

target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-05-01T15:30:59.160  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068714195705048832  
 2Mass ID (if available) : 17515378-2253588

Jupiter 2031-05-01T15:30:59 K8.99 G14.91 Pgt

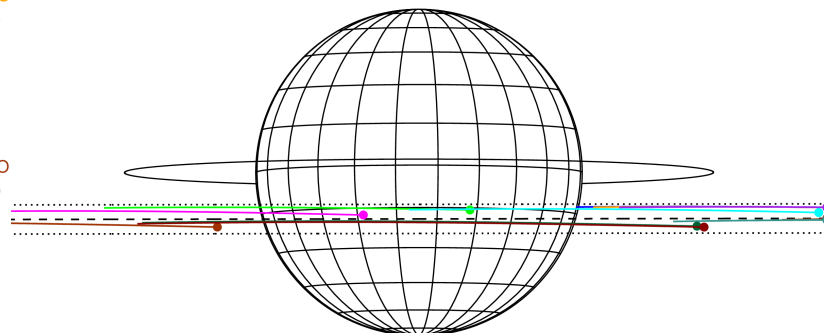
ICRS Star Coord at Epoch: 17h 51m 53.79170s -22:53:58.95777s

RUWE (>1.4 is poor) : 0.91  
 K magnitude : 8.989  
 G magnitude : 14.906  
 RP magnitude : 13.450  
 BP magnitude : 17.780  
 DUPflag : 0  
 Distance (au) : 4.562  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -6.88  
 Sun-Target sep (deg) : 132.51  
 Sun-Moon sep (deg) : 116.64  
 B (ring opening deg) : -2.60  
 PA of pole (deg) : 0.04  
 Pole direction: RA (deg): 268.05696  
 Dec (deg): 64.49651  
 C/A sky separation (") : 6.145  
 C/A sky separation (km) : 20333.7  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk



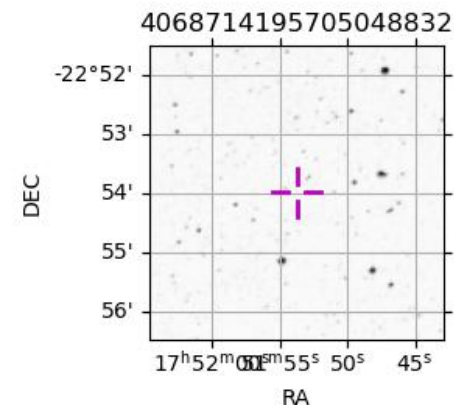
2031-05-01T15:30:59.1600 α: 17 51 53.7917 δ: -22 53 58.958 C/A 6.157" PA 0.07 deg v\_sky - 6.88 km/s D 04.56 AU  
 Credit: Styled after SORA/Lucky Star

Earth  
 PAL  
 PMO  
 KPNO  
 MCD  
 IRTF  
 KAV  
 RIO  
 ESO  
 AAT  
 SAAO  
 MSO



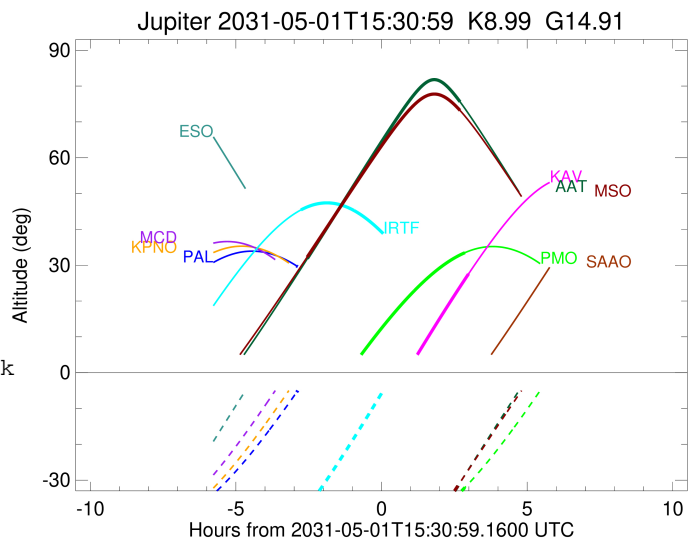
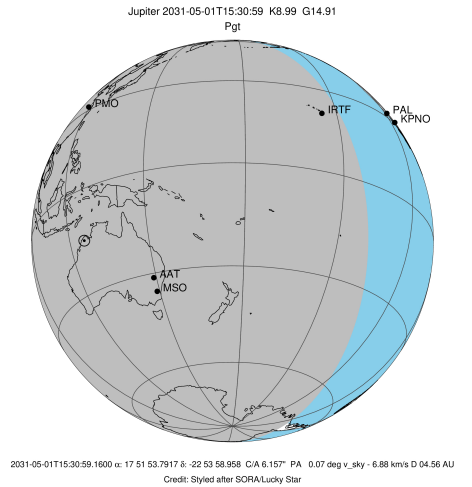
Observable events with sun below -5 deg and altitude above 5 deg

