

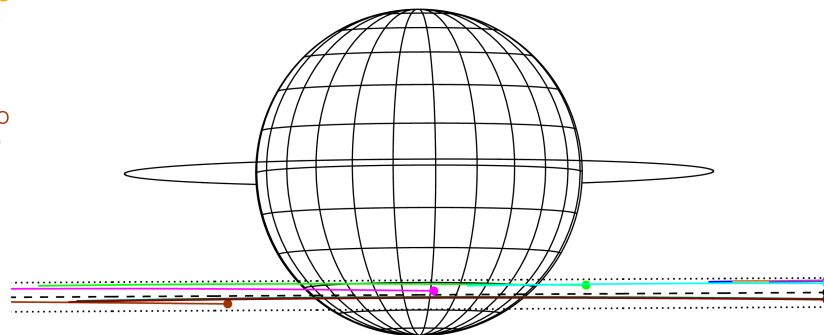
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-05-09T16:11:19.140
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068901181341378816
 2Mass ID (if available) : 17494554-2254020

Jupiter 2031-05-09T16:11:19 K8.46 G14.82 Pgt

ICRS Star Coord at Epoch: 17h 49m 45.54068s -22:54:02.43744s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 8.458
 G magnitude : 14.819
 RP magnitude : 13.318
 BP magnitude : 18.011
 DUPflag : 0
 Distance (au) : 4.472
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -9.78
 Sun-Target sep (deg) : 140.77
 Sun-Moon sep (deg) : 4.99
 B (ring opening deg) : -2.60
 PA of pole (deg) : 0.27
 Pole direction: RA (deg): 268.05695
 Dec (deg): 64.49651
 C/A sky separation (") : 16.526
 C/A sky separation (km) : 53603.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



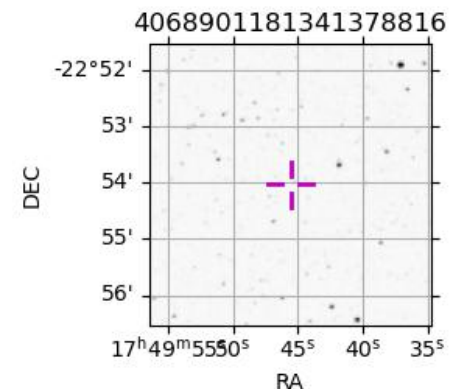
Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 KAV
 AAT
 SAAO
 MSO



2031-05-09T16:11:19.1400 α: 17 49 45.5407 δ: -22 54 02.437 C/A ***** PA 0.34 deg v_sky - 9.78 km/s D 04.47 AU
 Credit: Styled after SORA/Lucky Star

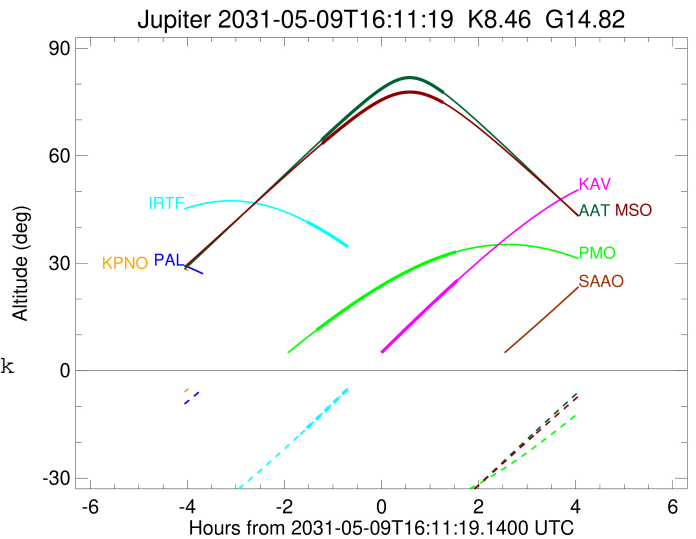
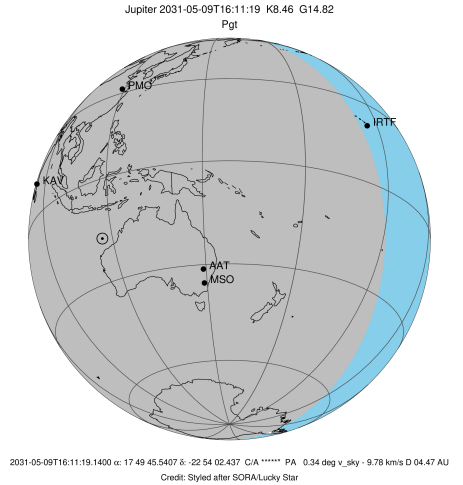
Observable events with sun below -5 deg and altitude above 5 deg

