

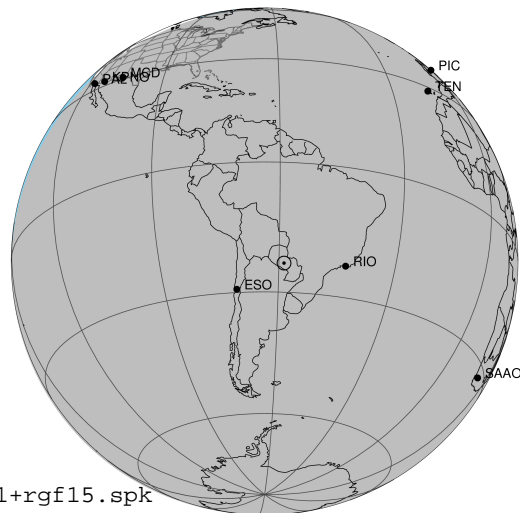
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-06-24T03:57:18.220
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068871215445201920
 2Mass ID (if available) : 17492955-2304590

Jupiter 2043-06-24T03:57:18 K7.44 G14.79 Pgt

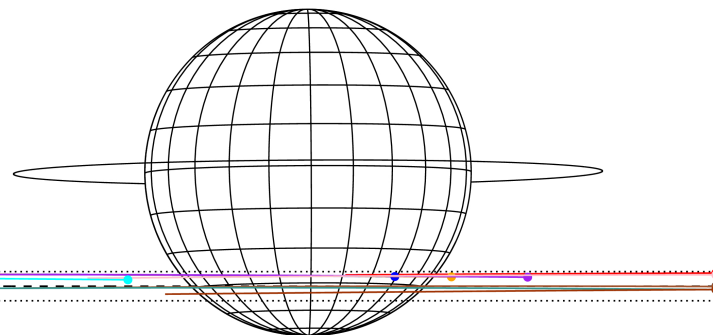
ICRS Star Coord at Epoch: 17h 49m 29.54258s -23°04:59.09535s

RUWE (>1.4 is poor) : 1.22
 K magnitude : 7.438
 G magnitude : 14.793
 RP magnitude : 13.094
 BP magnitude : 17.807
 DUPflag : 0
 Distance (au) : 4.251
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -16.33
 Sun-Target sep (deg) : 175.59
 Sun-Moon sep (deg) : 22.80
 B (ring opening deg) : -2.42
 PA of pole (deg) : 0.29
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 16.153
 C/A sky separation (km) : 49803.8
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-06-24T03:57:18 K7.44 G14.79
 Pgt



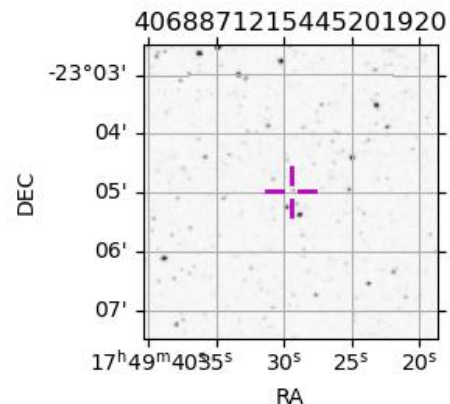
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 SAAO



2043-06-24T03:57:18.2200 α: 17 49 29.5426 δ: -23 04 59.095 C/A ***** PA 0.00 deg v_sky -16.33 km/s D 04.25 AU
 Credit: Styled after SORA/Lucky Star

