

target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2048-11-24T22:55:14.930
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 3427393591654270848
 2Mass ID (if available) : 05514717+2257375

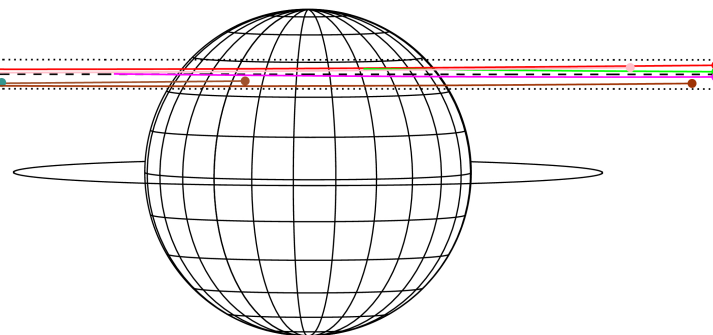
Jupiter 2048-11-24T22:55:14 K9.41 G11.47 Pgt

ICRS Star Coord at Epoch: 05h 51m 47.15433s +22:57:37.84159s
 RUWE (>1.4 is poor) : 1.42
 K magnitude : 9.415
 G magnitude : 11.471
 RP magnitude : 10.818
 BP magnitude : 11.959
 DUPflag : 0
 Distance (au) : 4.189
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -14.15
 Sun-Target sep (deg) : 154.55
 Sun-Moon sep (deg) : 23.30
 B (ring opening deg) : 2.54
 PA of pole (deg) : -0.05
 Pole direction: RA (deg): 268.05736
 Dec (deg): 64.49721
 C/A sky separation (") : 14.155
 C/A sky separation (km) : 43008.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



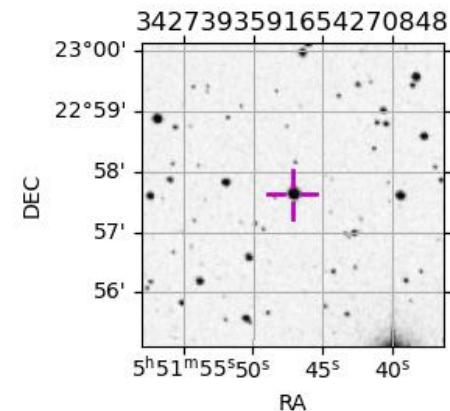
2048-11-24T22:55:14.9300 a: 05 51 47.1543 s: +22 57 37.842 C/A ***** PA 179.98 deg v_sky -14.15 km/s D 04.19 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PMO
 KPNO
 MCD
 TEN
 KAV
 RIO
 ESO
 SAAO



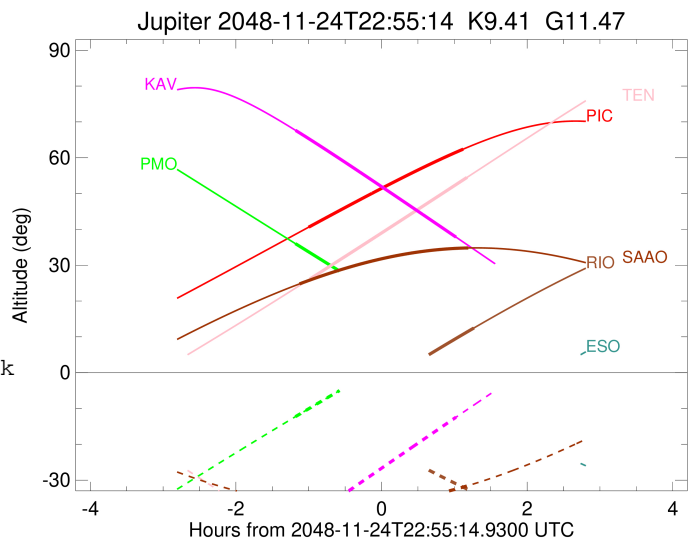
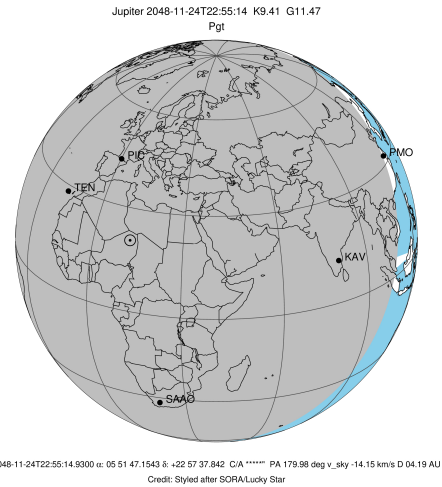
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	NOV 24 21:55 - NOV 25 00:02	Pie
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	NOV 24 21:44 - NOV 24 21:44	Pin
KPNO	Kitt Peak Natl Obs	32.0	248.4			Pnn
MCD	McDonald Obs. 2.7m	30.7	256.0			Pnn
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	NOV 24 21:56 - NOV 25 00:05	Pie
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	NOV 24 21:44 - NOV 24 23:56	Pie
RIO	Rio de Janeiro	-22.9	316.8	+	NOV 25 00:11 - NOV 25 00:11	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	NOV 24 21:47 - NOV 25 00:06	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-11-24T22:59:03.200
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : PIC
Location            : Pic du Midi
Latitude (deg)      : 42.93656
E. Longitude (deg)  : 0.14231
Altitude (km)       : 2.890
Gaia source ID      : 3427393591654270848
2Mass ID (if available) : 05514717+2257375
ICRS Star Coord at Epoch: 05h 51m 47.15433s +22:57:37.84159s
RUWE (>1.4 is poor) : 1.42
K magnitude          : 9.415
G magnitude          : 11.471
RP magnitude         : 10.818
BP magnitude         : 11.959
DUPflag             : 0
Distance (au)       : 4.189
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.15
Sun-Target sep (deg) : 154.55
Sun-Moon sep (deg)   : 24.01
B (ring opening deg) : 2.54
PA of pole (deg)     : -0.05
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation ("): 14.995
C/A sky separation (km): 45560.8
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
    
