

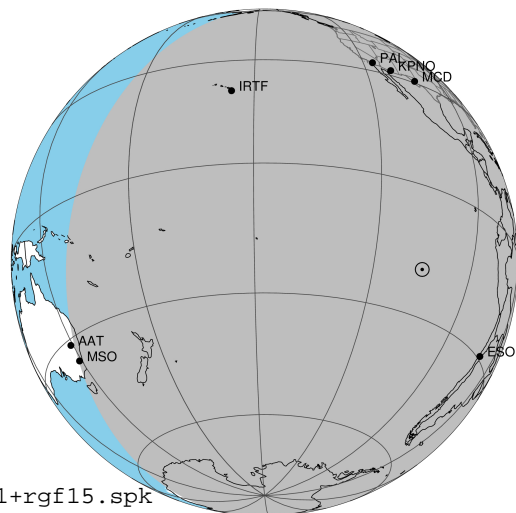
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-26T07:11:27.850
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116685265133830400
 2Mass ID (if available) : 17342799-2303278

Jupiter 2043-07-26T07:11:27 K9.96 G14.75 Pgt

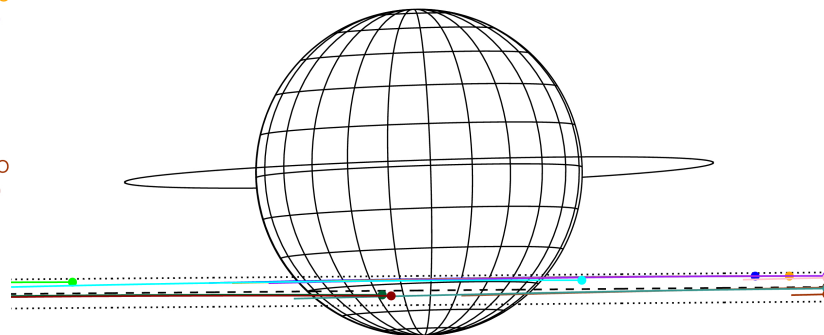
ICRS Star Coord at Epoch: 17h 34m 27.98418s -23:03:27.98108s

RUWE (>1.4 is poor) : 1.00
 K magnitude : 9.957
 G magnitude : 14.746
 RP magnitude : 13.507
 BP magnitude : 16.339
 DUPflag : 0
 Distance (au) : 4.421
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -10.10
 Sun-Target sep (deg) : 141.50
 Sun-Moon sep (deg) : 89.25
 B (ring opening deg) : -2.38
 PA of pole (deg) : 1.91
 Pole direction: RA (deg): 268.05670
 Dec (deg): 64.49731
 C/A sky separation (") : 16.121
 C/A sky separation (km) : 51689.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-26T07:11:27 K9.96 G14.75
 Pgt



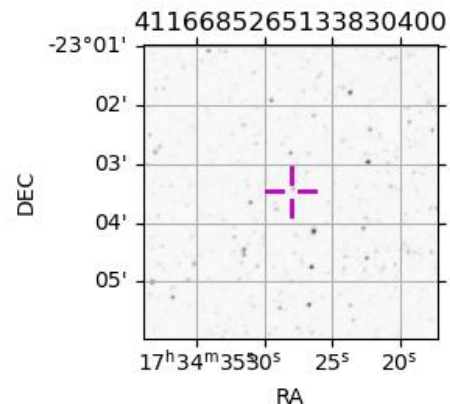
Earth
 PAL
 PMO
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 AAT
 SAAO
 MSO



2043-07-26T07:11:27.8500 α: 17 34 27.9842 δ: -23 03 27.981 C/A ***** PA 0.49 deg v_sky -10.10 km/s D 04.42 AU
 Credit: Styled after SORA/Lucky Star