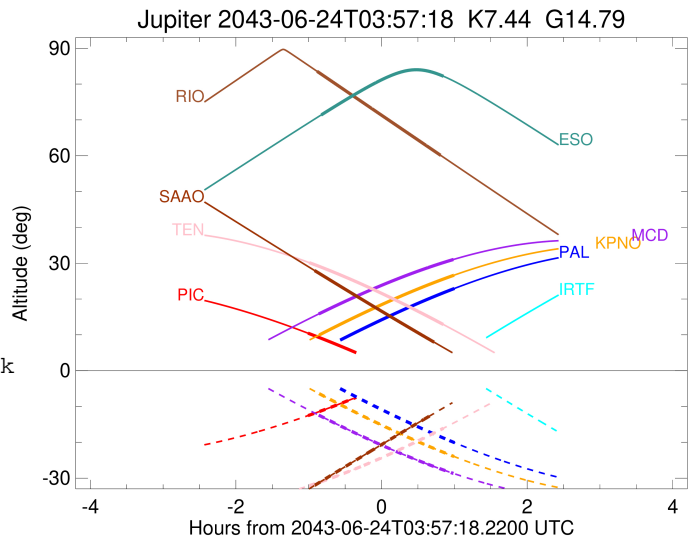
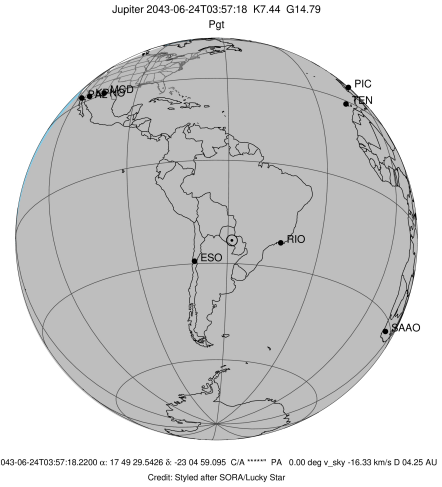
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	JUN 24 02:56 - JUN 24 02:56	Pin
PAL	Palomar Mt (200")	33.4	243.1	+	JUN 24 04:57 - JUN 24 04:57	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	JUN 24 03:05 - JUN 24 04:57	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+	JUN 24 03:05 - JUN 24 04:56	Pie
TEN	Teide Obs./Tenerife	28.3	343.5	+	JUN 24 02:57 - JUN 24 04:48	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	+	JUN 24 03:04 - JUN 24 04:46	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	JUN 24 03:07 - JUN 24 04:48	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	JUN 24 03:02 - JUN 24 04:40	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-24T03:52:42.760
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      : 4068871215445201920
2Mass ID (if available) : 17492955-2304590
ICRS Star Coord at Epoch: 17h 49m 29.54258s -23:04:59.09535s
RUWE (>1.4 is poor) : 1.22
K magnitude          : 7.438
G magnitude          : 14.793
RP magnitude         : 13.094
BP magnitude         : 17.807
DUPflag             : 0
Distance (au)       : 4.251
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.33
Sun-Target sep (deg) : 175.59
Sun-Moon sep (deg)  : 22.44
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.29
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 14.595
C/A sky separation (km) : 44999.2
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
    
