

target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-03-15T09:11:48.700  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068933857462138496  
 2Mass ID (if available) : 17471757-2252181

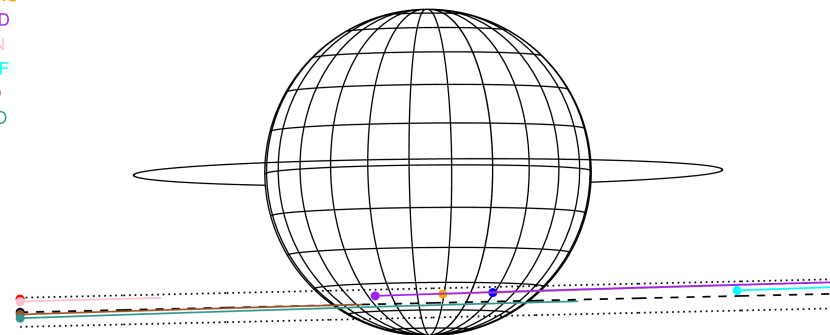
Jupiter 2031-03-15T09:11:48 K9.56 G14.57 Pgt

ICRS Star Coord at Epoch: 17h 47m 17.56814s -22:52:18.20346s

RUWE (>1.4 is poor) : 0.95  
 K magnitude : 9.556  
 G magnitude : 14.574  
 RP magnitude : 13.299  
 BP magnitude : 16.382  
 DUPflag : 0  
 Distance (au) : 5.268  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 14.67  
 Sun-Target sep (deg) : 87.08  
 Sun-Moon sep (deg) : 14.59  
 B (ring opening deg) : -2.63  
 PA of pole (deg) : 0.53  
 Pole direction: RA (deg): 268.05700  
 Dec (deg): 64.49651  
 C/A sky separation (") : 14.961  
 C/A sky separation (km) : 57161.0  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk



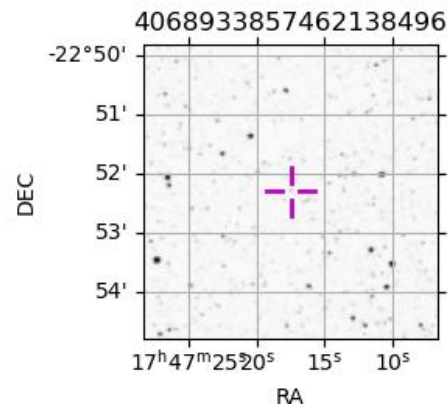
Earth  
 PIC  
 PAL  
 KPNO  
 MCD  
 TEN  
 IRTF  
 RIO  
 ESO



2031-03-15T09:11:48.7000 α: 17 47 17.5681 δ: -22 52 18.203 C/A \*\*\*\*\* PA 1.30 deg v\_sky +14.67 km/s D 05.27 AU  
 Credit: Styled after SORA/Lucky Star

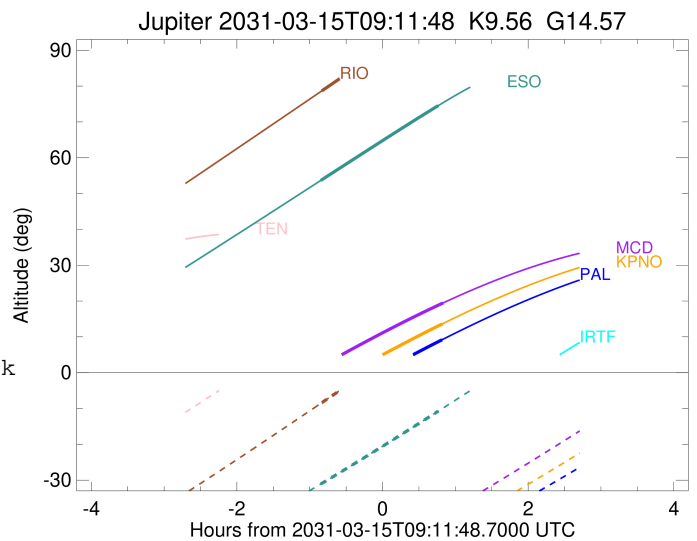
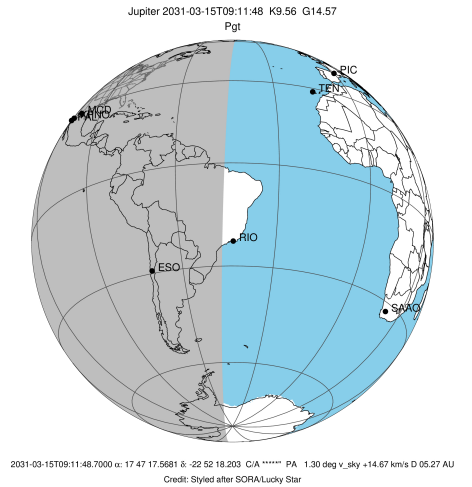
Observable events with sun below -5 deg and altitude above 5 deg

