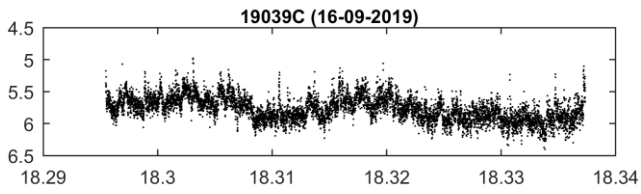
Period: 97.05 min

Eccentricity: 0.0009

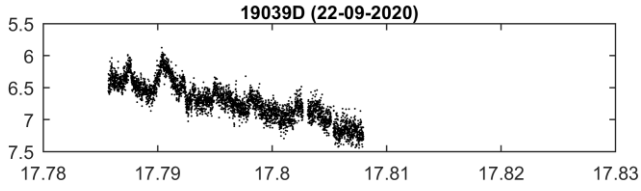
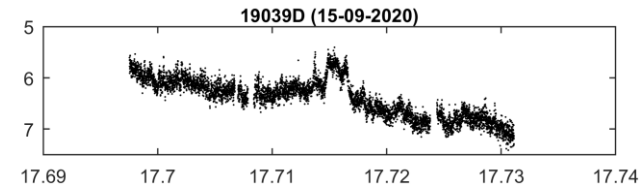
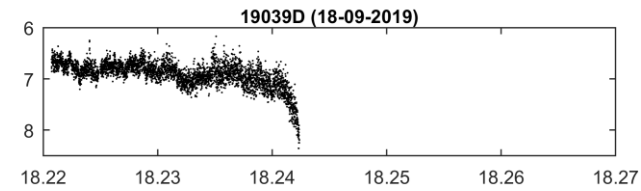
Launch date: 2019-07-10

Source: Commonwealth of Independent States (former USSR)
(CIS)





COSMOS 2538
 NORAD ID: 44424
 Int'l Code: 2019-039D
 Dimensions:
 Initial orbit:
 Perigee: 616 km
 Apogee: 623 km
 Inclination: 97.88°
 Period: 97.08 min
 Eccentricity: 0.0005
 Launch date: 2019-07-10
 Source: Commonwealth of Independent States (former USSR) (CIS)



COSMOS 2542

NORAD ID: 44797

Int'l Code: 2019-079A

Dimensions:

Initial orbit:

Perigee: 368 km

Apogee: 857 km

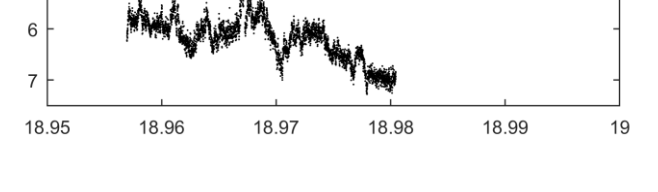
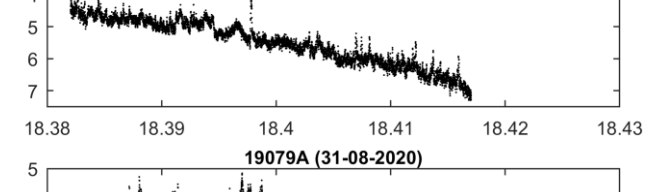
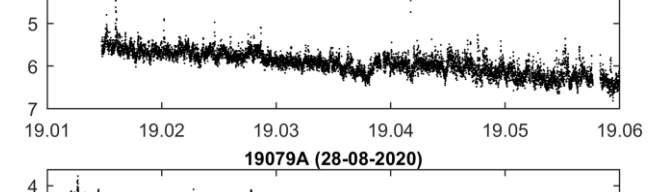
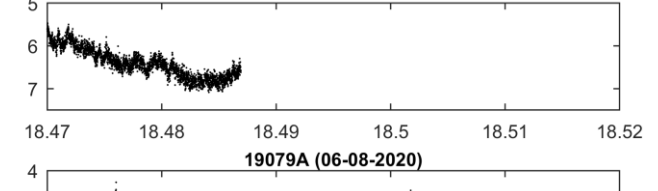
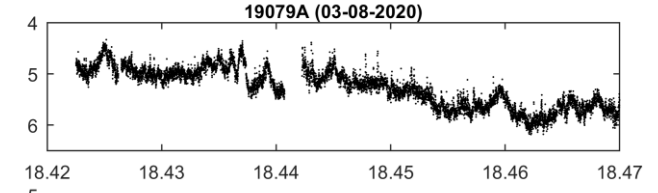
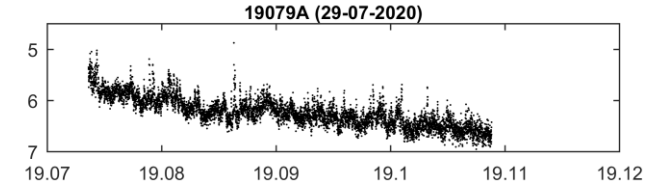
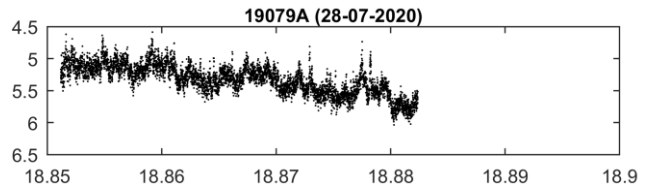
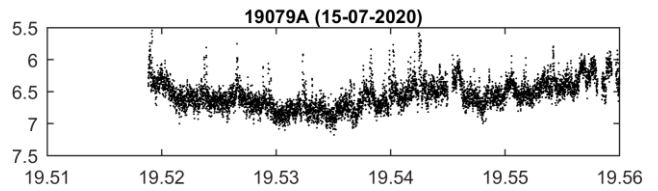
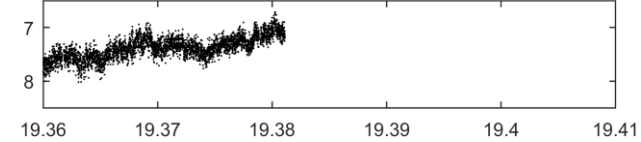
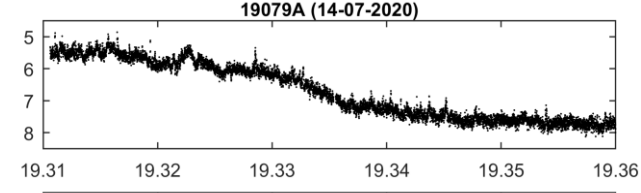
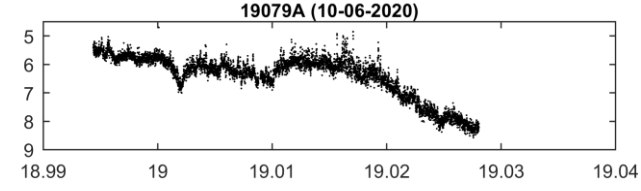
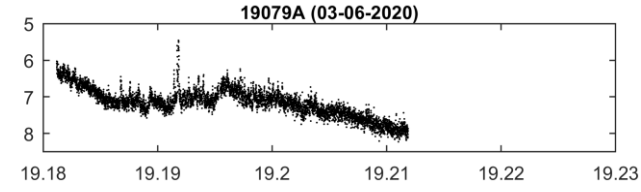
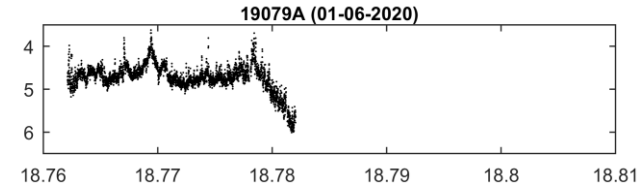
Inclination: 97.90°

Period: 96.95 min

Eccentricity: 0.035

Launch date: 2019-11-25

Source: Commonwealth of Independent States (former USSR) (CIS)



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Scientific publication

Atlas of light curves of space objects

Volume 6 (2019 – 2020)

Published by the decision of the Academic Council of the Astronomical Observatory
of Odessa I.I.Mechnikov National University, 09/28/2021.

Light curves of the artificial space objects (satellites and space debris bodies) were obtained
using the KT-50 telescope (46.4778 N, 30.7557 E) equipped with a TV-CCD Watec-902H2.

DOI: [https://www.doi.org/10.18524/Atl_v.6\(2019-2020\).2021](https://www.doi.org/10.18524/Atl_v.6(2019-2020).2021)

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