```

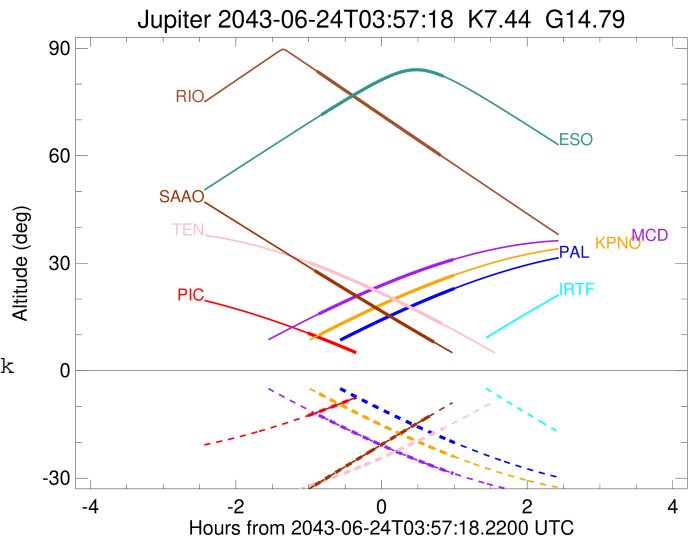
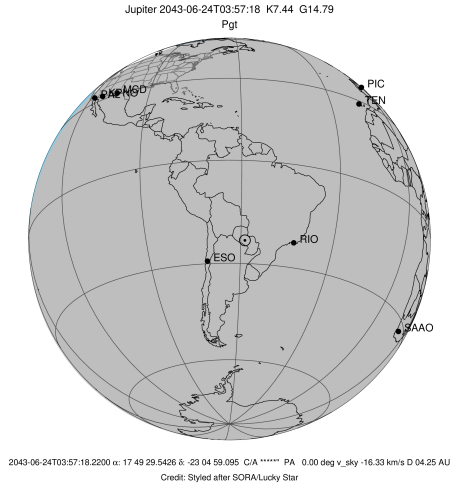


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-24T02:56:42.701	10.47	-12.55	71488.8	-38.88	-42.57
Jupiter	E	2043-06-24T04:48:58.613	-6.31x	3.39x	71488.8	-39.12	-42.81

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-24T04:01:54.990
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        : 4068871215445201920
2Mass ID (if available) : 17492955-2304590
ICRS Star Coord at Epoch: 17h 49m 29.54258s -23:04:59.09535s
RUWE (>1.4 is poor) : 1.22
K magnitude           : 7.438
G magnitude           : 14.793
RP magnitude          : 13.094
BP magnitude          : 17.807
DUPflag              : 0
Distance (au)         : 4.251
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.33
Sun-Target sep (deg)  : 175.59
Sun-Moon sep (deg)   : 23.59
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.29
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 14.690
C/A sky separation (km) : 45294.5
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
    
```

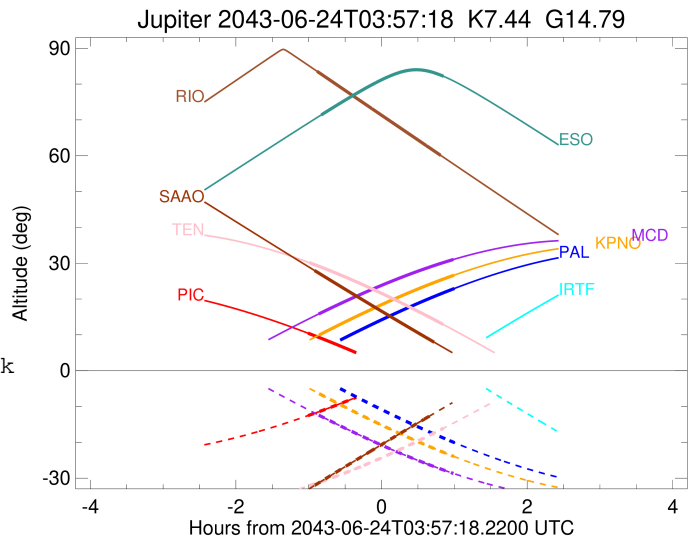
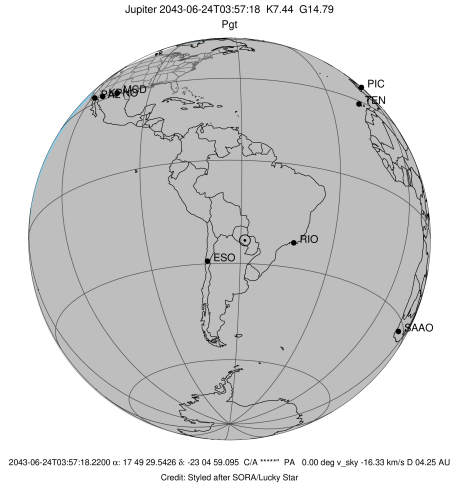


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-24T03:06:11.237	5.54	-1.94x	71488.7	-40.01	-43.72
Jupiter	E	2043-06-24T04:57:23.775	22.94	-20.08	71488.9	-38.62	-42.30

