

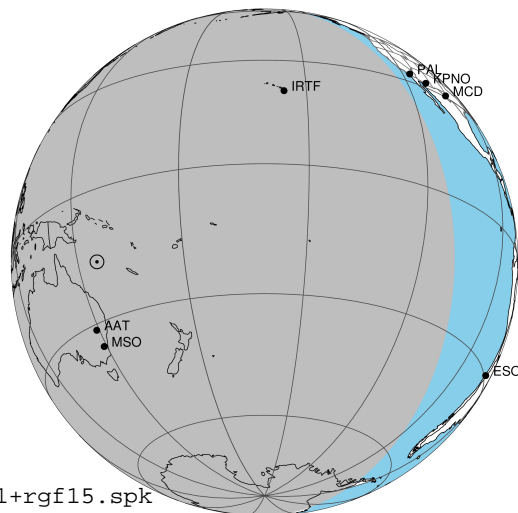
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-05-07T13:31:58.900
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068897711007383552
 2Mass ID (if available) : 17502380-2253369

Jupiter 2031-05-07T13:31:58 K9.03 G14.59 Pgt

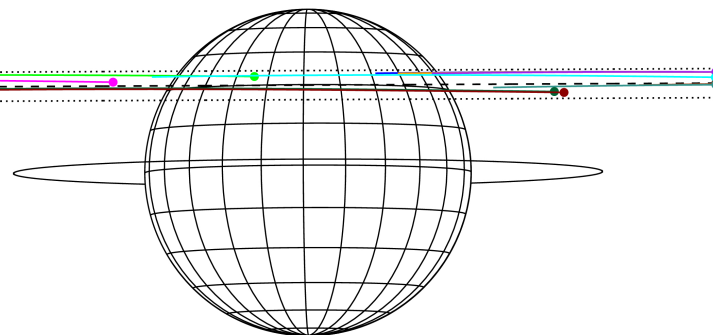
ICRS Star Coord at Epoch: 17h 50m 23.79594s -22:53:37.03675s

RUWE (>1.4 is poor) : 0.96
 K magnitude : 9.026
 G magnitude : 14.594
 RP magnitude : 13.263
 BP magnitude : 16.715
 DUPflag : 0
 Distance (au) : 4.495
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -9.06
 Sun-Target sep (deg) : 138.59
 Sun-Moon sep (deg) : 35.86
 B (ring opening deg) : -2.61
 PA of pole (deg) : 0.20
 Pole direction: RA (deg): 268.05695
 Dec (deg): 64.49651
 C/A sky separation (") : 11.742
 C/A sky separation (km) : 38277.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-05-07T13:31:58 K9.03 G14.59
 Pgt



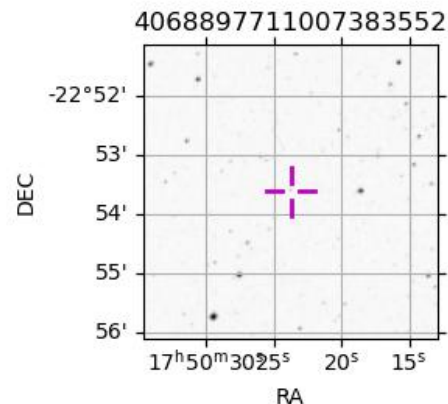
Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



2031-05-07T13:31:58.9000 α: 17 50 23.7959 δ: -22 53 37.037 C/A ***** PA 180.28 deg v_sky - 9.06 km/s D 04.49 AU
 Credit: Styled after SORA/Lucky Star

