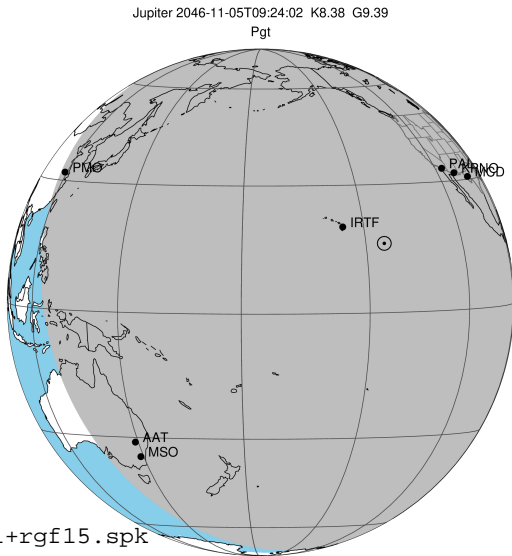


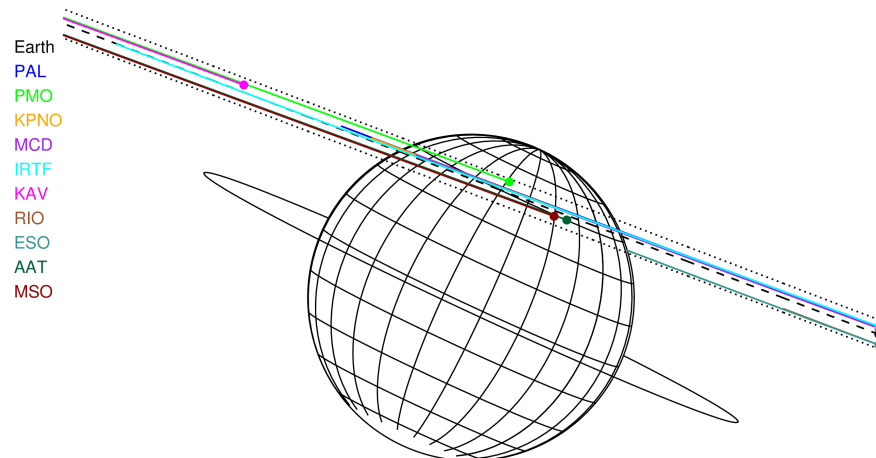
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2046-11-05T09:24:02.970
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 2550495036568355328
 2Mass ID (if available) : 00382461+0226043

Jupiter 2046-11-05T09:24:02 K8.38 G9.39 Pgt

ICRS Star Coord at Epoch: 00h 38m 24.44692s +02:26:02.35482s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 8.380
 G magnitude : 9.388
 RP magnitude : 9.011
 BP magnitude : 9.607
 DUPflag : 0
 Distance (au) : 4.090
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -11.42
 Sun-Target sep (deg) : 147.27
 Sun-Moon sep (deg) : 58.82
 B (ring opening deg) : 2.74
 PA of pole (deg) : -24.98
 Pole direction: RA (deg): 268.05714
 Dec (deg): 64.49722
 C/A sky separation (") : 16.373
 C/A sky separation (km) : 48569.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

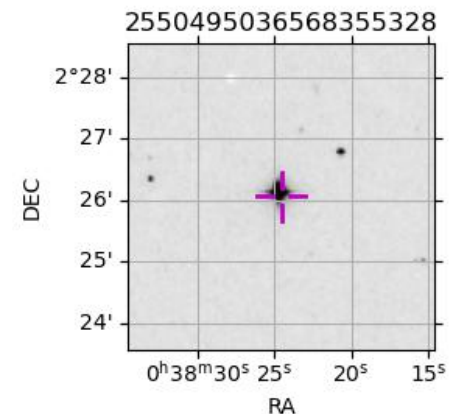


2046-11-05T09:24:02.9700 a: 00 38 24.4469 s: +02 26 02.355 C/A ***** PA 159.14 deg v_sky -11.42 km/s D 04.09 AU
 Credit: Styled after SORA/Lucky Star



