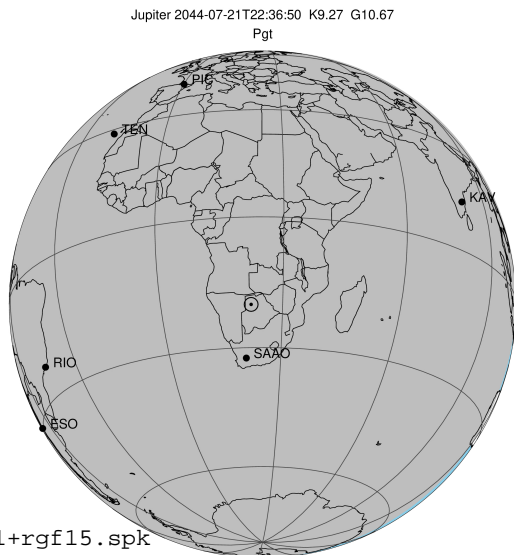


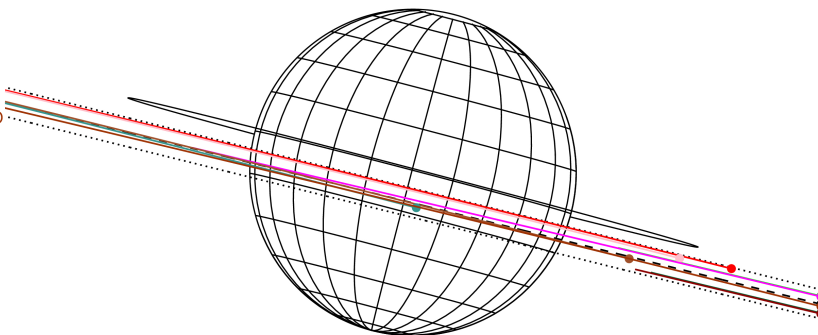
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2044-07-21T22:36:50.520
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 6854374355350523136
 2Mass ID (if available) : 20162273-2020204

Jupiter 2044-07-21T22:36:50 K9.27 G10.67 Pgt

ICRS Star Coord at Epoch: 20h 16m 22.78399s -20:20:21.45524s
 RUWE (>1.4 is poor) : 0.89
 K magnitude : 9.265
 G magnitude : 10.672
 RP magnitude : 10.169
 BP magnitude : 11.007
 DUPflag : 0
 Distance (au) : 4.110
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -16.05
 Sun-Target sep (deg) : 177.40
 Sun-Moon sep (deg) : 138.06
 B (ring opening deg) : -0.73
 PA of pole (deg) : -14.67
 Pole direction: RA (deg): 268.05689
 Dec (deg): 64.49728
 C/A sky separation (") : 4.353
 C/A sky separation (km) : 12973.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



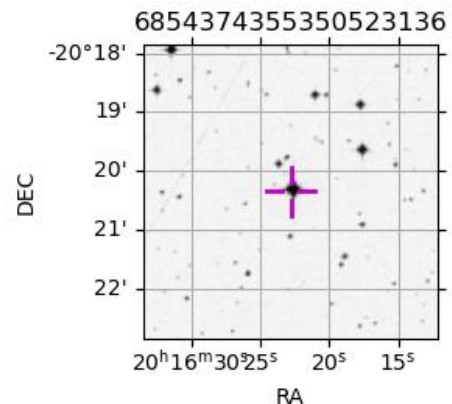
Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



2044-07-21T22:36:50.5200 at: 20 16 22.7840 s: -20 20 21.455 C/A 4.359" PA 346.07 deg v_sky -16.05 km/s D 04.11 AU
 Credit: Styled after SORA/Lucky Star

