

target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-03-17T09:18:12.220
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068887574879032320
 2Mass ID (if available) : 17480431-2252029

Jupiter 2031-03-17T09:18:12 K7.58 G13.77 Pgt

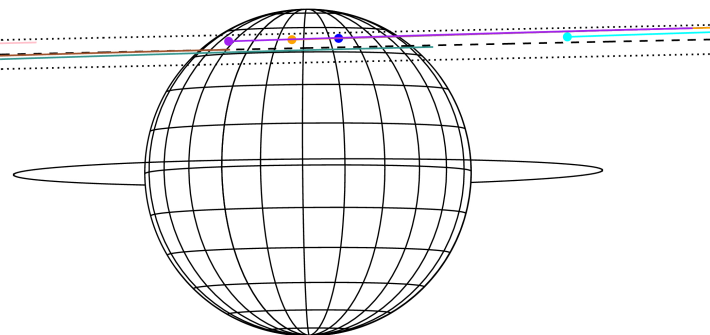
ICRS Star Coord at Epoch: 17h 48m 04.30600s -22:52:03.02399s

RUWE (>1.4 is poor) : 0.76
 K magnitude : 7.579
 G magnitude : 13.773
 RP magnitude : 12.249
 BP magnitude : 17.282
 DUPflag : 0
 Distance (au) : 5.235
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 13.72
 Sun-Target sep (deg) : 88.90
 Sun-Moon sep (deg) : 13.80
 B (ring opening deg) : -2.63
 PA of pole (deg) : 0.45
 Pole direction: RA (deg): 268.05700
 Dec (deg): 64.49651
 C/A sky separation (") : 14.361
 C/A sky separation (km) : 54531.4
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



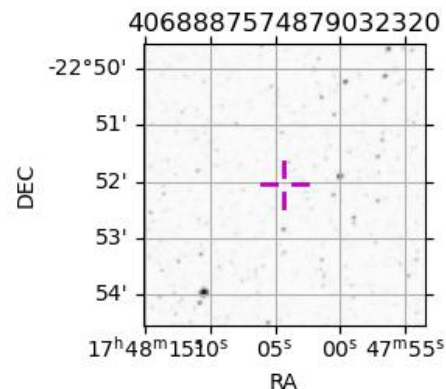
2031-03-17T09:18:12.2200 a: 17 48 04.3060 s: -22 52 03.024 C/A ***** PA 181.21 deg v_sky +13.72 km/s D 05.24 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO



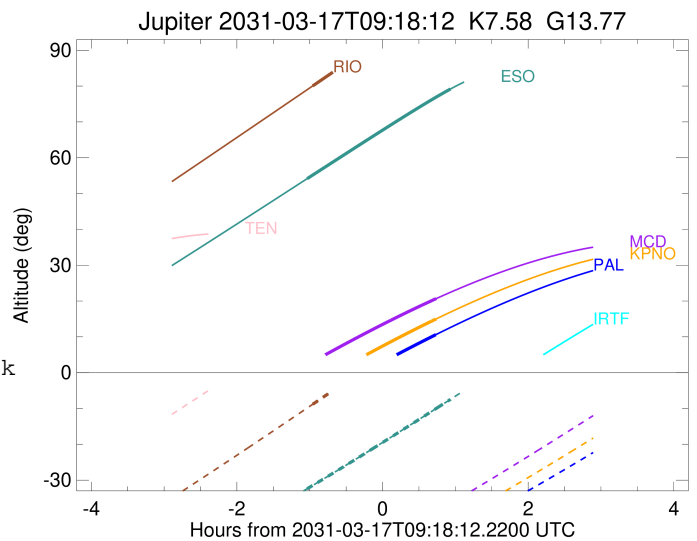
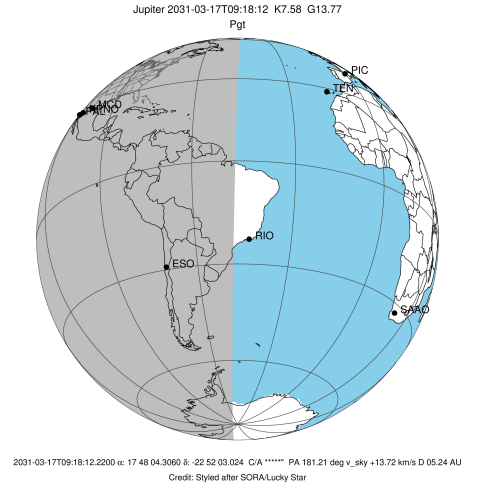
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+	MAR 17 10:02 - MAR 17 10:02	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	MAR 17 10:02 - MAR 17 10:02	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	MAR 17 10:02 - MAR 17 10:02	Pne
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	MAR 17 08:20 - MAR 17 08:20	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	MAR 17 08:16 - MAR 17 10:14	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-17T09:11:12.570
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : PAL
Location             : Palomar Mt (200")
Latitude (deg)       : 33.35622
E. Longitude (deg)   : 243.13601
Altitude (km)        : 1.706
Gaia source ID       : 4068887574879032320
2Mass ID (if available) : 17480431-2252029
ICRS Star Coord at Epoch: 17h 48m 04.30600s -22:52:03.02399s
RUWE (>1.4 is poor) : 0.76
K magnitude          : 7.579
G magnitude          : 13.773
RP magnitude         : 12.249
BP magnitude         : 17.282
DUPflag             : 0
Distance (au)        : 5.236
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 13.72
Sun-Target sep (deg) : 88.90
Sun-Moon sep (deg)   : 14.46
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.45
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation ("): 15.355
C/A sky separation (km): 58305.4
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