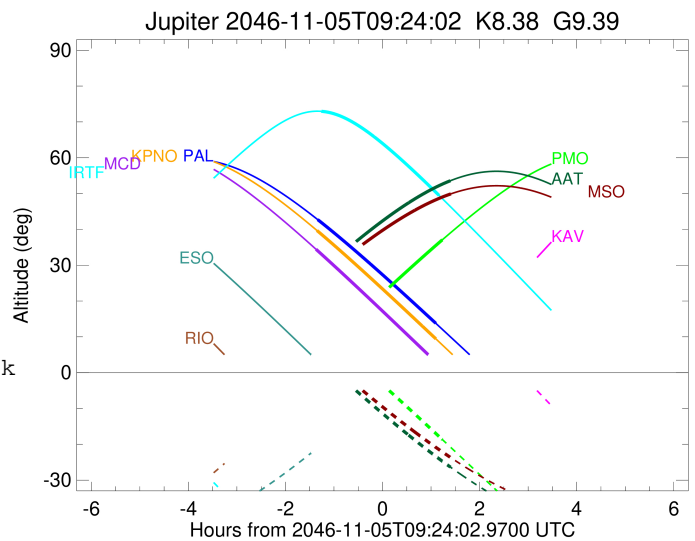
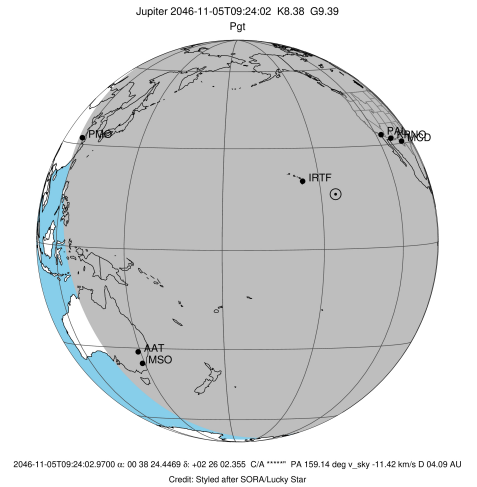
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	NOV 05 08:03 - NOV 05 10:29		Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+ +	NOV 05 10:37 - NOV 05 10:37		Pne
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	NOV 05 08:03 - NOV 05 10:30		Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	NOV 05 08:02 - NOV 05 08:02		Pin
TEN	Teide Obs./Tenerife	28.3	343.5				Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	NOV 05 08:08 - NOV 05 10:33		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	+ +	NOV 05 07:55 - NOV 05 07:55		Pin
AAT	Siding Spring (AAT)	-31.3	149.1	+ +	NOV 05 10:47 - NOV 05 10:47		Pne
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8				Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	NOV 05 10:48 - NOV 05 10:48		Pne



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2046-11-05T09:16:36.120
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      : 2550495036568355328
2Mass ID (if available) : 00382461+0226043
ICRS Star Coord at Epoch: 00h 38m 24.44692s +02:26:02.35482s
RUWE (>1.4 is poor) : 0.99
K magnitude         : 8.380
G magnitude         : 9.388
RP magnitude        : 9.011
BP magnitude        : 9.607
DUPflag            : 0
Distance (au)       : 4.090
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -11.42
Sun-Target sep (deg) : 147.27
Sun-Moon sep (deg)  : 59.59
B (ring opening deg) : 2.74
PA of pole (deg)    : -24.98
Pole direction: RA (deg): 268.05714
Dec (deg): 64.49722
C/A sky separation (") : 16.893
C/A sky separation (km) : 50111.1
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
    
