

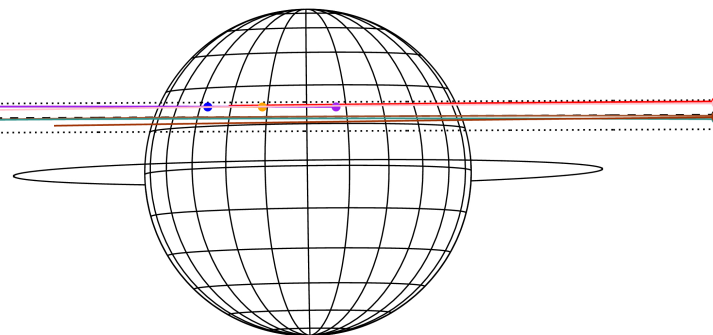
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-01T02:32:57.460
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068834351637954944
 2Mass ID (if available) : 17454267-2304270

Jupiter 2043-07-01T02:32:57 K8.32 G14.66 Pgt

ICRS Star Coord at Epoch: 17h 45m 42.66509s -23:04:27.21912s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 8.322
 G magnitude : 14.661
 RP magnitude : 13.117
 BP magnitude : 17.895
 DUPflag : 0
 Distance (au) : 4.264
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.82
 Sun-Target sep (deg) : 168.11
 Sun-Moon sep (deg) : 114.68
 B (ring opening deg) : -2.42
 PA of pole (deg) : 0.70
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 7.916
 C/A sky separation (km) : 24480.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



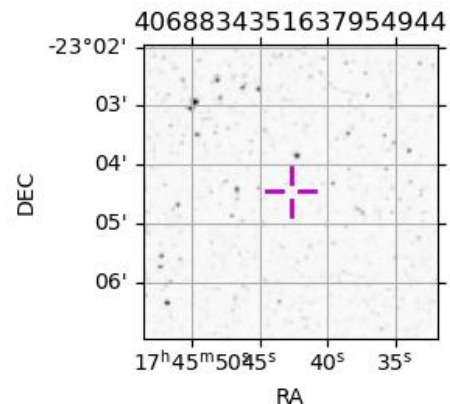
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 SAAO



2043-07-01T02:32:57.4600 at: 17 45 42.6651 s: -23 04 27.219 C/A 7.905" PA 180.28 deg v_sky -15.82 km/s D 04.26 AU
 Credit: Styled after SORA/Lucky Star

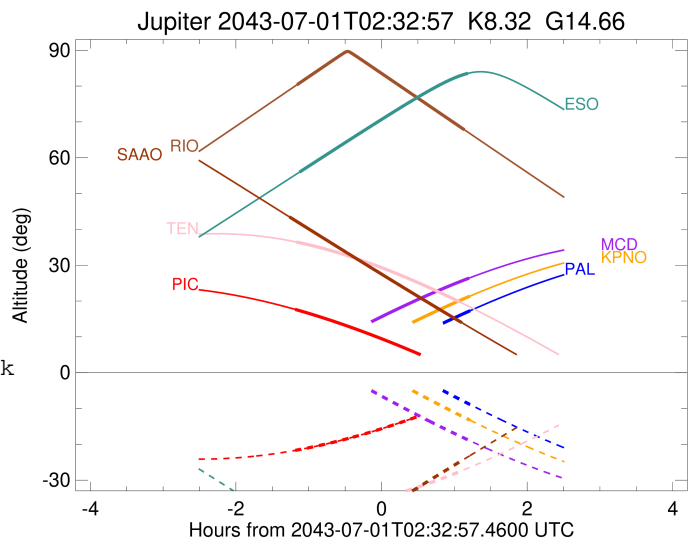
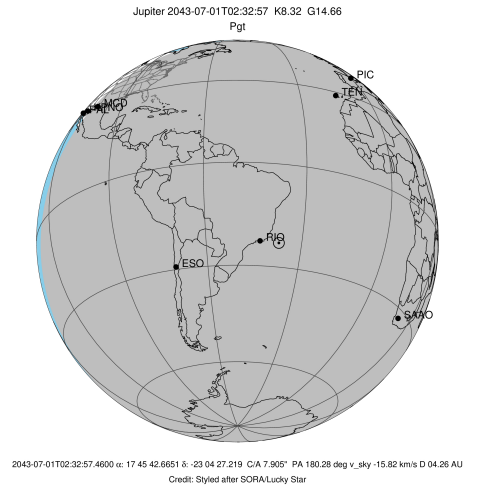
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	JUL 01 01:21 - JUL 01 01:21	Pin
PAL	Palomar Mt (200")	33.4	243.1	+	JUL 01 03:45 - JUL 01 03:45	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	JUL 01 03:45 - JUL 01 03:45	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	JUL 01 03:45 - JUL 01 03:45	Pne
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	JUL 01 01:22 - JUL 01 03:37	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 01 01:23 - JUL 01 03:41	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUL 01 01:25 - JUL 01 03:44	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 01 01:17 - JUL 01 03:39	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-01T02:29:24.550
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      : 4068834351637954944
2Mass ID (if available) : 17454267-2304270
ICRS Star Coord at Epoch: 17h 45m 42.66509s -23:04:27.21912s
RUWE (>1.4 is poor) : 0.99
K magnitude         : 8.322
G magnitude         : 14.661
RP magnitude        : 13.117
BP magnitude        : 17.895
DUPflag            : 0
Distance (au)       : 4.264
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.82
Sun-Target sep (deg) : 168.11
Sun-Moon sep (deg)  : 115.06
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.70
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 9.589
C/A sky separation (km) : 29652.0
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
    
