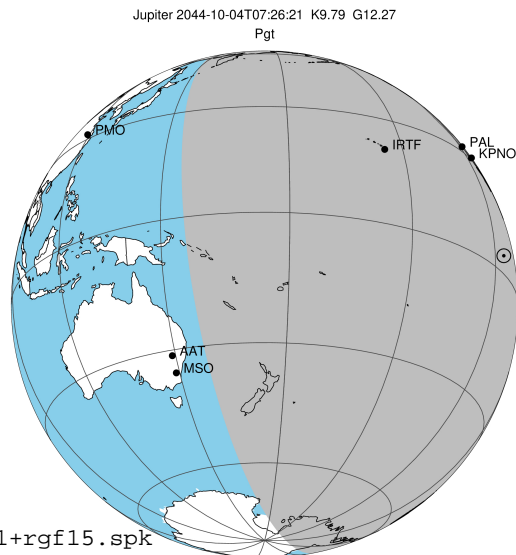


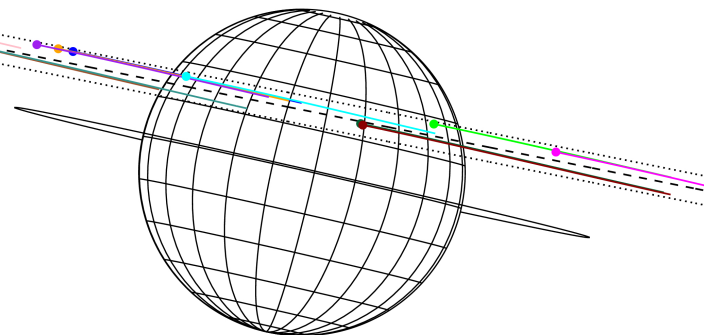
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2044-10-04T07:26:21.560  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 6864469860659757312  
 2Mass ID (if available) : 19552940-2126107

Jupiter 2044-10-04T07:26:21 K9.79 G12.27 Pgt

ICRS Star Coord at Epoch: 19h 55m 29.41830s -21:26:11.11922s  
 RUWE (>1.4 is poor) : 1.16  
 K magnitude : 9.790  
 G magnitude : 12.271  
 RP magnitude : 11.515  
 BP magnitude : 12.893  
 DUPflag : 0  
 Distance (au) : 4.738  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 5.44  
 Sun-Target sep (deg) : 105.61  
 Sun-Moon sep (deg) : 41.71  
 B (ring opening deg) : -0.82  
 PA of pole (deg) : -12.74  
 Pole direction: RA (deg): 268.05692  
 Dec (deg): 64.49727  
 C/A sky separation (") : 7.840  
 C/A sky separation (km) : 26941.1  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk



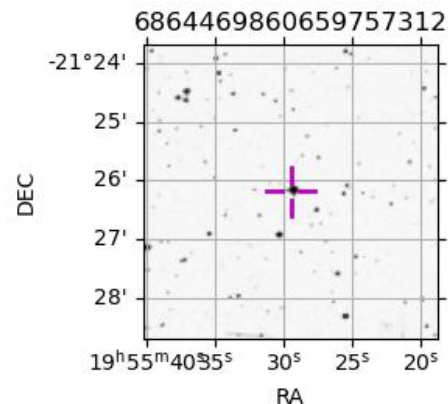
Earth  
 PIC  
 PAL  
 PMO  
 KPNO  
 MCD  
 TEN  
 IRTF  
 KAV  
 RIO  
 ESO  
 AAT  
 SAAO  
 MSO



2044-10-04T07:26:21.5600 or: 19 55 29.4183 s: -21 26 11.1119 C/A 7.835" PA 168.66 deg v\_sky + 5.44 km/s D 04.74 AU  
 Credit: Styled after SORA/Lucky Star