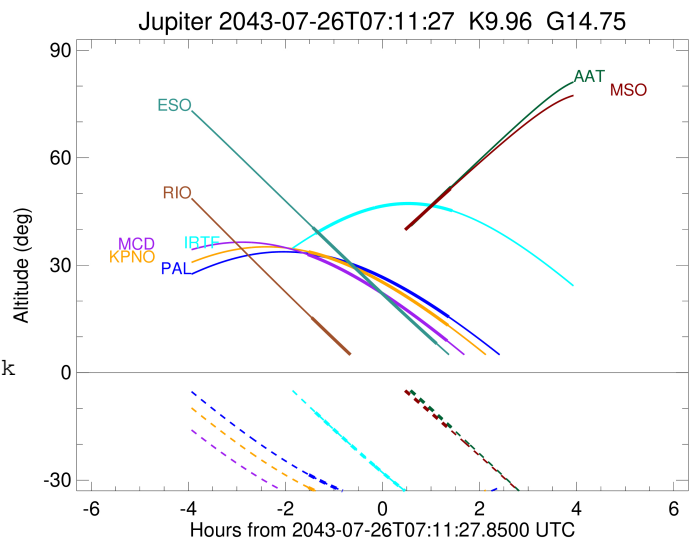
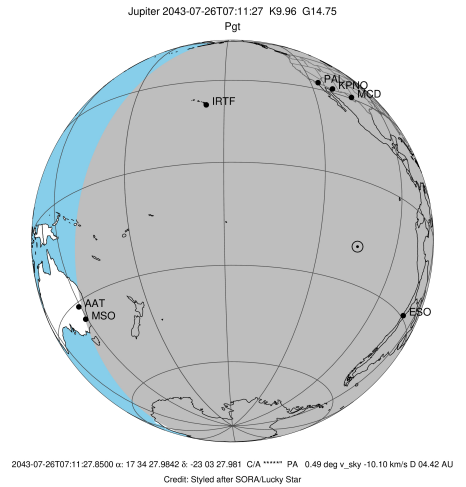
Observable events with sun below -5 deg and altitude above 5 deg

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 26 05:40	- JUL 26 08:33	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8				Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JUL 26 05:39	- JUL 26 08:32	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JUL 26 05:39	- JUL 26 08:31	Pie
TEN	Teide Obs./Tenerife	28.3	343.5				Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	JUL 26 05:48	- JUL 26 08:37	Pie
KAV	Kavalur Observatory	12.6	78.8				Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	JUL 26 05:43	- JUL 26 05:43	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUL 26 05:45	- JUL 26 08:18	Pie
AAT	Siding Spring (AAT)	-31.3	149.1	+	JUL 26 08:36	- JUL 26 08:36	Pne
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8				Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUL 26 08:35	- JUL 26 08:35	Pne



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-26T07:06:37.730
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      : 4116685265133830400
2Mass ID (if available) : 17342799-2303278
ICRS Star Coord at Epoch: 17h 34m 27.98418s -23:03:27.98108s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 9.957
G magnitude          : 14.746
RP magnitude         : 13.507
BP magnitude         : 16.339
DUPflag             : 0
Distance (au)       : 4.421
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -10.10
Sun-Target sep (deg) : 141.50
Sun-Moon sep (deg)  : 89.68
B (ring opening deg) : -2.38
PA of pole (deg)    : 1.91
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (") : 14.549
C/A sky separation (km) : 46649.5
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
    
