

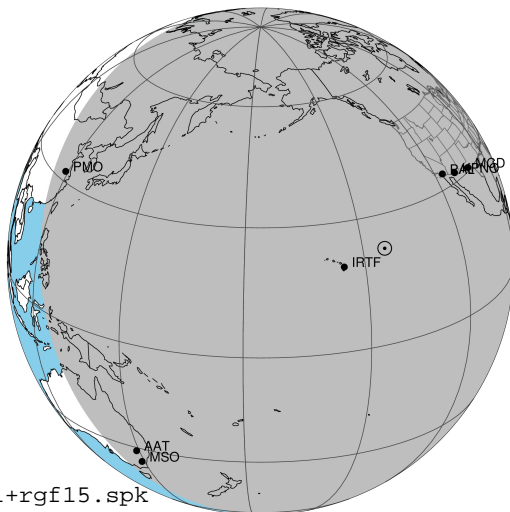
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2037-01-07T09:42:33.430
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 3415265188126115456
 2Mass ID (if available) : 05053171+2222238

Jupiter 2037-01-07T09:42:33 K9.88 G11.76 Pgt

ICRS Star Coord at Epoch: 05h 05m 31.71783s +22:22:23.53427s

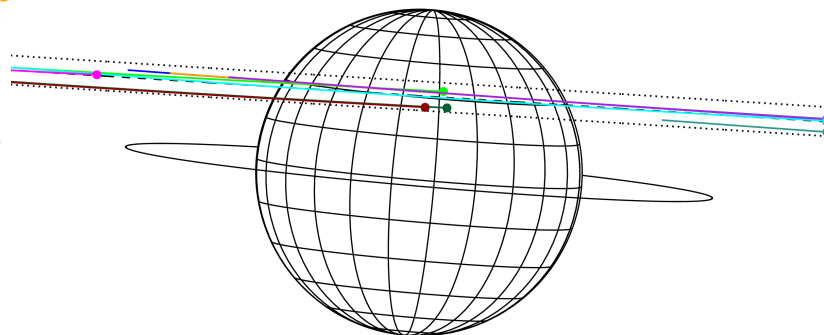
RUWE (>1.4 is poor) : 0.96
 K magnitude : 9.878
 G magnitude : 11.757
 RP magnitude : 11.115
 BP magnitude : 12.223
 DUPflag : 0
 Distance (au) : 4.222
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -13.08
 Sun-Target sep (deg) : 150.50
 Sun-Moon sep (deg) : 101.77
 B (ring opening deg) : 2.66
 PA of pole (deg) : -5.00
 Pole direction: RA (deg): 268.05631
 Dec (deg): 64.49687
 C/A sky separation (") : 10.944
 C/A sky separation (km) : 33509.8
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2037-01-07T09:42:33 K9.88 G11.76
 Pgt



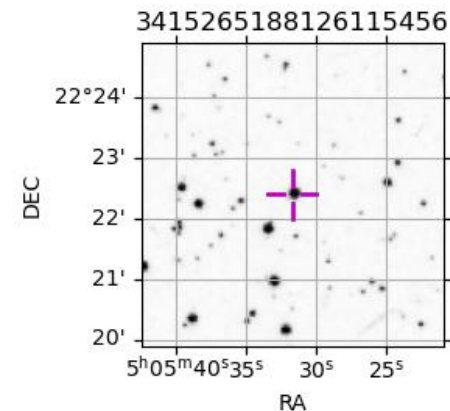
2037-01-07T09:42:33.4300 a: 05 05 31.7178 s: +22 22 23.534 C/A ***** PA 176.39 deg v_sky -13.08 km/s D 04.22 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 KAV
 ESO
 AAT
 MSO



