

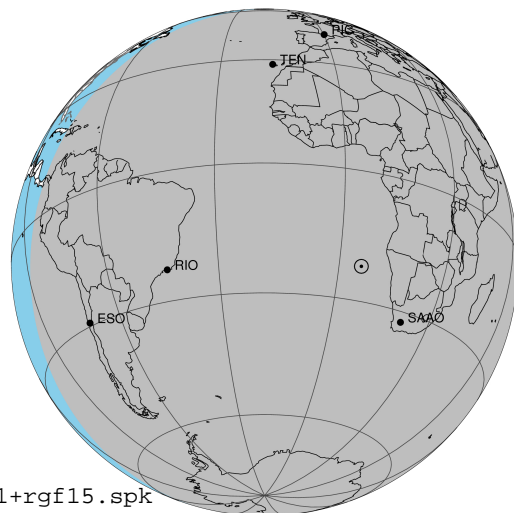
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-10T23:42:23.490
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116546589232591616
 2Mass ID (if available) : 17404164-2304131

Jupiter 2043-07-10T23:42:23 K9.91 G14.51 Pgt

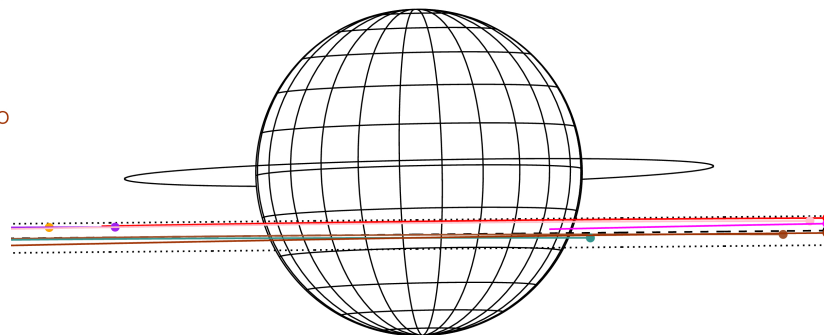
ICRS Star Coord at Epoch: 17h 40m 41.64934s -23:04:13.25340s

RUWE (>1.4 is poor) : 0.92
 K magnitude : 9.912
 G magnitude : 14.508
 RP magnitude : 13.311
 BP magnitude : 16.054
 DUPflag : 0
 Distance (au) : 4.305
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -14.24
 Sun-Target sep (deg) : 157.53
 Sun-Moon sep (deg) : 102.86
 B (ring opening deg) : -2.40
 PA of pole (deg) : 1.24
 Pole direction: RA (deg): 268.05670
 Dec (deg): 64.49732
 C/A sky separation (") : 8.691
 C/A sky separation (km) : 27139.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-10T23:42:23 K9.91 G14.51
 Pgt



Earth
 PIC
 KPNO
 MCD
 TEN
 KAV
 RIO
 ESO
 SAAO

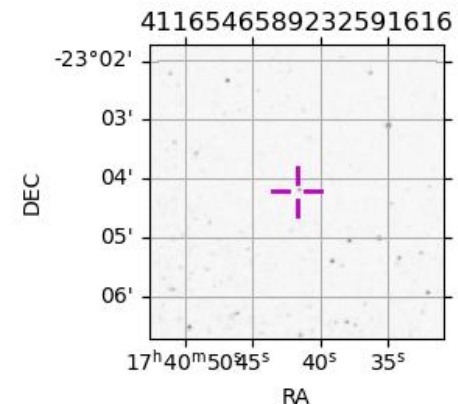


2043-07-10T23:42:23.4900 a: 17 40 41.6493 s: -23 04 13.253 C/A 8.702" PA 0.55 deg v_sky -14.24 km/s D 04.31 AU

