

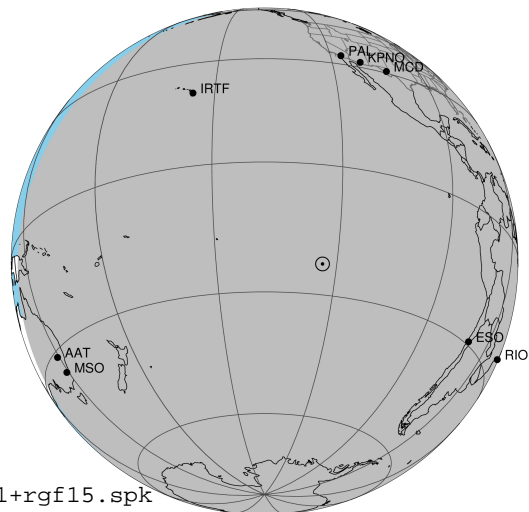
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-02T08:18:26.440
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068845140651868928
 2Mass ID (if available) : 17450315-2304409

Jupiter 2043-07-02T08:18:26 K8.45 G14.23 Pgt

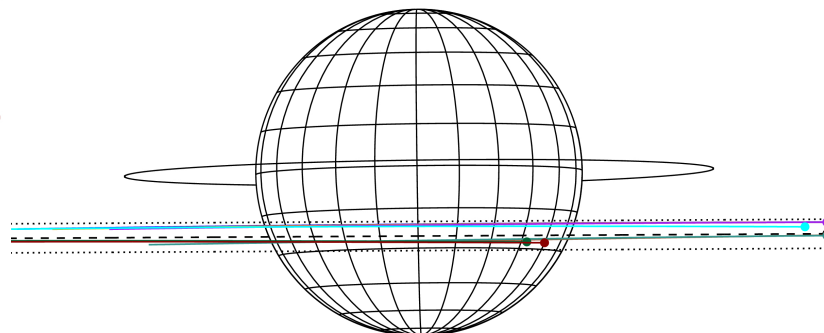
ICRS Star Coord at Epoch: 17h 45m 03.14642s -23°04'41.29879s

RUWE (>1.4 is poor) : 1.03
 K magnitude : 8.454
 G magnitude : 14.228
 RP magnitude : 12.795
 BP magnitude : 17.007
 DUPflag : 0
 Distance (au) : 4.267
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.67
 Sun-Target sep (deg) : 166.78
 Sun-Moon sep (deg) : 132.46
 B (ring opening deg) : -2.41
 PA of pole (deg) : 0.77
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 8.993
 C/A sky separation (km) : 27834.7
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-02T08:18:26 K8.45 G14.23
 Pgt



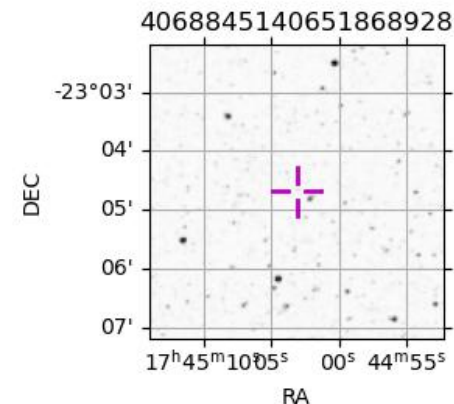
Earth
 PAL
 KPNO
 MCD
 IRTF
 RIO
 ESO
 AAT
 MSO



2043-07-02T08:18:26.4400 a: 17 45 03.1464 s: -23 04 41.299 C/A 8.993" PA 0.32 deg v_sky -15.67 km/s D 04.27 AU
 Credit: Styled after SORA/Lucky Star