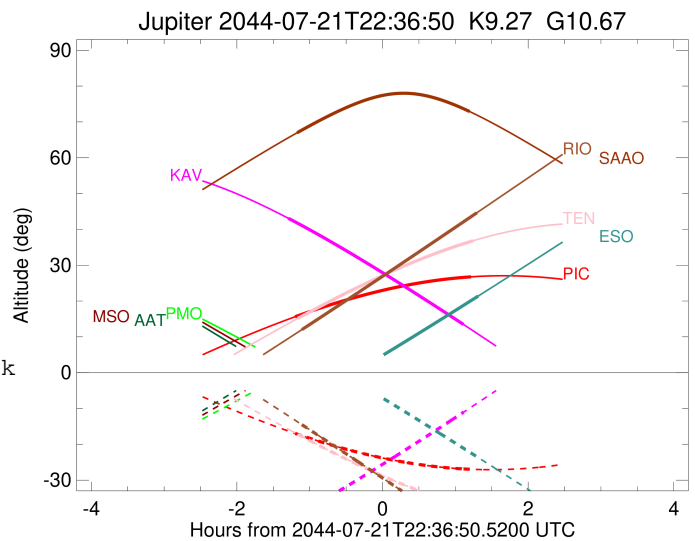
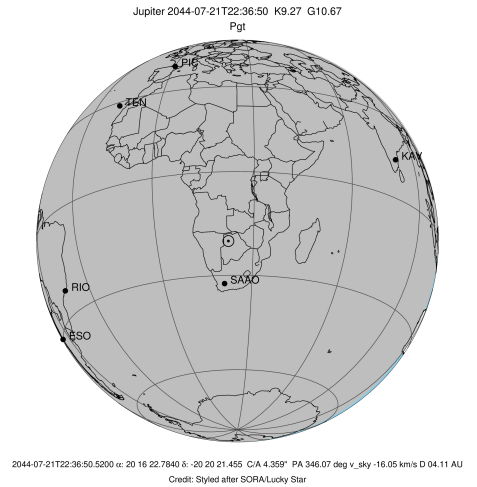
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	JUL 21 21:24 - JUL 21 23:49	Pie
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
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	+ +	JUL 21 21:26 - JUL 21 23:51	Pie
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUL 21 21:19 - JUL 21 23:43	Pie
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUL 21 21:30 - JUL 21 23:54	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3		JUL 21 23:55 - JUL 21 23:55	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 21 21:26 - JUL 21 23:48	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2044-07-21T22:37:24.600
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        : 6854374355350523136
2Mass ID (if available) : 20162273-2020204
ICRS Star Coord at Epoch: 20h 16m 22.78399s -20:20:21.45524s
RUWE (>1.4 is poor)  : 0.89
K magnitude           : 9.265
G magnitude           : 10.672
RP magnitude          : 10.169
BP magnitude          : 11.007
DUPflag              : 0
Distance (au)         : 4.110
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg)  : 177.40
Sun-Moon sep (deg)    : 138.32
B (ring opening deg) : -0.73
PA of pole (deg)      : -14.67
Pole direction: RA (deg): 268.05689
Dec (deg): 64.49728
C/A sky separation (") : 2.394
C/A sky separation (km) : 7136.0
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
    
```

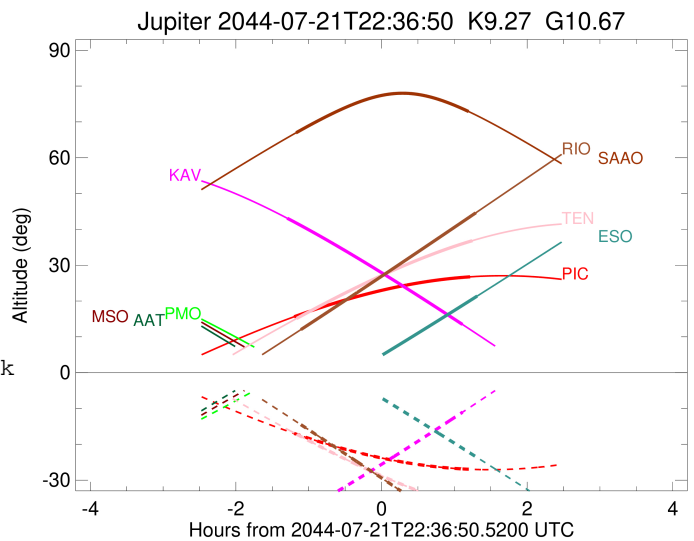
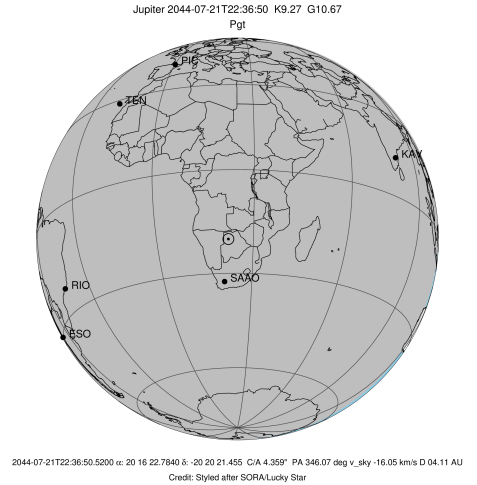


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-07-21T21:24:51.577	15.61	-16.96	71492.0	-4.97	-5.67
Jupiter	E	2044-07-21T23:49:47.864	26.75	-26.97	71492.0	-6.65	-7.59

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2044-07-21T22:39:28.560
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      : 6854374355350523136
2Mass ID (if available) : 20162273-2020204
ICRS Star Coord at Epoch: 20h 16m 22.78399s -20:20:21.45524s
RUWE (>1.4 is poor) : 0.89
K magnitude         : 9.265
G magnitude         : 10.672
RP magnitude        : 10.169
BP magnitude        : 11.007
DUPflag            : 0
Distance (au)       : 4.110
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg) : 177.40
Sun-Moon sep (deg)  : 138.12
B (ring opening deg) : -0.73
PA of pole (deg)    : -14.67
Pole direction: RA (deg): 268.05689
Dec (deg): 64.49728
C/A sky separation (") : 2.656
C/A sky separation (km) : 7915.5
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
    
```

