

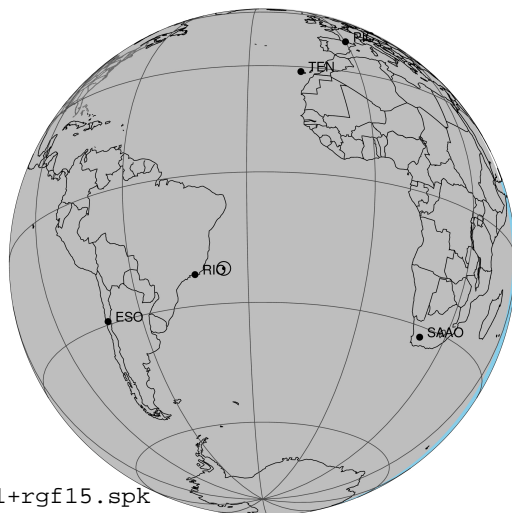
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2032-07-11T02:29:11.330  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 6866042166586260992  
 2Mass ID (if available) : 20000235-2101425

Jupiter 2032-07-11T02:29:11 K9.65 G12.40 Pgt

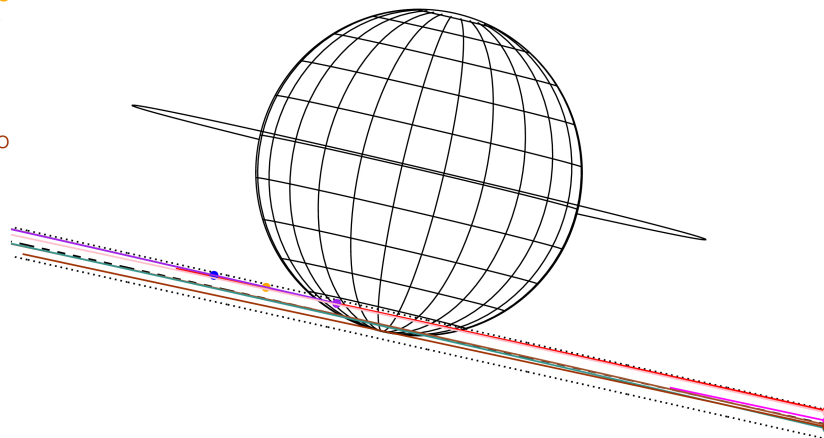
ICRS Star Coord at Epoch: 20h 00m 02.34288s -21:01:42.96909s

RUWE (>1.4 is poor) : 1.06  
 K magnitude : 9.655  
 G magnitude : 12.399  
 RP magnitude : 11.580  
 BP magnitude : 13.116  
 DUPflag : 0  
 Distance (au) : 4.134  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -15.74  
 Sun-Target sep (deg) : 171.07  
 Sun-Moon sep (deg) : 149.90  
 B (ring opening deg) : -0.98  
 PA of pole (deg) : -13.17  
 Pole direction: RA (deg): 268.05663  
 Dec (deg): 64.49655  
 C/A sky separation (") : 22.877  
 C/A sky separation (km) : 68585.7  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2032-07-11T02:29:11 K9.65 G12.40  
 Pgt



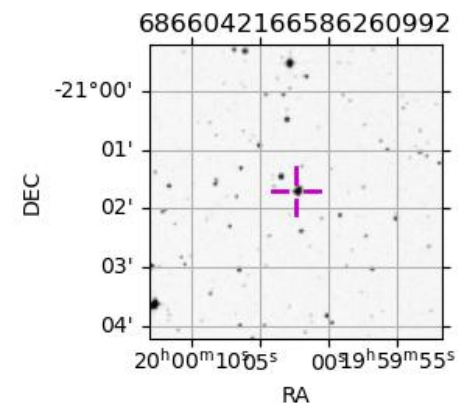
Earth  
 PIC  
 PAL  
 KPNO  
 MCD  
 TEN  
 KAV  
 RIO  
 ESO  
 SAAO



2032-07-11T02:29:11.3300 a: 20 00 02.34288 s: -21 01 42.96909 C/A \*\*\*\*\* PA 347.36 deg v\_sky -15.74 km/s D 04.13 AU  
 Credit: Styled after SORA/Lucky Star