```

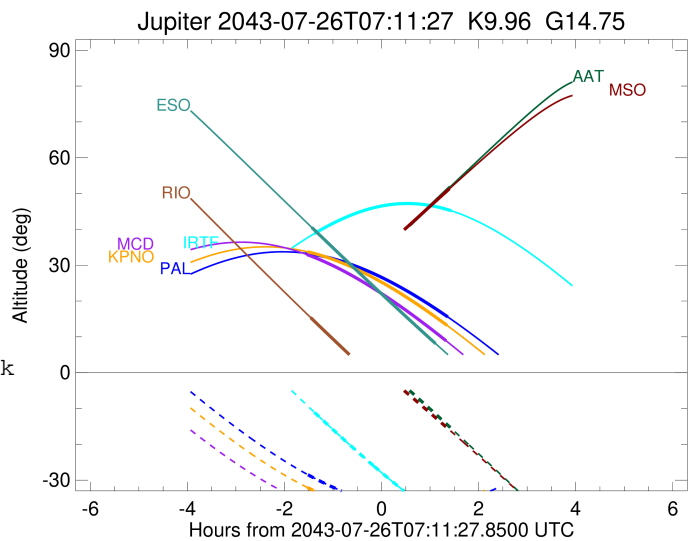
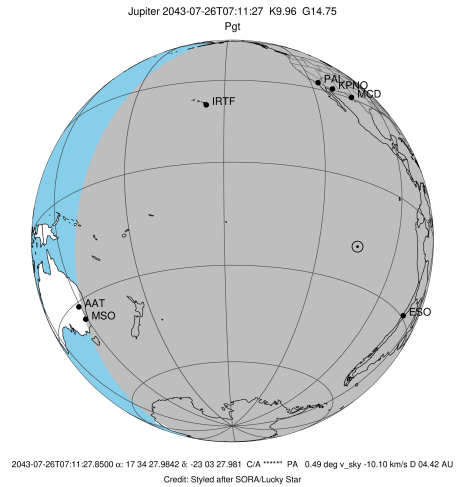


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-26T05:40:36.661	33.24	-28.50	71488.5	-41.85	-45.57
Jupiter	E	2043-07-26T08:33:24.456	15.55	-36.57	71488.8	-39.80	-43.51

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-26T07:05:47.550
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       : 4116685265133830400
2Mass ID (if available) : 17342799-2303278
ICRS Star Coord at Epoch: 17h 34m 27.98418s -23:03:27.98108s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 9.957
G magnitude           : 14.746
RP magnitude          : 13.507
BP magnitude          : 16.339
DUPflag              : 0
Distance (au)         : 4.421
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -10.10
Sun-Target sep (deg) : 141.50
Sun-Moon sep (deg)   : 89.66
B (ring opening deg) : -2.38
PA of pole (deg)     : 1.91
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (") : 14.608
C/A sky separation (km) : 46838.2
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
    
```

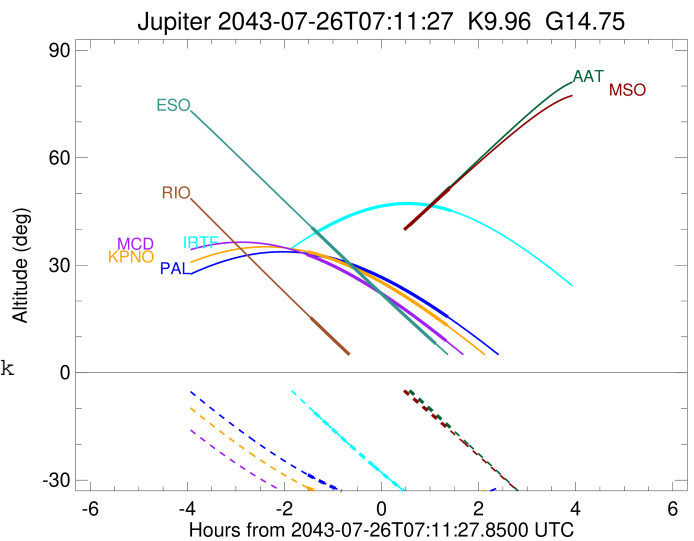
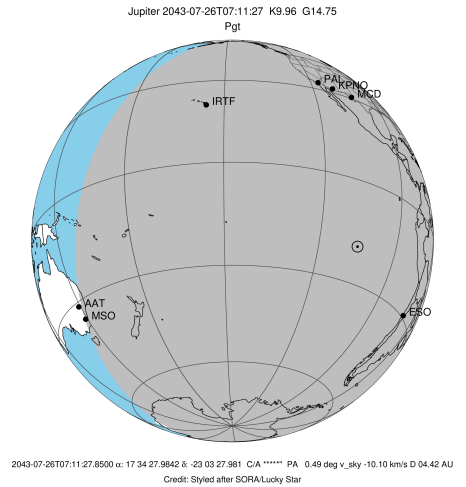