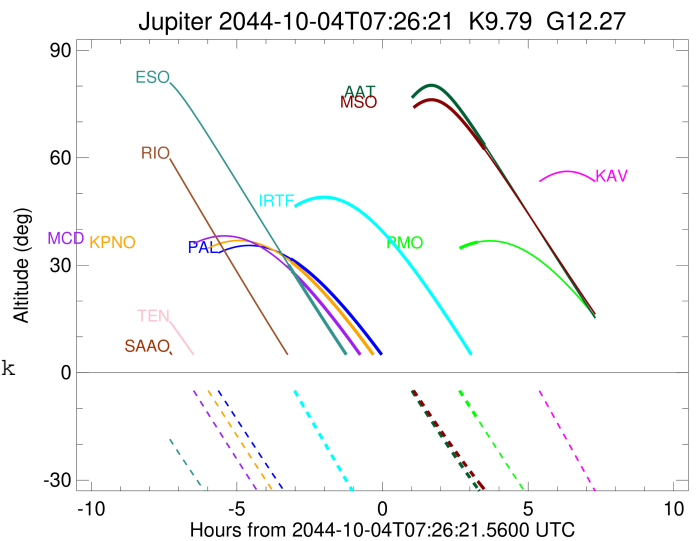
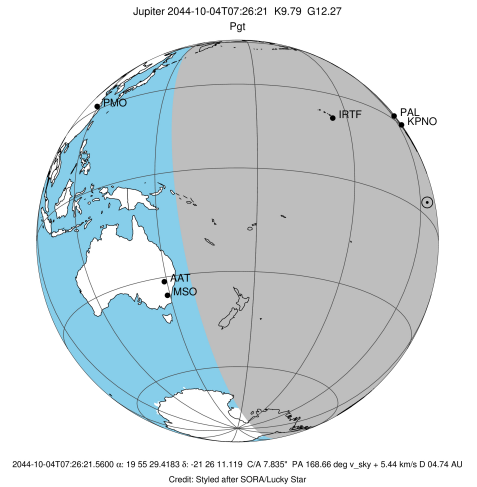
Observable events with sun below -5 deg and altitude above 5 deg

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	+	OCT 04 04:17 - OCT 04 04:17	Pin
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	OCT 04 10:42 - OCT 04 10:42	Pne
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	OCT 04 04:18 - OCT 04 04:18	Pin
MCD	McDonald Obs. 2.7m	30.7	256.0	+	OCT 04 04:19 - OCT 04 04:19	Pin
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
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	+	OCT 04 04:12 - OCT 04 04:12	Pin
AAT	Siding Spring (AAT)	-31.3	149.1	+	OCT 04 10:56 - OCT 04 10:56	Pne
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	OCT 04 10:56 - OCT 04 10:56	Pne



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2044-10-04T07:46:41.420
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        : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41830s -21:26:11.11922s
RUWE (>1.4 is poor) : 1.16
K magnitude           : 9.790
G magnitude           : 12.271
RP magnitude          : 11.515
BP magnitude          : 12.893
DUPflag              : 0
Distance (au)         : 4.739
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 5.44
Sun-Target sep (deg)  : 105.61
Sun-Moon sep (deg)   : 41.14
B (ring opening deg) : -0.82
PA of pole (deg)     : -12.74
Pole direction: RA (deg): 268.05692
Dec (deg): 64.49727
C/A sky separation (" ) : 8.623
C/A sky separation (km) : 29633.3
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
    
