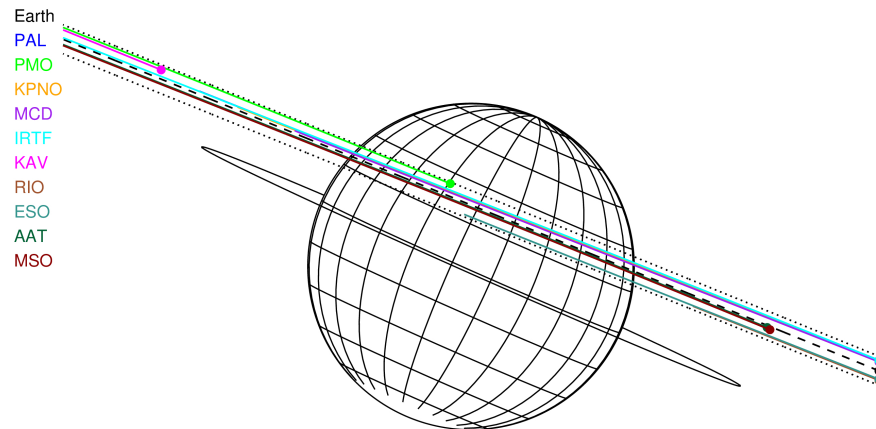
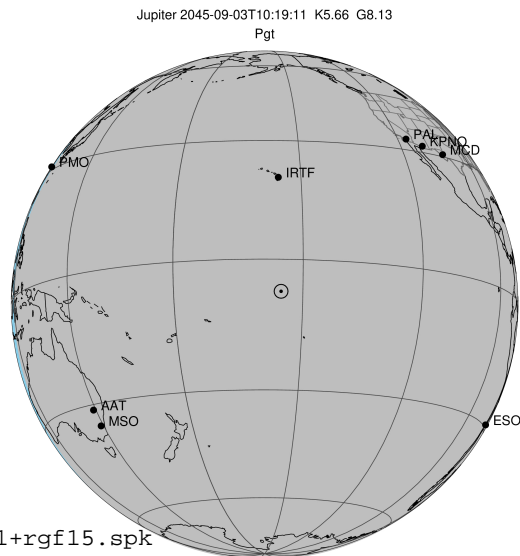


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2045-09-03T10:19:11.650
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 2602776092914341248
 2Mass ID (if available) : 22334110-1031157

Jupiter 2045-09-03T10:19:11 K5.66 G8.13 Pgt

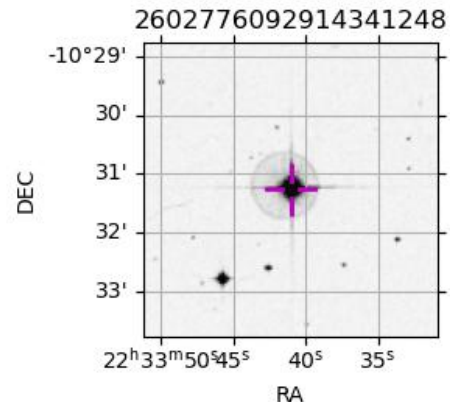
ICRS Star Coord at Epoch: 22h 33m 41.12388s -10:31:16.26579s
 RUWE (>1.4 is poor) : 1.11
 K magnitude : 5.663
 G magnitude : 8.127
 RP magnitude : 7.389
 BP magnitude : 8.726
 DUPflag : 0
 Distance (au) : 3.997
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.83
 Sun-Target sep (deg) : 175.24
 Sun-Moon sep (deg) : 82.51
 B (ring opening deg) : 1.29
 PA of pole (deg) : -23.93
 Pole direction: RA (deg): 268.05704
 Dec (deg): 64.49724
 C/A sky separation (") : 8.605
 C/A sky separation (km) : 24947.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



2045-09-03T10:19:11.6500 at: 22 33 41.1239 s: -10 31 16.266 C/A 8.607" PA 157.89 deg v_sky -15.83 km/s D 04.00 AU
 Credit: Styled after SORA/Lucky Star