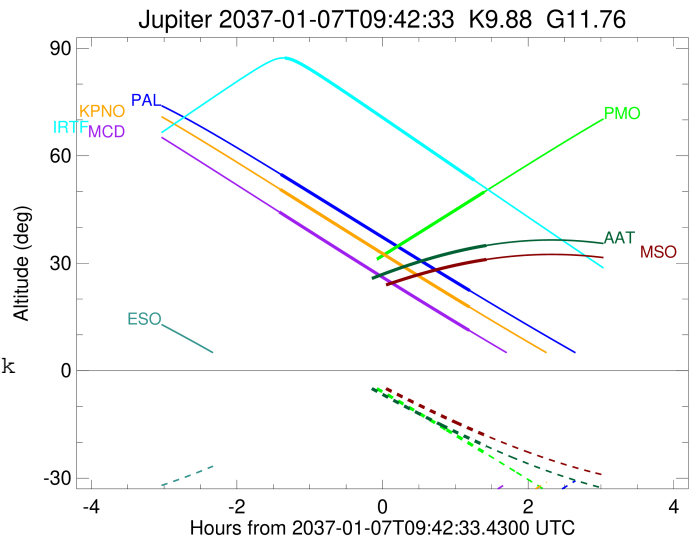
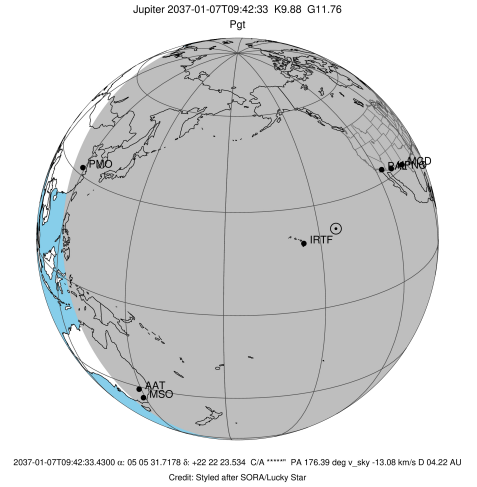
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	JAN 07 08:18 - JAN 07 10:54	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+ +	JAN 07 11:06 - JAN 07 11:06	Pne
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JAN 07 08:18 - JAN 07 10:54	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JAN 07 08:17 - JAN 07 10:53	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	JAN 07 08:21 - JAN 07 10:58	Pie
KAV	Kavalur Observatory	12.6	78.8			Pnn
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	+ +	JAN 07 11:08 - JAN 07 11:08	Pne
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	JAN 07 11:08 - JAN 07 11:08	Pne



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2037-01-07T09:36:17.300
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      : 3415265188126115456
2Mass ID (if available) : 05053171+2222238
ICRS Star Coord at Epoch: 05h 05m 31.71783s +22:22:23.53427s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.878
G magnitude          : 11.757
RP magnitude         : 11.115
BP magnitude         : 12.223
DUPflag             : 0
Distance (au)       : 4.222
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.08
Sun-Target sep (deg) : 150.50
Sun-Moon sep (deg)  : 102.52
B (ring opening deg) : 2.66
PA of pole (deg)    : -5.00
Pole direction: RA (deg): 268.05631
Dec (deg): 64.49687
C/A sky separation (" ) : 11.553
C/A sky separation (km) : 35374.1
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
    