```

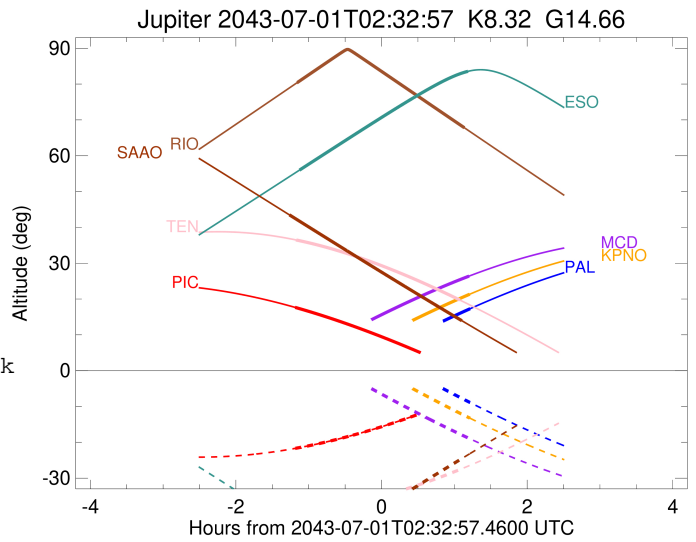
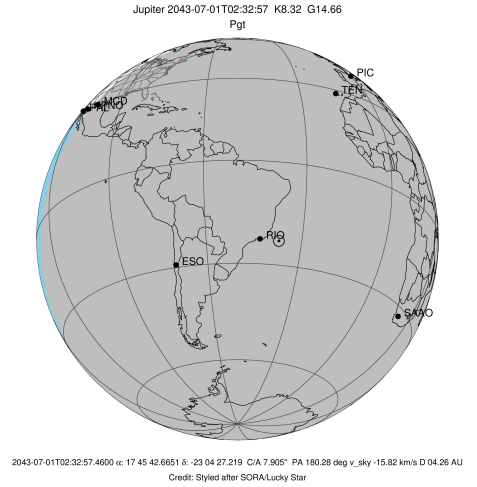


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-01T01:21:56.562	17.65	-21.68	71490.6	24.37	27.34
Jupiter	E	2043-07-01T03:37:12.671	0.19x	-7.78	71490.6	24.50	27.49

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-01T02:37:48.520
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      : 4068834351637954944
2Mass ID (if available) : 17454267-2304270
ICRS Star Coord at Epoch: 17h 45m 42.66509s -23:04:27.21912s
RUWE (>1.4 is poor) : 0.99
K magnitude         : 8.322
G magnitude         : 14.661
RP magnitude        : 13.117
BP magnitude        : 17.895
DUPflag            : 0
Distance (au)       : 4.264
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.82
Sun-Target sep (deg) : 168.11
Sun-Moon sep (deg)  : 114.44
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.70
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 9.235
C/A sky separation (km) : 28559.3
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
    
```