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			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+ +	MAY 09 14:51 - MAY 09 17:43	Pie
KPNO	Kitt Peak Natl Obs	32.0	248.4			Pnn
MCD	McDonald Obs. 2.7m	30.7	256.0			Pnn
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	MAY 09 14:39 - MAY 09 14:39	Pin
KAV	Kavalur Observatory	12.6	78.8	+	MAY 09 17:45 - MAY 09 17:45	Pne
RIO	Rio de Janeiro	-22.9	316.8			Pnn
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1	+ +	MAY 09 14:57 - MAY 09 17:28	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	MAY 09 14:57 - MAY 09 17:27	Pie



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-09T16:17:42.510
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : PMO
Location            : Purple Mtn Obs. Nanking
Latitude (deg)      : 32.06667
E. Longitude (deg)  : 118.82089
Altitude (km)       : 0.364
Gaia source ID      : 4068901181341378816
2Mass ID (if available) : 17494554-2254020
ICRS Star Coord at Epoch: 17h 49m 45.54068s -22:54:02.43744s
RUWE (>1.4 is poor) : 1.02
K magnitude          : 8.458
G magnitude          : 14.819
RP magnitude         : 13.318
BP magnitude         : 18.011
DUPflag             : 0
Distance (au)       : 4.472
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.78
Sun-Target sep (deg) : 140.77
Sun-Moon sep (deg)  : 4.28
B (ring opening deg) : -2.60
PA of pole (deg)    : 0.27
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (" ) : 15.057
C/A sky separation (km) : 48839.4
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
    
```

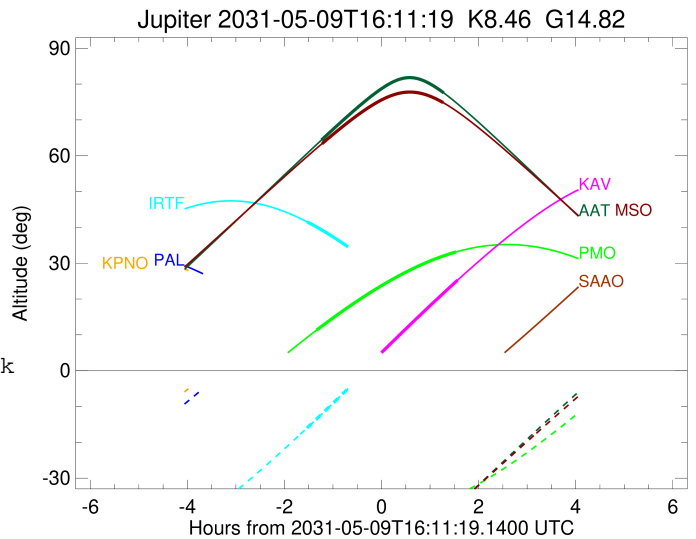
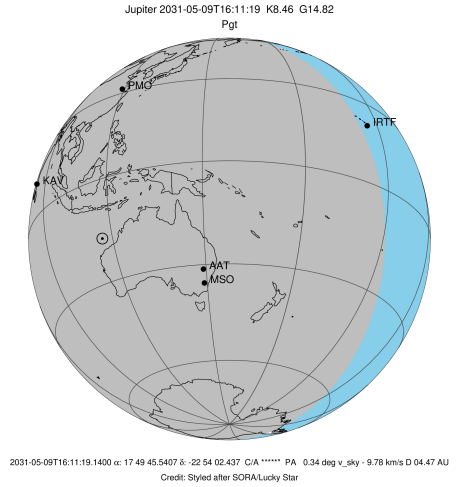


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-09T14:51:11.915	11.33	-37.92	71487.6	-43.62	-47.34
Jupiter	E	2031-05-09T17:43:16.216	33.13	-34.93	71487.7	-42.72	-46.43

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-09T16:03:08.170
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : IRTF
Location              : Mauna Kea/IRTF
Latitude (deg)        : 19.82622
E. Longitude (deg)    : 204.52800
Altitude (km)         : 4.168
Gaia source ID        : 4068901181341378816
2Mass ID (if available) : 17494554-2254020
ICRS Star Coord at Epoch: 17h 49m 45.54068s -22:54:02.43744s
RUWE (>1.4 is poor)  : 1.02
K magnitude           : 8.458
G magnitude           : 14.819
RP magnitude          : 13.318
BP magnitude          : 18.011
DUPflag              : 0
Distance (au)         : 4.472
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.78
Sun-Target sep (deg)  : 140.77
Sun-Moon sep (deg)    : 5.53
B (ring opening deg) : -2.60
PA of pole (deg)      : 0.27
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 15.400
C/A sky separation (km) : 49953.0
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
    
```