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	+	MAY 01 12:36 - MAY 01 12:36	Pin
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	MAY 01 18:22 - MAY 01 18:22	Pne
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 01 12:45 - MAY 01 12:45	Pin
KAV	Kavalur Observatory	12.6	78.8	+	MAY 01 18:30 - MAY 01 18:30	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 01 12:58 - MAY 01 18:12	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	MAY 01 12:57 - MAY 01 18:12	Pie



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-01T15:18:37.130
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        : 4068714195705048832
2Mass ID (if available) : 17515378-2253588
ICRS Star Coord at Epoch: 17h 51m 53.79170s -22:53:58.95777s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 8.989
G magnitude           : 14.906
RP magnitude          : 13.450
BP magnitude          : 17.780
DUPflag              : 0
Distance (au)         : 4.563
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -6.88
Sun-Target sep (deg)  : 132.51
Sun-Moon sep (deg)    : 116.37
B (ring opening deg) : -2.60
PA of pole (deg)      : 0.04
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation (" ) : 4.900
C/A sky separation (km) : 16213.8
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
    
```

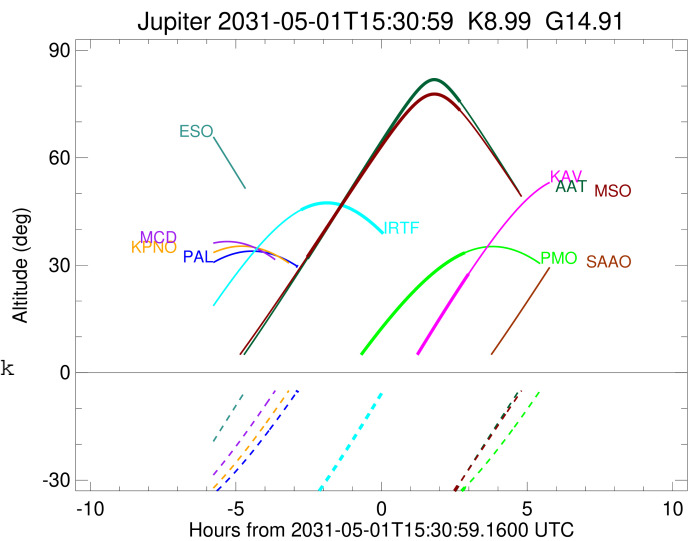
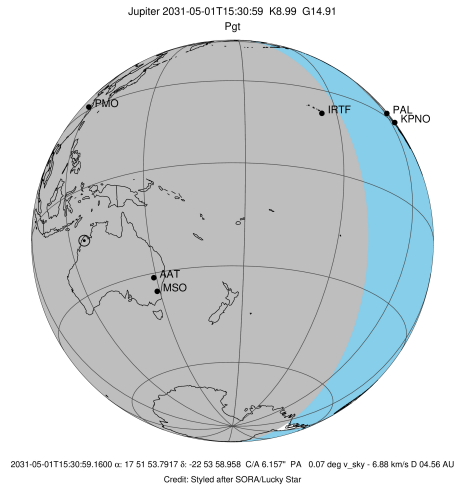


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-01T12:36:07.165	29.80	-5.46	71491.6	-12.24	-13.92
Jupiter	E	2031-05-01T18:05:53.971	-24.89x	61.32x	71491.4	-14.35	-16.30

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-01T15:42:20.170
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      : 4068714195705048832
2Mass ID (if available) : 17515378-2253588
ICRS Star Coord at Epoch: 17h 51m 53.79170s -22:53:58.95777s
RUWE (>1.4 is poor) : 0.91
K magnitude          : 8.989
G magnitude          : 14.906
RP magnitude         : 13.450
BP magnitude         : 17.780
DUPflag             : 0
Distance (au)        : 4.562
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -6.88
Sun-Target sep (deg) : 132.51
Sun-Moon sep (deg)  : 117.09
B (ring opening deg) : -2.60
PA of pole (deg)    : 0.04
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation (" ) : 4.838
C/A sky separation (km) : 16007.9
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
    
```