```

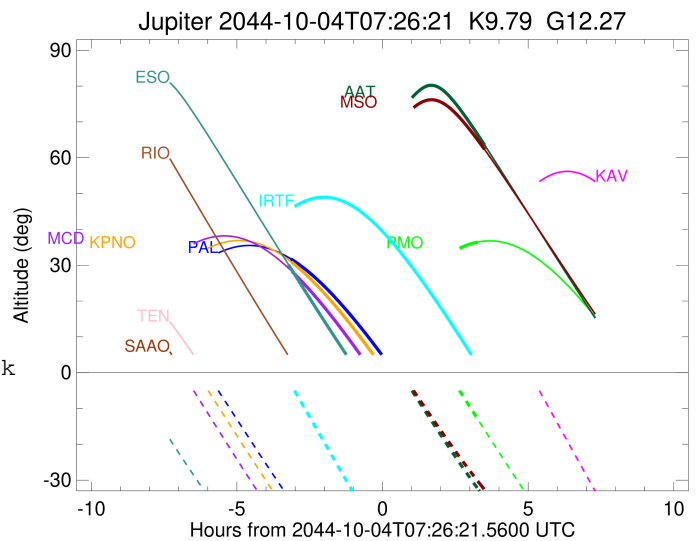
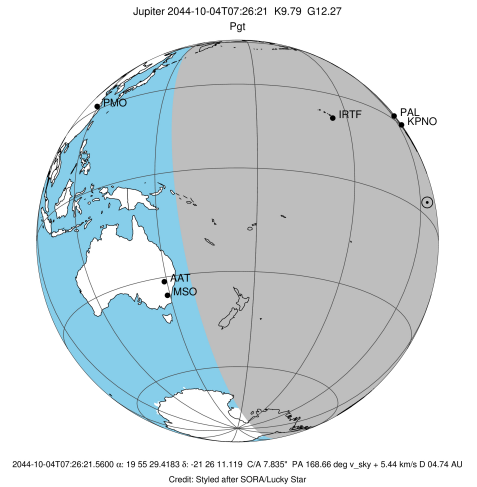


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-10-04T04:17:28.656	31.76	-35.75	71491.8	24.73	27.74
Jupiter	E	2044-10-04T11:01:10.635	-38.33x	-34.48	71491.8	24.63	27.63

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2044-10-04T07:13:32.920
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      : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41830s -21:26:11.11922s
RUWE (>1.4 is poor) : 1.16
K magnitude          : 9.790
G magnitude          : 12.271
RP magnitude         : 11.515
BP magnitude         : 12.893
DUPflag             : 0
Distance (au)       : 4.738
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 5.44
Sun-Target sep (deg) : 105.61
Sun-Moon sep (deg)  : 42.26
B (ring opening deg) : -0.82
PA of pole (deg)    : -12.74
Pole direction: RA (deg): 268.05692
Dec (deg): 64.49727
C/A sky separation (") : 9.296
C/A sky separation (km) : 31946.7
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
    
```

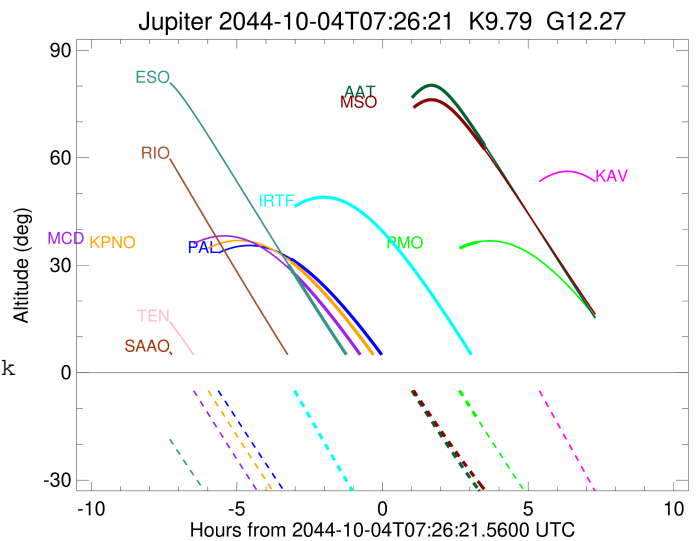
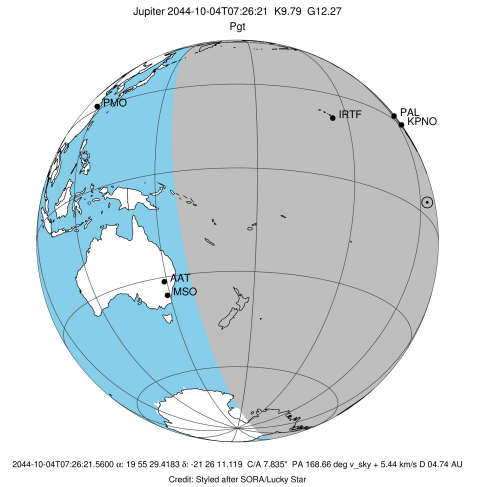


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-10-04T03:52:45.555	-26.72x	53.52x	71491.9	23.77	26.69
Jupiter	E	2044-10-04T10:42:26.335	36.45	-12.93	71491.8	28.04	31.28