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-24T04:01:38.250
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     : 4068871215445201920
2Mass ID (if available) : 17492955-2304590
ICRS Star Coord at Epoch: 17h 49m 29.54258s -23:04:59.09535s
RUWE (>1.4 is poor) : 1.22
K magnitude         : 7.438
G magnitude         : 14.793
RP magnitude       : 13.094
BP magnitude       : 17.807
DUPflag           : 0
Distance (au)      : 4.251
f0 (km)           : 0.00
g0 (km)           : 0.00
skyplane vel. (km/s) : -16.33
Sun-Target sep (deg) : 175.59
Sun-Moon sep (deg)  : 23.58
B (ring opening deg) : -2.42
PA of pole (deg)   : 0.29
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 14.675
C/A sky separation (km) : 45248.2
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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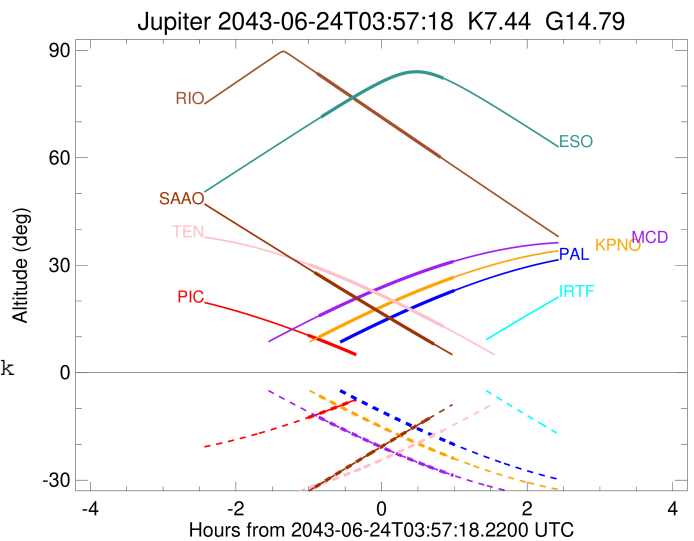
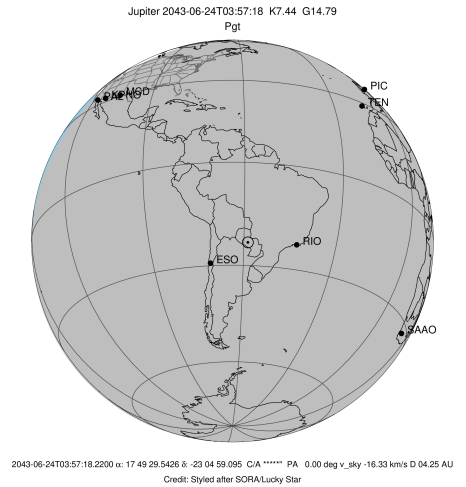


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-24T03:05:59.095	9.97	-6.42	71488.7	-39.95	-43.65
Jupiter	E	2043-06-24T04:57:03.426	26.65	-23.96	71488.9	-38.60	-42.29