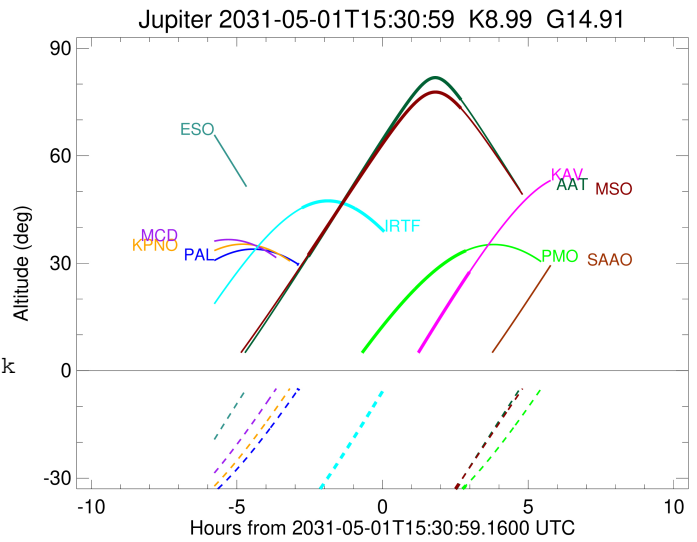
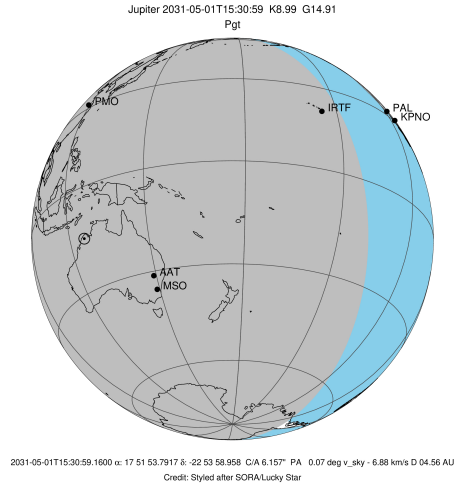


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-01T12:55:35.614	-17.08x	-25.20	71491.5	-14.08	-16.00
Jupiter	E	2031-05-01T18:22:55.423	33.50	-32.04	71491.6	-12.30	-13.99

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-01T15:24:03.910
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      : 4068714195705048832
2Mass ID (if available) : 17515378-2253588
ICRS Star Coord at Epoch: 17h 51m 53.79170s -22:53:58.95777s
RUWE (>1.4 is poor) : 0.91
K magnitude          : 8.989
G magnitude          : 14.906
RP magnitude         : 13.450
BP magnitude         : 17.780
DUPflag             : 0
Distance (au)       : 4.562
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -6.88
Sun-Target sep (deg) : 132.51
Sun-Moon sep (deg)  : 116.95
B (ring opening deg) : -2.60
PA of pole (deg)    : 0.04
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation (" ) : 4.916
C/A sky separation (km) : 16265.9
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
    