```

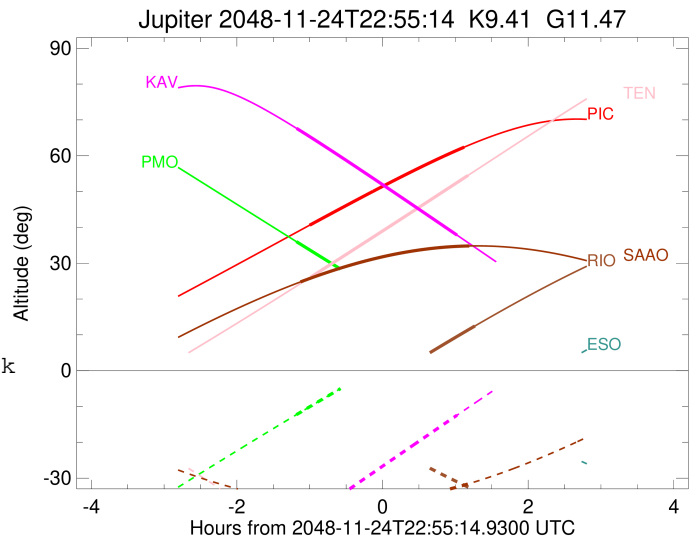
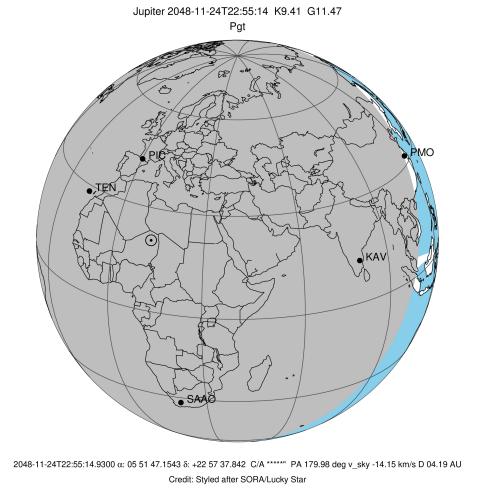


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-11-24T21:55:14.593	40.61	-58.06	71488.3	39.96	43.66
Jupiter	E	2048-11-25T00:02:33.029	62.38	-67.82	71488.5	39.25	42.95

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2048-11-24T22:48:29.390
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       : 3427393591654270848
2Mass ID (if available) : 05514717+2257375
ICRS Star Coord at Epoch: 05h 51m 47.15433s +22:57:37.84159s
RUWE (>1.4 is poor) : 1.42
K magnitude           : 9.415
G magnitude           : 11.471
RP magnitude          : 10.818
BP magnitude          : 11.959
DUPflag              : 0
Distance (au)        : 4.189
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.15
Sun-Target sep (deg) : 154.55
Sun-Moon sep (deg)   : 22.78
B (ring opening deg) : 2.54
PA of pole (deg)     : -0.05
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation (") : 15.027
C/A sky separation (km) : 45655.9
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
    
```