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2043-06-24T04:01:07.410
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        : 4068871215445201920
2Mass ID (if available) : 17492955-2304590
ICRS Star Coord at Epoch: 17h 49m 29.54258s -23:04:59.09535s
RUWE (>1.4 is poor)  : 1.22
K magnitude            : 7.438
G magnitude            : 14.793
RP magnitude           : 13.094
BP magnitude           : 17.807
DUPflag               : 0
Distance (au)         : 4.251
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -16.33
Sun-Target sep (deg)  : 175.59
Sun-Moon sep (deg)    : 23.56
B (ring opening deg)  : -2.42
PA of pole (deg)      : 0.29
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 14.644
C/A sky separation (km) : 45150.9
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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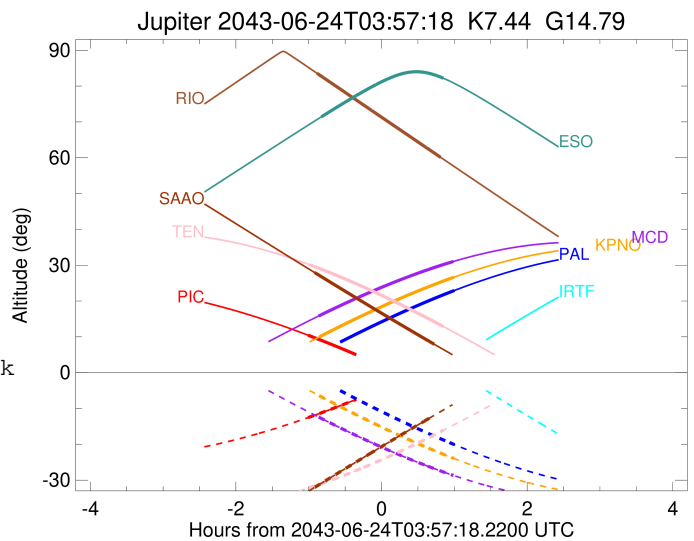
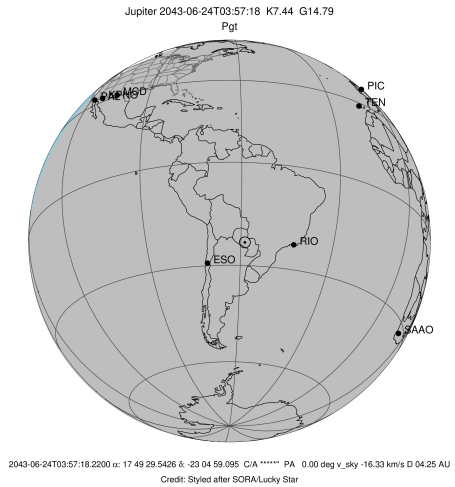


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-24T03:05:32.426	15.82	-12.40	71488.7	-39.80	-43.51
Jupiter	E	2043-06-24T04:56:30.163	31.02	-28.67	71488.9	-38.55	-42.24

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-24T03:52:50.160
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      : 4068871215445201920
2Mass ID (if available) : 17492955-2304590
ICRS Star Coord at Epoch: 17h 49m 29.54258s -23:04:59.09535s
RUWE (>1.4 is poor) : 1.22
K magnitude          : 7.438
G magnitude          : 14.793
RP magnitude         : 13.094
BP magnitude         : 17.807
DUPflag             : 0
Distance (au)       : 4.251
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.33
Sun-Target sep (deg) : 175.59
Sun-Moon sep (deg)  : 22.55
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.29
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 14.765
C/A sky separation (km) : 45523.6
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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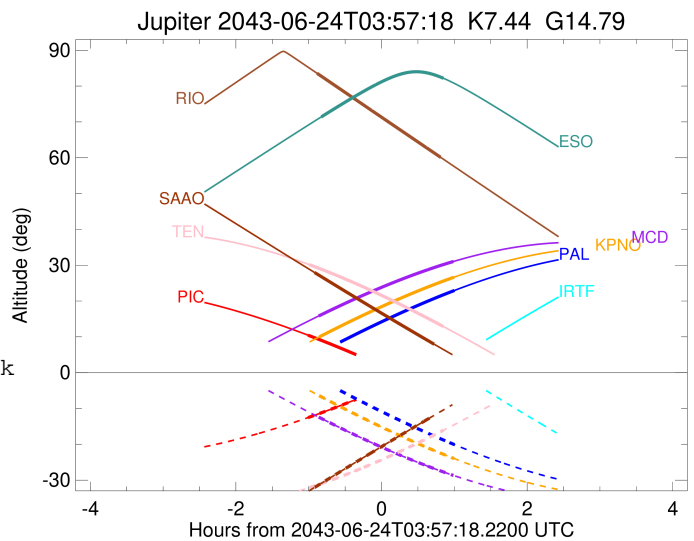
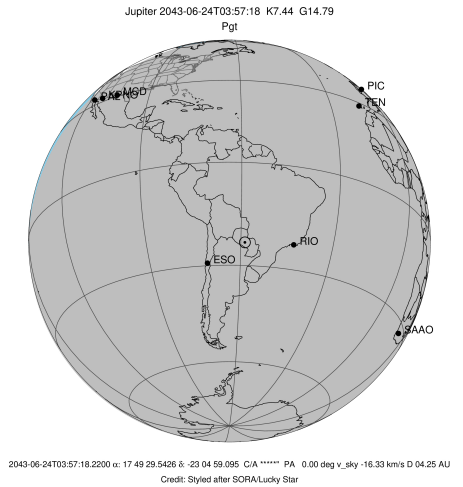