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2044-10-04T07:47:01.770
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      : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41830s -21:26:11.11922s
RUWE (>1.4 is poor) : 1.16
K magnitude         : 9.790
G magnitude         : 12.271
RP magnitude        : 11.515
BP magnitude        : 12.893
DUPflag            : 0
Distance (au)       : 4.739
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 5.44
Sun-Target sep (deg) : 105.61
Sun-Moon sep (deg)  : 41.09
B (ring opening deg) : -0.82
PA of pole (deg)    : -12.74
Pole direction: RA (deg): 268.05692
Dec (deg): 64.49727
C/A sky separation (") : 8.528
C/A sky separation (km) : 29307.7
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
    
```

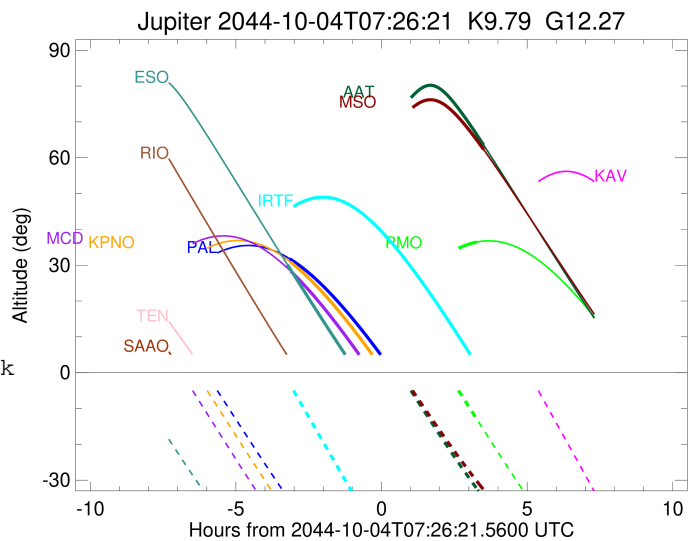
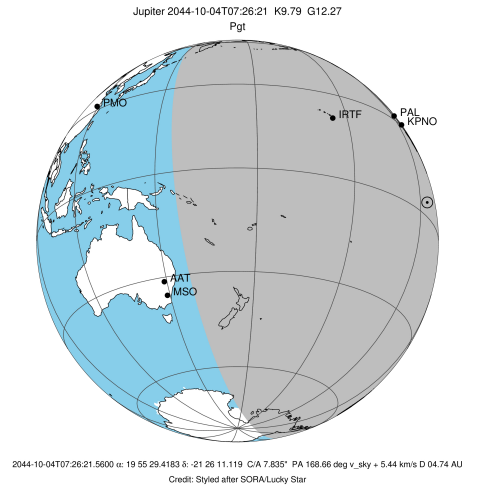


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-10-04T04:18:30.208	30.91	-40.58	71491.8	24.49	27.48
Jupiter	E	2044-10-04T11:00:41.119	-42.63x	-30.74	71491.8	24.43	27.41

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2044-10-04T07:47:07.430
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        : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41830s -21:26:11.11922s
RUWE (>1.4 is poor) : 1.16
K magnitude           : 9.790
G magnitude           : 12.271
RP magnitude          : 11.515
BP magnitude          : 12.893
DUPflag              : 0
Distance (au)         : 4.739
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 5.44
Sun-Target sep (deg)  : 105.61
Sun-Moon sep (deg)    : 41.01
B (ring opening deg) : -0.82
PA of pole (deg)      : -12.74
Pole direction: RA (deg): 268.05692
Dec (deg): 64.49727
C/A sky separation (") : 8.412
C/A sky separation (km) : 28909.9
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
    
```