```

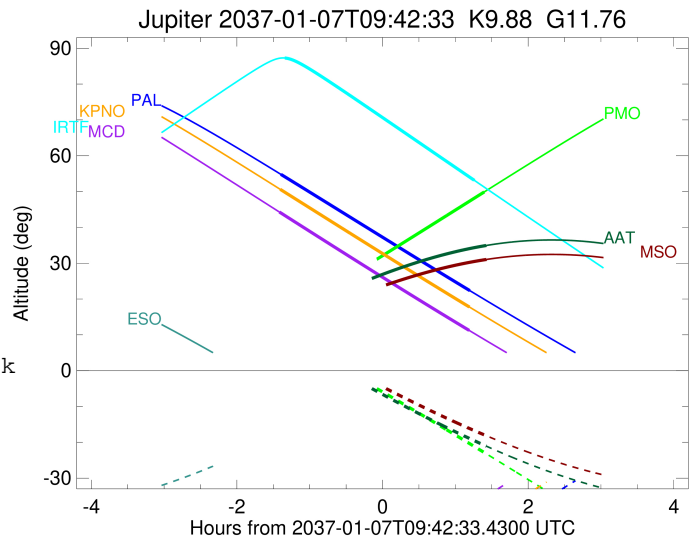
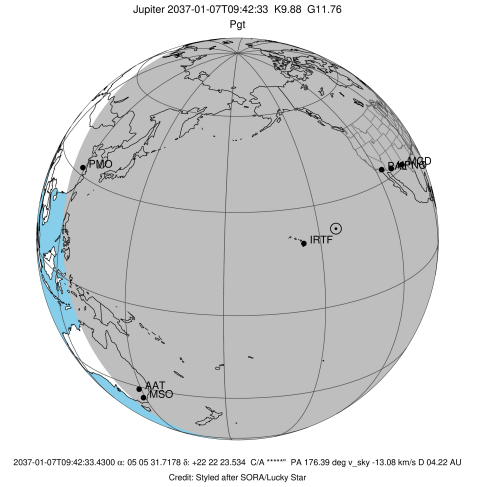


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2037-01-07T08:18:50.026	54.79	-77.80	71489.5	30.61	34.01
Jupiter	E	2037-01-07T10:54:28.421	22.35	-48.90	71489.8	28.79	32.08

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2037-01-07T09:49:03.170
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        : 3415265188126115456
2Mass ID (if available) : 05053171+2222238
ICRS Star Coord at Epoch: 05h 05m 31.71783s +22:22:23.53427s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.878
G magnitude           : 11.757
RP magnitude          : 11.115
BP magnitude          : 12.223
DUPflag              : 0
Distance (au)         : 4.222
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.08
Sun-Target sep (deg) : 150.50
Sun-Moon sep (deg)   : 102.13
B (ring opening deg) : 2.66
PA of pole (deg)     : -5.00
Pole direction: RA (deg): 268.05631
Dec (deg): 64.49687
C/A sky separation (") : 11.754
C/A sky separation (km) : 35988.1
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
    
```

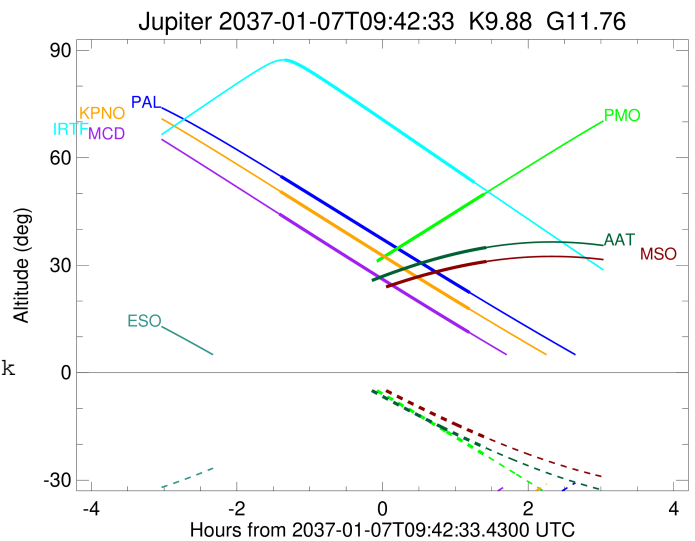
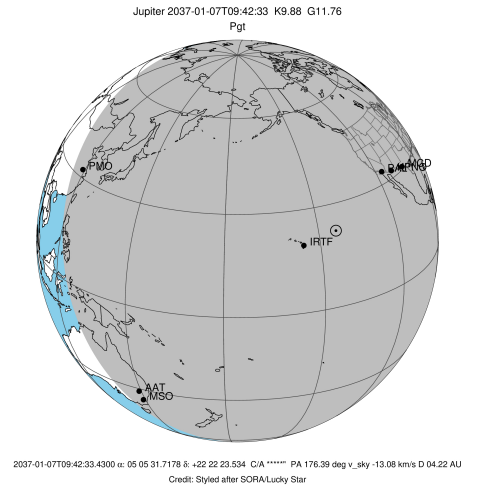


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2037-01-07T08:31:02.471	17.21	7.54x	71489.2	32.23	35.71
Jupiter	E	2037-01-07T11:06:25.475	49.89	-22.86	71489.8	28.22	31.49

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2037-01-07T09:35:51.140
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        : 3415265188126115456
2Mass ID (if available) : 05053171+2222238
ICRS Star Coord at Epoch: 05h 05m 31.71783s +22:22:23.53427s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.878
G magnitude           : 11.757
RP magnitude          : 11.115
BP magnitude          : 12.223
DUPflag              : 0
Distance (au)         : 4.222
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.08
Sun-Target sep (deg)  : 150.50
Sun-Moon sep (deg)   : 102.46
B (ring opening deg) : 2.66
PA of pole (deg)     : -5.00
Pole direction: RA (deg): 268.05631
Dec (deg): 64.49687
C/A sky separation (") : 11.555
C/A sky separation (km) : 35379.8
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
    