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-26T05:39:58.636	33.74	-32.06	71488.5	-41.98	-45.70
Jupiter	E	2043-07-26T08:32:28.277	13.20	-36.84	71488.8	-40.07	-43.78

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-26T07:04:40.840
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      : 4116685265133830400
2Mass ID (if available) : 17342799-2303278
ICRS Star Coord at Epoch: 17h 34m 27.98418s -23:03:27.98108s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 9.957
G magnitude          : 14.746
RP magnitude         : 13.507
BP magnitude         : 16.339
DUPflag             : 0
Distance (au)       : 4.421
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -10.10
Sun-Target sep (deg) : 141.50
Sun-Moon sep (deg)  : 89.61
B (ring opening deg) : -2.38
PA of pole (deg)    : 1.91
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (" ) : 14.688
C/A sky separation (km) : 47094.4
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
    
```

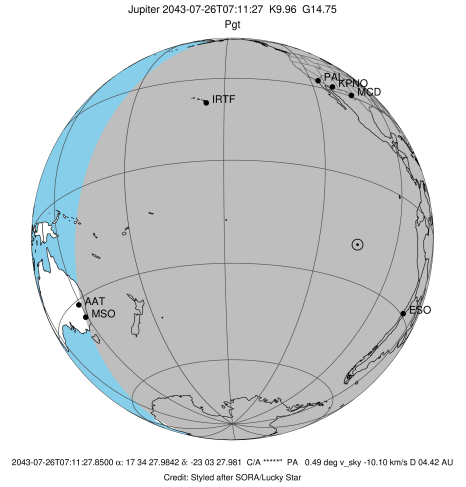


x: target alt < 5.0 deg or sun > -5.0 deg

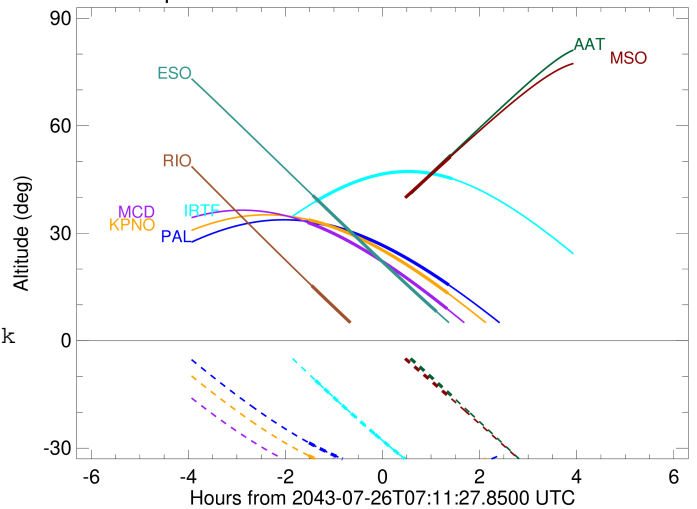
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-26T05:39:03.871	32.98	-36.17	71488.5	-42.15	-45.87
Jupiter	E	2043-07-26T08:31:17.919	8.90	-35.72	71488.7	-40.42	-44.13

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-26T07:12:59.080
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       : 4116685265133830400
2Mass ID (if available) : 17342799-2303278
ICRS Star Coord at Epoch: 17h 34m 27.98418s -23:03:27.98108s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 9.957
G magnitude           : 14.746
RP magnitude         : 13.507
BP magnitude         : 16.339
DUPflag              : 0
Distance (au)        : 4.421
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.10
Sun-Target sep (deg) : 141.50
Sun-Moon sep (deg)   : 89.95
B (ring opening deg) : -2.38
PA of pole (deg)     : 1.91
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (") : 14.777
C/A sky separation (km) : 47379.3
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
    
```