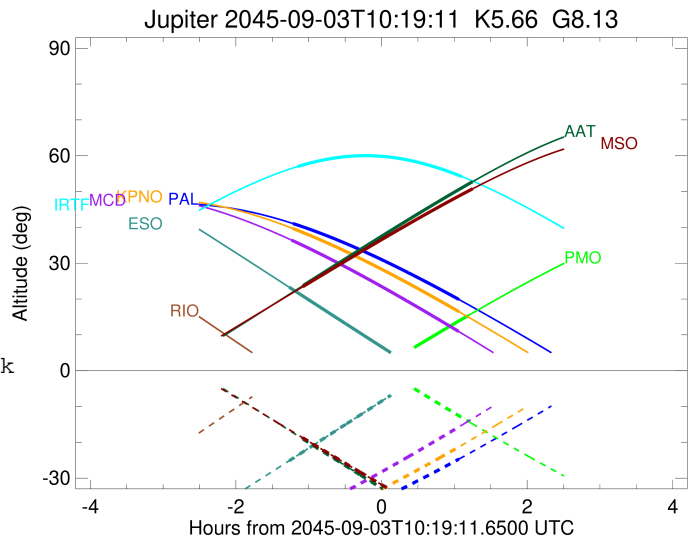
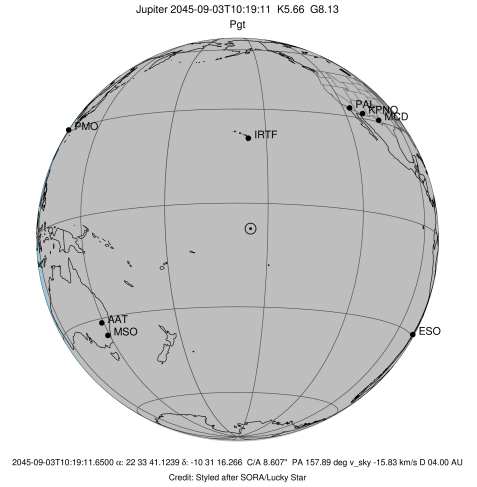
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	SEP 03 09:06 - SEP 03 11:22		Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+ +	SEP 03 11:30 - SEP 03 11:30		Pne
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	SEP 03 09:05 - SEP 03 11:22		Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	SEP 03 09:04 - SEP 03 11:22		Pie
TEN	Teide Obs./Tenerife	28.3	343.5				Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	SEP 03 09:10 - SEP 03 11:25		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	+ +	SEP 03 09:03 - SEP 03 09:03		Pin
AAT	Siding Spring (AAT)	-31.3	149.1	+ +	SEP 03 09:14 - SEP 03 11:34		Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8				Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	SEP 03 09:14 - SEP 03 11:34		Pie



```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch             : 2045-09-03T10:14:25.650
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        : 2602776092914341248
2Mass ID (if available) : 22334110-1031157
ICRS Star Coord at Epoch: 22h 33m 41.12388s -10:31:16.26579s
RUWE (>1.4 is poor) : 1.11
K magnitude           : 5.663
G magnitude           : 8.127
RP magnitude          : 7.389
BP magnitude          : 8.726
DUPflag              : 0
Distance (au)         : 3.997
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.83
Sun-Target sep (deg)  : 175.24
Sun-Moon sep (deg)    : 82.91
B (ring opening deg)  : 1.29
PA of pole (deg)      : -23.93
Pole direction: RA (deg): 268.05704
Dec (deg): 64.49724
C/A sky separation (") : 9.478
C/A sky separation (km) : 27479.4
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
    
```

