

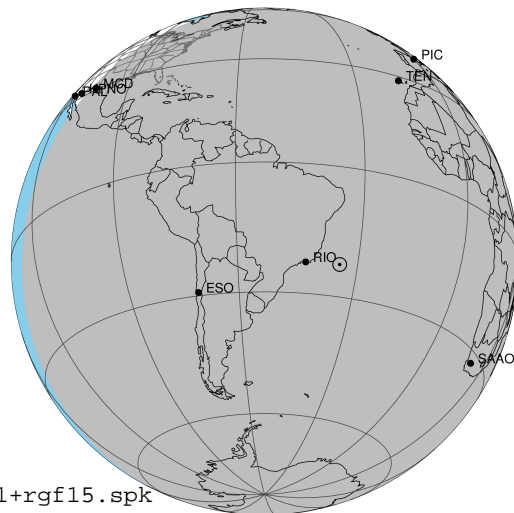
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-06T02:23:11.850
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116860882136497664
 2Mass ID (if available) : 17430624-2304324

Jupiter 2043-07-06T02:23:11 K9.74 G14.73 Pgt

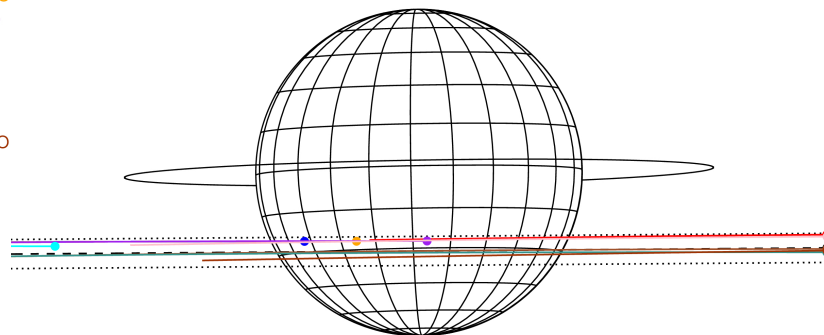
ICRS Star Coord at Epoch: 17h 43m 06.23791s -23:04:32.75511s

RUWE (>1.4 is poor) : 0.95
 K magnitude : 9.737
 G magnitude : 14.729
 RP magnitude : 13.488
 BP magnitude : 16.421
 DUPflag : 0
 Distance (au) : 4.281
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.15
 Sun-Target sep (deg) : 162.75
 Sun-Moon sep (deg) : 170.08
 B (ring opening deg) : -2.41
 PA of pole (deg) : 0.98
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 11.070
 C/A sky separation (km) : 34373.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-06T02:23:11 K9.74 G14.73
 Pgt



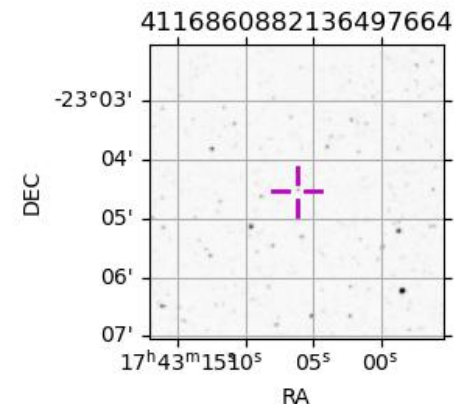
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 SAAO



2043-07-06T02:23:11.8500 α: 17 43 06.2379 δ: -23 04 32.755 C/A ***** PA 0.43 deg v_sky -15.15 km/s D 04.28 AU
 Credit: Styled after SORA/Lucky Star

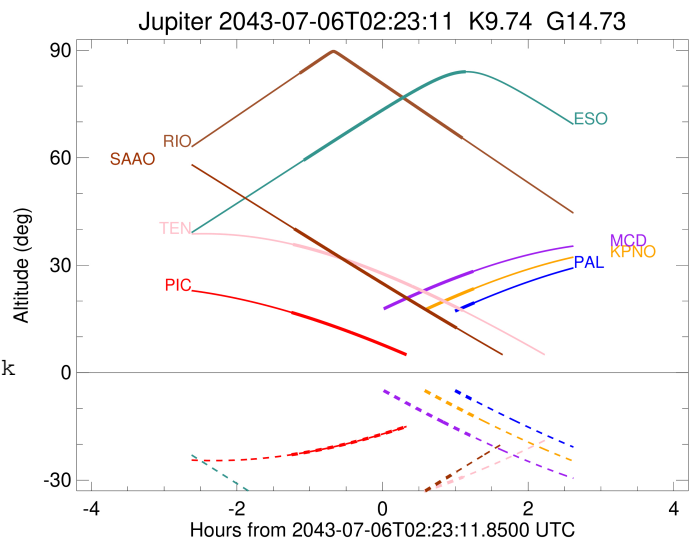
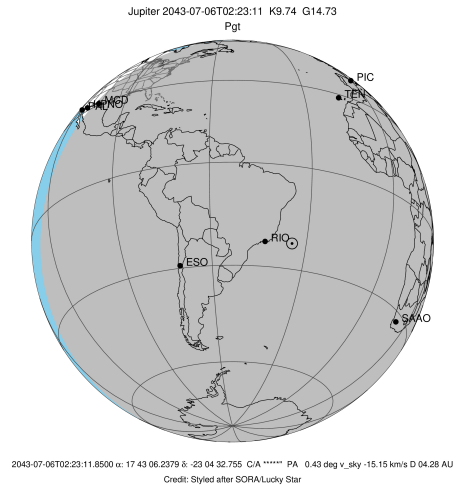
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	JUL 06 01:08 - JUL 06 01:08	Pin
PAL	Palomar Mt (200")	33.4	243.1	+	JUL 06 03:38 - JUL 06 03:38	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	JUL 06 03:38 - JUL 06 03:38	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	JUL 06 03:38 - JUL 06 03:38	Pne