Jupiter 2043-07-26T07:11:27 K9.96 G14.75

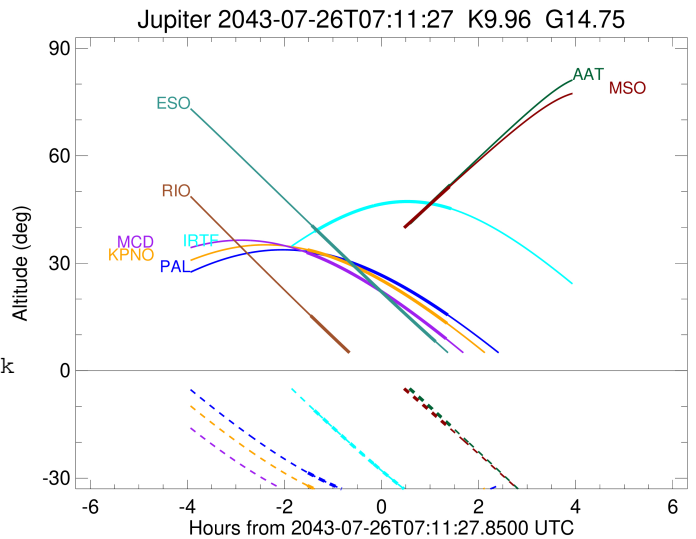
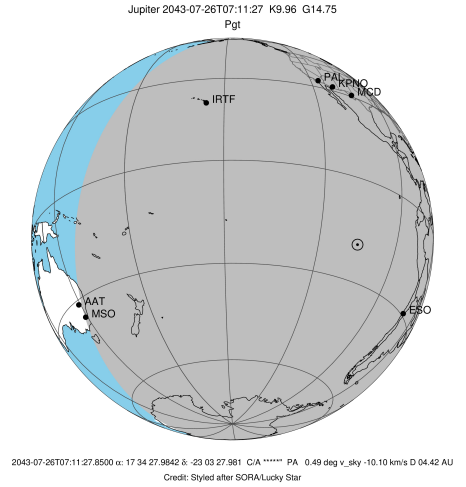


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-26T05:48:22.620	38.81	-11.03	71488.4	-43.18	-46.90
Jupiter	E	2043-07-26T08:37:33.493	45.20	-42.38	71488.8	-40.08	-43.79

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-26T07:00:27.460
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       : 4116685265133830400
2Mass ID (if available) : 17342799-2303278
ICRS Star Coord at Epoch: 17h 34m 27.98418s -23:03:27.98108s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 9.957
G magnitude           : 14.746
RP magnitude          : 13.507
BP magnitude          : 16.339
DUPflag              : 0
Distance (au)        : 4.421
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -10.10
Sun-Target sep (deg) : 141.50
Sun-Moon sep (deg)   : 89.18
B (ring opening deg) : -2.38
PA of pole (deg)     : 1.91
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (") : 16.967
C/A sky separation (km) : 54402.4
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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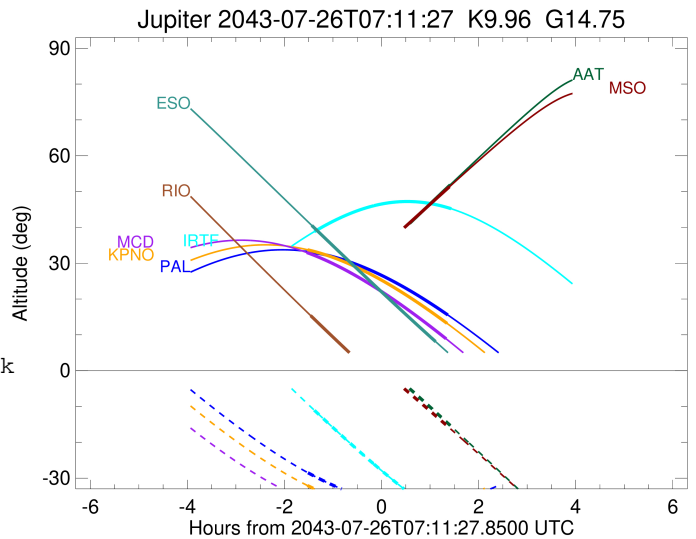
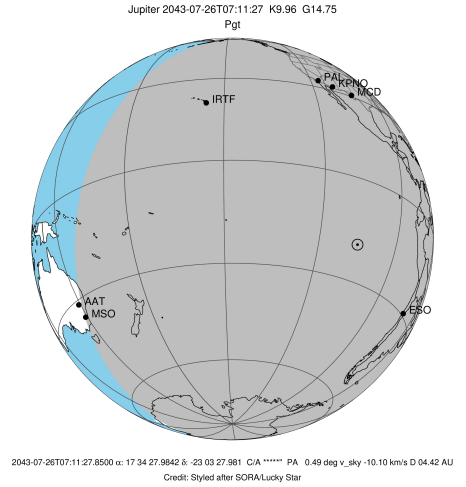