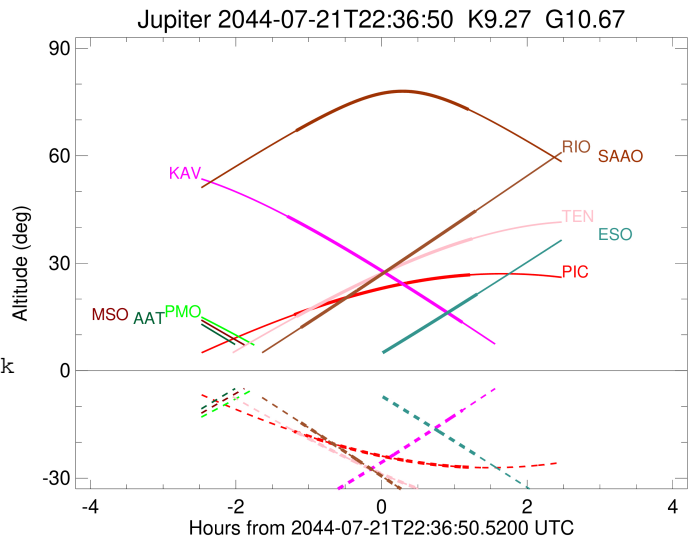
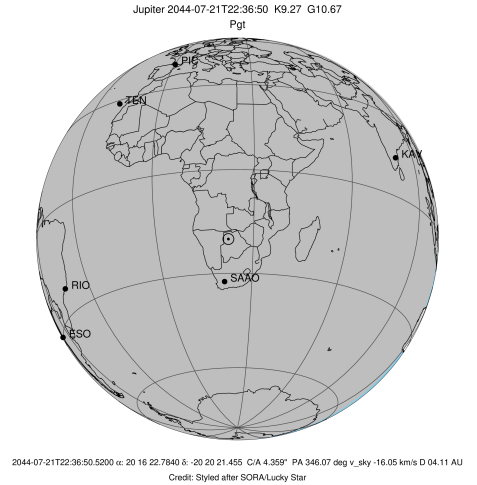


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-07-21T21:26:58.459	15.14	-17.20	71492.0	-5.75	-6.57
Jupiter	E	2044-07-21T23:51:38.817	36.84	-37.90	71492.0	-7.15	-8.16

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2044-07-21T22:31:05.050
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        : 6854374355350523136
2Mass ID (if available) : 20162273-2020204
ICRS Star Coord at Epoch: 20h 16m 22.78399s -20:20:21.45523s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 9.265
G magnitude           : 10.672
RP magnitude          : 10.169
BP magnitude          : 11.007
DUPflag              : 0
Distance (au)         : 4.110
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg)  : 177.40
Sun-Moon sep (deg)    : 139.04
B (ring opening deg) : -0.73
PA of pole (deg)     : -14.67
Pole direction: RA (deg): 268.05689
Dec (deg): 64.49728
C/A sky separation (") : 3.907
C/A sky separation (km) : 11644.4
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
    