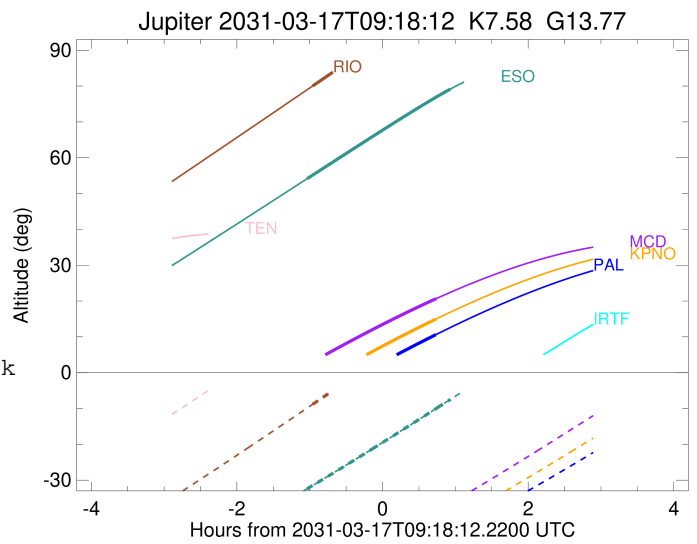
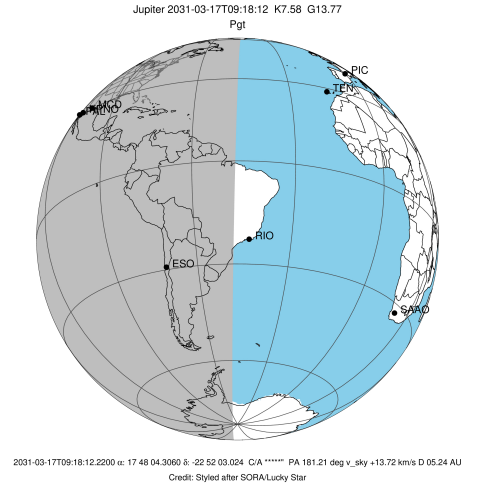


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-17T08:20:43.570	-7.94x	-57.66	71485.9	53.18	56.64
Jupiter	E	2031-03-17T10:02:04.641	10.59	-46.54	71485.5	55.91	59.23

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-17T09:11:20.150
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : KPNO
Location             : Kitt Peak Natl Obs
Latitude (deg)       : 31.96333
E. Longitude (deg)   : 248.40000
Altitude (km)        : 2.120
Gaia source ID       : 4068887574879032320
2Mass ID (if available) : 17480431-2252029
ICRS Star Coord at Epoch: 17h 48m 04.30600s -22:52:03.02399s
RUWE (>1.4 is poor) : 0.76
K magnitude           : 7.579
G magnitude           : 13.773
RP magnitude         : 12.249
BP magnitude         : 17.282
DUPflag              : 0
Distance (au)        : 5.236
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 13.72
Sun-Target sep (deg) : 88.90
Sun-Moon sep (deg)   : 14.46
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.45
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 15.374
C/A sky separation (km) : 58379.5
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