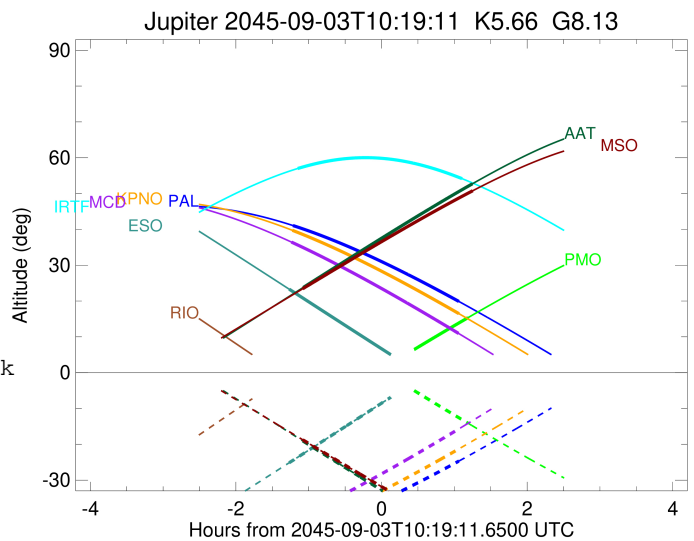
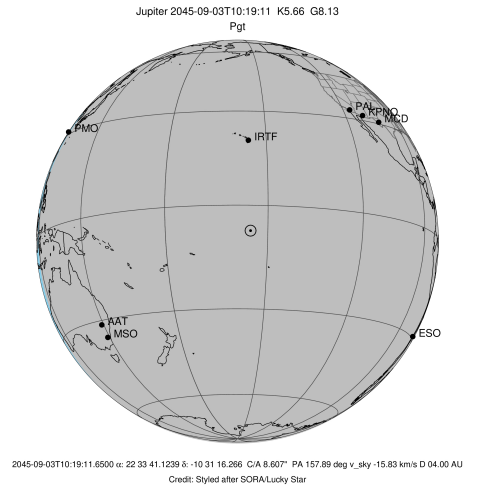


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2045-09-03T09:06:13.493	41.07	-45.30	71491.6	24.98	28.00
Jupiter	E	2045-09-03T11:22:57.144	19.88	-24.68	71491.7	20.27	22.87

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2045-09-03T10:22:56.920
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      : 2602776092914341248
2Mass ID (if available) : 22334110-1031157
ICRS Star Coord at Epoch: 22h 33m 41.12388s -10:31:16.26579s
RUWE (>1.4 is poor) : 1.11
K magnitude          : 5.663
G magnitude          : 8.127
RP magnitude         : 7.389
BP magnitude         : 8.726
DUPflag             : 0
Distance (au)       : 3.997
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.83
Sun-Target sep (deg) : 175.24
Sun-Moon sep (deg)  : 82.59
B (ring opening deg) : 1.29
PA of pole (deg)    : -23.93
Pole direction: RA (deg): 268.05704
Dec (deg): 64.49724
C/A sky separation (") : 10.406
C/A sky separation (km) : 30169.4
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
    
```

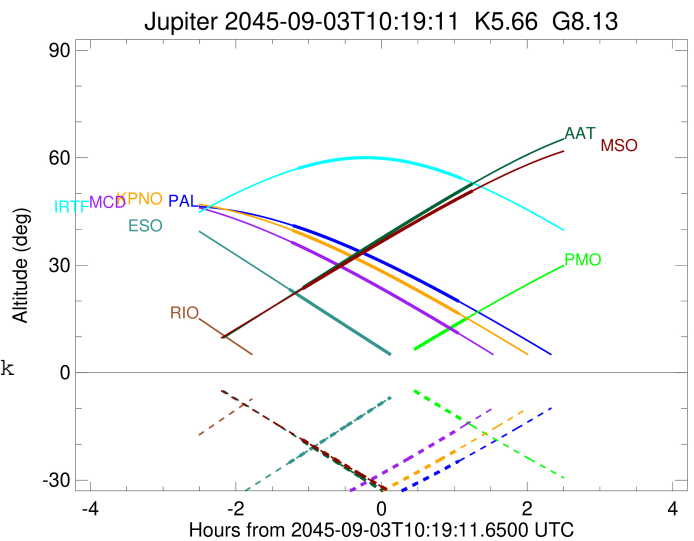
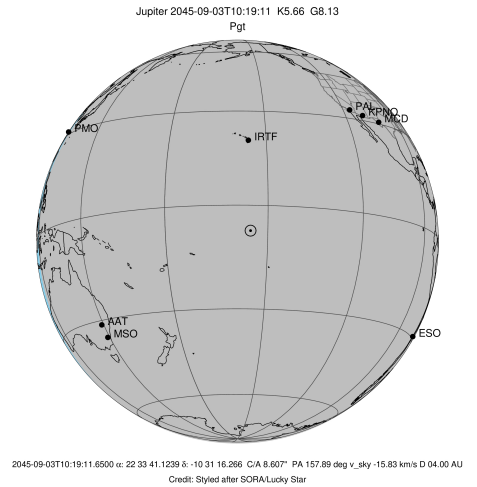


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2045-09-03T09:14:48.110	-12.64x	14.26x	71491.5	26.54	29.68
Jupiter	E	2045-09-03T11:30:39.367	15.39	-14.14	71491.6	23.20	26.08

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2045-09-03T10:14:05.390
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      : 2602776092914341248
2Mass ID (if available) : 22334110-1031157
ICRS Star Coord at Epoch: 22h 33m 41.12388s -10:31:16.26579s
RUWE (>1.4 is poor) : 1.11
K magnitude          : 5.663
G magnitude          : 8.127
RP magnitude         : 7.389
BP magnitude         : 8.726
DUPflag             : 0
Distance (au)        : 3.997
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.83
Sun-Target sep (deg) : 175.24
Sun-Moon sep (deg)   : 82.86
B (ring opening deg) : 1.29
PA of pole (deg)     : -23.93
Pole direction: RA (deg): 268.05704
Dec (deg): 64.49724
C/A sky separation (") : 9.368
C/A sky separation (km) : 27160.7
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
    
```