Credit: Styled after SORA/Lucky Star

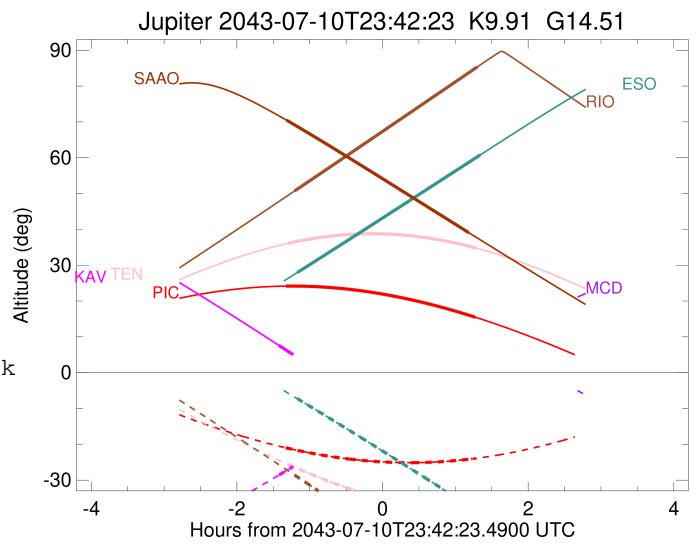
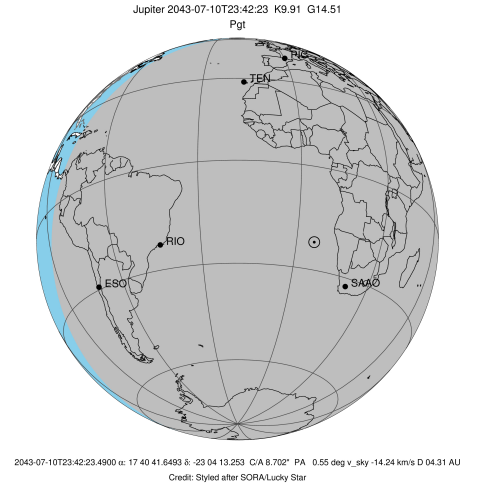
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	JUL 10 22:22 - JUL 11 00:58	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 10 22:24 - JUL 11 00:59	Pie
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+	JUL 10 22:17 - JUL 10 22:17	Pin
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUL 10 22:29 - JUL 11 01:00	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUL 10 22:32 - JUL 11 01:02	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 10 22:23 - JUL 11 00:53	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-10T23:40:38.230
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        : 4116546589232591616
2Mass ID (if available) : 17404164-2304131
ICRS Star Coord at Epoch: 17h 40m 41.64934s -23:04:13.25340s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 9.912
G magnitude           : 14.508
RP magnitude          : 13.311
BP magnitude          : 16.054
DUPflag              : 0
Distance (au)         : 4.305
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.24
Sun-Target sep (deg)  : 157.53
Sun-Moon sep (deg)   : 103.16
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.24
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (" ) : 6.857
C/A sky separation (km) : 21412.5
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
    