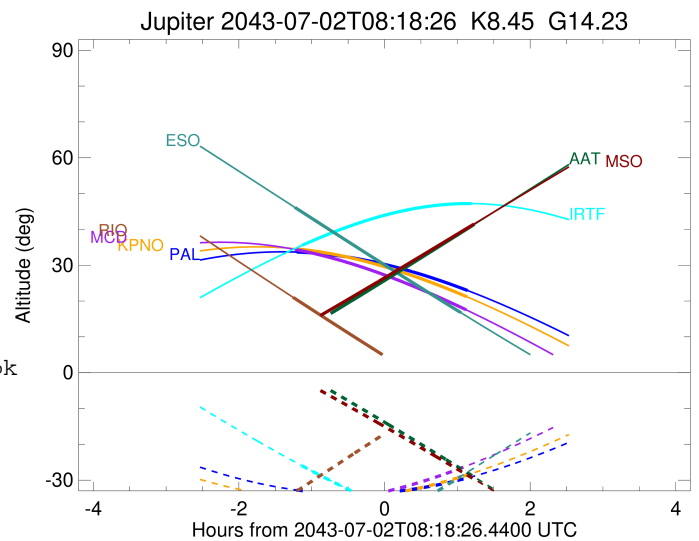
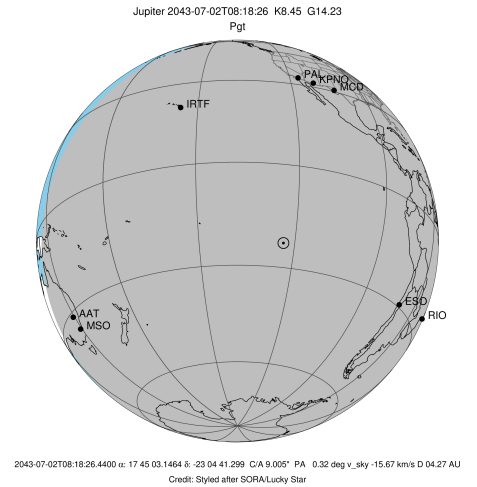
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	JUL 02 07:06 - JUL 02 09:26	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JUL 02 07:05 - JUL 02 09:26	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JUL 02 07:04 - JUL 02 09:25	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	JUL 02 07:10 - JUL 02 09:30	Pie
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	JUL 02 07:03 - JUL 02 07:03	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUL 02 07:04 - JUL 02 09:21	Pie
AAT	Siding Spring (AAT)	-31.3	149.1	+	JUL 02 09:32 - JUL 02 09:32	Pne
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUL 02 09:31 - JUL 02 09:31	Pne



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-02T08:16:22.230
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       : 4068845140651868928
2Mass ID (if available) : 17450315-2304409
ICRS Star Coord at Epoch: 17h 45m 03.14642s -23:04:41.29879s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 8.454
G magnitude           : 14.228
RP magnitude         : 12.795
BP magnitude         : 17.007
DUPflag              : 0
Distance (au)        : 4.267
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.67
Sun-Target sep (deg) : 166.78
Sun-Moon sep (deg)   : 133.06
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.77
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 7.323
C/A sky separation (km): 22666.0
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
    