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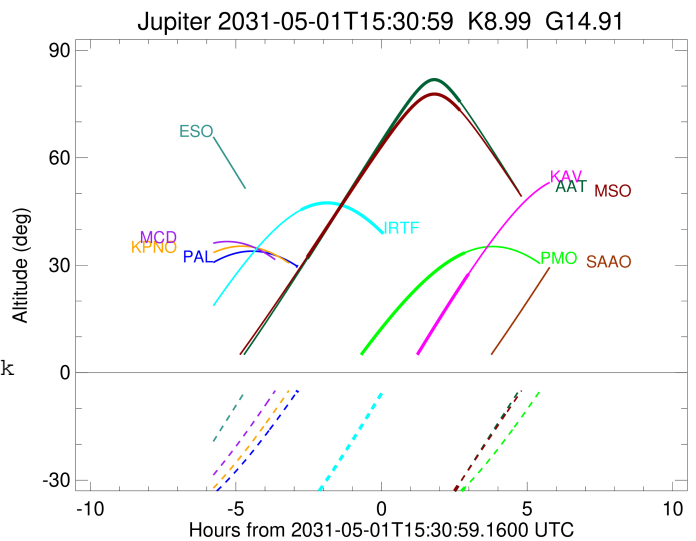
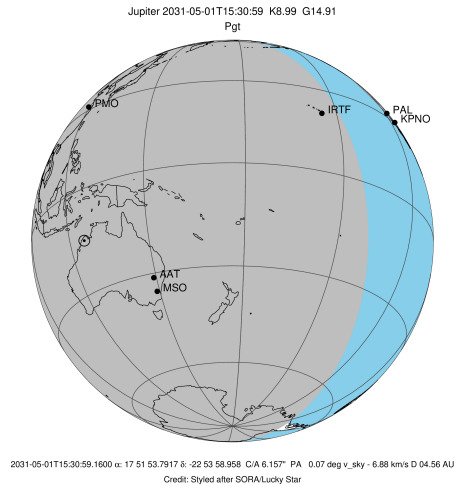


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-01T12:45:03.787	45.43	-39.99	71491.5	-12.94	-14.72
Jupiter	E	2031-05-01T18:05:07.268	12.11	29.61x	71491.4	-14.15	-16.07

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-01T15:47:13.860
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       : 4068714195705048832
2Mass ID (if available) : 17515378-2253588
ICRS Star Coord at Epoch: 17h 51m 53.79170s -22:53:58.95777s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 8.989
G magnitude           : 14.906
RP magnitude         : 13.450
BP magnitude         : 17.780
DUPflag              : 0
Distance (au)        : 4.562
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -6.88
Sun-Target sep (deg) : 132.51
Sun-Moon sep (deg)   : 116.87
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.04
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation ("): 5.803
C/A sky separation (km): 19201.3
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
    
```

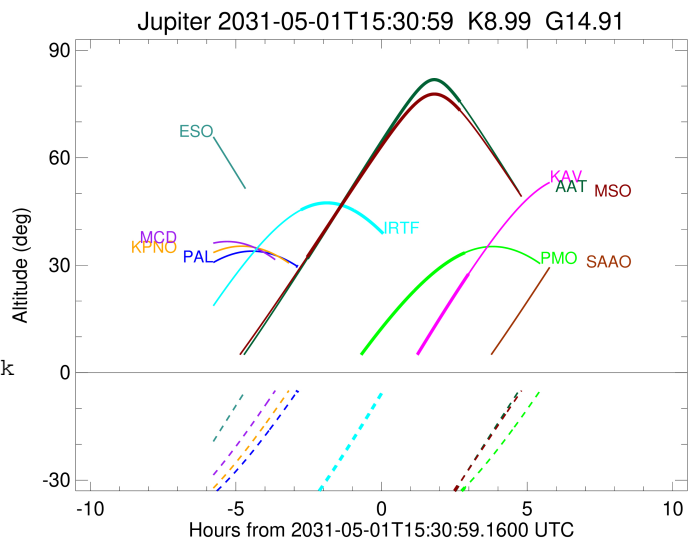
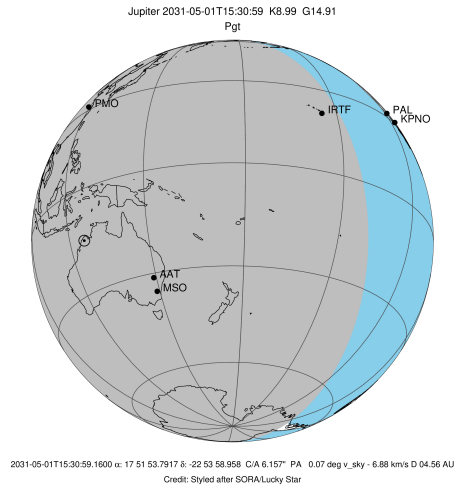


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-01T12:55:13.073	-47.49x	0.07x	71491.2	-16.87	-19.11
Jupiter	E	2031-05-01T18:30:14.458	27.56	-62.17	71491.4	-14.26	-16.20

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-01T15:37:12.170
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        : 4068714195705048832
2Mass ID (if available) : 17515378-2253588
ICRS Star Coord at Epoch: 17h 51m 53.79170s -22:53:58.95777s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 8.989
G magnitude           : 14.906
RP magnitude          : 13.450
BP magnitude          : 17.780
DUPflag              : 0
Distance (au)         : 4.562
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -6.88
Sun-Target sep (deg)  : 132.51
Sun-Moon sep (deg)   : 117.55
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.04
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation (") : 6.482
C/A sky separation (km) : 21449.3
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
    
```