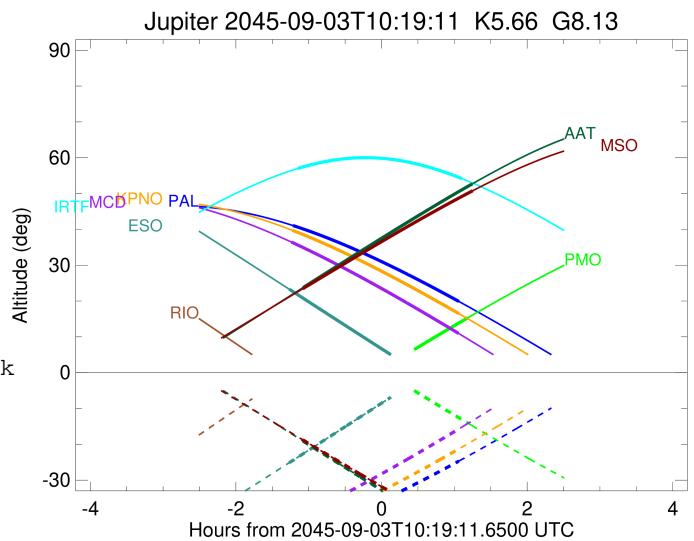
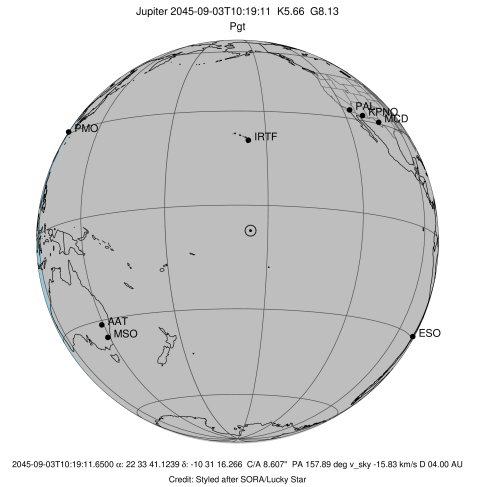


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2045-09-03T09:05:41.190	39.74	-44.16	71491.6	24.70	27.70
Jupiter	E	2045-09-03T11:22:51.105	16.50	-21.30	71491.7	20.01	22.58

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2045-09-03T10:13:39.170
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        : 2602776092914341248
2Mass ID (if available) : 22334110-1031157
ICRS Star Coord at Epoch: 22h 33m 41.12388s -10:31:16.26579s
RUWE (>1.4 is poor) : 1.11
K magnitude           : 5.663
G magnitude           : 8.127
RP magnitude          : 7.389
BP magnitude          : 8.726
DUPflag              : 0
Distance (au)         : 3.997
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.83
Sun-Target sep (deg)  : 175.24
Sun-Moon sep (deg)    : 82.78
B (ring opening deg) : 1.29
PA of pole (deg)      : -23.93
Pole direction: RA (deg): 268.05704
Dec (deg): 64.49724
C/A sky separation (") : 9.234
C/A sky separation (km) : 26772.1
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
    