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-24T02:57:42.068	30.16	-32.11	71488.8	-39.45	-43.15
Jupiter	E	2043-06-24T04:48:13.035	12.89	-16.10	71488.7	-39.67	-43.37

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2043-06-24T03:55:05.910
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        : 4068871215445201920
2Mass ID (if available) : 17492955-2304590
ICRS Star Coord at Epoch: 17h 49m 29.54258s -23:04:59.09535s
RUWE (>1.4 is poor)  : 1.22
K magnitude            : 7.438
G magnitude            : 14.793
RP magnitude           : 13.094
BP magnitude           : 17.807
DUPflag               : 0
Distance (au)         : 4.251
f0 (km)                : 0.00
g0 (km)                : 0.00
skyplane vel. (km/s)  : -16.33
Sun-Target sep (deg)  : 175.59
Sun-Moon sep (deg)    : 22.87
B (ring opening deg)  : -2.42
PA of pole (deg)      : 0.29
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 16.188
C/A sky separation (km) : 49911.2
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
    
```

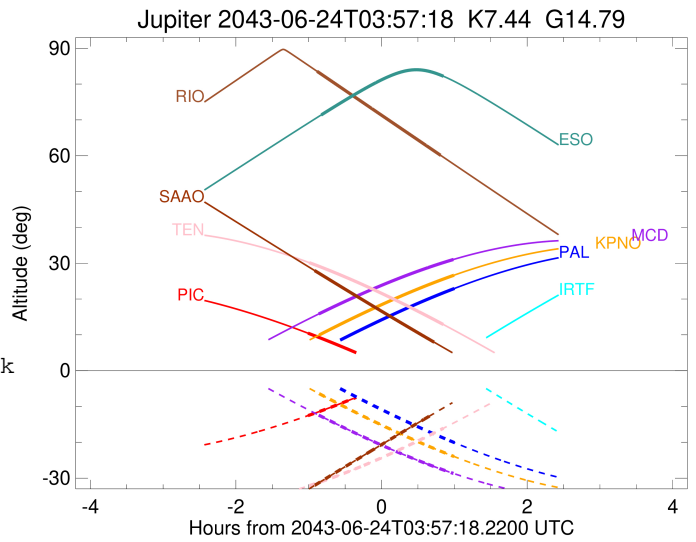
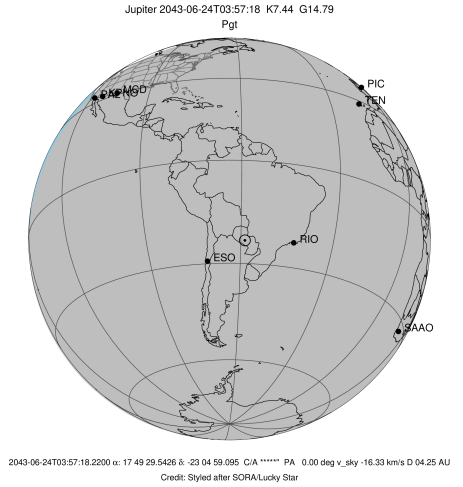


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-24T03:04:13.286	83.55	-87.83	71488.1	-44.38	-48.09
Jupiter	E	2043-06-24T04:46:04.828	60.09	-64.54	71488.1	-44.20	-47.91

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-24T03:58:03.350
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        : 4068871215445201920
2Mass ID (if available) : 17492955-2304590
ICRS Star Coord at Epoch: 17h 49m 29.54258s -23:04:59.09535s
RUWE (>1.4 is poor) : 1.22
K magnitude           : 7.438
G magnitude           : 14.793
RP magnitude          : 13.094
BP magnitude          : 17.807
DUPflag              : 0
Distance (au)         : 4.251
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.33
Sun-Target sep (deg) : 175.59
Sun-Moon sep (deg)   : 23.23
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.29
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 16.373
C/A sky separation (km) : 50483.8
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
    
```