```

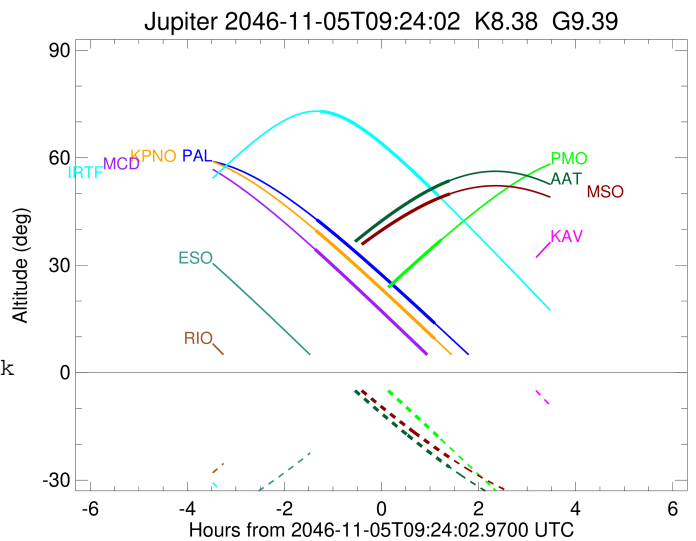
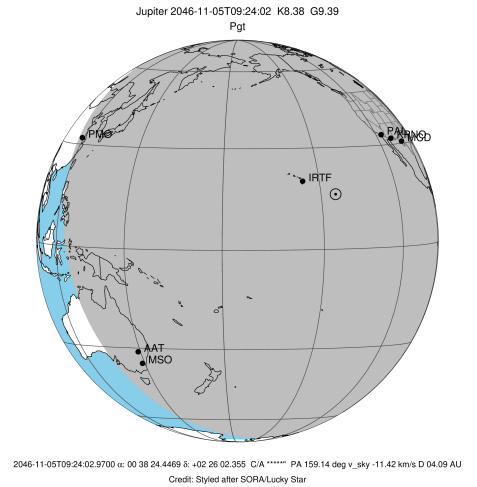


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2046-11-05T08:03:55.809	42.73	-71.05	71486.2	48.94	52.56
Jupiter	E	2046-11-05T10:29:57.174	13.78	-46.13	71487.7	40.13	43.84

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2046-11-05T09:29:31.460
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       : 2550495036568355328
2Mass ID (if available) : 00382461+0226043
ICRS Star Coord at Epoch: 00h 38m 24.44692s +02:26:02.35482s
RUWE (>1.4 is poor) : 0.99
K magnitude          : 8.380
G magnitude          : 9.388
RP magnitude         : 9.011
BP magnitude         : 9.607
DUPflag             : 0
Distance (au)        : 4.090
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -11.42
Sun-Target sep (deg) : 147.27
Sun-Moon sep (deg)   : 58.86
B (ring opening deg) : 2.74
PA of pole (deg)     : -24.98
Pole direction: RA (deg): 268.05714
Dec (deg): 64.49722
C/A sky separation ("): 17.982
C/A sky separation (km): 53342.4
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
    
```

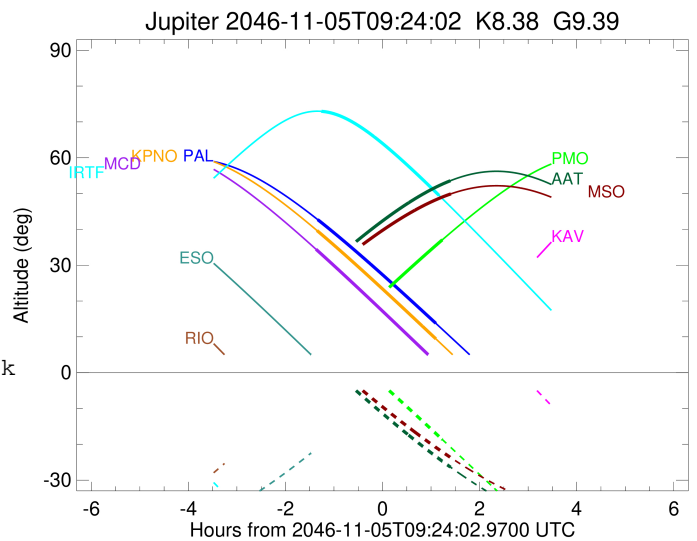
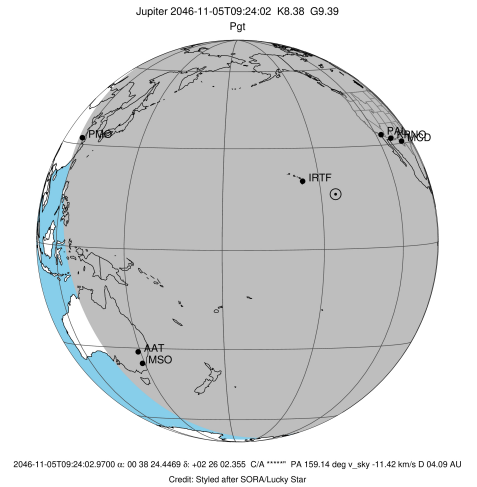