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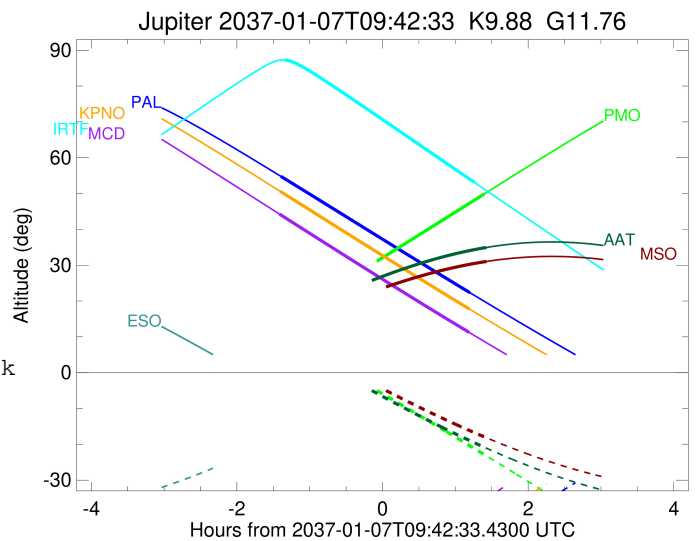
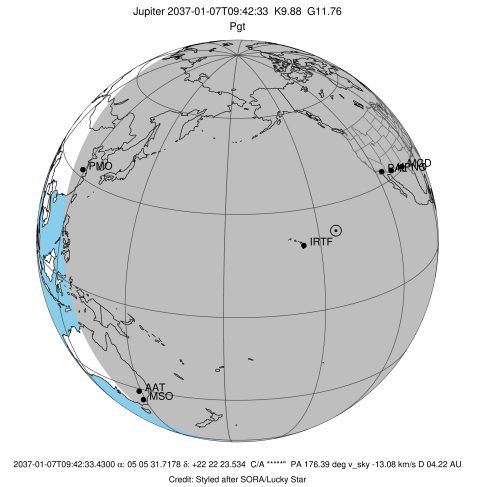


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2037-01-07T08:18:16.112	50.62	-76.13	71489.5	30.56	33.96
Jupiter	E	2037-01-07T10:54:13.156	17.76	-44.54	71489.8	28.83	32.13

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2037-01-07T09:35:21.080
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        : 3415265188126115456
2Mass ID (if available) : 05053171+2222238
ICRS Star Coord at Epoch: 05h 05m 31.71783s +22:22:23.53427s
RUWE (>1.4 is poor) : 0.96
K magnitude            : 9.878
G magnitude           : 11.757
RP magnitude          : 11.115
BP magnitude          : 12.223
DUPflag               : 0
Distance (au)         : 4.222
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.08
Sun-Target sep (deg) : 150.50
Sun-Moon sep (deg)   : 102.38
B (ring opening deg) : 2.66
PA of pole (deg)     : -5.00
Pole direction: RA (deg): 268.05631
Dec (deg): 64.49687
C/A sky separation (") : 11.589
C/A sky separation (km) : 35482.6
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
    