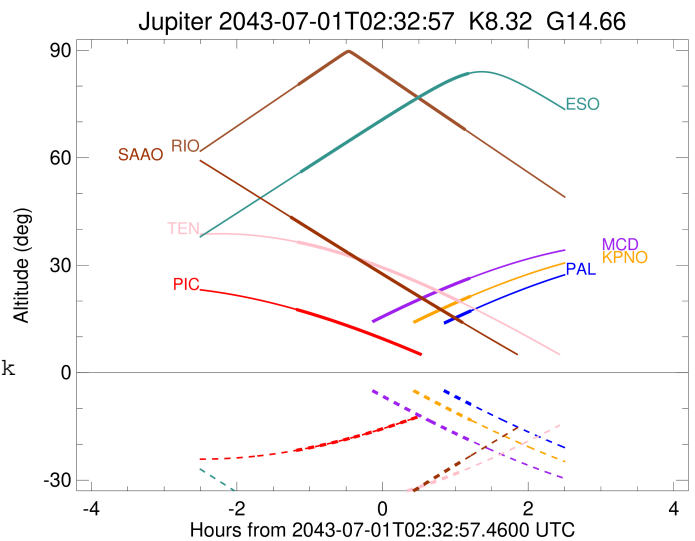
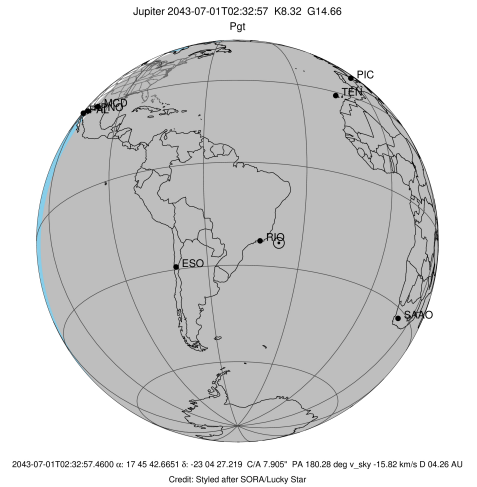


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-01T01:29:12.613	-6.65x	16.78x	71490.8	22.57	25.39
Jupiter	E	2043-07-01T03:45:59.151	17.29	-8.90	71490.6	24.40	27.38

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-01T02:37:39.540
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      : 4068834351637954944
2Mass ID (if available) : 17454267-2304270
ICRS Star Coord at Epoch: 17h 45m 42.66509s -23:04:27.21912s
RUWE (>1.4 is poor) : 0.99
K magnitude         : 8.322
G magnitude         : 14.661
RP magnitude        : 13.117
BP magnitude        : 17.895
DUPflag            : 0
Distance (au)       : 4.264
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.82
Sun-Target sep (deg) : 168.11
Sun-Moon sep (deg)  : 114.52
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.70
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 9.257
C/A sky separation (km) : 28625.8
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
    
```

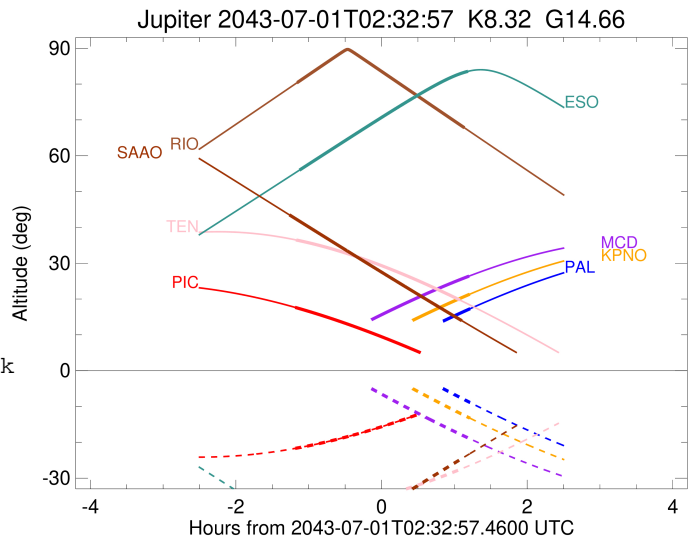
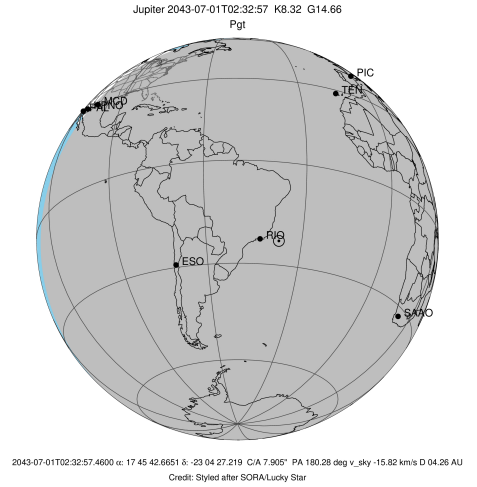


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-01T01:29:14.462	-2.03x	12.12x	71490.8	22.64	25.46
Jupiter	E	2043-07-01T03:45:40.341	21.34	-13.24	71490.6	24.44	27.42

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-01T02:37:19.590
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      : 4068834351637954944
2Mass ID (if available) : 17454267-2304270
ICRS Star Coord at Epoch: 17h 45m 42.66509s -23:04:27.21912s
RUWE (>1.4 is poor) : 0.99
K magnitude         : 8.322
G magnitude         : 14.661
RP magnitude        : 13.117
BP magnitude        : 17.895
DUPflag            : 0
Distance (au)       : 4.264
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.82
Sun-Target sep (deg) : 168.11
Sun-Moon sep (deg)  : 114.63
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.70
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 9.301
C/A sky separation (km) : 28762.3
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
    
```