TEN	Teide Obs./Tenerife	28.3	343.5	+	JUL 06 01:09 - JUL 06 03:29	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 06 01:15 - JUL 06 03:29	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	JUL 06 01:18 - JUL 06 03:31	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	JUL 06 01:10 - JUL 06 03:24	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-06T02:18:54.740
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       : 4116860882136497664
2Mass ID (if available) : 17430624-2304324
ICRS Star Coord at Epoch: 17h 43m 06.23791s -23:04:32.75511s
RUWE (>1.4 is poor) : 0.95
K magnitude           : 9.737
G magnitude           : 14.729
RP magnitude          : 13.488
BP magnitude          : 16.421
DUPflag              : 0
Distance (au)        : 4.281
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.15
Sun-Target sep (deg) : 162.75
Sun-Moon sep (deg)   : 170.01
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.98
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 9.425
C/A sky separation (km) : 29266.7
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
    
```

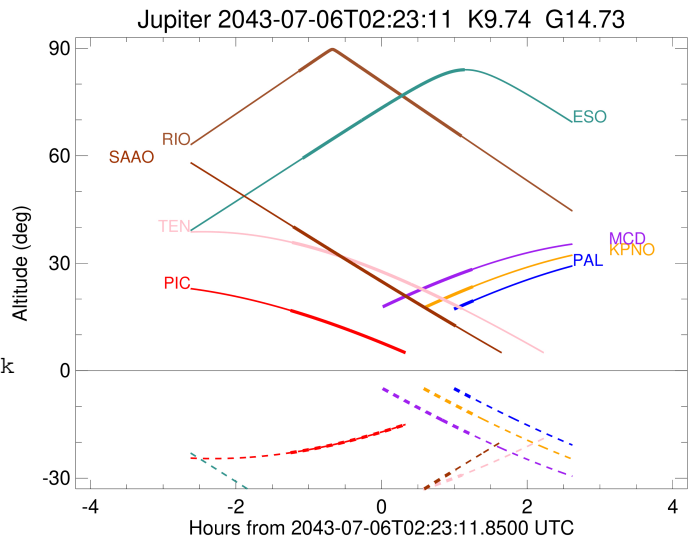
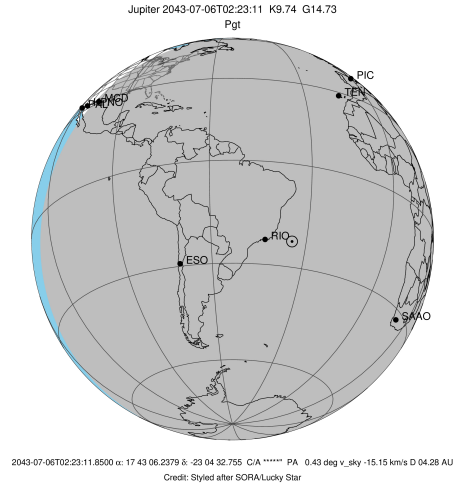


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-06T01:08:20.159	16.80	-22.89	71490.6	-24.35	-27.33
Jupiter	E	2043-07-06T03:29:54.625	-2.16x	-9.23	71490.7	-24.03	-26.98

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-06T02:28:41.640