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	+	MAR 15 10:00 - MAR 15 10:00	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	MAR 15 10:01 - MAR 15 10:01	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	MAR 15 10:01 - MAR 15 10:01	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 15 08:21 - MAR 15 08:21	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	MAR 15 08:21 - MAR 15 09:57	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



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-15T09:06:29.960
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      : 4068933857462138496
2Mass ID (if available) : 17471757-2252181
ICRS Star Coord at Epoch: 17h 47m 17.56814s -22:52:18.20346s
RUWE (>1.4 is poor) : 0.95
K magnitude          : 9.556
G magnitude          : 14.574
RP magnitude         : 13.299
BP magnitude         : 16.382
DUPflag             : 0
Distance (au)       : 5.268
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 14.67
Sun-Target sep (deg) : 87.08
Sun-Moon sep (deg)  : 13.80
B (ring opening deg) : -2.63
PA of pole (deg)    : 0.53
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation ("): 14.004
C/A sky separation (km): 53505.1
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
    
```

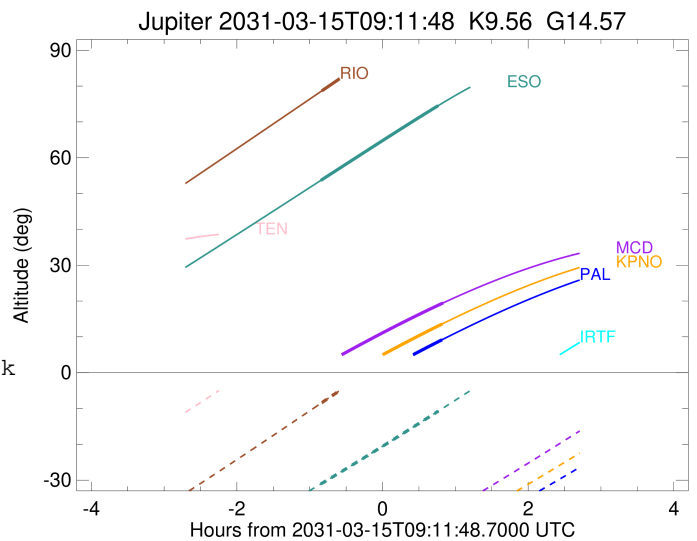
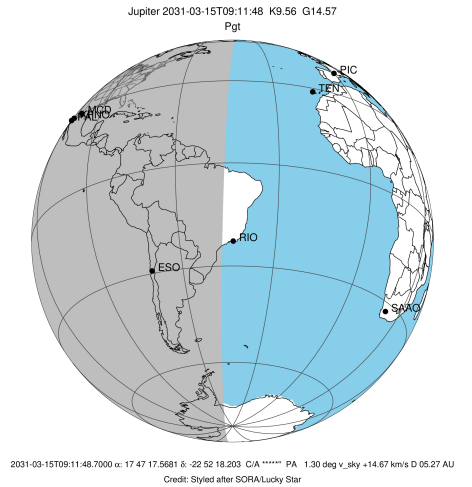


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-15T08:12:29.049	-10.94x	-58.76	71486.5	-49.74	-53.34
Jupiter	E	2031-03-15T10:00:54.392	9.19	-47.43	71486.9	-47.06	-50.73

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-15T09:06:34.520
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       : 4068933857462138496
2Mass ID (if available) : 17471757-2252181
ICRS Star Coord at Epoch: 17h 47m 17.56814s -22:52:18.20346s
RUWE (>1.4 is poor) : 0.95
K magnitude           : 9.556
G magnitude           : 14.574
RP magnitude          : 13.299
BP magnitude          : 16.382
DUPflag              : 0
Distance (au)        : 5.268
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 14.67
Sun-Target sep (deg) : 87.08
Sun-Moon sep (deg)   : 13.83
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.53
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 13.984
C/A sky separation (km) : 53430.0
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
    
```