```

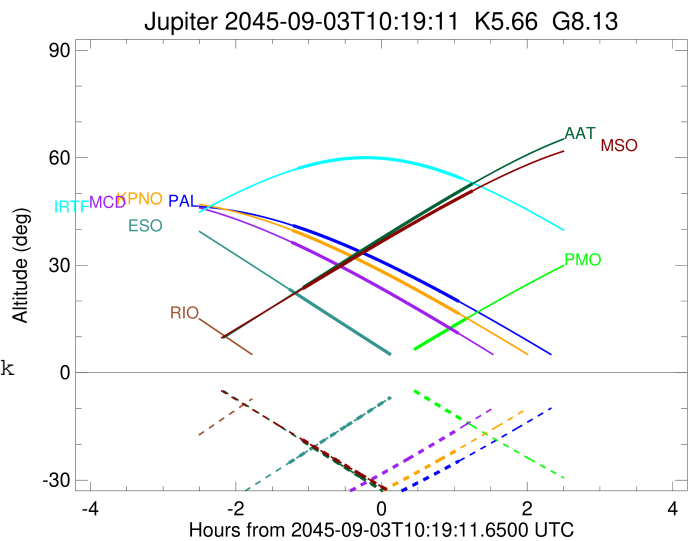
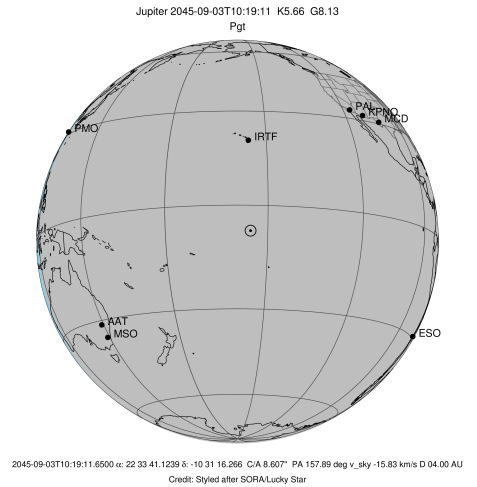


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2045-09-03T09:04:57.697	36.45	-41.04	71491.6	24.35	27.32
Jupiter	E	2045-09-03T11:22:44.936	10.94	-15.74	71491.7	19.70	22.25

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2045-09-03T10:17:55.630
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       : 2602776092914341248
2Mass ID (if available) : 22334110-1031157
ICRS Star Coord at Epoch: 22h 33m 41.12388s -10:31:16.26579s
RUWE (>1.4 is poor) : 1.11
K magnitude          : 5.663
G magnitude          : 8.127
RP magnitude         : 7.389
BP magnitude         : 8.726
DUPflag             : 0
Distance (au)        : 3.997
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.83
Sun-Target sep (deg) : 175.24
Sun-Moon sep (deg)   : 83.30
B (ring opening deg) : 1.29
PA of pole (deg)     : -23.93
Pole direction: RA (deg): 268.05704
Dec (deg): 64.49724
C/A sky separation (") : 9.583
C/A sky separation (km) : 27781.9
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
    
```

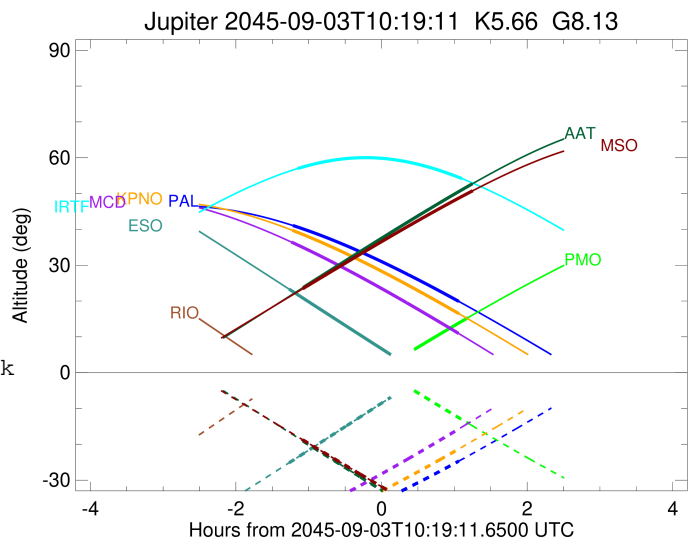
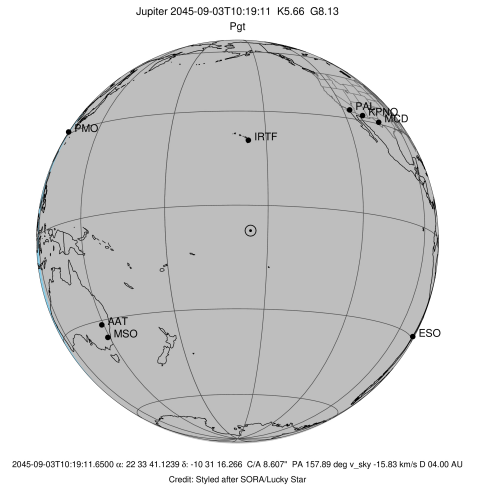