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2046-11-05T08:20:34.768	8.65	9.28x	71485.5	52.58	56.06
Jupiter	E	2046-11-05T10:37:56.481	37.07	-18.65	71487.1	43.62	47.33

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2046-11-05T09:16:09.520
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        : 2550495036568355328
2Mass ID (if available) : 00382461+0226043
ICRS Star Coord at Epoch: 00h 38m 24.44692s +02:26:02.35482s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 8.380
G magnitude           : 9.388
RP magnitude          : 9.011
BP magnitude          : 9.607
DUPflag              : 0
Distance (au)         : 4.090
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -11.42
Sun-Target sep (deg) : 147.27
Sun-Moon sep (deg)   : 59.56
B (ring opening deg) : 2.74
PA of pole (deg)     : -24.98
Pole direction: RA (deg): 268.05714
Dec (deg): 64.49722
C/A sky separation (") : 16.819
C/A sky separation (km) : 49893.2
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
    
```

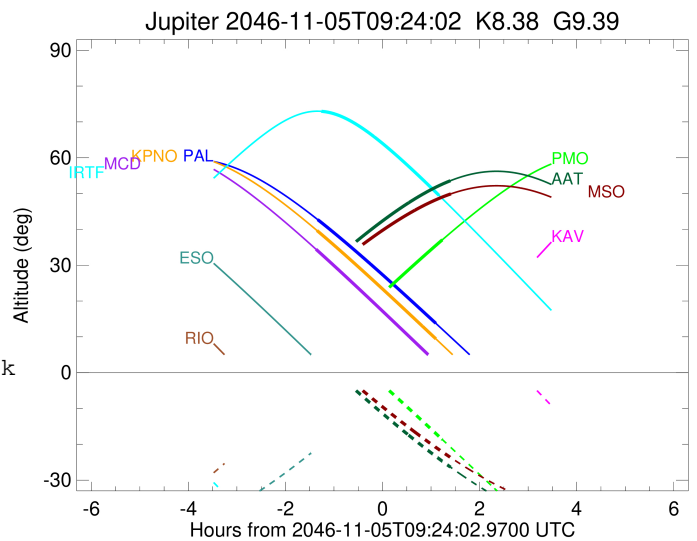
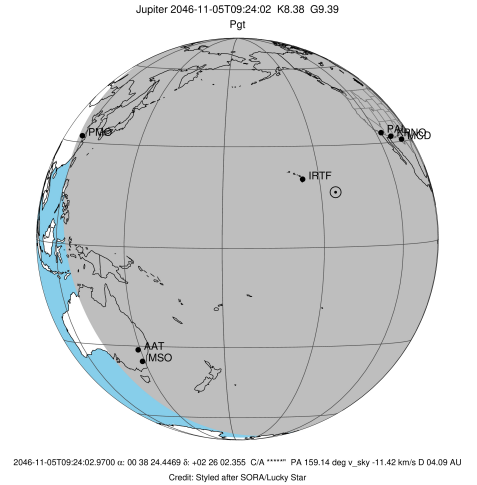


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2046-11-05T08:03:03.605	39.68	-69.92	71486.2	48.65	52.28
Jupiter	E	2046-11-05T10:29:59.559	9.44	-41.97	71487.8	39.94	43.65

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2046-11-05T09:15:36.640
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        : 2550495036568355328
2Mass ID (if available) : 00382461+0226043
ICRS Star Coord at Epoch: 00h 38m 24.44692s +02:26:02.35482s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 8.380
G magnitude           : 9.388
RP magnitude          : 9.011
BP magnitude          : 9.607
DUPflag              : 0
Distance (au)         : 4.090
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -11.42
Sun-Target sep (deg) : 147.27
Sun-Moon sep (deg)   : 59.50
B (ring opening deg) : 2.74
PA of pole (deg)     : -24.98
Pole direction: RA (deg): 268.05714
Dec (deg): 64.49722
C/A sky separation ("): 16.747
C/A sky separation (km): 49678.3
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
    
```