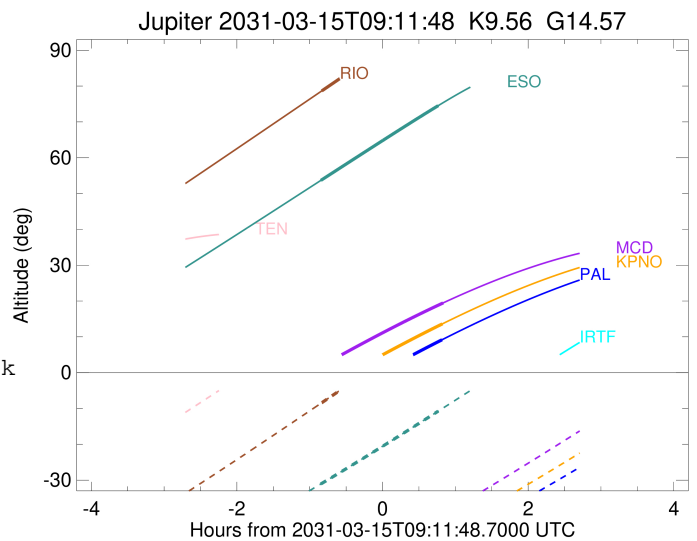
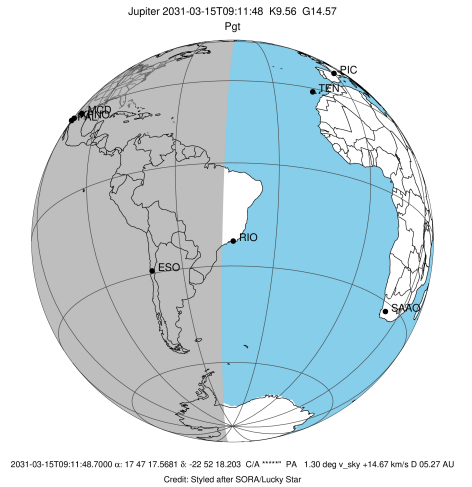


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-15T08:12:20.150	-6.33x	-59.12	71486.5	-49.66	-53.25
Jupiter	E	2031-03-15T10:01:12.384	13.63	-44.65	71486.9	-46.98	-50.65

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-15T09:06:48.730
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        : 4068933857462138496
2Mass ID (if available) : 17471757-2252181
ICRS Star Coord at Epoch: 17h 47m 17.56814s -22:52:18.20346s
RUWE (>1.4 is poor) : 0.95
K magnitude           : 9.556
G magnitude           : 14.574
RP magnitude          : 13.299
BP magnitude          : 16.382
DUPflag              : 0
Distance (au)         : 5.268
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 14.67
Sun-Target sep (deg)  : 87.08
Sun-Moon sep (deg)   : 13.90
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.53
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 13.942
C/A sky separation (km) : 53268.8
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
    