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2045-09-03T09:10:18.553	57.00	-57.84	71491.6	25.23	28.28
Jupiter	E	2045-09-03T11:25:36.353	54.15	-58.67	71491.7	20.42	23.04

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2045-09-03T10:15:03.970
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      : 2602776092914341248
2Mass ID (if available) : 22334110-1031157
ICRS Star Coord at Epoch: 22h 33m 41.12388s -10:31:16.26579s
RUWE (>1.4 is poor) : 1.11
K magnitude          : 5.663
G magnitude          : 8.127
RP magnitude         : 7.389
BP magnitude         : 8.726
DUPflag             : 0
Distance (au)       : 3.997
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.83
Sun-Target sep (deg) : 175.24
Sun-Moon sep (deg)  : 82.55
B (ring opening deg) : 1.29
PA of pole (deg)    : -23.93
Pole direction: RA (deg): 268.05704
Dec (deg): 64.49724
C/A sky separation (") : 6.922
C/A sky separation (km) : 20068.8
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
    
```

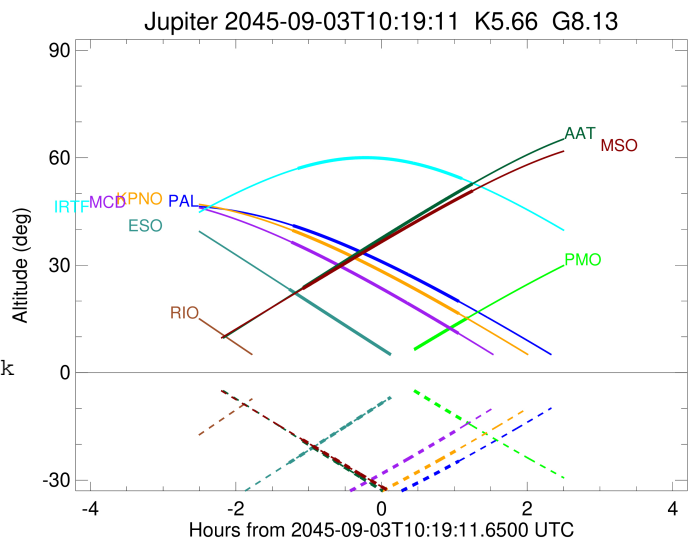
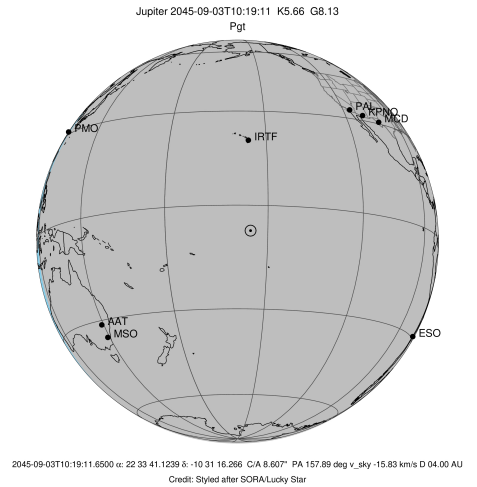


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2045-09-03T09:03:06.778	23.30	-25.15	71491.8	18.47	20.88
Jupiter	E	2045-09-03T11:27:33.897	-7.95x	6.26x	71491.9	14.30	16.24