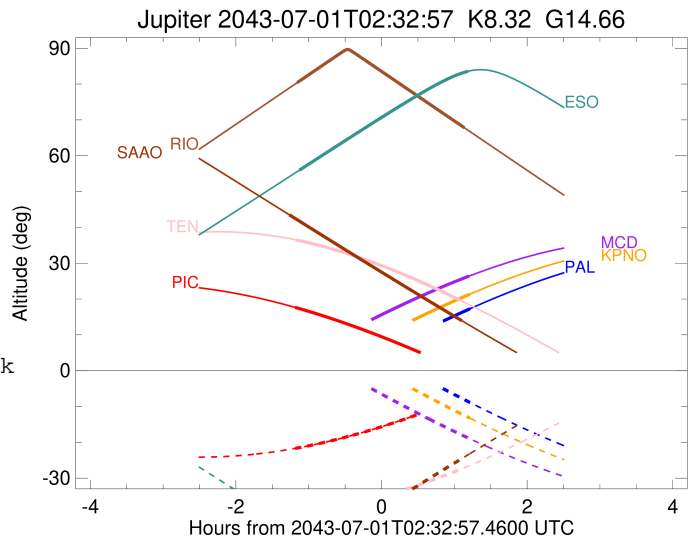
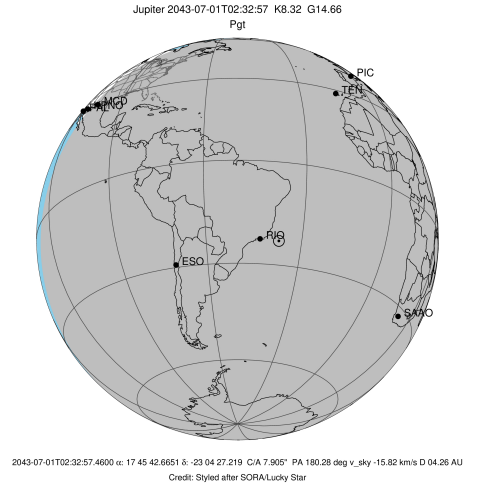


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-01T01:29:10.599	4.29x	5.63x	71490.8	22.78	25.62
Jupiter	E	2043-07-01T03:45:06.327	26.39	-18.90	71490.6	24.51	27.50

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-01T02:29:54.060
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      : 4068834351637954944
2Mass ID (if available) : 17454267-2304270
ICRS Star Coord at Epoch: 17h 45m 42.66509s -23:04:27.21912s
RUWE (>1.4 is poor) : 0.99
K magnitude          : 8.322
G magnitude          : 14.661
RP magnitude         : 13.117
BP magnitude         : 17.895
DUPflag             : 0
Distance (au)       : 4.264
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.82
Sun-Target sep (deg) : 168.11
Sun-Moon sep (deg)  : 115.32
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.70
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 9.409
C/A sky separation (km) : 29097.1
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
    