```

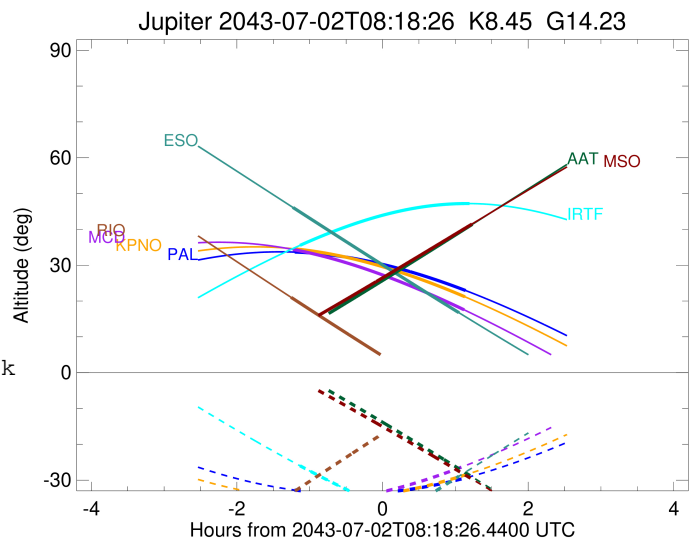
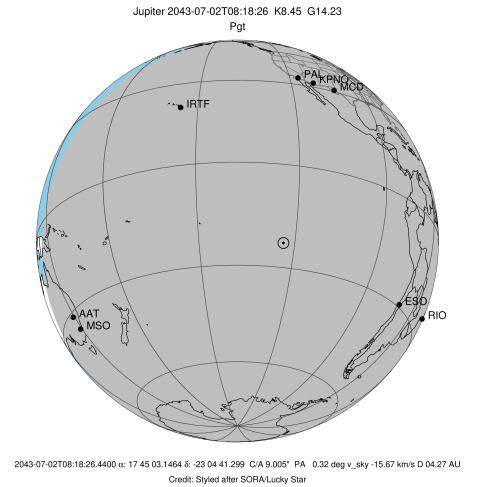


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T07:06:01.496	33.66	-32.76	71491.2	-18.81	-21.26
Jupiter	E	2043-07-02T09:26:55.466	22.93	-29.37	71491.2	-18.28	-20.68

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-02T08:15:50.610
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       : 4068845140651868928
2Mass ID (if available) : 17450315-2304409
ICRS Star Coord at Epoch: 17h 45m 03.14642s -23:04:41.29879s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 8.454
G magnitude           : 14.228
RP magnitude         : 12.795
BP magnitude         : 17.007
DUPflag              : 0
Distance (au)        : 4.267
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.67
Sun-Target sep (deg) : 166.78
Sun-Moon sep (deg)   : 133.11
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.77
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 7.376
C/A sky separation (km): 22829.1
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
    
```

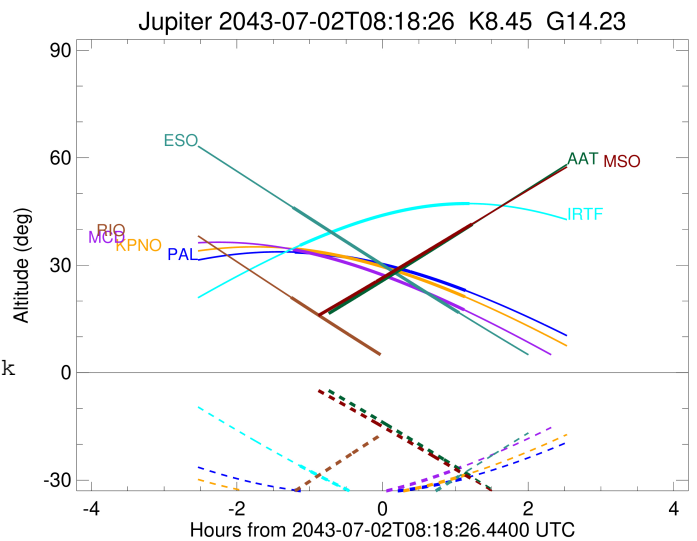
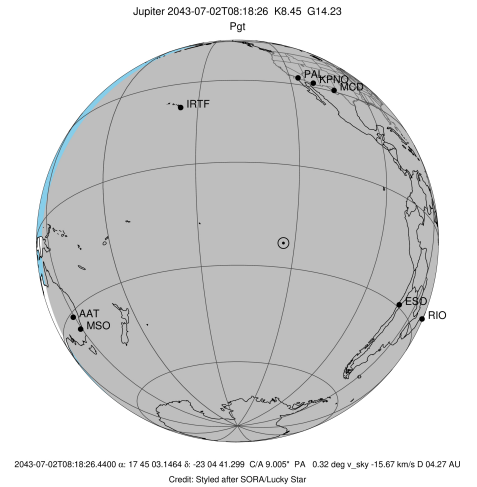