```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch             : 2045-09-03T10:24:25.930
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        : 2602776092914341248
2Mass ID (if available) : 22334110-1031157
ICRS Star Coord at Epoch: 22h 33m 41.12388s -10:31:16.26579s
RUWE (>1.4 is poor) : 1.11
K magnitude           : 5.663
G magnitude           : 8.127
RP magnitude          : 7.389
BP magnitude          : 8.726
DUPflag              : 0
Distance (au)         : 3.997
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.83
Sun-Target sep (deg) : 175.24
Sun-Moon sep (deg)   : 83.18
B (ring opening deg) : 1.29
PA of pole (deg)     : -23.93
Pole direction: RA (deg): 268.05704
Dec (deg): 64.49724
C/A sky separation (") : 8.319
C/A sky separation (km) : 24116.9
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
    
```

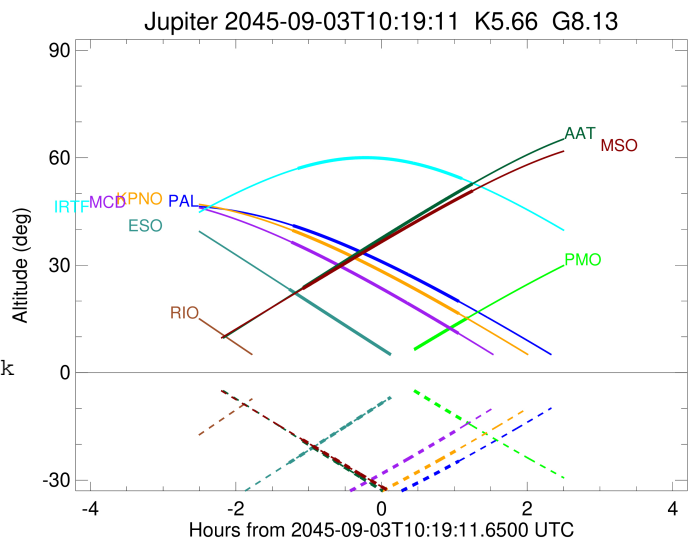
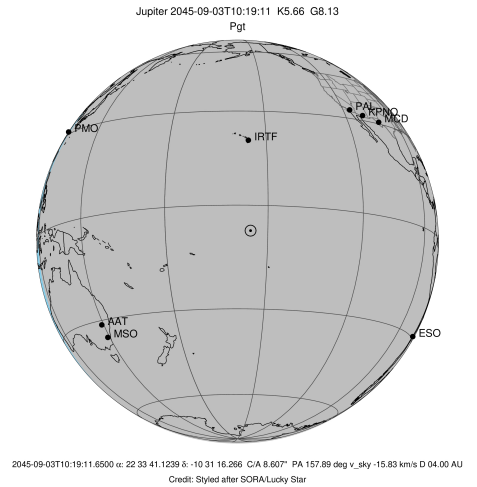


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2045-09-03T09:14:28.915	23.73	-19.08	71491.7	21.59	24.32
Jupiter	E	2045-09-03T11:34:02.079	52.71	-47.90	71491.8	17.65	19.98


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2045-09-03T10:24:24.180
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       : 2602776092914341248
2Mass ID (if available) : 22334110-1031157
ICRS Star Coord at Epoch: 22h 33m 41.12388s -10:31:16.26579s
RUWE (>1.4 is poor) : 1.11
K magnitude           : 5.663
G magnitude           : 8.127
RP magnitude          : 7.389
BP magnitude          : 8.726
DUPflag              : 0
Distance (au)        : 3.997
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.83
Sun-Target sep (deg) : 175.24
Sun-Moon sep (deg)   : 83.16
B (ring opening deg) : 1.29
PA of pole (deg)     : -23.93
Pole direction: RA (deg): 268.05704
Dec (deg): 64.49724
C/A sky separation (") : 8.167
C/A sky separation (km) : 23678.3
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	2045-09-03T09:14:15.011	23.42	-18.73	71491.7	21.22	23.91
Jupiter	E	2045-09-03T11:34:13.294	50.75	-45.97	71491.8	17.29	19.58