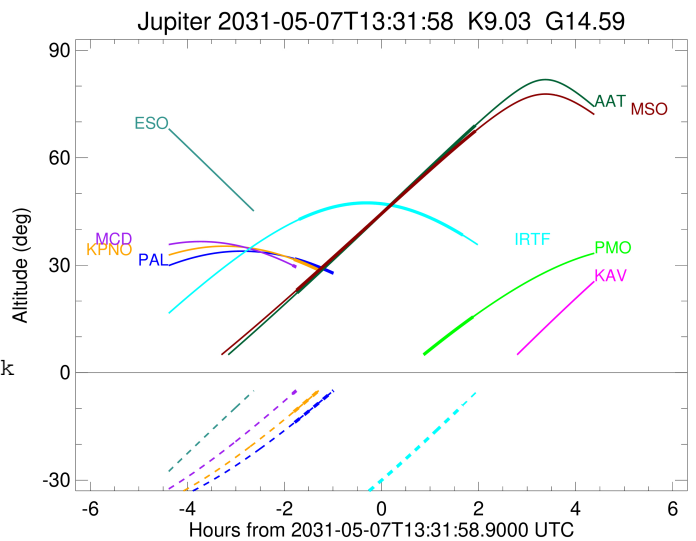
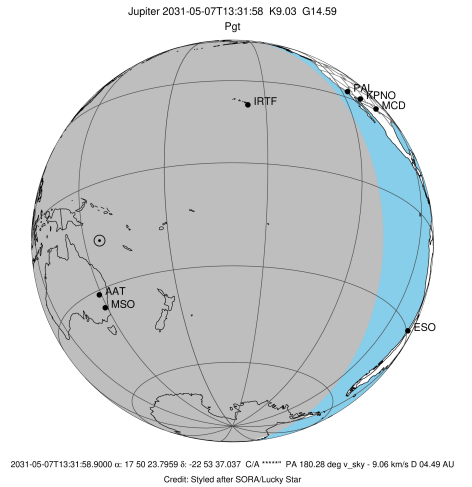
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+	MAY 07 11:44 - MAY 07 11:44	Pin
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	MAY 07 15:25 - MAY 07 15:25	Pne
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	MAY 07 11:43 - MAY 07 11:43	Pin
MCD	McDonald Obs. 2.7m	30.7	256.0	+	MAY 07 11:42 - MAY 07 11:42	Pin
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	MAY 07 11:49 - MAY 07 15:12	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	+	MAY 07 11:47 - MAY 07 15:27	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	MAY 07 11:46 - MAY 07 15:28	Pie



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-07T13:26:18.020
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       : 4068897711007383552
2Mass ID (if available) : 17502380-2253369
ICRS Star Coord at Epoch: 17h 50m 23.79594s -22:53:37.03675s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.026
G magnitude           : 14.594
RP magnitude          : 13.263
BP magnitude          : 16.715
DUPflag              : 0
Distance (au)        : 4.495
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.06
Sun-Target sep (deg) : 138.59
Sun-Moon sep (deg)   : 36.54
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.20
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation ("): 13.204
C/A sky separation (km): 43044.8
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
    