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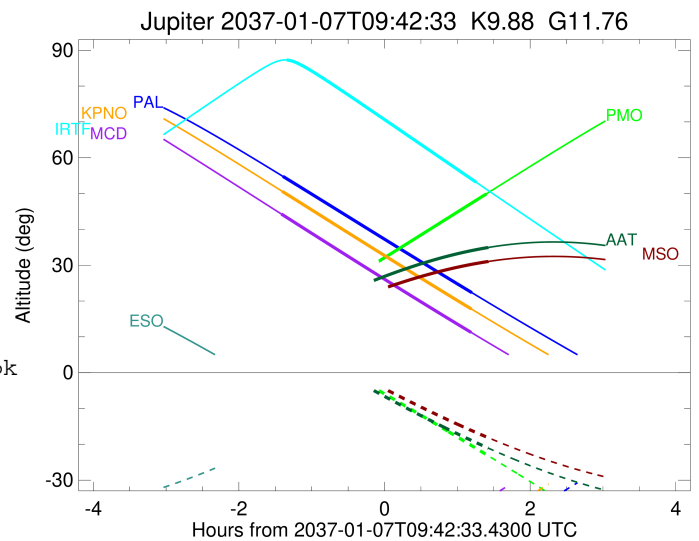
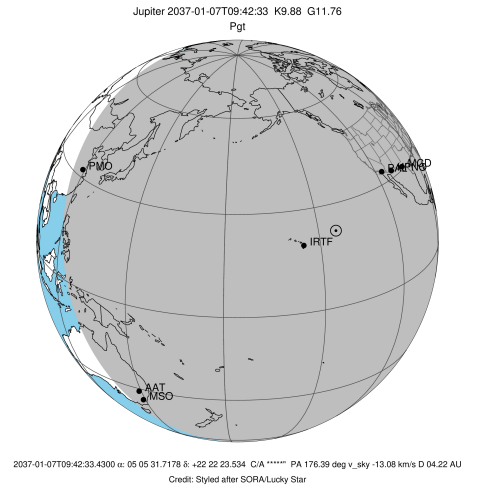


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2037-01-07T08:17:36.401	44.27	-71.30	71489.5	30.59	33.99
Jupiter	E	2037-01-07T10:53:56.428	11.24	-38.05	71489.7	28.97	32.28

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2037-01-07T09:39:52.340
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       : 3415265188126115456
2Mass ID (if available) : 05053171+2222238
ICRS Star Coord at Epoch: 05h 05m 31.71783s +22:22:23.53427s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.878
G magnitude           : 11.757
RP magnitude         : 11.115
BP magnitude         : 12.223
DUPflag              : 0
Distance (au)        : 4.222
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.08
Sun-Target sep (deg) : 150.50
Sun-Moon sep (deg)   : 102.75
B (ring opening deg) : 2.66
PA of pole (deg)     : -5.00
Pole direction: RA (deg): 268.05631
Dec (deg): 64.49687
C/A sky separation (") : 10.851
C/A sky separation (km) : 33223.4
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
    
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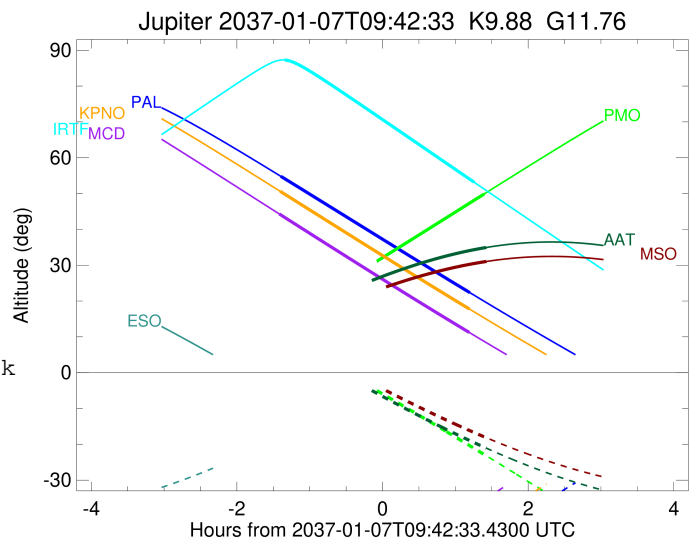
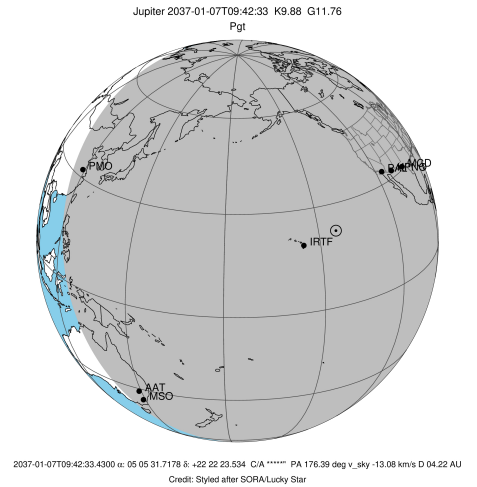