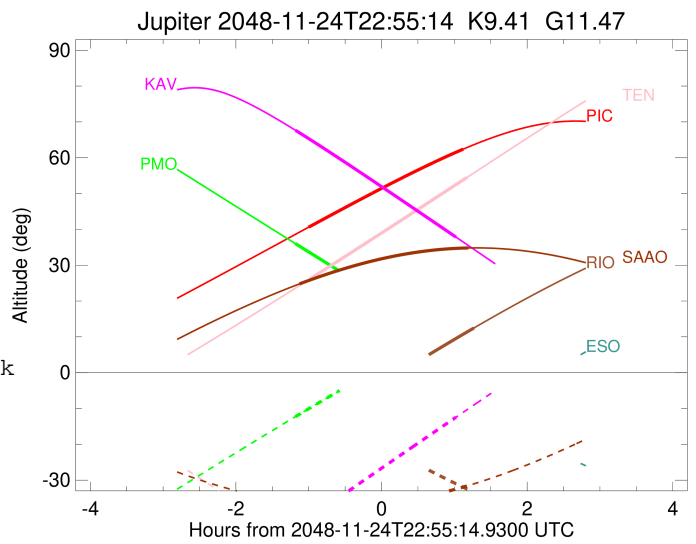
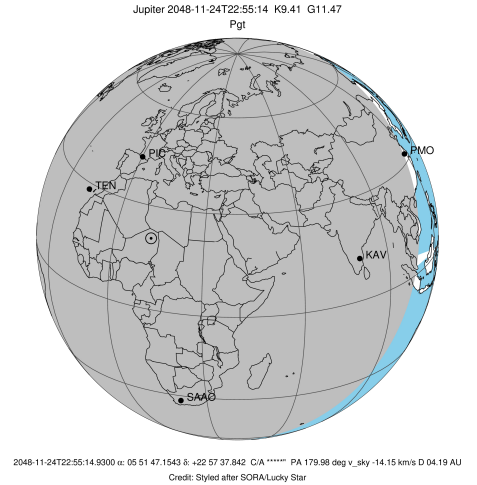


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-11-24T21:44:20.348	36.01	-12.28	71488.5	39.10	42.79
Jupiter	E	2048-11-24T23:53:05.733	9.47	12.32x	71488.3	40.24	43.95

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2048-11-24T23:01:10.580
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : TEN
Location              : Teide Obs./Tenerife
Latitude (deg)        : 28.30050
E. Longitude (deg)    : 343.48909
Altitude (km)         : 2.395
Gaia source ID        : 3427393591654270848
2Mass ID (if available) : 05514717+2257375
ICRS Star Coord at Epoch: 05h 51m 47.15433s +22:57:37.84159s
RUWE (>1.4 is poor) : 1.42
K magnitude           : 9.415
G magnitude           : 11.471
RP magnitude          : 10.818
BP magnitude          : 11.959
DUPflag              : 0
Distance (au)         : 4.189
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.15
Sun-Target sep (deg) : 154.55
Sun-Moon sep (deg)   : 24.16
B (ring opening deg) : 2.54
PA of pole (deg)     : -0.05
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation (") : 14.648
C/A sky separation (km) : 44506.1
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
    