```

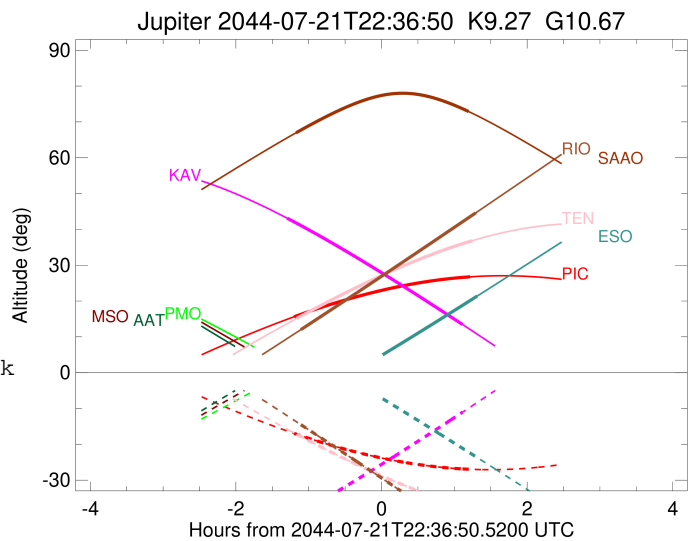
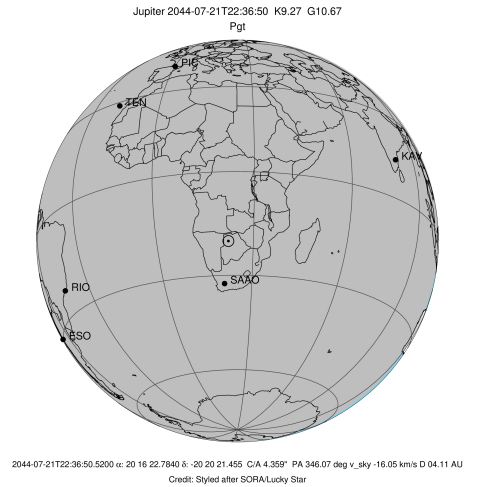


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-07-21T21:19:09.595	43.10	-41.07	71492.0	-7.98	-9.11
Jupiter	E	2044-07-21T23:43:31.414	13.47	-11.06	71492.0	-10.78	-12.28

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2044-07-21T22:42:44.920
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        : 6854374355350523136
2Mass ID (if available) : 20162273-2020204
ICRS Star Coord at Epoch: 20h 16m 22.78399s -20:20:21.45524s
RUWE (>1.4 is poor)  : 0.89
K magnitude           : 9.265
G magnitude           : 10.672
RP magnitude          : 10.169
BP magnitude          : 11.007
DUPflag              : 0
Distance (au)         : 4.110
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg) : 177.40
Sun-Moon sep (deg)   : 137.71
B (ring opening deg) : -0.73
PA of pole (deg)     : -14.67
Pole direction: RA (deg): 268.05689
Dec (deg): 64.49728
C/A sky separation (") : 4.403
C/A sky separation (km) : 13124.2
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
    
```

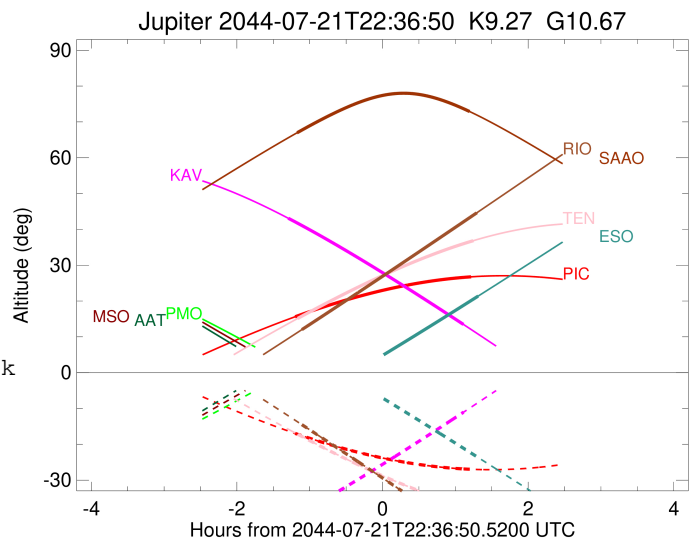
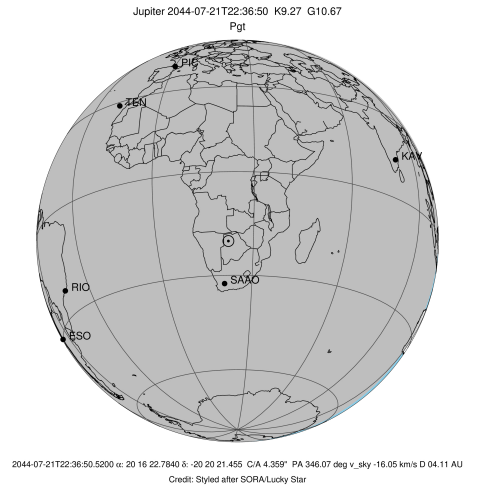