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-26T05:43:52.543	15.38	-51.62	71487.5	-49.97	-53.55
Jupiter	E	2043-07-26T08:18:18.534	-16.60x	-16.49	71487.6	-48.97	-52.59

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-26T07:01:16.080
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      : 4116685265133830400
2Mass ID (if available) : 17342799-2303278
ICRS Star Coord at Epoch: 17h 34m 27.98418s -23:03:27.98108s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 9.957
G magnitude          : 14.746
RP magnitude         : 13.507
BP magnitude         : 16.339
DUPflag             : 0
Distance (au)       : 4.421
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.10
Sun-Target sep (deg) : 141.50
Sun-Moon sep (deg)  : 89.61
B (ring opening deg) : -2.38
PA of pole (deg)    : 1.91
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation ("): 16.820
C/A sky separation (km): 53931.6
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
    
```

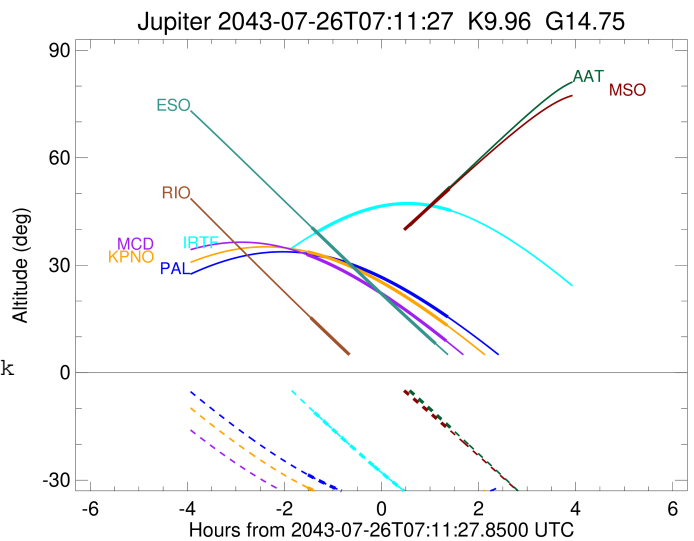
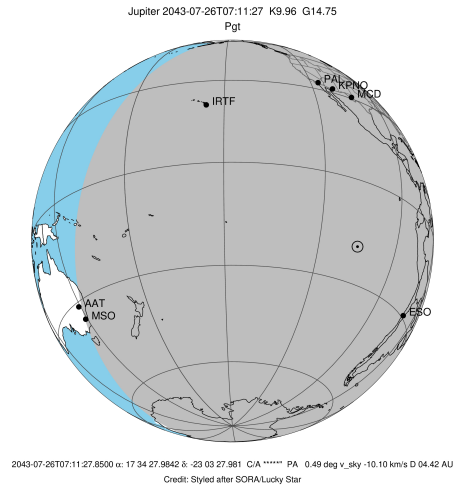


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-26T05:45:17.529	40.53	-74.05	71487.5	-49.54	-53.14
Jupiter	E	2043-07-26T08:18:22.984	8.10	-41.79	71487.7	-48.39	-52.02


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-26T07:20:31.750
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      : 4116685265133830400
2Mass ID (if available) : 17342799-2303278
ICRS Star Coord at Epoch: 17h 34m 27.98418s -23:03:27.98108s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 9.957
G magnitude          : 14.746
RP magnitude         : 13.507
BP magnitude         : 16.339
DUPflag             : 0
Distance (au)       : 4.421
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -10.10
Sun-Target sep (deg) : 141.50
Sun-Moon sep (deg)  : 89.79
B (ring opening deg) : -2.38
PA of pole (deg)    : 1.91
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (") : 16.751
C/A sky separation (km) : 53710.1
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
    
```