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T07:05:32.572	34.57	-34.86	71491.2	-18.90	-21.36
Jupiter	E	2043-07-02T09:26:23.978	21.17	-28.57	71491.2	-18.47	-20.88

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-02T08:15:07.380
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       : 4068845140651868928
2Mass ID (if available) : 17450315-2304409
ICRS Star Coord at Epoch: 17h 45m 03.14642s -23:04:41.29879s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 8.454
G magnitude          : 14.228
RP magnitude         : 12.795
BP magnitude         : 17.007
DUPflag             : 0
Distance (au)        : 4.267
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.67
Sun-Target sep (deg) : 166.78
Sun-Moon sep (deg)   : 133.15
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.77
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 7.448
C/A sky separation (km): 23051.5
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
    
```

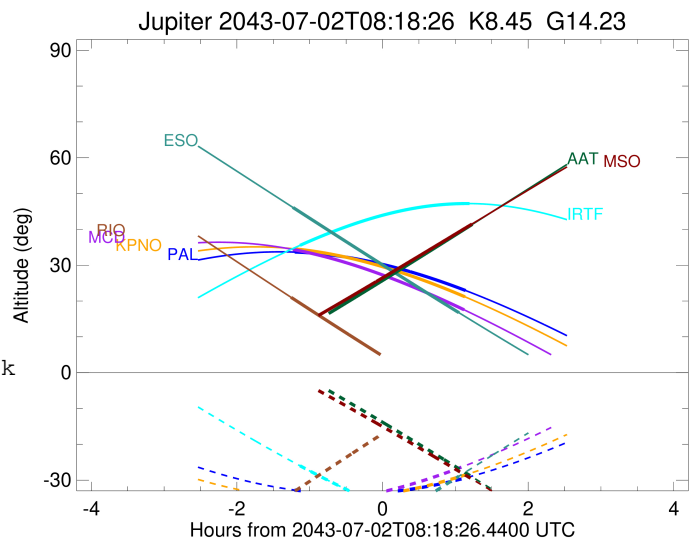
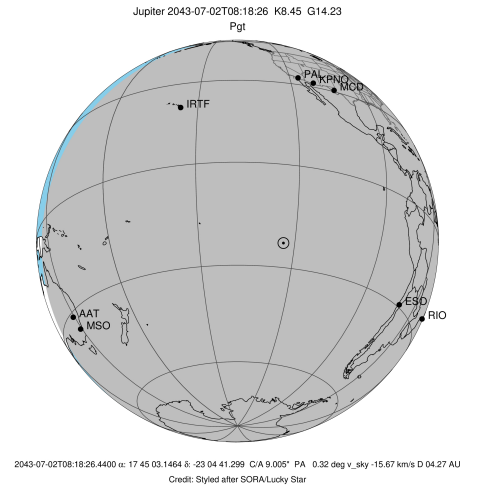


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T07:04:50.614	34.38	-36.45	71491.1	-19.02	-21.49
Jupiter	E	2043-07-02T09:25:43.372	17.54	-26.08	71491.2	-18.72	-21.16

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-02T08:20:23.490
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      : 4068845140651868928
2Mass ID (if available) : 17450315-2304409
ICRS Star Coord at Epoch: 17h 45m 03.14642s -23:04:41.29879s
RUWE (>1.4 is poor) : 1.03
K magnitude         : 8.454
G magnitude         : 14.228
RP magnitude        : 12.795
BP magnitude        : 17.007
DUPflag            : 0
Distance (au)       : 4.267
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.67
Sun-Target sep (deg) : 166.78
Sun-Moon sep (deg)  : 132.80
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.77
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 7.627
C/A sky separation (km) : 23604.9
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
    
```