```

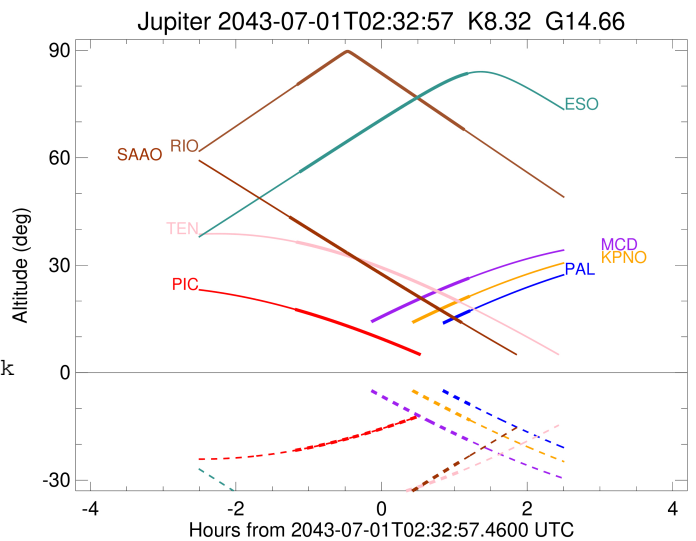
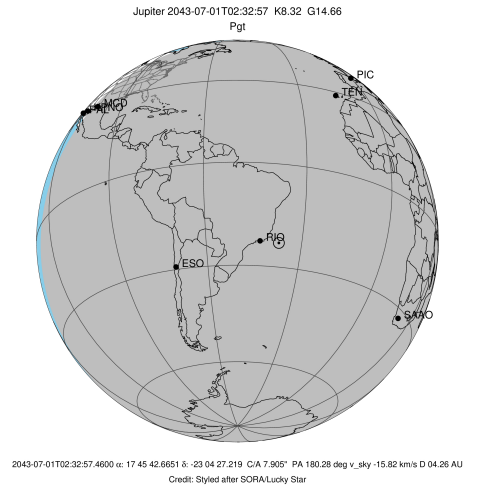


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-01T01:22:38.680	36.47	-38.66	71490.7	23.80	26.73
Jupiter	E	2043-07-01T03:37:26.683	19.73	-27.61	71490.7	24.04	26.99

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-01T02:32:15.190
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       : 4068834351637954944
2Mass ID (if available) : 17454267-2304270
ICRS Star Coord at Epoch: 17h 45m 42.66509s -23:04:27.21912s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 8.322
G magnitude           : 14.661
RP magnitude         : 13.117
BP magnitude         : 17.895
DUPflag              : 0
Distance (au)        : 4.264
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.82
Sun-Target sep (deg) : 168.11
Sun-Moon sep (deg)   : 115.61
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.70
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 7.923
C/A sky separation (km) : 24501.4
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
    
```

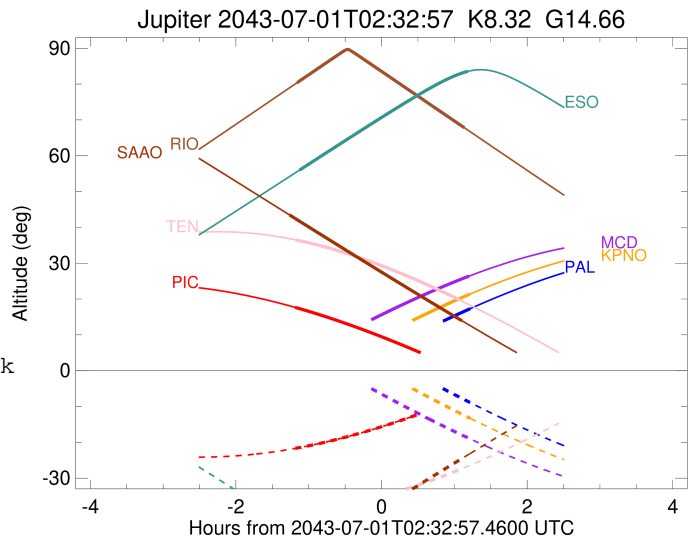
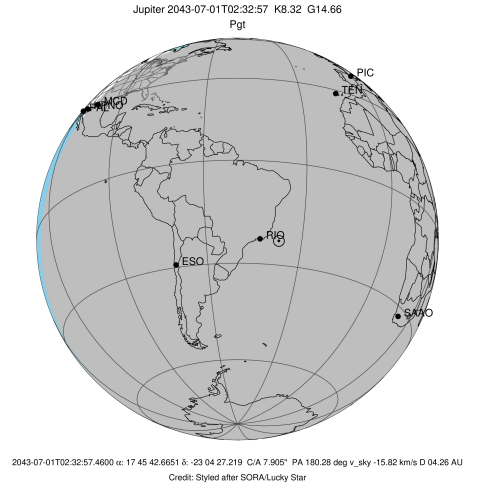