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        : 4116860882136497664
2Mass ID (if available) : 17430624-2304324
ICRS Star Coord at Epoch: 17h 43m 06.23791s -23:04:32.75511s
RUWE (>1.4 is poor) : 0.95
K magnitude           : 9.737
G magnitude           : 14.729
RP magnitude          : 13.488
BP magnitude          : 16.421
DUPflag              : 0
Distance (au)         : 4.281
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.15
Sun-Target sep (deg)  : 162.75
Sun-Moon sep (deg)   : 171.07
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.98
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 9.727
C/A sky separation (km) : 30202.6
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
    
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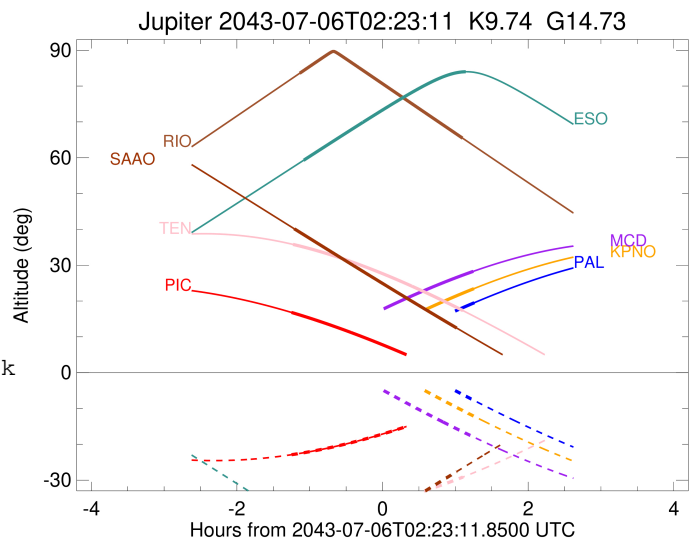
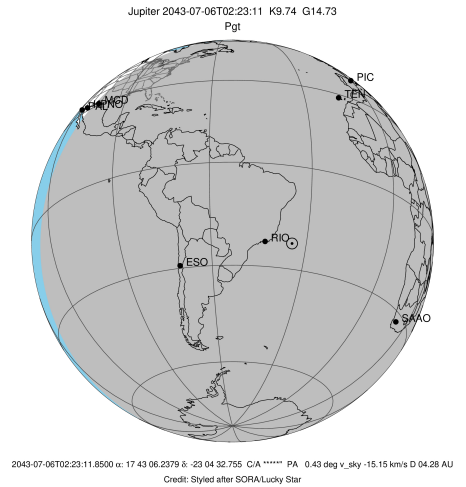


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-06T01:18:00.847	-4.53x	19.01x	71490.5	-26.06	-29.16
Jupiter	E	2043-07-06T03:38:54.908	19.53	-7.80	71490.7	-23.96	-26.91

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-06T02:28:29.320
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       : 4116860882136497664
2Mass ID (if available) : 17430624-2304324
ICRS Star Coord at Epoch: 17h 43m 06.23791s -23:04:32.75511s
RUWE (>1.4 is poor) : 0.95
K magnitude           : 9.737
G magnitude           : 14.729
RP magnitude         : 13.488
BP magnitude         : 16.421