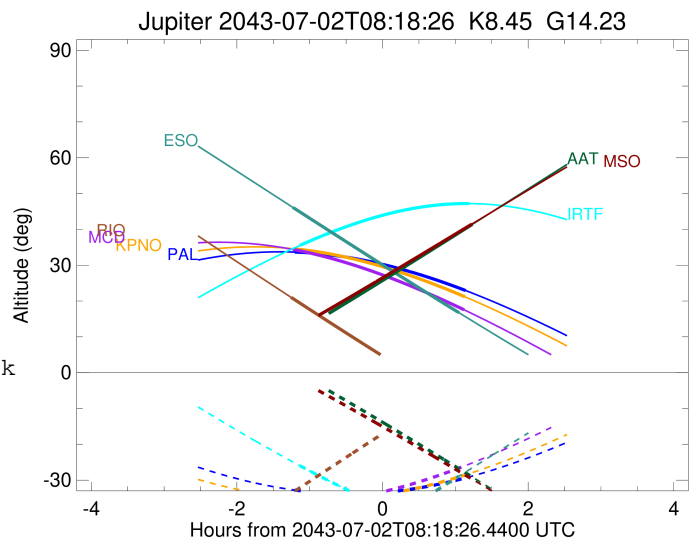
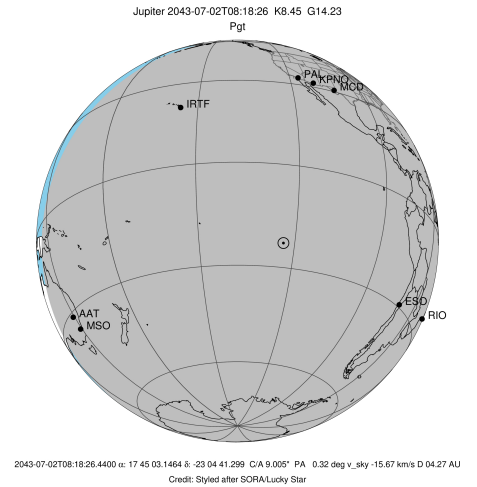


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T07:10:26.468	35.53	-25.98	71491.1	-19.98	-22.55
Jupiter	E	2043-07-02T09:30:11.634	47.20	-45.16	71491.2	-18.72	-21.16

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-02T08:11:51.120
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       : 4068845140651868928
2Mass ID (if available) : 17450315-2304409
ICRS Star Coord at Epoch: 17h 45m 03.14642s -23:04:41.29879s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 8.454
G magnitude           : 14.228
RP magnitude          : 12.795
BP magnitude          : 17.007
DUPflag              : 0
Distance (au)         : 4.267
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.67
Sun-Target sep (deg) : 166.78
Sun-Moon sep (deg)   : 133.13
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.77
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 9.765
C/A sky separation (km): 30224.1
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
    