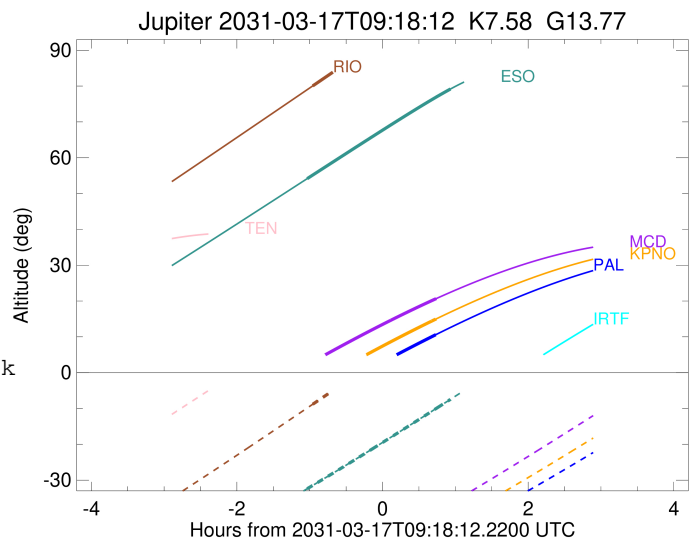
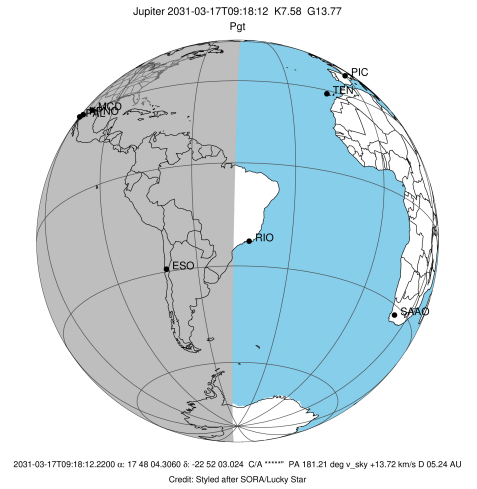


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-17T08:20:50.202	-3.29x	-57.70	71485.9	53.28	56.74
Jupiter	E	2031-03-17T10:02:12.921	14.97	-43.81	71485.5	56.00	59.32

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-17T09:11:41.390
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : MCD
Location              : McDonald Obs. 2.7m
Latitude (deg)        : 30.67158
E. Longitude (deg)    : 255.97844
Altitude (km)         : 2.075
Gaia source ID        : 4068887574879032320
2Mass ID (if available) : 17480431-2252029
ICRS Star Coord at Epoch: 17h 48m 04.30600s -22:52:03.02399s
RUWE (>1.4 is poor) : 0.76
K magnitude           : 7.579
G magnitude           : 13.773
RP magnitude          : 12.249
BP magnitude          : 17.282
DUPflag              : 0
Distance (au)         : 5.236
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 13.72
Sun-Target sep (deg)  : 88.90
Sun-Moon sep (deg)    : 14.44
B (ring opening deg) : -2.63
PA of pole (deg)      : 0.45
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 15.416
C/A sky separation (km) : 58536.3
NAIF SPICE kernels    : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

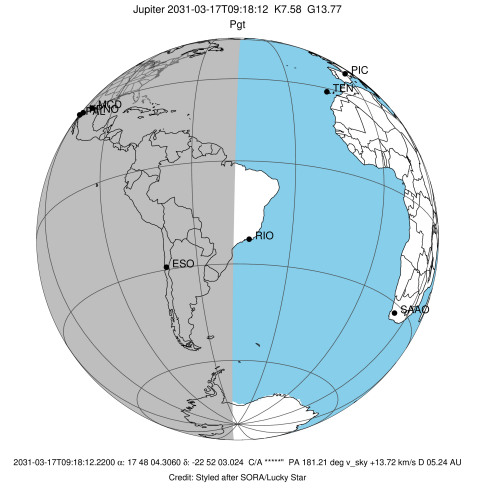


x: target alt < 5.0 deg or sun > -5.0 deg

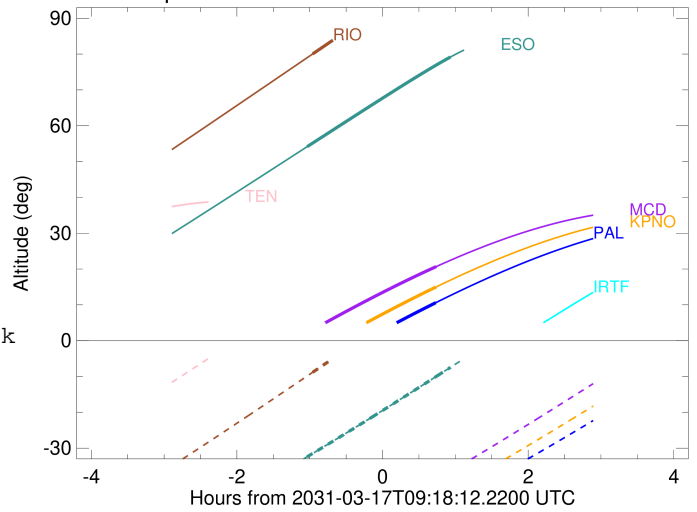
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-17T08:21:15.563	3.15x	-55.66	71485.9	53.52	56.96
Jupiter	E	2031-03-17T10:02:29.072	20.68	-38.78	71485.5	56.18	59.49