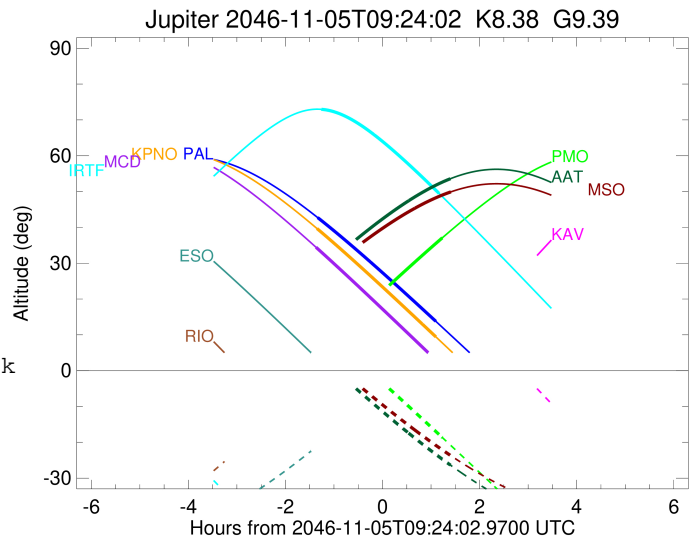
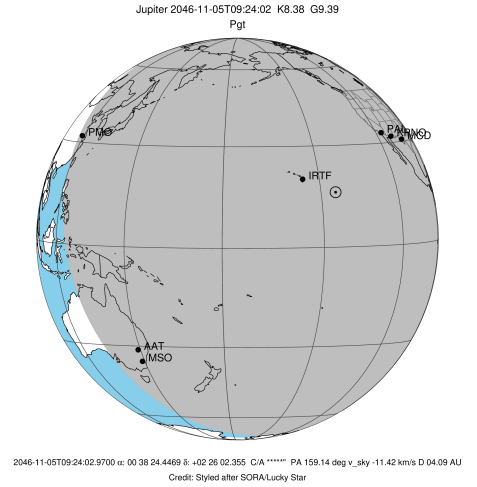


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2046-11-05T08:01:59.635	34.42	-66.07	71486.3	48.33	51.97
Jupiter	E	2046-11-05T10:30:01.857	2.96x	-35.60	71487.8	39.80	43.50

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2046-11-05T09:21:12.460
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       : 2550495036568355328
2Mass ID (if available) : 00382461+0226043
ICRS Star Coord at Epoch: 00h 38m 24.44692s +02:26:02.35482s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 8.380
G magnitude           : 9.388
RP magnitude          : 9.011
BP magnitude          : 9.607
DUPflag              : 0
Distance (au)        : 4.090
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -11.42
Sun-Target sep (deg) : 147.27
Sun-Moon sep (deg)   : 59.73
B (ring opening deg) : 2.74
PA of pole (deg)     : -24.98
Pole direction: RA (deg): 268.05714
Dec (deg): 64.49722
C/A sky separation ("): 16.728
C/A sky separation (km): 49622.7
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
    