```

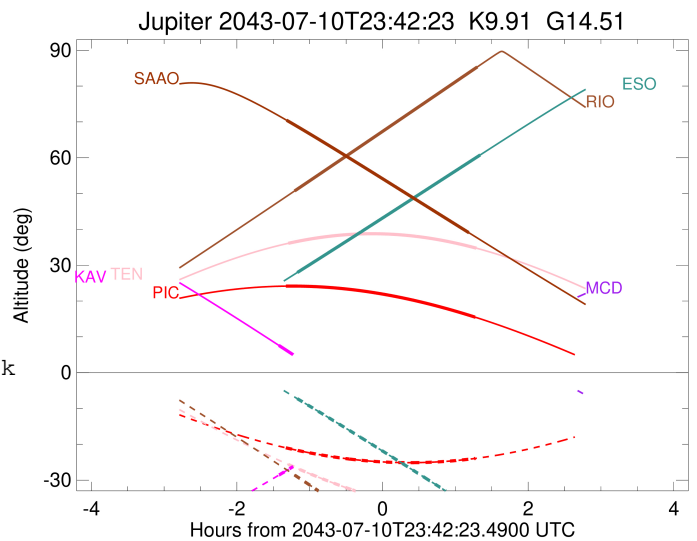
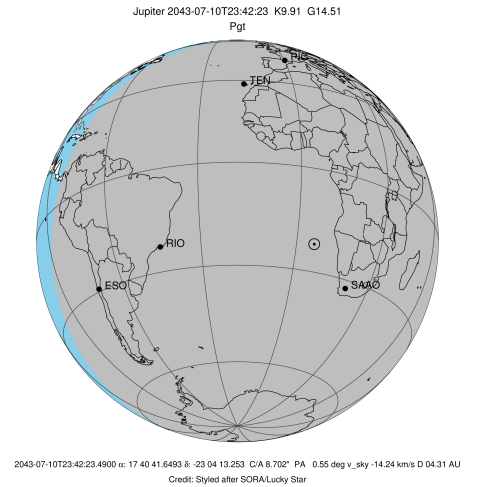


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-10T22:22:41.447	24.15	-20.97	71491.2	-18.04	-20.41
Jupiter	E	2043-07-11T00:58:49.978	15.48	-23.94	71491.3	-16.96	-19.21

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2043-07-10T23:42:10.850
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        : 4116546589232591616
2Mass ID (if available) : 17404164-2304131
ICRS Star Coord at Epoch: 17h 40m 41.64934s -23:04:13.25340s
RUWE (>1.4 is poor)  : 0.92
K magnitude            : 9.912
G magnitude           : 14.508
RP magnitude          : 13.311
BP magnitude          : 16.054
DUPflag              : 0
Distance (au)         : 4.305
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -14.24
Sun-Target sep (deg)  : 157.53
Sun-Moon sep (deg)    : 103.44
B (ring opening deg)  : -2.40
PA of pole (deg)      : 1.24
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 7.100
C/A sky separation (km) : 22169.8
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
    
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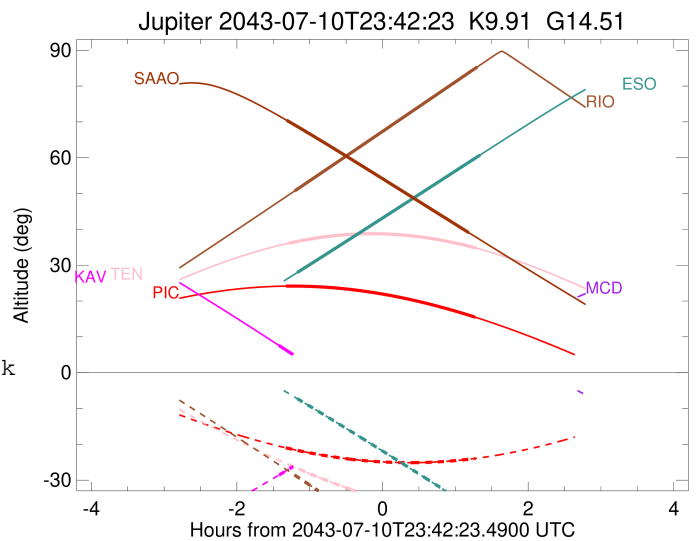
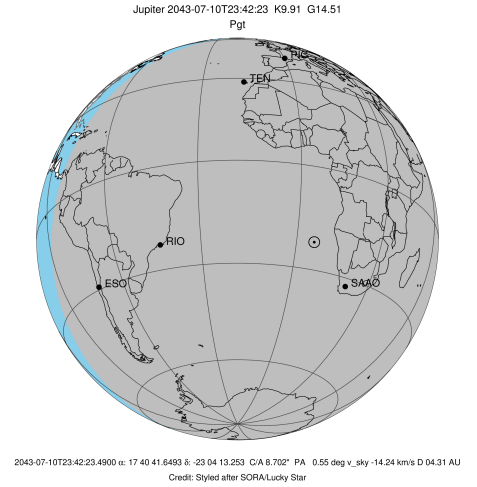


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-10T22:24:52.948	36.11	-25.64	71491.2	-18.84	-21.29
Jupiter	E	2043-07-11T00:59:33.425	34.76	-39.66	71491.3	-17.47	-19.78

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-10T23:34:45.590
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      : 4116546589232591616
2Mass ID (if available) : 17404164-2304131
ICRS Star Coord at Epoch: 17h 40m 41.64934s -23:04:13.25340s
RUWE (>1.4 is poor) : 0.92
K magnitude         : 9.912
G magnitude         : 14.508
RP magnitude        : 13.311
BP magnitude        : 16.054
DUPflag            : 0
Distance (au)       : 4.305
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -14.24
Sun-Target sep (deg) : 157.53
Sun-Moon sep (deg)  : 102.48
B (ring opening deg) : -2.40
PA of pole (deg)    : 1.24
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (" ) : 8.351
C/A sky separation (km) : 26075.9
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
    
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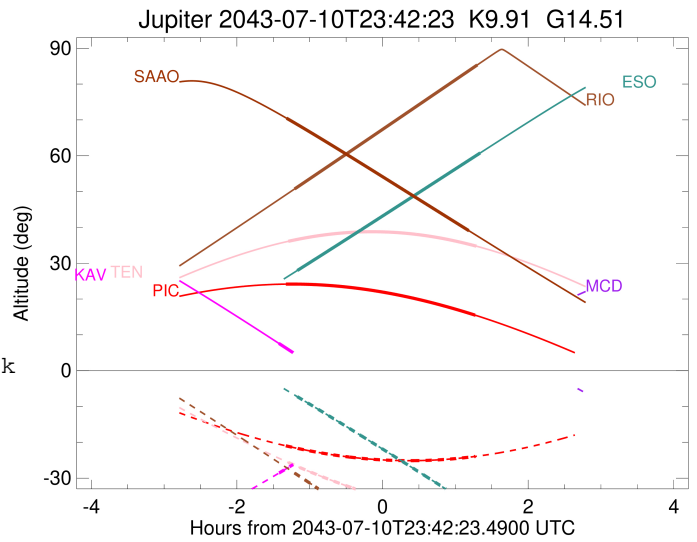
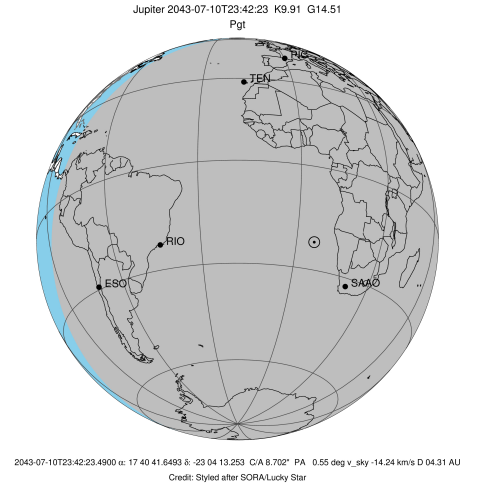


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-10T22:17:03.682	7.60	-28.58	71491.0	-21.36	-24.07
Jupiter	E	2043-07-11T00:53:22.330	-27.87x	5.41x	71490.9	-21.37	-24.08

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-10T23:45:19.980
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        : 4116546589232591616
2Mass ID (if available) : 17404164-2304131
ICRS Star Coord at Epoch: 17h 40m 41.64934s -23:04:13.25340s
RUWE (>1.4 is poor)  : 0.92
K magnitude           : 9.912
G magnitude           : 14.508
RP magnitude          : 13.311
BP magnitude          : 16.054
DUPflag              : 0
Distance (au)         : 4.305
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -14.24
Sun-Target sep (deg)  : 157.53
Sun-Moon sep (deg)    : 103.79
B (ring opening deg)  : -2.40
PA of pole (deg)      : 1.24
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (" ) : 8.747
C/A sky separation (km) : 27312.6
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
    
```