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-17T09:18:40.940
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : RIO
Location              : Rio de Janeiro
Latitude (deg)        : -22.89506
E. Longitude (deg)    : 316.77708
Altitude (km)         : 0.033
Gaia source ID        : 4068887574879032320
2Mass ID (if available) : 17480431-2252029
ICRS Star Coord at Epoch: 17h 48m 04.30600s -22:52:03.02399s
RUWE (>1.4 is poor) : 0.76
K magnitude           : 7.579
G magnitude           : 13.773
RP magnitude          : 12.249
BP magnitude          : 17.282
DUPflag              : 0
Distance (au)         : 5.235
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 13.72
Sun-Target sep (deg) : 88.90
Sun-Moon sep (deg)   : 13.99
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.45
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation ("): 14.365
C/A sky separation (km): 54546.4
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```



Jupiter 2031-03-17T09:18:12 K7.58 G13.77

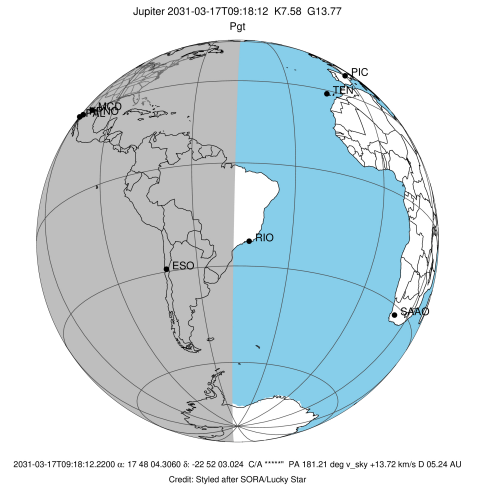


x: target alt < 5.0 deg or sun > -5.0 deg

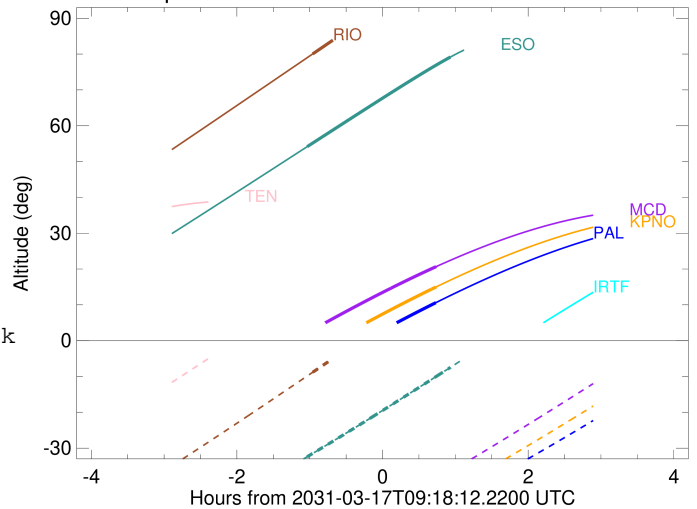
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-17T08:20:42.226	80.04	-8.82	71486.6	48.82	52.45
Jupiter	E	2031-03-17T10:16:43.412	73.17	17.88x	71486.4	50.32	53.89

```

target           : Jupiter
target radius (km) : 71492.00
C/A epoch       : 2031-03-17T09:15:02.550
Event type      : Pgt
                : Jupiter occs: geocentric, topocentric
                : Not a ringed target
Observer code   : ESO
Location        : European Southern Obs. (3.6m)
Latitude (deg)  : -29.26097
E. Longitude (deg) : 289.26831
Altitude (km)   : 2.400
Gaia source ID  : 4068887574879032320
2Mass ID (if available) : 17480431-2252029
ICRS Star Coord at Epoch: 17h 48m 04.30600s -22:52:03.02399s
RUWE (>1.4 is poor) : 0.76
K magnitude     : 7.579
G magnitude     : 13.773
RP magnitude    : 12.249
BP magnitude    : 17.282
DUPflag        : 0
Distance (au)   : 5.235
f0 (km)         : 0.00
g0 (km)         : 0.00
skyplane vel. (km/s) : 13.72
Sun-Target sep (deg) : 88.90
Sun-Moon sep (deg) : 14.39
B (ring opening deg) : -2.63
PA of pole (deg) : 0.45
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 14.116
C/A sky separation (km) : 53601.7
NAIF SPICE kernels : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```



Jupiter 2031-03-17T09:18:12 K7.58 G13.77



x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-17T08:16:06.090	54.15	-32.41	71486.9	47.36	51.02
Jupiter	E	2031-03-17T10:14:16.942	79.19	-7.43	71486.5	49.50	53.10