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-07-21T21:30:24.181	12.02	-14.51	71492.0	-10.23	-11.66
Jupiter	E	2044-07-21T23:54:34.634	44.63	-47.11	71492.0	-11.09	-12.63

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2044-07-21T22:43:20.720
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       : 6854374355350523136
2Mass ID (if available) : 20162273-2020204
ICRS Star Coord at Epoch: 20h 16m 22.78399s -20:20:21.45524s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 9.265
G magnitude           : 10.672
RP magnitude          : 10.169
BP magnitude          : 11.007
DUPflag              : 0
Distance (au)        : 4.110
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg) : 177.40
Sun-Moon sep (deg)   : 137.39
B (ring opening deg) : -0.73
PA of pole (deg)     : -14.67
Pole direction: RA (deg): 268.05689
Dec (deg): 64.49728
C/A sky separation (") : 4.891
C/A sky separation (km) : 14576.6
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
    
```

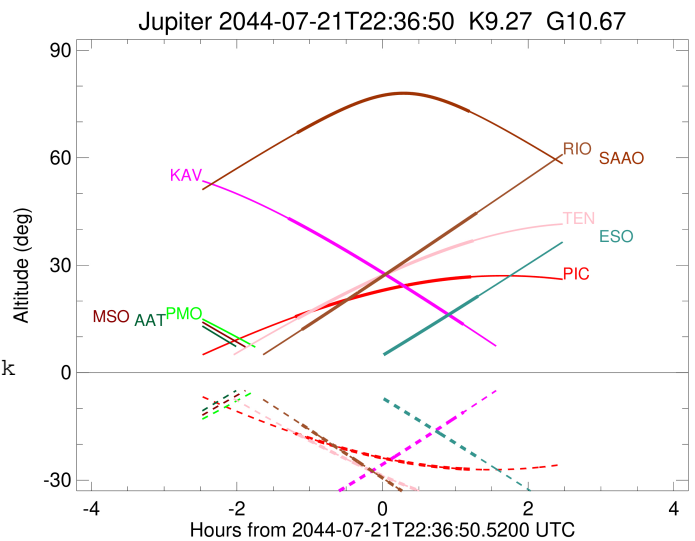
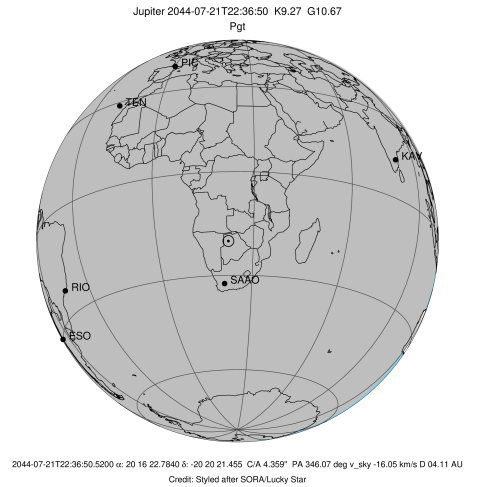


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-07-21T21:30:25.161	-8.44x	6.26x	71492.0	-11.57	-13.17
Jupiter	E	2044-07-21T23:55:41.953	21.38	-23.69	71492.0	-12.06	-13.73

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2044-07-21T22:37:30.000
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        : 6854374355350523136
2Mass ID (if available) : 20162273-2020204
ICRS Star Coord at Epoch: 20h 16m 22.78399s -20:20:21.45524s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 9.265
G magnitude           : 10.672
RP magnitude          : 10.169
BP magnitude          : 11.007
DUPflag              : 0
Distance (au)         : 4.110
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg) : 177.40
Sun-Moon sep (deg)   : 138.62
B (ring opening deg) : -0.73
PA of pole (deg)     : -14.67
Pole direction: RA (deg): 268.05689
Dec (deg): 64.49728
C/A sky separation (") : 4.753
C/A sky separation (km) : 14167.8
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	2044-07-21T21:26:25.572	66.96	-69.06	71492.0	-10.46	-11.92
Jupiter	E	2044-07-21T23:48:34.634	72.89	-71.08	71492.0	-12.55	-14.27