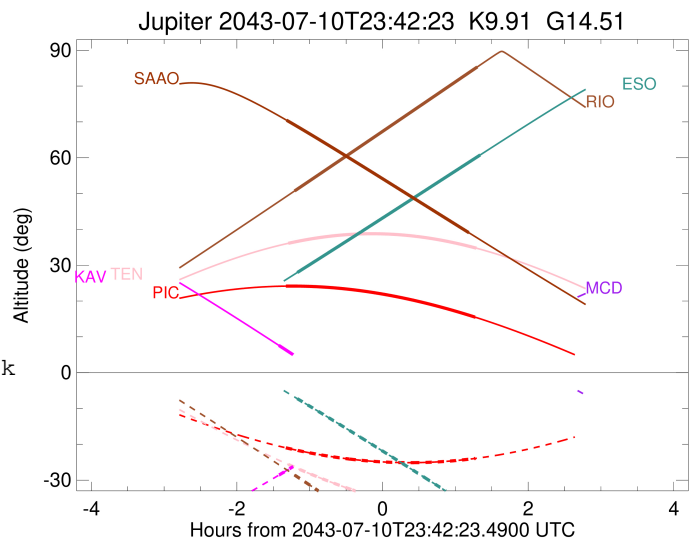
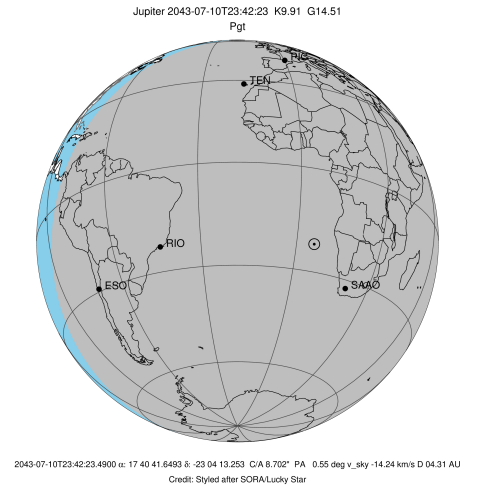