DUPflag              : 0
Distance (au)        : 4.281
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.15
Sun-Target sep (deg) : 162.75
Sun-Moon sep (deg)   : 171.07
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.98
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 9.706
C/A sky separation (km) : 30139.5
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
    
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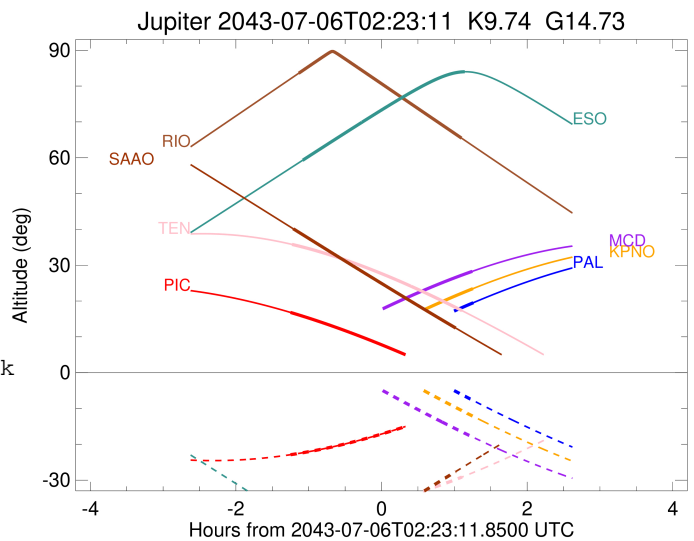
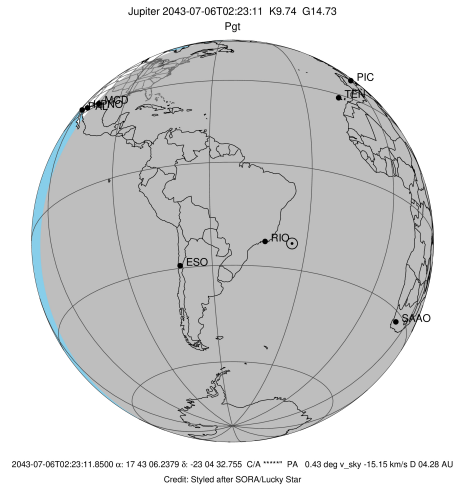


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-06T01:17:56.666	0.06x	14.37x	71490.5	-25.99	-29.09
Jupiter	E	2043-07-06T03:38:35.717	23.46	-12.17	71490.7	-23.93	-26.87

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-06T02:28:03.690
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      : 4116860882136497664
2Mass ID (if available) : 17430624-2304324
ICRS Star Coord at Epoch: 17h 43m 06.23791s -23:04:32.75511s
RUWE (>1.4 is poor) : 0.95
K magnitude          : 9.737
G magnitude          : 14.729
RP magnitude         : 13.488
BP magnitude         : 16.421
DUPflag             : 0
Distance (au)       : 4.281
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.15
Sun-Target sep (deg) : 162.75
Sun-Moon sep (deg)  : 171.05
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.98
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 9.665
C/A sky separation (km): 30010.1
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
    