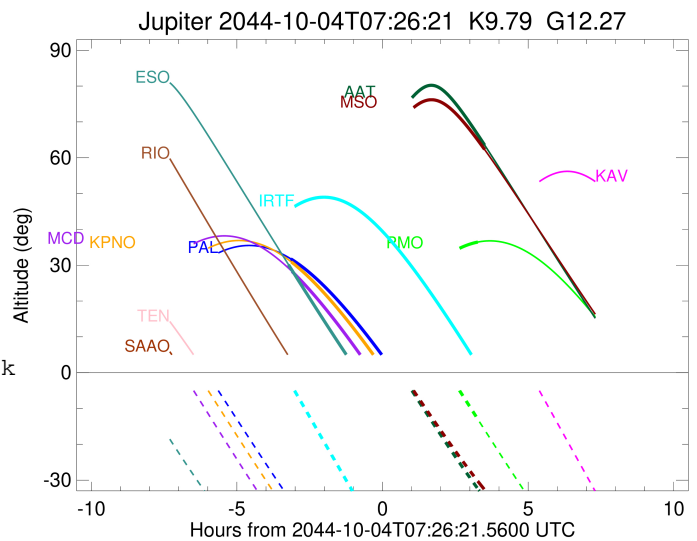
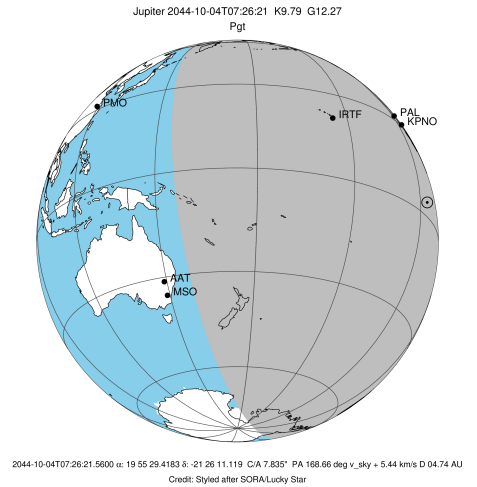


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-10-04T04:19:53.657	28.25	-47.21	71491.8	24.17	27.13
Jupiter	E	2044-10-04T10:59:35.343	-48.90x	-24.91	71491.8	24.22	27.19

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2044-10-04T07:39:46.570
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       : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41830s -21:26:11.11922s
RUWE (>1.4 is poor) : 1.16
K magnitude          : 9.790
G magnitude          : 12.271
RP magnitude         : 11.515
BP magnitude         : 12.893
DUPflag             : 0
Distance (au)        : 4.738
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 5.44
Sun-Target sep (deg) : 105.61
Sun-Moon sep (deg)   : 41.16
B (ring opening deg) : -0.82
PA of pole (deg)     : -12.74
Pole direction: RA (deg): 268.05692
Dec (deg): 64.49727
C/A sky separation ("): 6.456
C/A sky separation (km): 22188.6
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
    
```

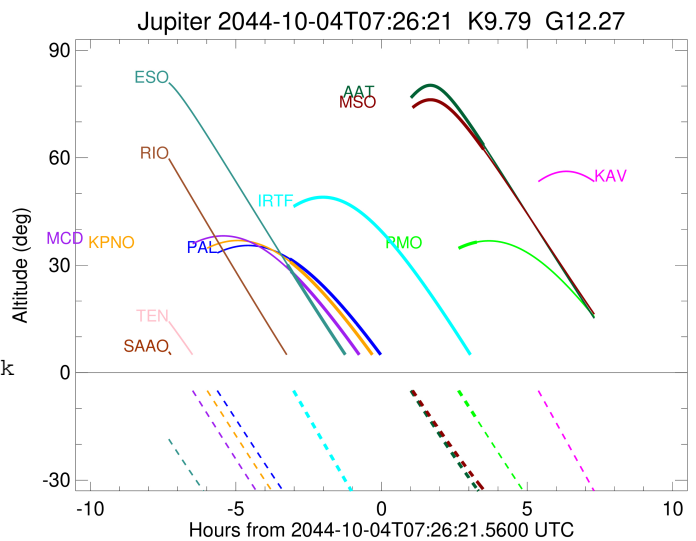
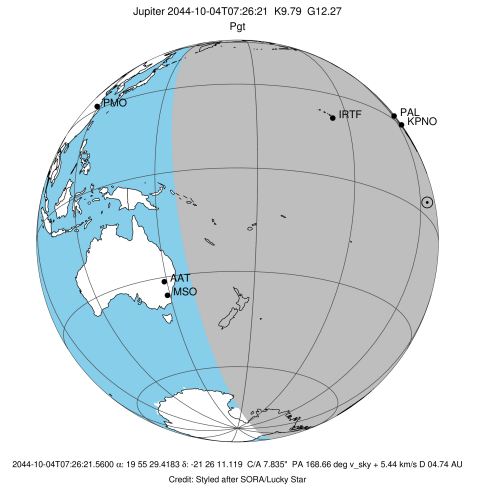


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-10-04T04:12:39.823	30.15	-56.02	71491.9	18.11	20.48
Jupiter	E	2044-10-04T10:54:22.169	-38.08x	7.30x	71491.9	19.26	21.76

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2044-10-04T07:18:08.320
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        : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41830s -21:26:11.11922s
RUWE (>1.4 is poor) : 1.16
K magnitude           : 9.790
G magnitude           : 12.271
RP magnitude          : 11.515
BP magnitude          : 12.893
DUPflag               : 0
Distance (au)         : 4.738
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 5.44
Sun-Target sep (deg) : 105.61
Sun-Moon sep (deg)   : 42.56
B (ring opening deg) : -0.82
PA of pole (deg)     : -12.74
Pole direction: RA (deg): 268.05692
Dec (deg): 64.49727
C/A sky separation ("): 7.614
C/A sky separation (km): 26165.1
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
    
```