```

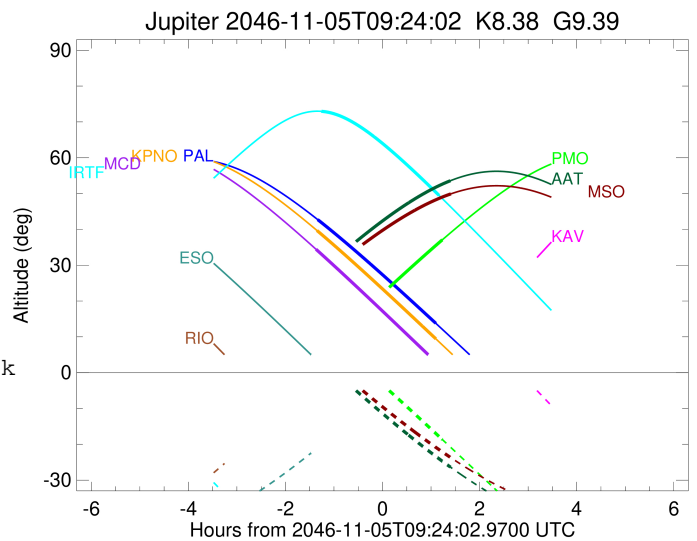
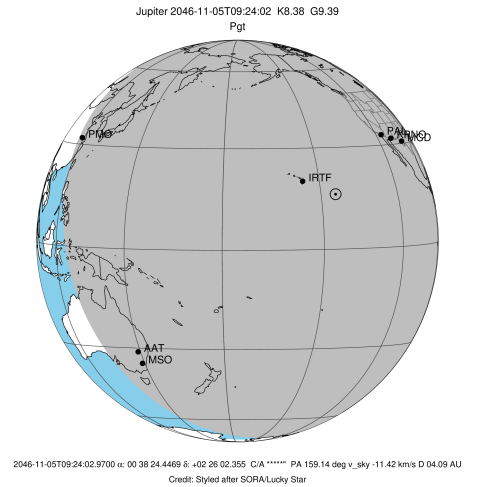


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2046-11-05T08:08:45.012	72.94	-61.99	71486.2	48.72	52.35
Jupiter	E	2046-11-05T10:33:58.872	49.47	-82.14	71487.9	39.17	42.86

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2046-11-05T09:17:56.600
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      : 2550495036568355328
2Mass ID (if available) : 00382461+0226043
ICRS Star Coord at Epoch: 00h 38m 24.44692s +02:26:02.35482s
RUWE (>1.4 is poor) : 0.99
K magnitude          : 8.380
G magnitude          : 9.388
RP magnitude         : 9.011
BP magnitude         : 9.607
DUPflag             : 0
Distance (au)       : 4.090
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -11.42
Sun-Target sep (deg) : 147.27
Sun-Moon sep (deg)  : 58.92
B (ring opening deg) : 2.74
PA of pole (deg)    : -24.98
Pole direction: RA (deg): 268.05714
Dec (deg): 64.49722
C/A sky separation ("): 14.767
C/A sky separation (km): 43805.6
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
    
```

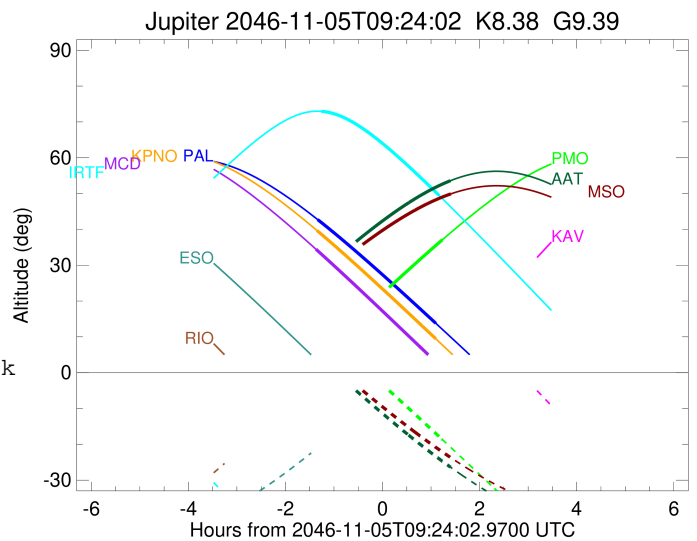
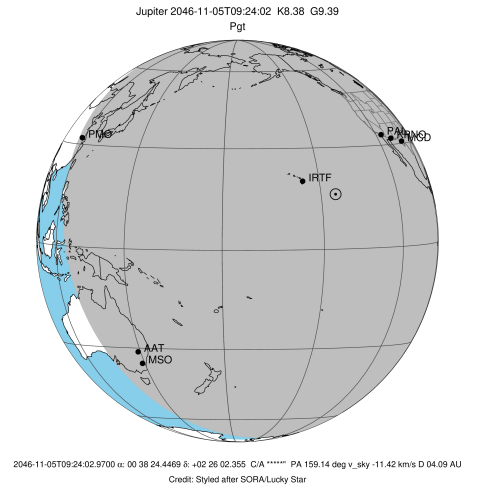