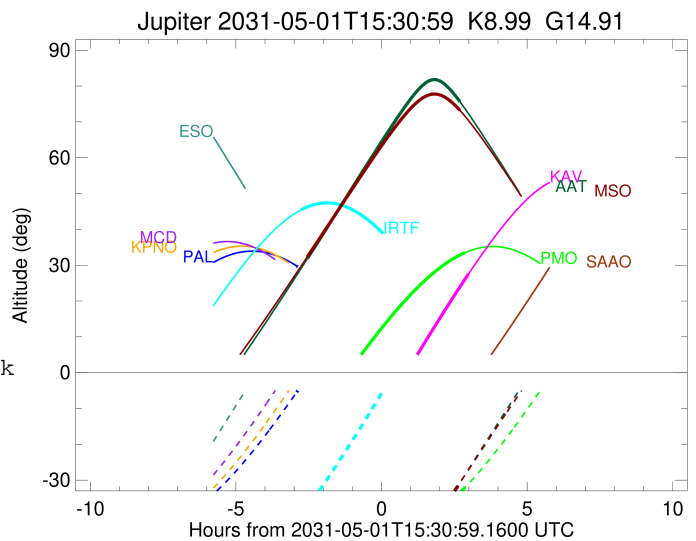
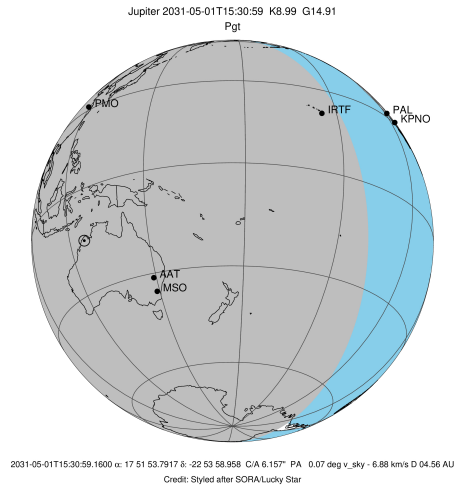


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-01T12:58:11.251	31.82	-68.53	71491.1	-18.27	-20.66
Jupiter	E	2031-05-01T18:12:47.932	75.60	-30.71	71491.2	-17.36	-19.65

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-01T15:36:57.620
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       : 4068714195705048832
2Mass ID (if available) : 17515378-2253588
ICRS Star Coord at Epoch: 17h 51m 53.79170s -22:53:58.95777s
RUWE (>1.4 is poor) : 0.91
K magnitude          : 8.989
G magnitude          : 14.906
RP magnitude         : 13.450
BP magnitude         : 17.780
DUPflag             : 0
Distance (au)        : 4.562
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -6.88
Sun-Target sep (deg) : 132.51
Sun-Moon sep (deg)  : 117.54
B (ring opening deg) : -2.60
PA of pole (deg)    : 0.04
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation (") : 6.613
C/A sky separation (km) : 21882.8
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	2031-05-01T12:57:58.187	32.29	-65.48	71491.1	-18.60	-21.03
Jupiter	E	2031-05-01T18:12:37.585	73.21	-30.69	71491.1	-17.73	-20.06