```

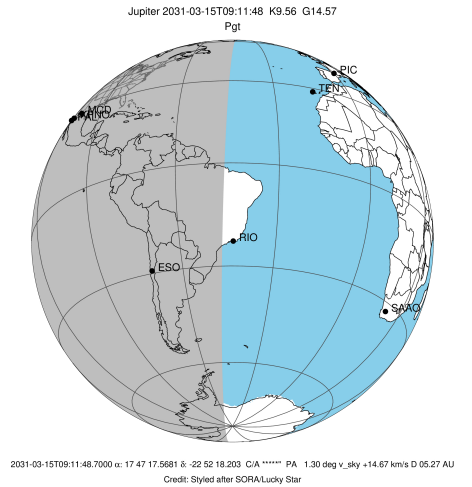


x: target alt < 5.0 deg or sun > -5.0 deg

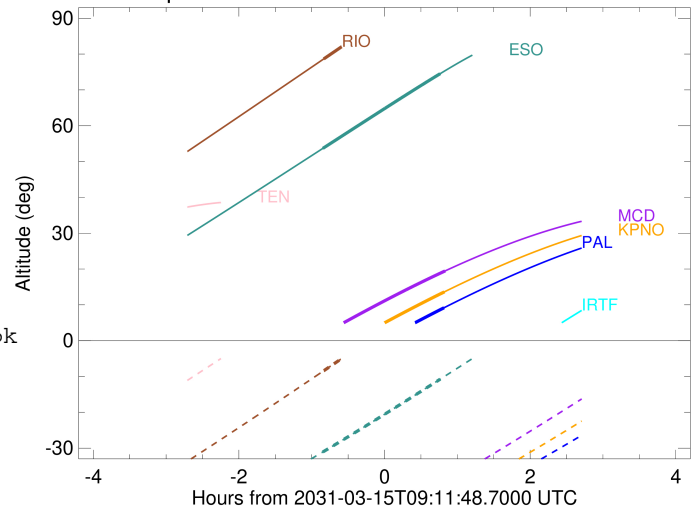
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-15T08:12:10.955	0.07x	-57.51	71486.5	-49.45	-53.06
Jupiter	E	2031-03-15T10:01:49.554	19.48	-39.51	71487.0	-46.82	-50.49

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-15T09:11:52.400
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      : 4068933857462138496
2Mass ID (if available) : 17471757-2252181
ICRS Star Coord at Epoch: 17h 47m 17.56814s -22:52:18.20346s
RUWE (>1.4 is poor) : 0.95
K magnitude          : 9.556
G magnitude          : 14.574
RP magnitude         : 13.299
BP magnitude         : 16.382
DUPflag             : 0
Distance (au)       : 5.268
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 14.67
Sun-Target sep (deg) : 87.08
Sun-Moon sep (deg)  : 14.85
B (ring opening deg) : -2.63
PA of pole (deg)    : 0.53
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 14.957
C/A sky separation (km) : 57146.9
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 2031-03-15T09:11:48 K9.56 G14.57

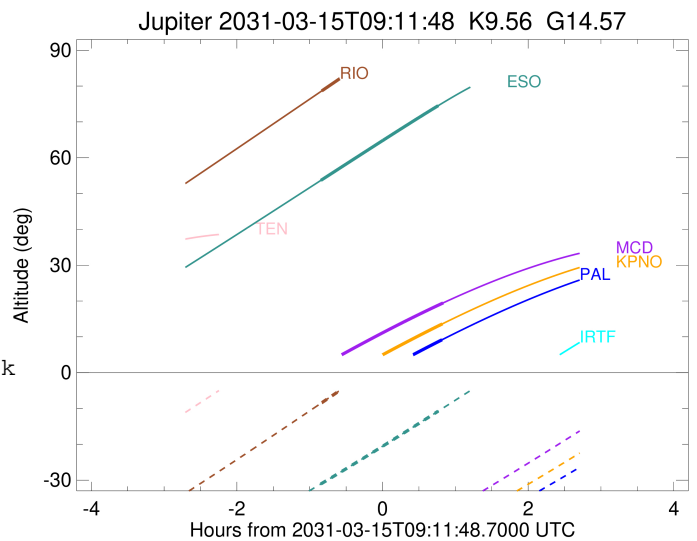
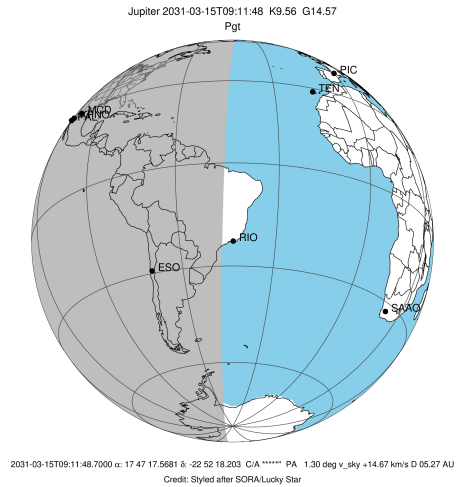


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-15T08:21:44.043	78.64	-8.40	71485.8	-53.86	-57.29
Jupiter	E	2031-03-15T10:02:04.628	78.19	14.70x	71486.1	-52.27	-55.77

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-15T09:09:14.470
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      : 4068933857462138496
2Mass ID (if available) : 17471757-2252181
ICRS Star Coord at Epoch: 17h 47m 17.56814s -22:52:18.20346s
RUWE (>1.4 is poor) : 0.95
K magnitude         : 9.556
G magnitude         : 14.574
RP magnitude        : 13.299
BP magnitude        : 16.382
DUPflag            : 0
Distance (au)       : 5.268
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 14.67
Sun-Target sep (deg) : 87.08
Sun-Moon sep (deg)  : 14.44
B (ring opening deg) : -2.63
PA of pole (deg)    : 0.53
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 15.221
C/A sky separation (km) : 58155.1
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	2031-03-15T08:20:59.959	53.66	-31.07	71485.6	-55.50	-58.84
Jupiter	E	2031-03-15T09:57:40.437	74.52	-10.75	71485.9	-53.33	-56.78