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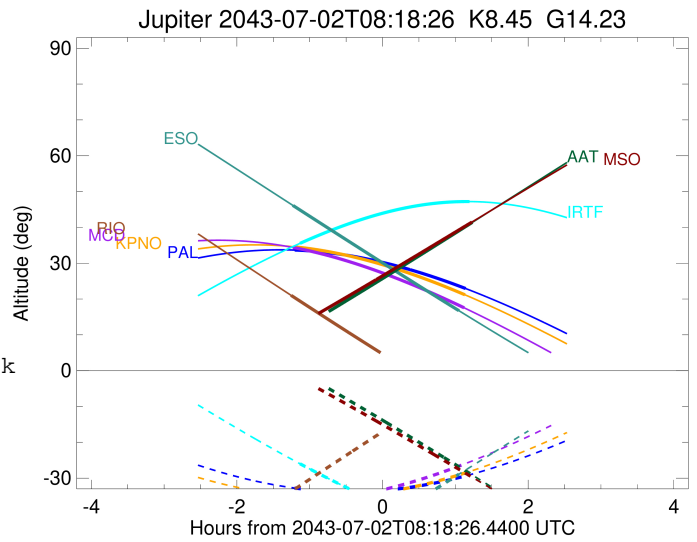
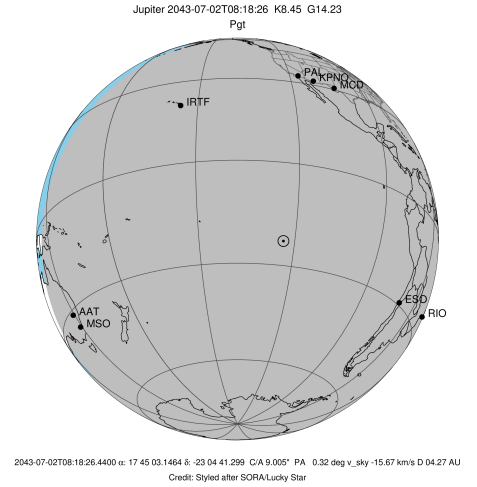


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T07:03:09.916	21.01	-33.74	71490.6	-24.83	-27.85
Jupiter	E	2043-07-02T09:21:08.207	-8.35x	-3.54x	71490.6	-25.14	-28.17

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-02T08:12:44.670
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       : 4068845140651868928
2Mass ID (if available) : 17450315-2304409
ICRS Star Coord at Epoch: 17h 45m 03.14642s -23:04:41.29879s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 8.454
G magnitude           : 14.228
RP magnitude          : 12.795
BP magnitude          : 17.007
DUPflag              : 0
Distance (au)         : 4.267
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.67
Sun-Target sep (deg) : 166.78
Sun-Moon sep (deg)   : 133.37
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.77
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 9.624
C/A sky separation (km): 29787.9
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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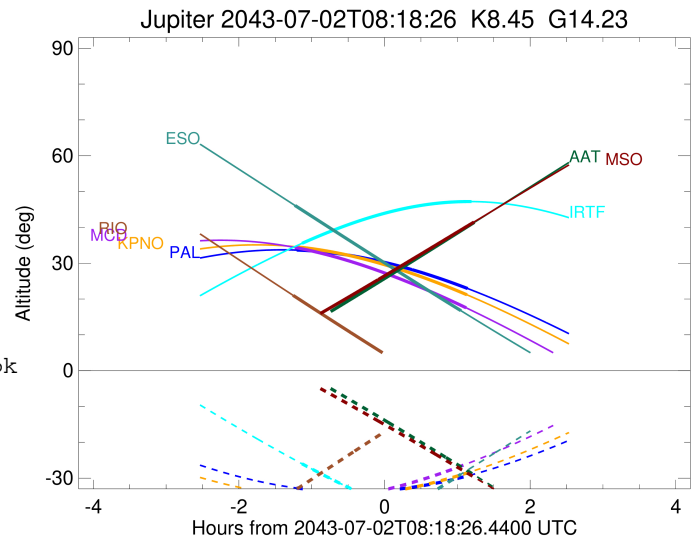
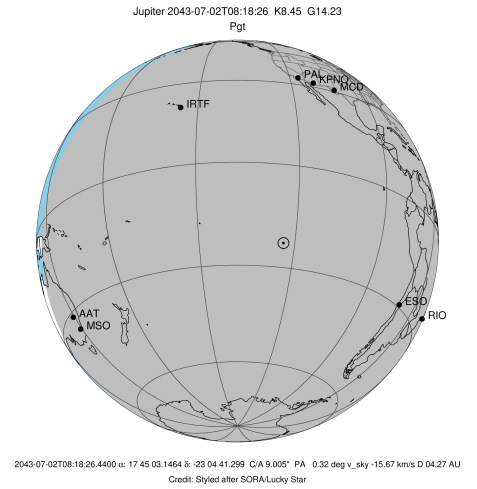