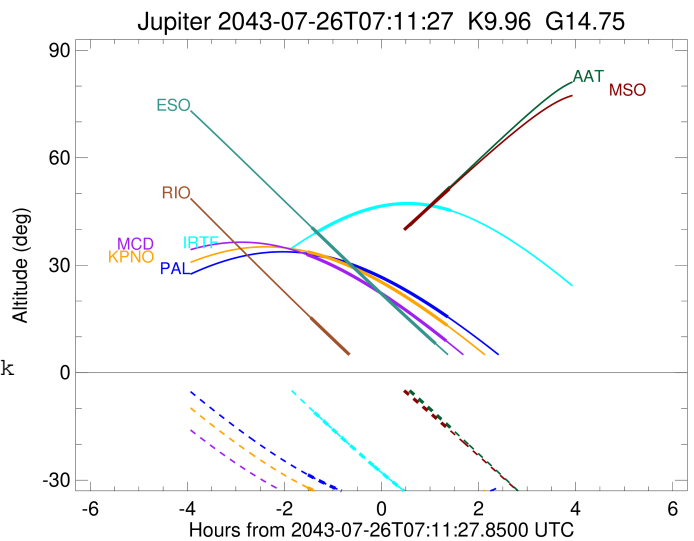
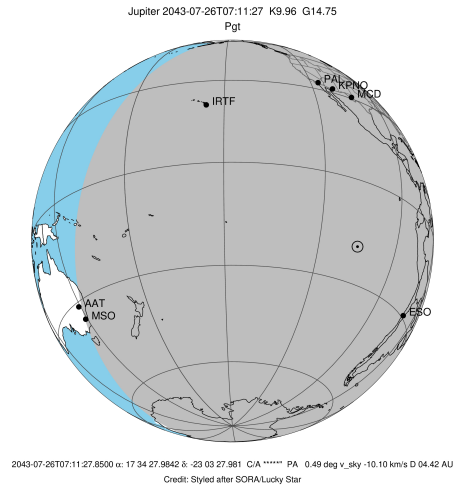


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-26T06:03:46.809	19.50	14.55x	71487.3	-50.89	-54.45
Jupiter	E	2043-07-26T08:36:30.210	51.89	-15.31	71487.9	-46.55	-50.23


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-26T07:20:08.320
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      : 4116685265133830400
2Mass ID (if available) : 17342799-2303278
ICRS Star Coord at Epoch: 17h 34m 27.98418s -23:03:27.98108s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 9.957
G magnitude          : 14.746
RP magnitude         : 13.507
BP magnitude         : 16.339
DUPflag             : 0
Distance (au)       : 4.421
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -10.10
Sun-Target sep (deg) : 141.50
Sun-Moon sep (deg)  : 89.80
B (ring opening deg) : -2.38
PA of pole (deg)    : 1.91
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (" ) : 16.874
C/A sky separation (km) : 54104.9
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	2043-07-26T06:04:04.573	20.56	12.27x	71487.3	-51.33	-54.87
Jupiter	E	2043-07-26T08:35:28.634	51.34	-15.98	71487.8	-47.06	-50.72