```

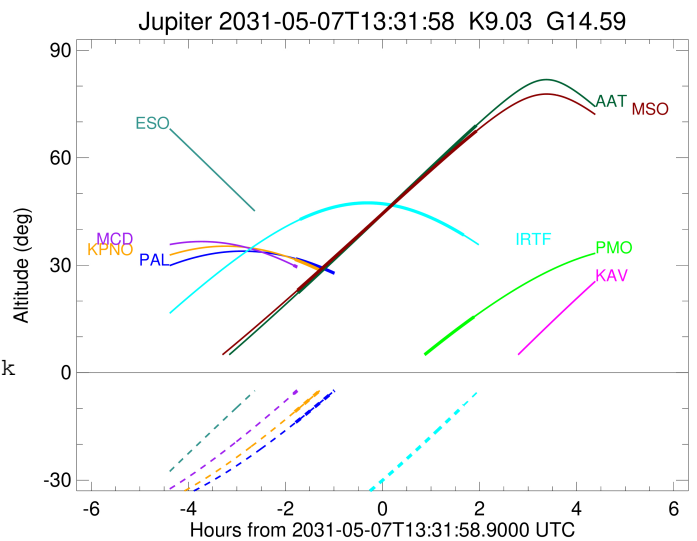
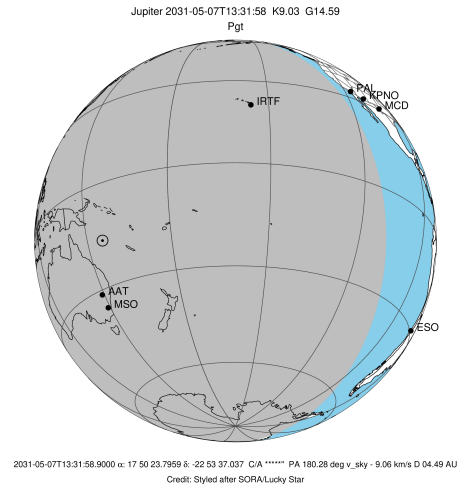


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-07T11:44:40.789	31.79	-13.89	71488.6	37.50	41.17
Jupiter	E	2031-05-07T15:08:51.409	4.67x	26.65x	71488.8	36.14	39.77

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-07T13:40:29.520
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       : 4068897711007383552
2Mass ID (if available) : 17502380-2253369
ICRS Star Coord at Epoch: 17h 50m 23.79594s -22:53:37.03675s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.026
G magnitude           : 14.594
RP magnitude         : 13.263
BP magnitude         : 16.715
DUPflag             : 0
Distance (au)        : 4.495
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.06
Sun-Target sep (deg) : 138.59
Sun-Moon sep (deg)   : 35.14
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.20
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 12.817
C/A sky separation (km) : 41780.2
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
    
```

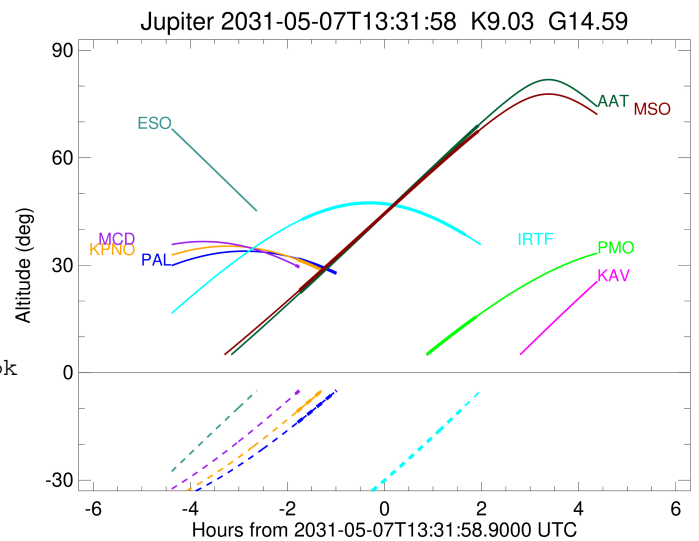
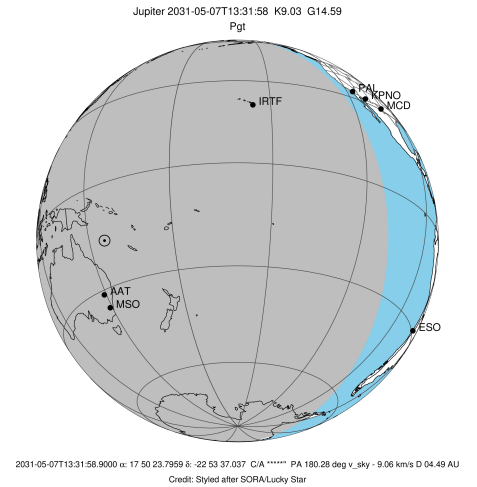


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-07T11:53:25.903	-24.71x	-13.23	71489.0	34.84	38.44
Jupiter	E	2031-05-07T15:25:18.673	15.61	-40.47	71488.7	36.49	40.14