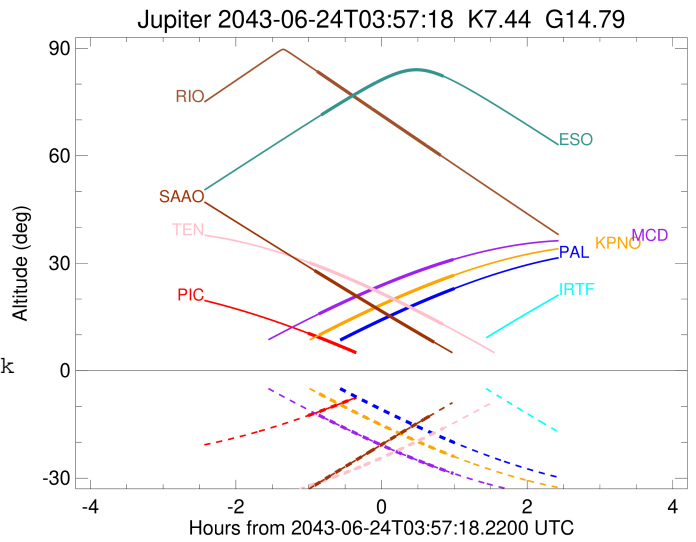
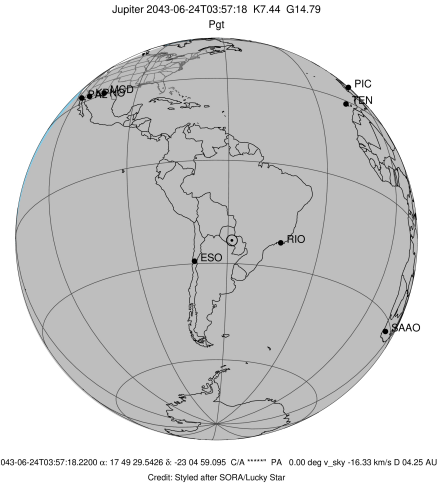


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-24T03:07:40.485	71.39	-67.44	71487.9	-45.29	-48.98
Jupiter	E	2043-06-24T04:48:24.500	82.16	-84.27	71488.0	-44.58	-48.29


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-24T03:51:21.170
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       : 4068871215445201920
2Mass ID (if available) : 17492955-2304590
ICRS Star Coord at Epoch: 17h 49m 29.54258s -23:04:59.09535s
RUWE (>1.4 is poor) : 1.22
K magnitude           : 7.438
G magnitude           : 14.793
RP magnitude          : 13.094
BP magnitude          : 17.807
DUPflag              : 0
Distance (au)        : 4.251
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.33
Sun-Target sep (deg) : 175.59
Sun-Moon sep (deg)   : 22.11
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.29
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 17.089
C/A sky separation (km) : 52691.7
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	2043-06-24T03:02:20.049	27.92	-32.00	71487.7	-47.20	-50.86
Jupiter	E	2043-06-24T04:40:38.036	7.96	-11.92	71487.6	-47.68	-51.33