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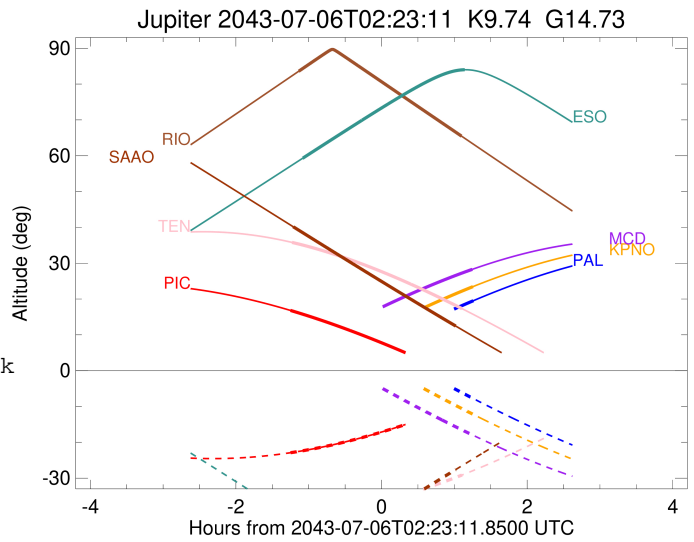
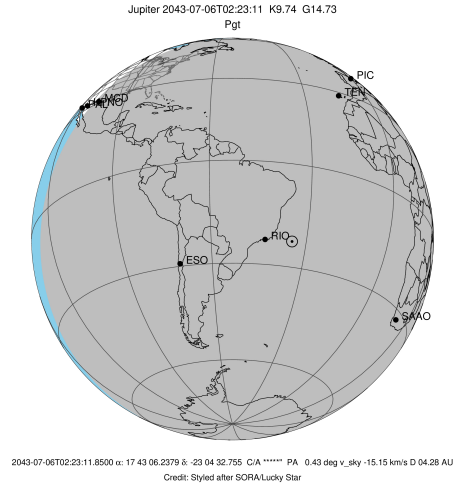


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-06T01:17:40.765	6.28	7.89x	71490.5	-25.84	-28.94
Jupiter	E	2043-07-06T03:38:02.809	28.28	-17.93	71490.7	-23.87	-26.80

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-06T02:19:23.170
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       : 4116860882136497664
2Mass ID (if available) : 17430624-2304324
ICRS Star Coord at Epoch: 17h 43m 06.23791s -23:04:32.75511s
RUWE (>1.4 is poor) : 0.95
K magnitude           : 9.737
G magnitude           : 14.729
RP magnitude          : 13.488
BP magnitude          : 16.421
DUPflag              : 0
Distance (au)         : 4.281
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.15
Sun-Target sep (deg)  : 162.75
Sun-Moon sep (deg)    : 170.08
B (ring opening deg) : -2.41
PA of pole (deg)      : 0.98
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 9.601
C/A sky separation (km) : 29813.1
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
    
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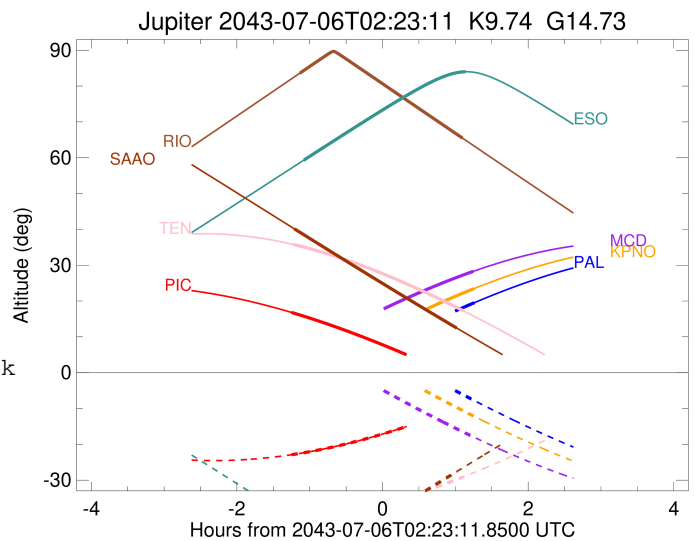
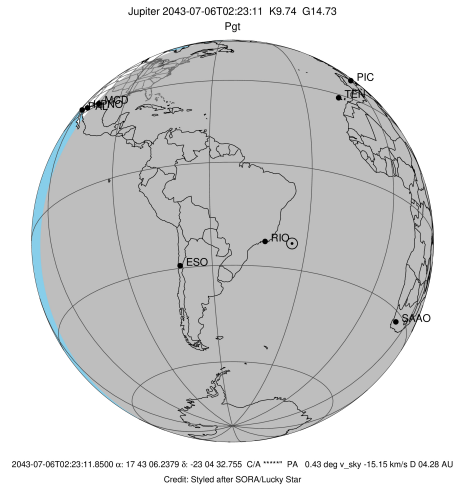


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-06T01:09:37.367	35.79	-39.16	71490.6	-24.91	-27.93
Jupiter	E	2043-07-06T03:29:30.935	17.32	-29.14	71490.6	-24.49	-27.48

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-06T02:22:01.510