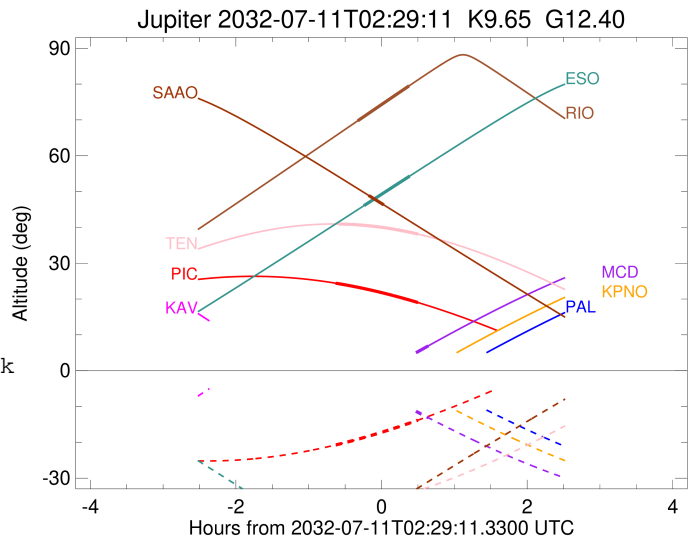
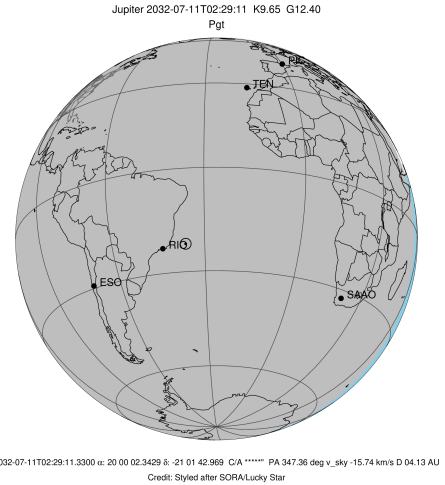
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	JUL 11 01:51 - JUL 11 02:59	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	+ +	JUL 11 03:07 - JUL 11 03:07	Pne
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	JUL 11 01:54 - JUL 11 02:59	Pie
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	+ +	JUL 11 02:09 - JUL 11 02:51	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUL 11 02:14 - JUL 11 02:52	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 11 02:18 - JUL 11 02:31	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-07-11T02:25:18.130
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        : 6866042166586260992
2Mass ID (if available) : 20000235-2101425
ICRS Star Coord at Epoch: 20h 00m 02.34288s -21:01:42.96909s
RUWE (>1.4 is poor) : 1.06
K magnitude           : 9.655
G magnitude           : 12.399
RP magnitude          : 11.580
BP magnitude          : 13.116
DUPflag              : 0
Distance (au)         : 4.134
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.74
Sun-Target sep (deg) : 171.07
Sun-Moon sep (deg)   : 149.58
B (ring opening deg) : -0.98
PA of pole (deg)     : -13.17
Pole direction: RA (deg): 268.05663
Dec (deg): 64.49655
C/A sky separation (") : 21.222
C/A sky separation (km) : 63625.7
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
    
```

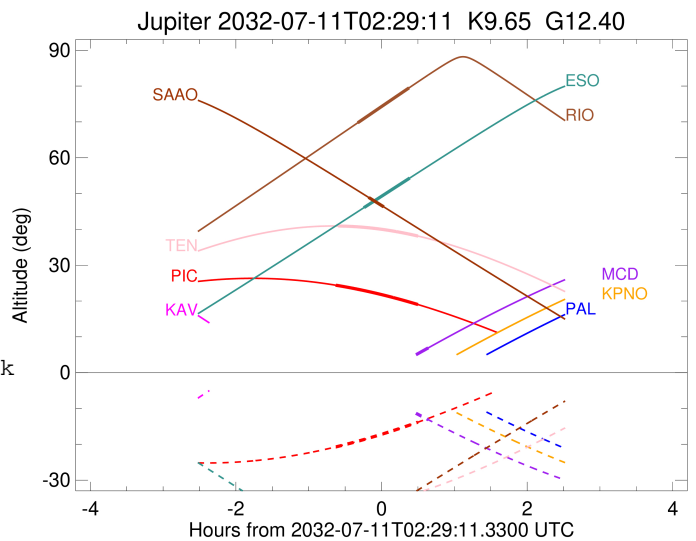
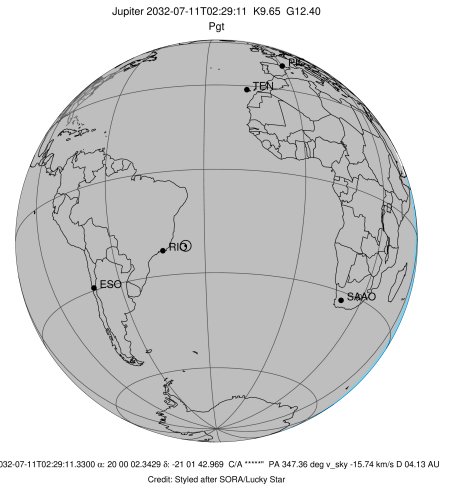


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-07-11T01:51:27.765	24.41	-20.73	71491.0	-61.92	-64.84
Jupiter	E	2032-07-11T02:59:11.629	19.02	-13.82	71490.9	-63.83	-66.60

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2032-07-11T02:34:22.150
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       : 6866042166586260992
2Mass ID (if available) : 20000235-2101425
ICRS Star Coord at Epoch: 20h 00m 02.34288s -21:01:42.96909s
RUWE (>1.4 is poor) : 1.06
K magnitude           : 9.655
G magnitude           : 12.399
RP magnitude          : 11.580
BP magnitude          : 13.116
DUPflag              : 0
Distance (au)         : 4.134
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.74
Sun-Target sep (deg)  : 171.07
Sun-Moon sep (deg)   : 150.35
B (ring opening deg) : -0.98
PA of pole (deg)     : -13.17
Pole direction: RA (deg): 268.05663
Dec (deg): 64.49655
C/A sky separation (") : 21.349
C/A sky separation (km) : 64005.3
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
    
```