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-07T13:25:39.380
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       : 4068897711007383552
2Mass ID (if available) : 17502380-2253369
ICRS Star Coord at Epoch: 17h 50m 23.79594s -22:53:37.03675s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.026
G magnitude          : 14.594
RP magnitude         : 13.263
BP magnitude         : 16.715
DUPflag             : 0
Distance (au)        : 4.495
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.06
Sun-Target sep (deg) : 138.59
Sun-Moon sep (deg)  : 36.57
B (ring opening deg) : -2.61
PA of pole (deg)    : 0.20
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation ("): 13.135
C/A sky separation (km): 42819.4
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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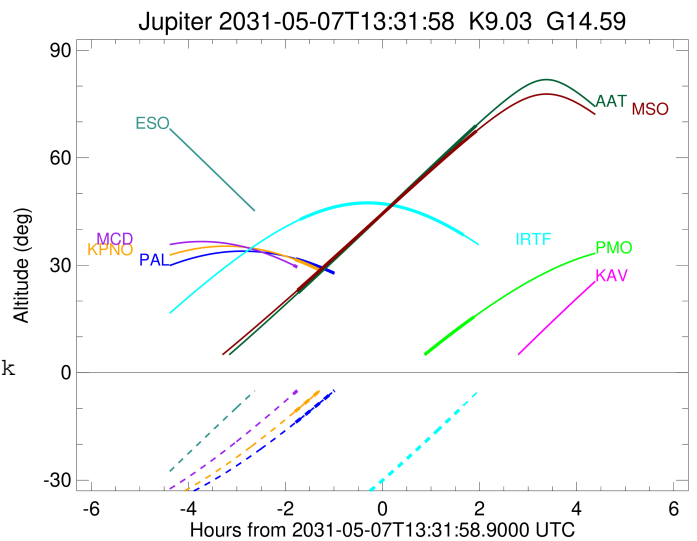
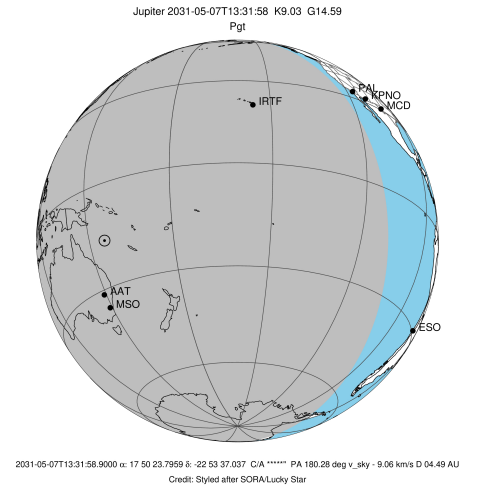


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-07T11:43:36.254	31.61	-10.91	71488.6	37.36	41.02
Jupiter	E	2031-05-07T15:08:47.487	1.52x	31.01x	71488.8	35.85	39.48

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-07T13:24:50.870
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       : 4068897711007383552
2Mass ID (if available) : 17502380-2253369
ICRS Star Coord at Epoch: 17h 50m 23.79594s -22:53:37.03675s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.026
G magnitude           : 14.594
RP magnitude          : 13.263
BP magnitude          : 16.715
DUPflag              : 0
Distance (au)        : 4.495
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.06
Sun-Target sep (deg) : 138.59
Sun-Moon sep (deg)   : 36.59
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.20
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation ("): 13.042
C/A sky separation (km): 42515.5
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
    