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       : 4116860882136497664
2Mass ID (if available) : 17430624-2304324
ICRS Star Coord at Epoch: 17h 43m 06.23791s -23:04:32.75511s
RUWE (>1.4 is poor) : 0.95
K magnitude          : 9.737
G magnitude           : 14.729
RP magnitude         : 13.488
BP magnitude         : 16.421
DUPflag             : 0
Distance (au)        : 4.281
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.15
Sun-Target sep (deg) : 162.75
Sun-Moon sep (deg)   : 170.12
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.98
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 11.068
C/A sky separation (km) : 34367.4
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
    
```

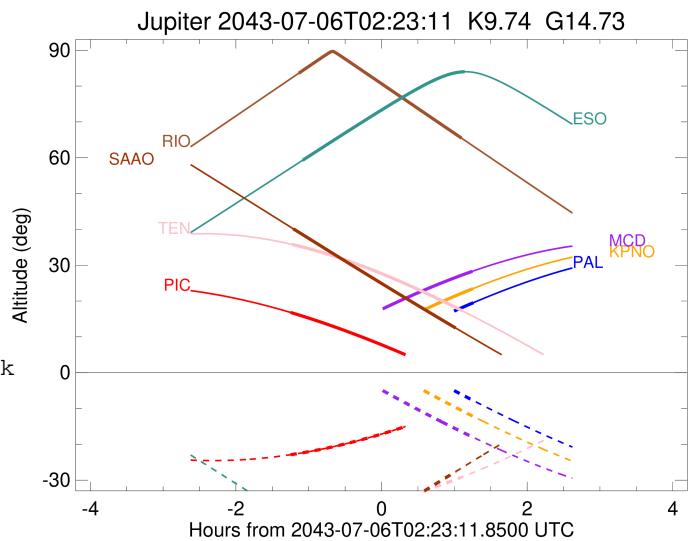
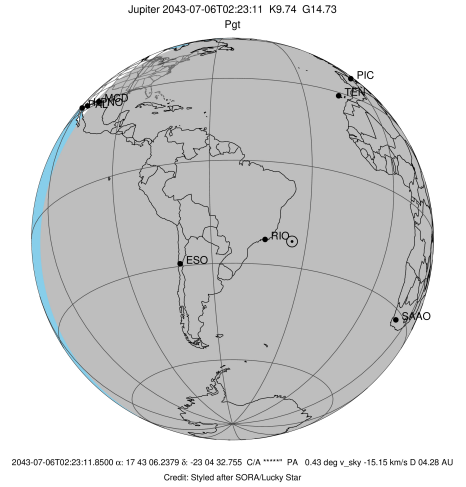


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-06T01:15:00.454	83.58	-66.38	71490.1	-29.24	-32.57
Jupiter	E	2043-07-06T03:29:09.883	65.46	-82.72	71490.2	-28.35	-31.62

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-06T02:25:05.710
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       : 4116860882136497664
2Mass ID (if available) : 17430624-2304324
ICRS Star Coord at Epoch: 17h 43m 06.23791s -23:04:32.75511s
RUWE (>1.4 is poor) : 0.95
K magnitude          : 9.737
G magnitude          : 14.729
RP magnitude         : 13.488
BP magnitude         : 16.421
DUPflag             : 0
Distance (au)        : 4.281