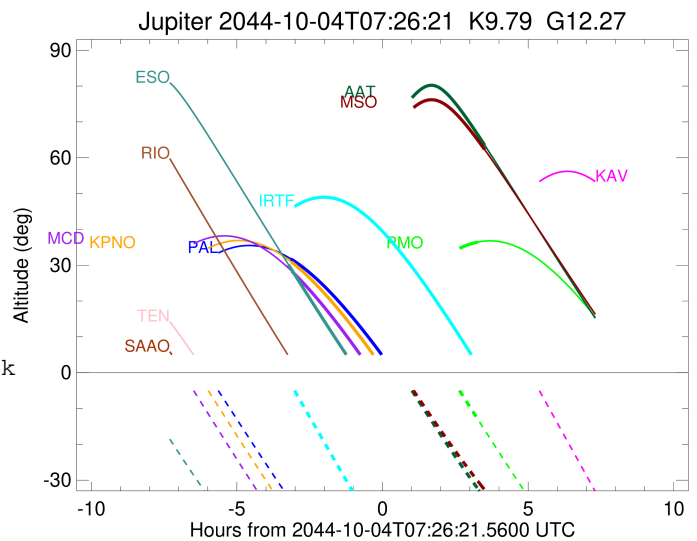
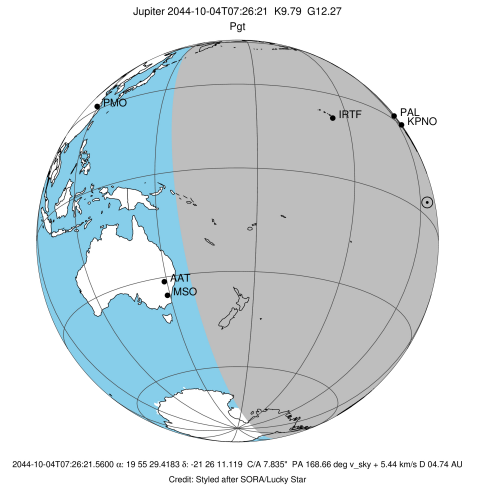


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-10-04T03:41:53.682	17.82	53.03x	71491.9	19.32	21.83
Jupiter	E	2044-10-04T10:56:56.086	63.49	-35.00	71491.9	22.00	24.77

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2044-10-04T07:18:11.730
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        : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41830s -21:26:11.11922s
RUWE (>1.4 is poor) : 1.16
K magnitude           : 9.790
G magnitude           : 12.271
RP magnitude          : 11.515
BP magnitude          : 12.893
DUPflag               : 0
Distance (au)         : 4.738
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 5.44
Sun-Target sep (deg) : 105.61
Sun-Moon sep (deg)   : 42.55
B (ring opening deg) : -0.82
PA of pole (deg)     : -12.74
Pole direction: RA (deg): 268.05692
Dec (deg): 64.49727
C/A sky separation (") : 7.485
C/A sky separation (km) : 25722.7
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	2044-10-04T03:41:56.157	18.76	50.34x	71491.9	18.98	21.45
Jupiter	E	2044-10-04T10:56:45.392	62.27	-32.69	71491.9	21.66	24.40