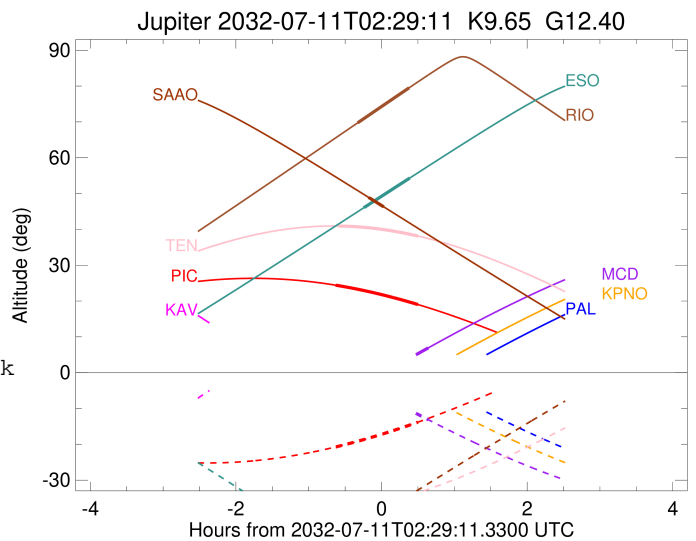
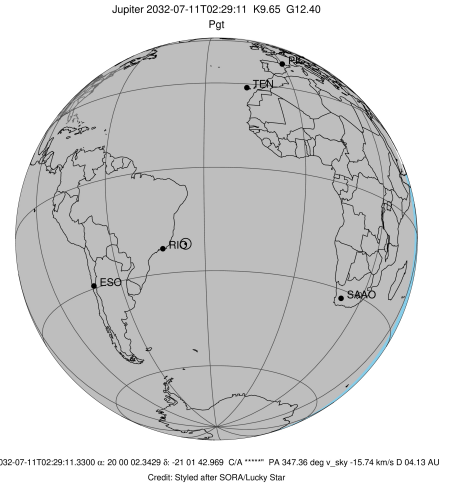


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-07-11T02:00:53.768	-6.17x	-0.79x	71490.9	-63.44	-66.25
Jupiter	E	2032-07-11T03:07:43.301	6.92	-13.13	71490.9	-63.68	-66.46

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2032-07-11T02:26:39.480
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       : 6866042166586260992
2Mass ID (if available) : 20000235-2101425
ICRS Star Coord at Epoch: 20h 00m 02.34288s -21:01:42.96909s
RUWE (>1.4 is poor) : 1.06
K magnitude           : 9.655
G magnitude           : 12.399
RP magnitude         : 11.580
BP magnitude         : 13.116
DUPflag              : 0
Distance (au)        : 4.134
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.74
Sun-Target sep (deg) : 171.07
Sun-Moon sep (deg)   : 149.86
B (ring opening deg) : -0.98
PA of pole (deg)     : -13.17
Pole direction: RA (deg): 268.05663
Dec (deg): 64.49655
C/A sky separation ("): 21.386
C/A sky separation (km): 64116.2
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
    