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.15
Sun-Target sep (deg) : 162.75
Sun-Moon sep (deg)   : 170.38
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.98
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 11.317
C/A sky separation (km) : 35140.0
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
    
```

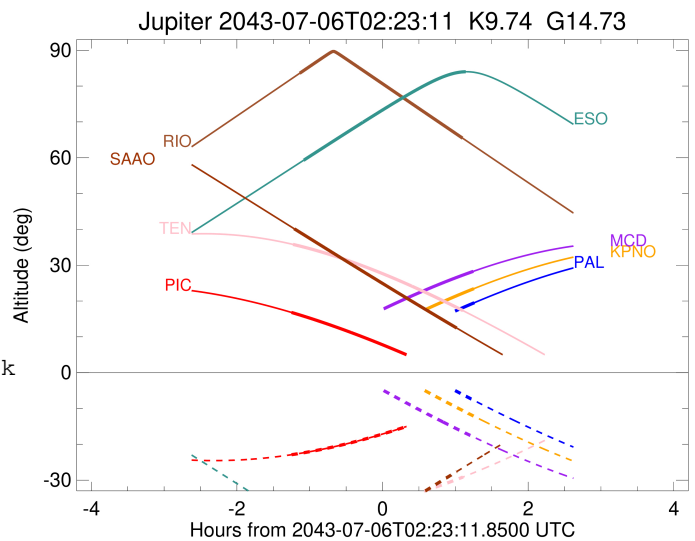
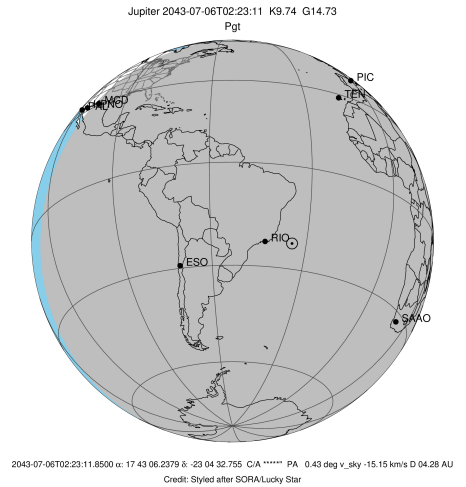


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-06T01:18:16.105	59.29	-42.87	71490.0	-30.22	-33.60
Jupiter	E	2043-07-06T03:31:48.041	83.99	-71.82	71490.2	-28.77	-32.07


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-06T02:17:08.070
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      : 4116860882136497664
2Mass ID (if available) : 17430624-2304324
ICRS Star Coord at Epoch: 17h 43m 06.23791s -23:04:32.75511s
RUWE (>1.4 is poor) : 0.95
K magnitude          : 9.737
G magnitude          : 14.729
RP magnitude         : 13.488
BP magnitude         : 16.421
DUPflag             : 0
Distance (au)       : 4.281
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.15
Sun-Target sep (deg) : 162.75
Sun-Moon sep (deg)  : 169.27
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.98
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 11.869
C/A sky separation (km): 36854.2
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	2043-07-06T01:10:31.174	40.16	-55.78	71489.9	-31.03	-34.46
Jupiter	E	2043-07-06T03:24:16.009	12.47	-27.62	71489.9	-31.02	-34.45