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-10T22:29:56.999	50.72	-28.57	71490.7	-23.50	-26.40
Jupiter	E	2043-07-11T01:00:28.181	85.32	-62.80	71490.9	-21.57	-24.30

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-10T23:47:43.620
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       : 4116546589232591616
2Mass ID (if available) : 17404164-2304131
ICRS Star Coord at Epoch: 17h 40m 41.64934s -23:04:13.25340s
RUWE (>1.4 is poor) : 0.92
K magnitude          : 9.912
G magnitude          : 14.508
RP magnitude         : 13.311
BP magnitude         : 16.054
DUPflag             : 0
Distance (au)        : 4.305
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.24
Sun-Target sep (deg) : 157.53
Sun-Moon sep (deg)   : 103.64
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.24
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation ("): 9.170
C/A sky separation (km): 28633.8
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
    
```

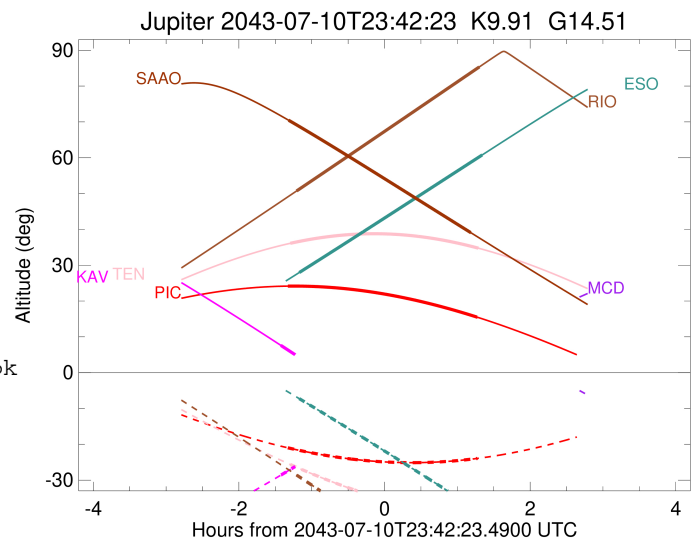
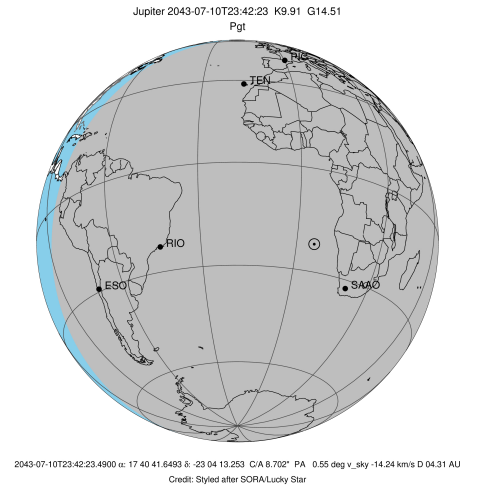


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-10T22:32:09.526	27.95	-7.25	71490.6	-24.83	-27.85
Jupiter	E	2043-07-11T01:02:48.157	60.75	-39.14	71490.8	-22.48	-25.29

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-10T23:38:14.940
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        : 4116546589232591616
2Mass ID (if available) : 17404164-2304131
ICRS Star Coord at Epoch: 17h 40m 41.64934s -23:04:13.25340s
RUWE (>1.4 is poor)  : 0.92
K magnitude           : 9.912
G magnitude           : 14.508
RP magnitude          : 13.311
BP magnitude          : 16.054
DUPflag              : 0
Distance (au)         : 4.305
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.24
Sun-Target sep (deg)  : 157.53
Sun-Moon sep (deg)    : 103.48
B (ring opening deg) : -2.40
PA of pole (deg)      : 1.24
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 9.156
C/A sky separation (km) : 28589.9
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	2043-07-10T22:23:25.206	70.45	-79.11	71490.7	-23.96	-26.90
Jupiter	E	2043-07-11T00:53:32.595	39.07	-59.25	71490.8	-23.30	-26.19