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2037-01-07T08:21:55.673	87.27	-60.48	71489.7	29.03	32.34
Jupiter	E	2037-01-07T10:58:10.400	53.13	-82.55	71490.1	26.53	29.67

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2037-01-07T09:47:03.760
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       : 3415265188126115456
2Mass ID (if available) : 05053171+2222238
ICRS Star Coord at Epoch: 05h 05m 31.71783s +22:22:23.53427s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.878
G magnitude           : 11.757
RP magnitude         : 11.115
BP magnitude         : 12.223
DUPflag              : 0
Distance (au)        : 4.222
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.08
Sun-Target sep (deg) : 150.50
Sun-Moon sep (deg)   : 102.08
B (ring opening deg) : 2.66
PA of pole (deg)     : -5.00
Pole direction: RA (deg): 268.05631
Dec (deg): 64.49687
C/A sky separation ("): 9.447
C/A sky separation (km): 28925.4
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
    
```

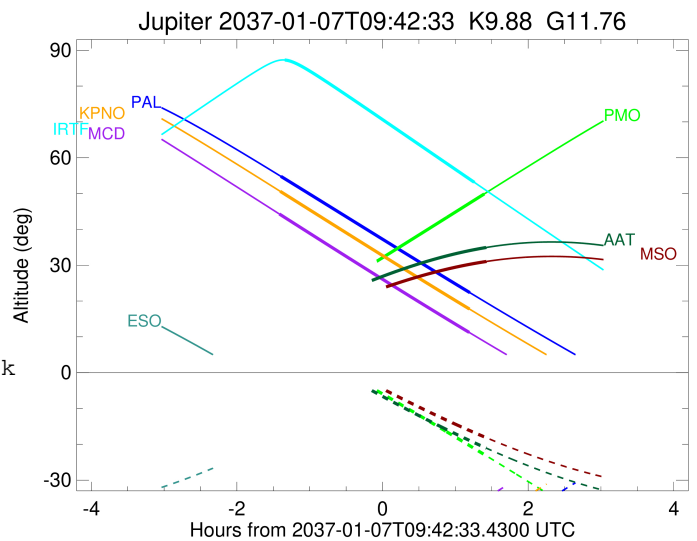
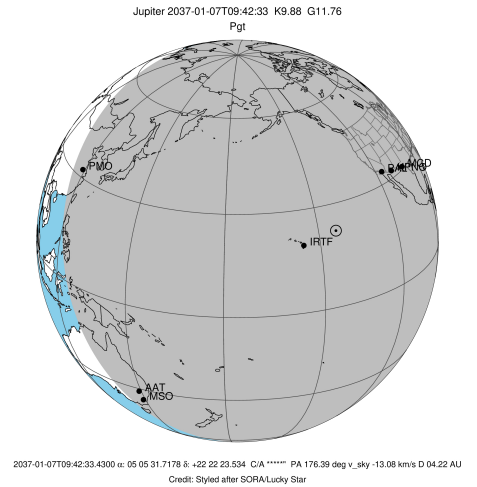


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2037-01-07T08:25:36.079	15.42	8.18x	71490.2	25.75	28.83
Jupiter	E	2037-01-07T11:08:06.934	34.94	-21.07	71490.6	22.10	24.88

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2037-01-07T09:46:54.190
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      : 3415265188126115456
2Mass ID (if available) : 05053171+2222238
ICRS Star Coord at Epoch: 05h 05m 31.71783s +22:22:23.53427s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.878
G magnitude          : 11.757
RP magnitude         : 11.115
BP magnitude         : 12.223
DUPflag             : 0
Distance (au)       : 4.222
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.08
Sun-Target sep (deg) : 150.50
Sun-Moon sep (deg)  : 102.03
B (ring opening deg) : 2.66
PA of pole (deg)    : -5.00
Pole direction: RA (deg): 268.05631
Dec (deg): 64.49687
C/A sky separation ("): 9.358
C/A sky separation (km): 28651.8
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	2037-01-07T08:25:12.522	12.76	9.73x	71490.2	25.48	28.55
Jupiter	E	2037-01-07T11:08:12.462	31.04	-18.17	71490.7	21.88	24.64