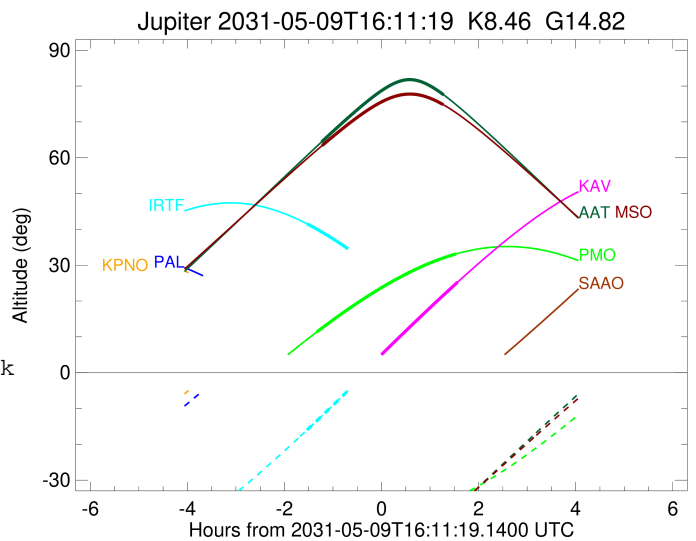
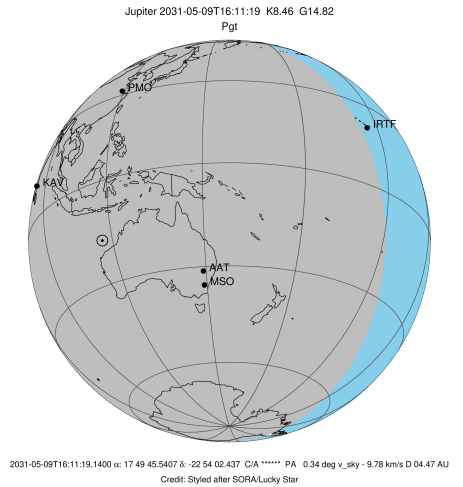


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-09T14:39:14.226	41.55	-16.00	71487.6	-43.67	-47.38
Jupiter	E	2031-05-09T17:27:51.258	12.86	21.67x	71487.3	-45.13	-48.83

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-09T16:23:08.890
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : KAV
Location             : Kavalur Observatory
Latitude (deg)       : 12.57556
E. Longitude (deg)   : 78.83167
Altitude (km)        : 0.722
Gaia source ID       : 4068901181341378816
2Mass ID (if available) : 17494554-2254020
ICRS Star Coord at Epoch: 17h 49m 45.54068s -22:54:02.43744s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 8.458
G magnitude           : 14.819
RP magnitude         : 13.318
BP magnitude         : 18.011
DUPflag              : 0
Distance (au)        : 4.472
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.78
Sun-Target sep (deg) : 140.77
Sun-Moon sep (deg)   : 4.01
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.27
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 15.961
C/A sky separation (km) : 51769.7
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
    
```

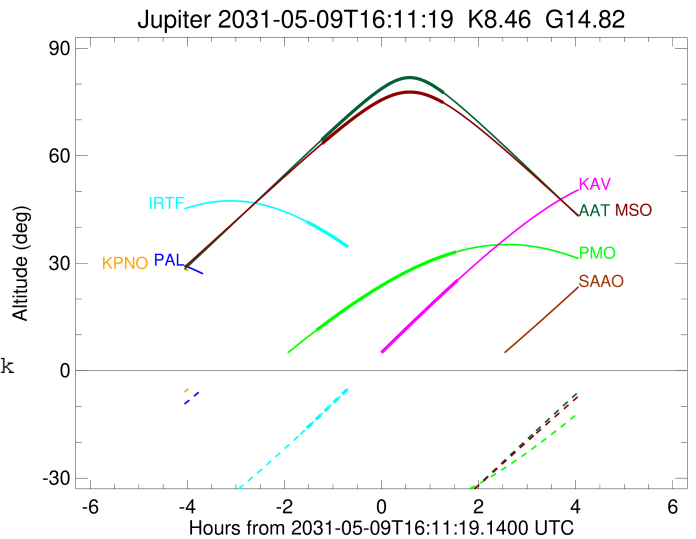
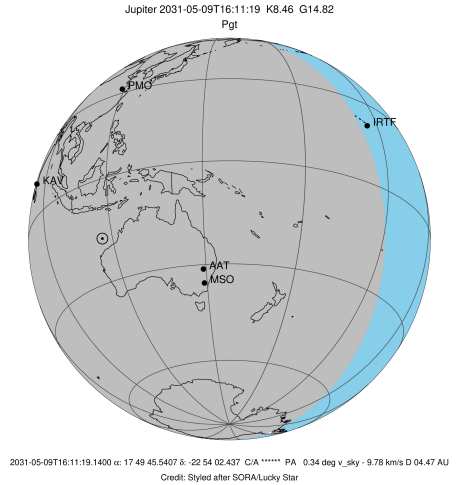


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-09T14:59:24.469	-11.17x	-27.64	71487.0	-47.29	-50.96
Jupiter	E	2031-05-09T17:45:20.979	25.25	-57.05	71487.3	-45.49	-49.18

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-09T16:12:52.700
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : AAT
Location              : Siding Spring (AAT)
Latitude (deg)        : -31.27703
E. Longitude (deg)    : 149.06608
Altitude (km)         : 1.164
Gaia source ID        : 4068901181341378816
2Mass ID (if available) : 17494554-2254020
ICRS Star Coord at Epoch: 17h 49m 45.54068s -22:54:02.43744s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 8.458
G magnitude           : 14.819
RP magnitude          : 13.318
BP magnitude          : 18.011
DUPflag              : 0
Distance (au)         : 4.472
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.78
Sun-Target sep (deg)  : 140.77
Sun-Moon sep (deg)    : 5.02
B (ring opening deg) : -2.60
PA of pole (deg)      : 0.27
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 16.814
C/A sky separation (km) : 54537.6
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
    
```