```

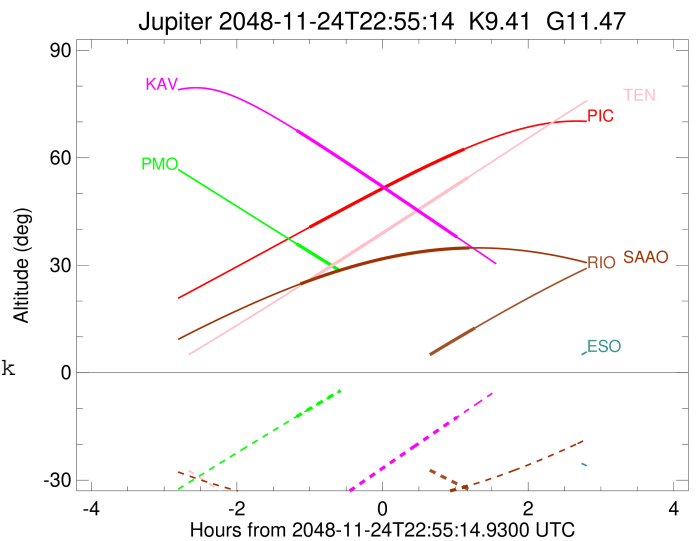
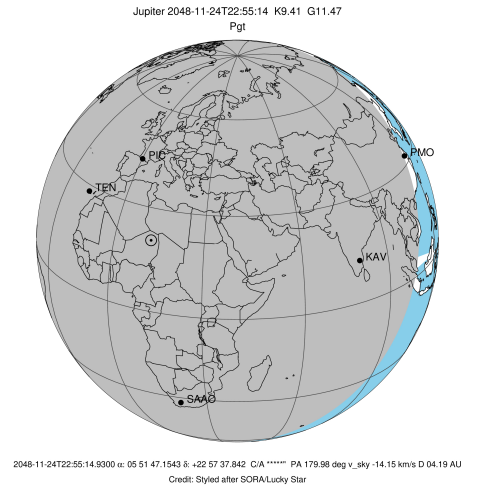


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-11-24T21:56:09.091	26.13	-49.36	71488.5	39.05	42.75
Jupiter	E	2048-11-25T00:05:43.096	54.50	-77.04	71488.6	37.97	41.65

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2048-11-24T22:50:25.210
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : KAV
Location              : Kavalur Observatory
Latitude (deg)        : 12.57556
E. Longitude (deg)    : 78.83167
Altitude (km)         : 0.722
Gaia source ID        : 3427393591654270848
2Mass ID (if available) : 05514717+2257375
ICRS Star Coord at Epoch: 05h 51m 47.15433s +22:57:37.84159s
RUWE (>1.4 is poor) : 1.42
K magnitude           : 9.415
G magnitude           : 11.471
RP magnitude          : 10.818
BP magnitude          : 11.959
DUPflag              : 0
Distance (au)         : 4.189
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.15
Sun-Target sep (deg) : 154.55
Sun-Moon sep (deg)   : 23.07
B (ring opening deg) : 2.54
PA of pole (deg)     : -0.05
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation (") : 13.944
C/A sky separation (km) : 42366.4
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
    
```

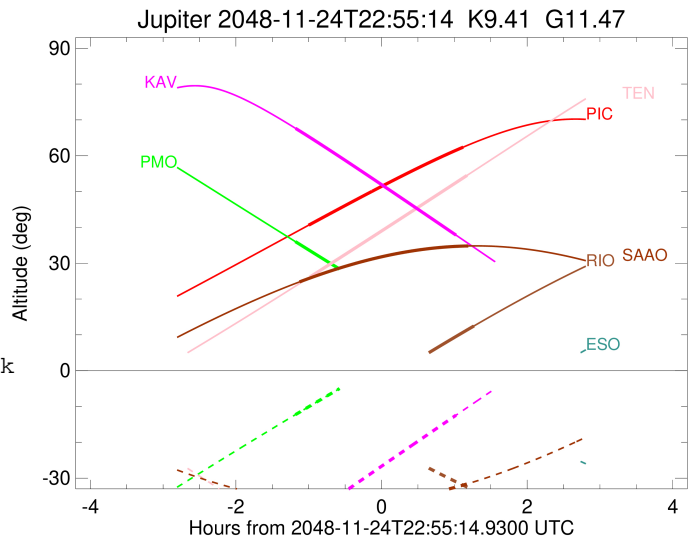
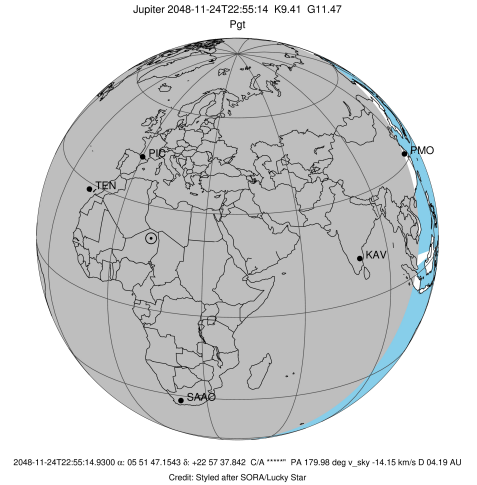