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-01T01:23:18.958	80.36	-68.53	71491.1	19.58	22.11
Jupiter	E	2043-07-01T03:41:16.478	67.79	-79.73	71491.0	20.29	22.90


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-01T02:34:53.000
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      : 4068834351637954944
2Mass ID (if available) : 17454267-2304270
ICRS Star Coord at Epoch: 17h 45m 42.66509s -23:04:27.21912s
RUWE (>1.4 is poor) : 0.99
K magnitude         : 8.322
G magnitude         : 14.661
RP magnitude        : 13.117
BP magnitude        : 17.895
DUPflag            : 0
Distance (au)       : 4.264
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.82
Sun-Target sep (deg) : 168.11
Sun-Moon sep (deg)  : 115.39
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.70
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 7.658
C/A sky separation (km) : 23681.1
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
    
```

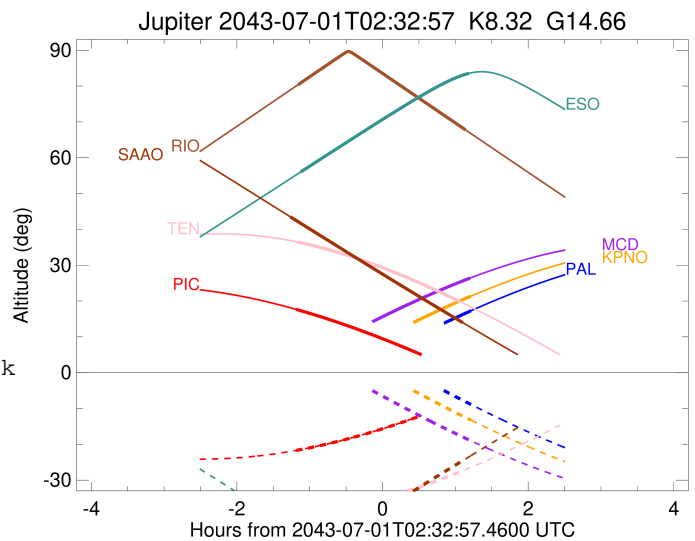
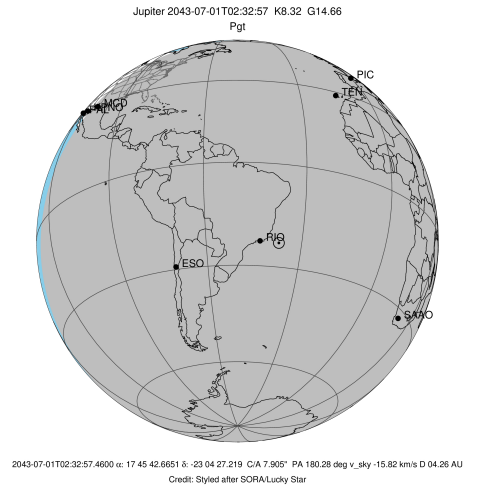


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-01T01:25:20.574	55.97	-44.74	71491.2	18.63	21.06
Jupiter	E	2043-07-01T03:44:16.047	83.55	-74.78	71491.1	19.86	22.42


```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2043-07-01T02:27:50.200
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         : 4068834351637954944
2Mass ID (if available) : 17454267-2304270
ICRS Star Coord at Epoch: 17h 45m 42.66509s -23:04:27.21912s
RUWE (>1.4 is poor)  : 0.99
K magnitude            : 8.322
G magnitude            : 14.661
RP magnitude           : 13.117
BP magnitude           : 17.895
DUPflag               : 0
Distance (au)         : 4.264
f0 (km)                : 0.00
g0 (km)                : 0.00
skyplane vel. (km/s)  : -15.82
Sun-Target sep (deg)  : 168.11
Sun-Moon sep (deg)    : 115.42
B (ring opening deg)  : -2.42
PA of pole (deg)      : 0.70
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 7.143
C/A sky separation (km) : 22089.6
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	2043-07-01T01:17:02.704	43.49	-54.38	71491.2	18.03	20.40
Jupiter	E	2043-07-01T03:39:09.031	13.95	-24.53	71491.3	17.86	20.22