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2046-11-05T07:55:35.441	5.05	-22.47	71487.4	41.72	45.44
Jupiter	E	2046-11-05T10:41:23.869	-30.96x	10.80x	71488.8	34.00	37.56

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2046-11-05T09:30:43.730
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      : 2550495036568355328
2Mass ID (if available) : 00382461+0226043
ICRS Star Coord at Epoch: 00h 38m 24.44692s +02:26:02.35482s
RUWE (>1.4 is poor) : 0.99
K magnitude          : 8.380
G magnitude          : 9.388
RP magnitude         : 9.011
BP magnitude         : 9.607
DUPflag             : 0
Distance (au)       : 4.090
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -11.42
Sun-Target sep (deg) : 147.27
Sun-Moon sep (deg)  : 59.04
B (ring opening deg) : 2.74
PA of pole (deg)    : -24.98
Pole direction: RA (deg): 268.05714
Dec (deg): 64.49722
C/A sky separation (") : 15.632
C/A sky separation (km) : 46373.3
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
    
```

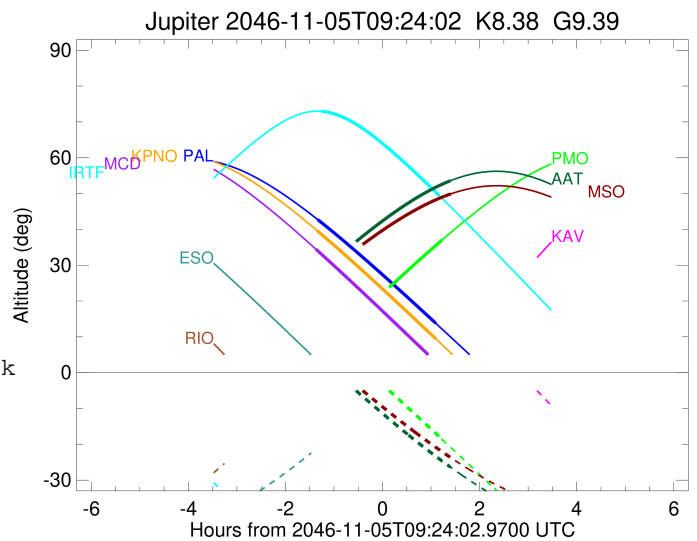
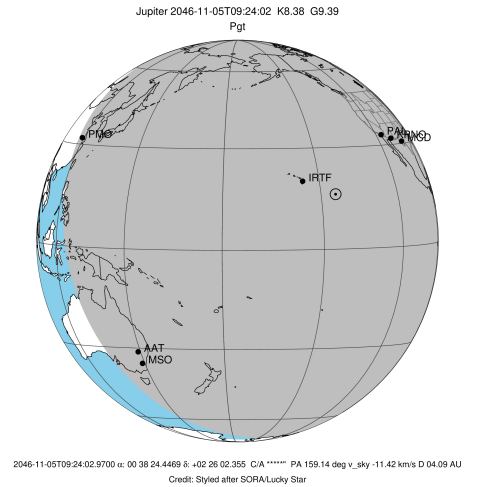


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2046-11-05T08:13:04.848	29.28	2.72x	71486.8	45.05	48.75
Jupiter	E	2046-11-05T10:47:58.905	53.58	-26.36	71488.5	35.61	39.23


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2046-11-05T09:30:41.970
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        : 2550495036568355328
2Mass ID (if available) : 00382461+0226043
ICRS Star Coord at Epoch: 00h 38m 24.44692s +02:26:02.35482s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 8.380
G magnitude           : 9.388
RP magnitude          : 9.011
BP magnitude          : 9.607
DUPflag              : 0
Distance (au)         : 4.090
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -11.42
Sun-Target sep (deg) : 147.27
Sun-Moon sep (deg)   : 59.01
B (ring opening deg) : 2.74
PA of pole (deg)     : -24.98
Pole direction: RA (deg): 268.05714
Dec (deg): 64.49722
C/A sky separation ("): 15.502
C/A sky separation (km): 45985.8
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	2046-11-05T08:12:30.171	27.45	4.04x	71486.9	44.62	48.33
Jupiter	E	2046-11-05T10:48:31.044	49.90	-23.73	71488.6	35.24	38.84