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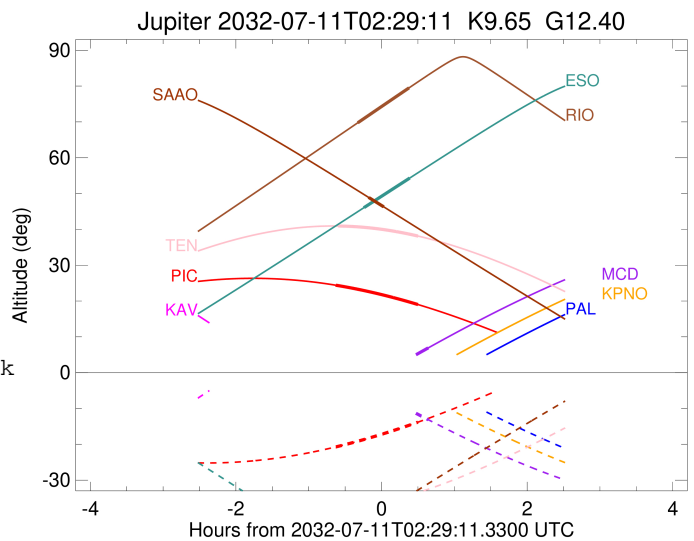
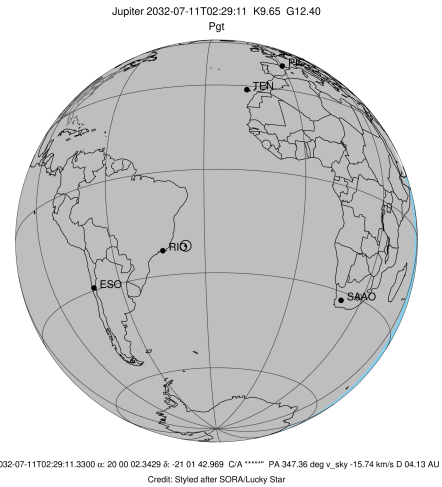


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-07-11T01:54:02.369	40.93	-38.80	71490.9	-62.83	-65.69
Jupiter	E	2032-07-11T02:59:18.225	38.13	-33.50	71490.9	-64.69	-67.39

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2032-07-11T02:30:45.360
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      : 6866042166586260992
2Mass ID (if available) : 20000235-2101425
ICRS Star Coord at Epoch: 20h 00m 02.34288s -21:01:42.96909s
RUWE (>1.4 is poor) : 1.06
K magnitude          : 9.655
G magnitude          : 12.399
RP magnitude         : 11.580
BP magnitude         : 13.116
DUPflag             : 0
Distance (au)        : 4.134
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.74
Sun-Target sep (deg) : 171.07
Sun-Moon sep (deg)  : 150.54
B (ring opening deg) : -0.98
PA of pole (deg)    : -13.17
Pole direction: RA (deg): 268.05663
Dec (deg): 64.49655
C/A sky separation ("): 22.848
C/A sky separation (km): 68498.4
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
    
```

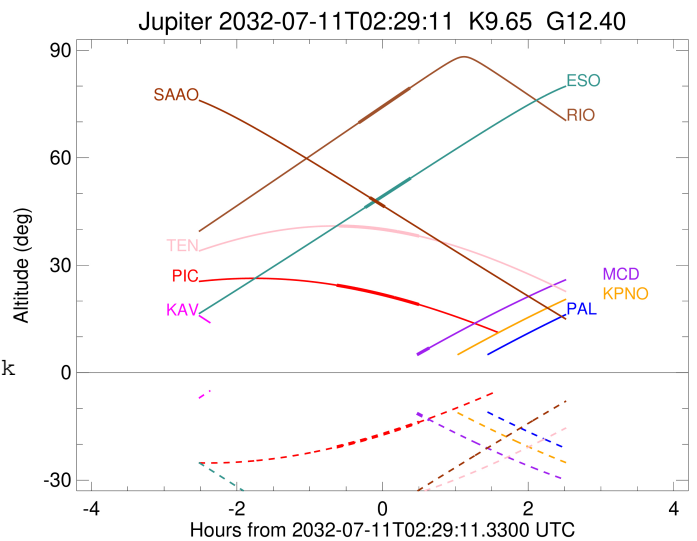
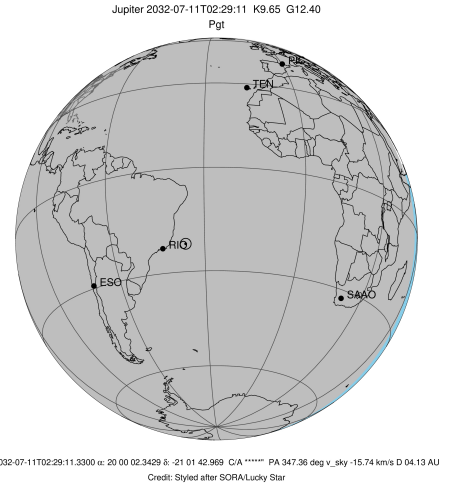


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-07-11T02:09:40.163	69.76	-78.70	71490.8	-72.66	-74.62
Jupiter	E	2032-07-11T02:51:49.889	79.48	-88.30	71490.8	-74.07	-75.88

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-07-11T02:33:36.650
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        : 6866042166586260992
2Mass ID (if available) : 20000235-2101425
ICRS Star Coord at Epoch: 20h 00m 02.34288s -21:01:42.96909s
RUWE (>1.4 is poor) : 1.06
K magnitude           : 9.655
G magnitude           : 12.399
RP magnitude          : 11.580
BP magnitude          : 13.116
DUPflag              : 0
Distance (au)         : 4.134
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.74
Sun-Target sep (deg) : 171.07
Sun-Moon sep (deg)   : 150.75
B (ring opening deg) : -0.98
PA of pole (deg)     : -13.17
Pole direction: RA (deg): 268.05663
Dec (deg): 64.49655
C/A sky separation (") : 23.065
C/A sky separation (km) : 69149.3
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
    
```