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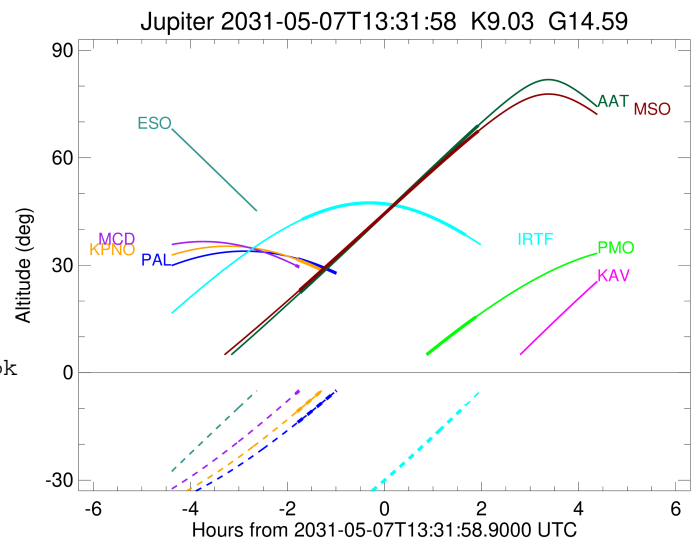
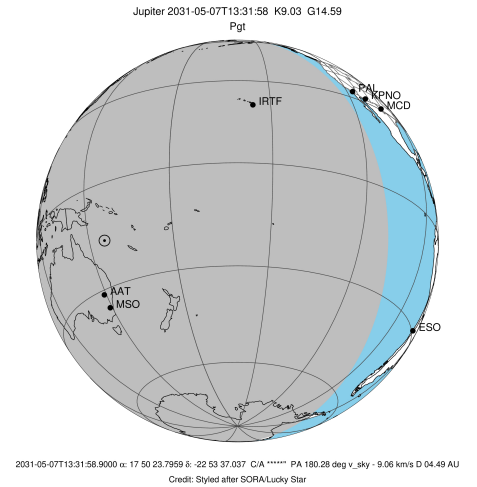


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-07T11:42:07.266	29.97	-5.91	71488.6	37.16	40.82
Jupiter	E	2031-05-07T15:08:51.126	-3.73x	37.51x	71488.9	35.48	39.09

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-07T13:31:14.260
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      : 4068897711007383552
2Mass ID (if available) : 17502380-2253369
ICRS Star Coord at Epoch: 17h 50m 23.79594s -22:53:37.03675s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.026
G magnitude          : 14.594
RP magnitude         : 13.263
BP magnitude         : 16.715
DUPflag             : 0
Distance (au)       : 4.495
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -9.06
Sun-Target sep (deg) : 138.59
Sun-Moon sep (deg)  : 36.37
B (ring opening deg) : -2.61
PA of pole (deg)    : 0.20
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 13.065
C/A sky separation (km) : 42589.3
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
    
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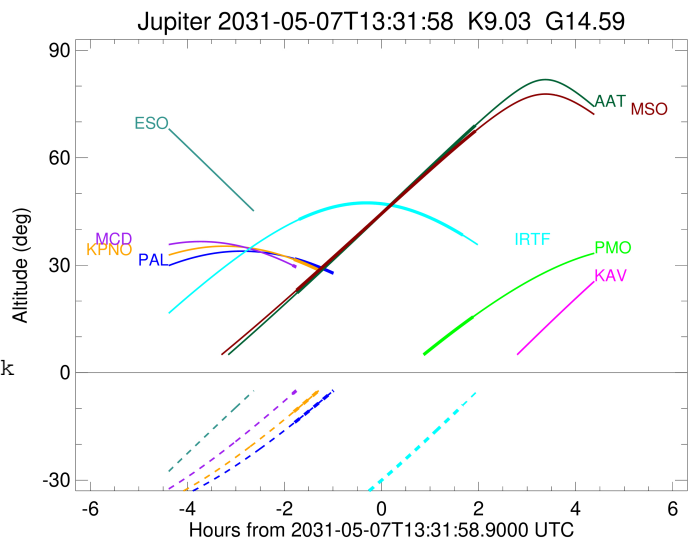
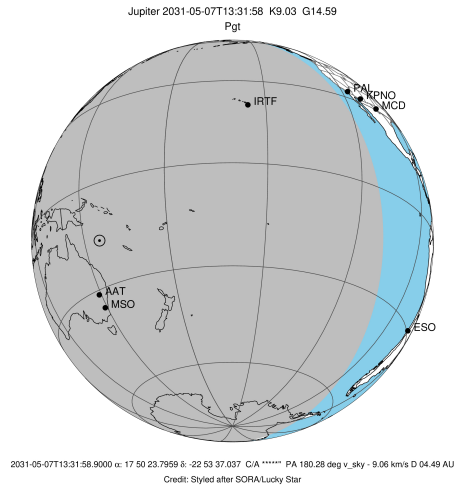