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T07:04:37.979	46.12	-58.60	71490.6	-24.57	-27.57
Jupiter	E	2043-07-02T09:21:21.618	16.75	-28.92	71490.6	-24.70	-27.71


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-02T08:24:14.520
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      : 4068845140651868928
2Mass ID (if available) : 17450315-2304409
ICRS Star Coord at Epoch: 17h 45m 03.14642s -23:04:41.29879s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 8.454
G magnitude          : 14.228
RP magnitude         : 12.795
BP magnitude         : 17.007
DUPflag             : 0
Distance (au)        : 4.267
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.67
Sun-Target sep (deg) : 166.78
Sun-Moon sep (deg)  : 132.22
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.77
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 9.754
C/A sky separation (km) : 30190.7
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
    
```

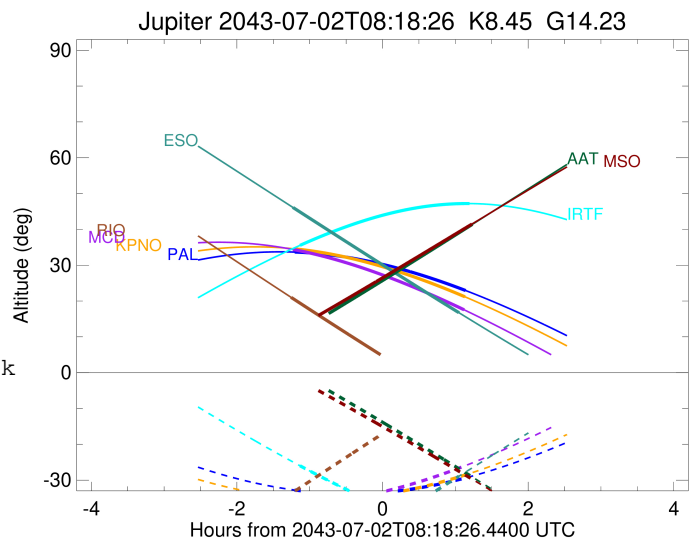
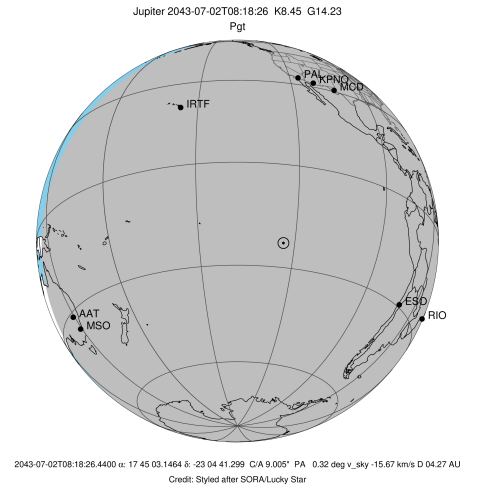


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T07:15:39.564	12.74	-1.41x	71490.5	-25.97	-29.07
Jupiter	E	2043-07-02T09:32:21.247	41.37	-29.11	71490.7	-24.00	-26.95


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-02T08:23:59.230
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       : 4068845140651868928
2Mass ID (if available) : 17450315-2304409
ICRS Star Coord at Epoch: 17h 45m 03.14642s -23:04:41.29879s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 8.454
G magnitude           : 14.228
RP magnitude          : 12.795
BP magnitude          : 17.007
DUPflag              : 0
Distance (au)        : 4.267
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.67
Sun-Target sep (deg) : 166.78
Sun-Moon sep (deg)   : 132.25
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.77
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 9.877
C/A sky separation (km) : 30569.7
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	2043-07-02T07:15:34.556	14.00	-3.13x	71490.4	-26.28	-29.40
Jupiter	E	2043-07-02T09:31:57.088	41.44	-29.65	71490.6	-24.36	-27.34