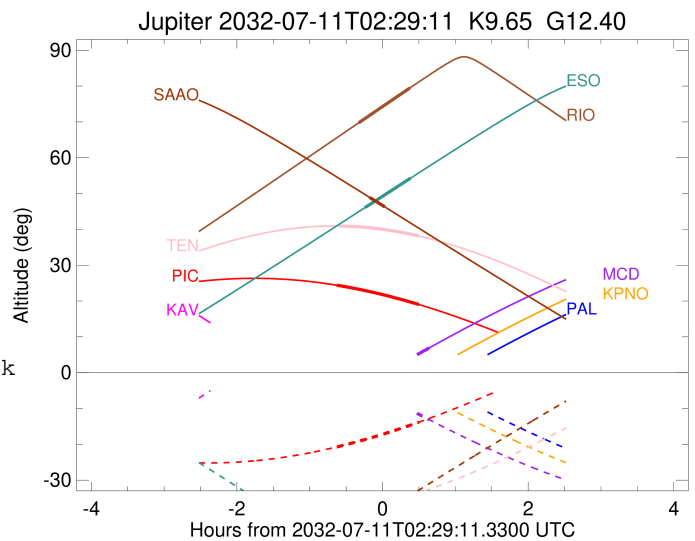
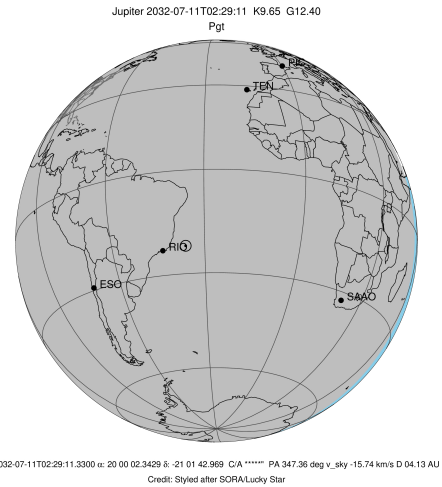


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-07-11T02:14:47.458	46.07	-54.78	71490.8	-74.87	-76.60
Jupiter	E	2032-07-11T02:52:24.327	54.31	-62.96	71490.8	-75.71	-77.34

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-07-11T02:24:51.470
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       : 6866042166586260992
2Mass ID (if available) : 20000235-2101425
ICRS Star Coord at Epoch: 20h 00m 02.34288s -21:01:42.96909s
RUWE (>1.4 is poor) : 1.06
K magnitude           : 9.655
G magnitude           : 12.399
RP magnitude          : 11.580
BP magnitude          : 13.116
DUPflag              : 0
Distance (au)        : 4.134
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.74
Sun-Target sep (deg) : 171.07
Sun-Moon sep (deg)   : 149.87
B (ring opening deg) : -0.98
PA of pole (deg)     : -13.17
Pole direction: RA (deg): 268.05663
Dec (deg): 64.49655
C/A sky separation (") : 23.763
C/A sky separation (km) : 71241.8
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	2032-07-11T02:18:38.947	48.90	-41.31	71490.7	-84.04	-84.74
Jupiter	E	2032-07-11T02:31:04.168	46.27	-38.69	71490.7	-86.19	-86.64