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-07T11:49:57.292	42.75	-47.10	71488.7	36.46	40.10
Jupiter	E	2031-05-07T15:12:25.283	38.39	-9.10	71488.8	36.14	39.77

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-07T13:38:43.110
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        : 4068897711007383552
2Mass ID (if available) : 17502380-2253369
ICRS Star Coord at Epoch: 17h 50m 23.79594s -22:53:37.03675s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.026
G magnitude           : 14.594
RP magnitude          : 13.263
BP magnitude          : 16.715
DUPflag              : 0
Distance (au)         : 4.495
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.06
Sun-Target sep (deg)  : 138.59
Sun-Moon sep (deg)    : 35.73
B (ring opening deg) : -2.61
PA of pole (deg)      : 0.20
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 11.237
C/A sky separation (km) : 36629.7
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
    
```

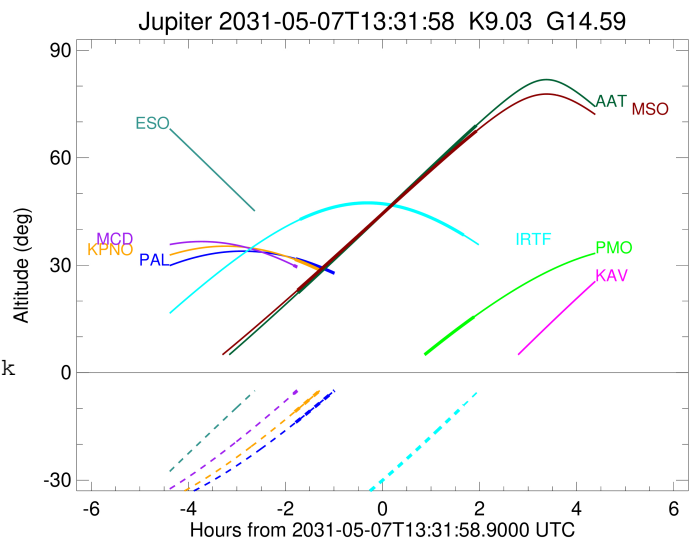
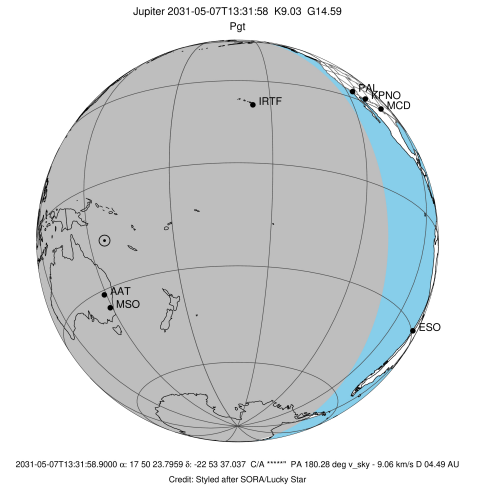


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-07T11:47:40.100	22.27	-56.69	71489.7	30.02	33.40
Jupiter	E	2031-05-07T15:27:50.731	69.00	-65.55	71489.5	31.24	34.68

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-07T13:38:26.000
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        : 4068897711007383552
2Mass ID (if available) : 17502380-2253369
ICRS Star Coord at Epoch: 17h 50m 23.79594s -22:53:37.03675s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.026
G magnitude           : 14.594
RP magnitude          : 13.263
BP magnitude          : 16.715
DUPflag              : 0
Distance (au)         : 4.495
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.06
Sun-Target sep (deg) : 138.59
Sun-Moon sep (deg)   : 35.75
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.20
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 11.111
C/A sky separation (km) : 36218.4
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	2031-05-07T11:46:50.243	22.99	-55.08	71489.7	29.68	33.03
Jupiter	E	2031-05-07T15:28:09.288	67.48	-63.27	71489.6	30.84	34.25