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-11-24T21:44:29.081	67.62	-43.21	71488.9	35.98	39.61
Jupiter	E	2048-11-24T23:56:40.669	37.82	-12.43	71488.8	36.78	40.43

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2048-11-24T23:02:38.240
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       : 3427393591654270848
2Mass ID (if available) : 05514717+2257375
ICRS Star Coord at Epoch: 05h 51m 47.15433s +22:57:37.84159s
RUWE (>1.4 is poor) : 1.42
K magnitude           : 9.415
G magnitude           : 11.471
RP magnitude         : 10.818
BP magnitude         : 11.959
DUPflag              : 0
Distance (au)        : 4.189
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.15
Sun-Target sep (deg) : 154.55
Sun-Moon sep (deg)   : 24.00
B (ring opening deg) : 2.54
PA of pole (deg)     : -0.05
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation (") : 13.290
C/A sky separation (km) : 40379.1
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
    
```

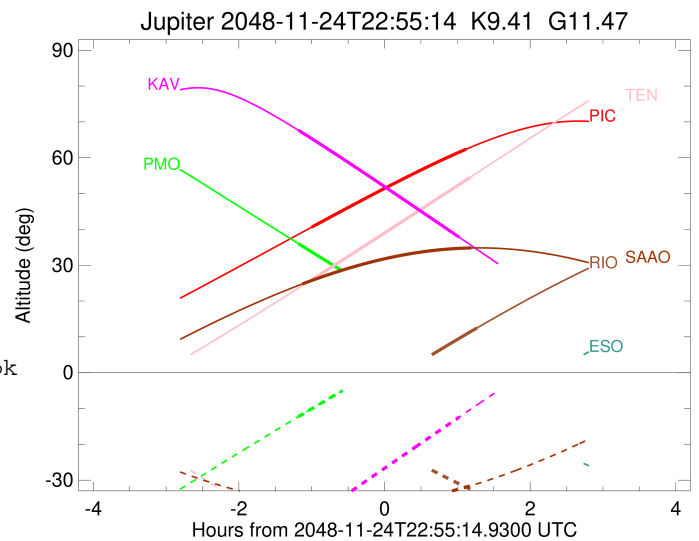
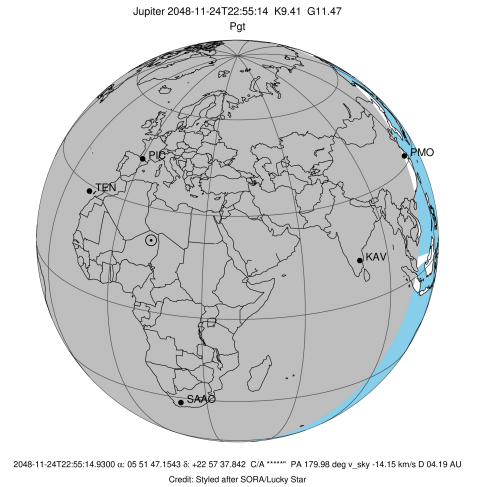


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-11-24T21:53:08.004	-16.55x	-7.70	71489.1	35.05	38.65
Jupiter	E	2048-11-25T00:11:27.211	12.48	-33.38	71489.3	33.69	37.24

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-11-24T22:57:25.590
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : SAAO
Location             : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)       : -32.37953
E. Longitude (deg)   : 20.81070
Altitude (km)        : 1.768
Gaia source ID       : 3427393591654270848
2Mass ID (if available) : 05514717+2257375
ICRS Star Coord at Epoch: 05h 51m 47.15433s +22:57:37.84159s
RUWE (>1.4 is poor) : 1.42
K magnitude          : 9.415
G magnitude          : 11.471
RP magnitude         : 10.818
BP magnitude         : 11.959
DUPflag             : 0
Distance (au)        : 4.189
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.15
Sun-Target sep (deg) : 154.55
Sun-Moon sep (deg)   : 23.67
B (ring opening deg) : 2.54
PA of pole (deg)     : -0.05
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation (") : 12.468
C/A sky separation (km) : 37881.5
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	2048-11-24T21:47:46.013	24.79	-36.30	71489.5	32.26	35.75
Jupiter	E	2048-11-25T00:06:50.866	34.81	-31.50	71489.5	31.84	35.31