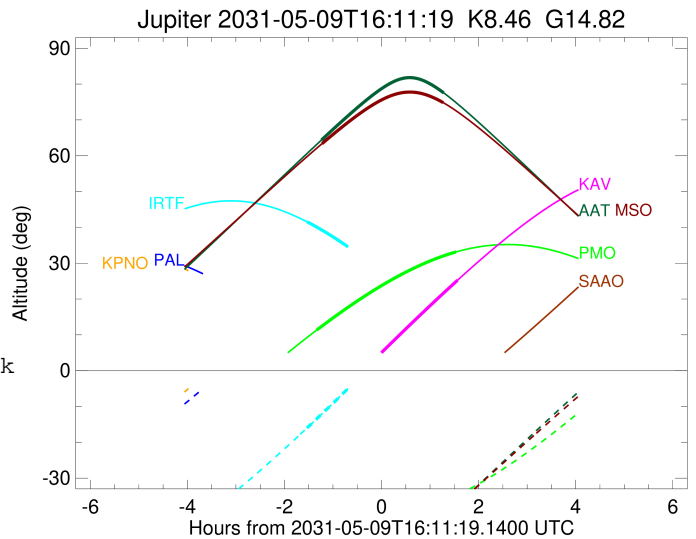
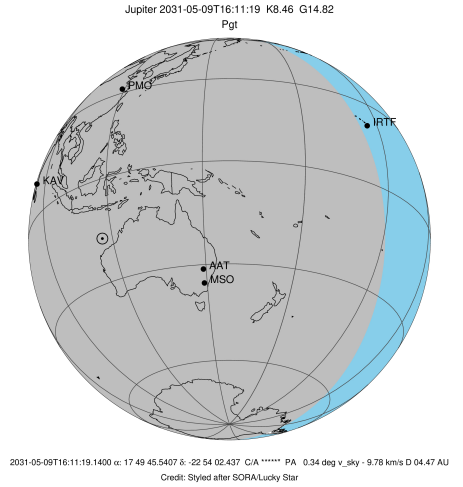


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-09T14:57:13.811	64.40	-71.16	71486.6	-49.85	-53.45
Jupiter	E	2031-05-09T17:28:15.457	77.53	-41.12	71486.6	-49.73	-53.33

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-09T16:12:49.240
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : MSO
Location             : Mt. Stromlo Observatory
Latitude (deg)       : -35.32000
E. Longitude (deg)   : 149.00833
Altitude (km)        : 0.770
Gaia source ID       : 4068901181341378816
2Mass ID (if available) : 17494554-2254020
ICRS Star Coord at Epoch: 17h 49m 45.54068s -22:54:02.43744s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 8.458
G magnitude           : 14.819
RP magnitude         : 13.318
BP magnitude         : 18.011
DUPflag              : 0
Distance (au)        : 4.472
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.78
Sun-Target sep (deg) : 140.77
Sun-Moon sep (deg)   : 5.05
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.27
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation ("): 16.950
C/A sky separation (km): 54977.8
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	2031-05-09T14:57:53.955	63.38	-68.15	71486.5	-50.39	-53.96
Jupiter	E	2031-05-09T17:27:28.980	74.82	-40.95	71486.5	-50.28	-53.85