

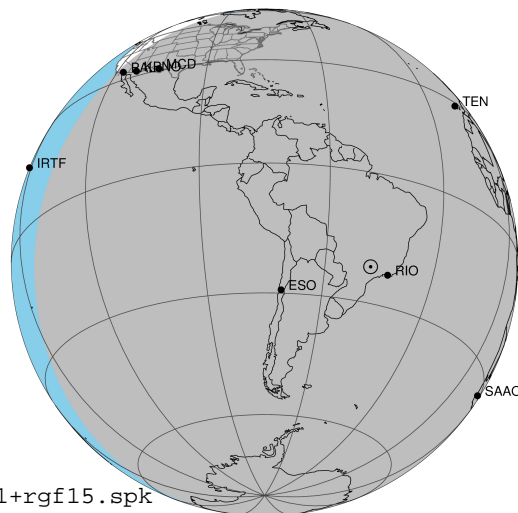
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-13T03:18:39.120
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116554874369464960
 2Mass ID (if available) : 17394136-2303523

Jupiter 2043-07-13T03:18:39 K5.49 G10.72 Pgt

ICRS Star Coord at Epoch: 17h 39m 41.37292s -23°03:52.48115s

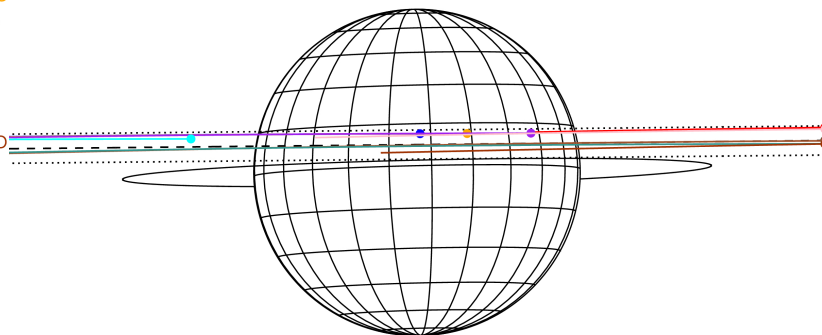
RUWE (>1.4 is poor) : 0.68
 K magnitude : 5.488
 G magnitude : 10.722
 RP magnitude : 9.429
 BP magnitude : 12.753
 DUPflag : 0
 Distance (au) : 4.318
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -13.77
 Sun-Target sep (deg) : 155.25
 Sun-Moon sep (deg) : 75.70
 B (ring opening deg) : -2.40
 PA of pole (deg) : 1.35
 Pole direction: RA (deg): 268.05670
 Dec (deg): 64.49732
 C/A sky separation (") : 3.900
 C/A sky separation (km) : 12212.4
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-13T03:18:39 K5.49 G10.72
 Pgt



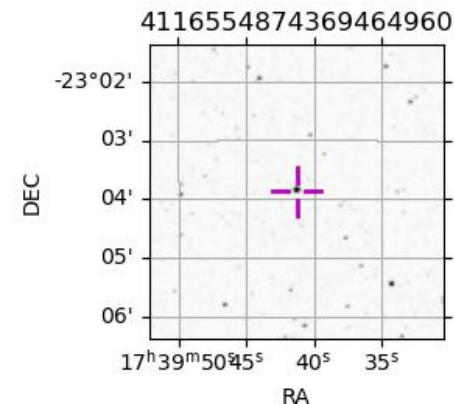
2043-07-13T03:18:39.1200 at: 17 39 41.3729 6: -23 03 52.481 C/A 3.888° PA 180.58 deg v_sky -13.77 km/s D 04.32 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 SAAO



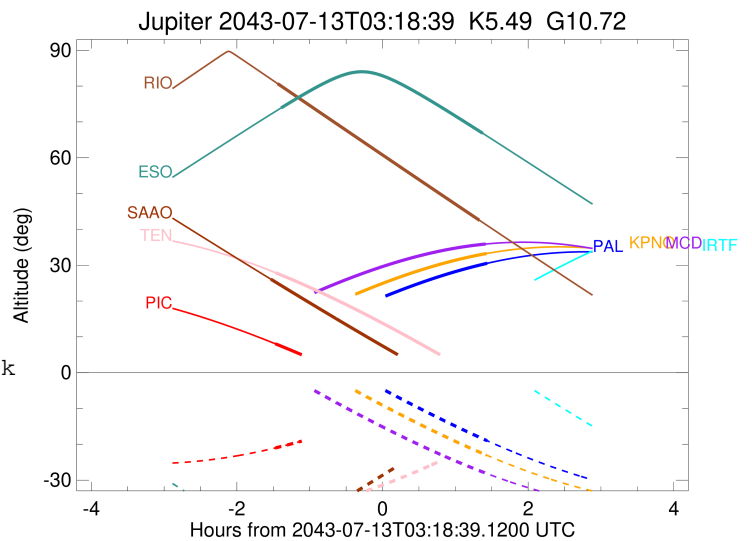
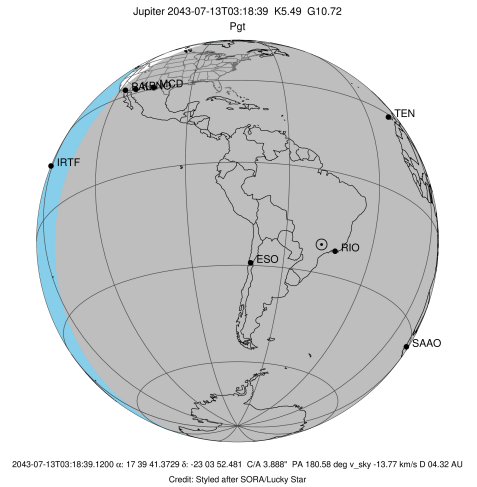
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	JUL 13 01:50 - JUL 13 01:50	Pin
PAL	Palomar Mt (200")	33.4	243.1	+	JUL 13 04:44 - JUL 13 04:44	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	JUL 13 04:44 - JUL 13 04:44	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	JUL 13 04:43 - JUL 13 04:43	Pne
TEN	Teide Obs./Tenerife	28.3	343.5	+	JUL 13 01:50 - JUL 13 01:50	Pin
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 13 01:52 - JUL 13 04:38	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	JUL 13 01:55 - JUL 13 04:41	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	JUL 13 01:46 - JUL 13 01:46	Pin
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-13T03:13:25.730
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        : 4116554874369464960
2Mass ID (if available) : 17394136-2303523
ICRS Star Coord at Epoch: 17h 39m 41.37292s -23:03:52.48115s
RUWE (>1.4 is poor)  : 0.68
K magnitude           : 5.488
G magnitude           : 10.722
RP magnitude          : 9.429
BP magnitude          : 12.753
DUPflag              : 0
Distance (au)         : 4.318
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.77
Sun-Target sep (deg)  : 155.25
Sun-Moon sep (deg)    : 75.77
B (ring opening deg)  : -2.40
PA of pole (deg)      : 1.35
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 5.341
C/A sky separation (km) : 16726.3
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
    
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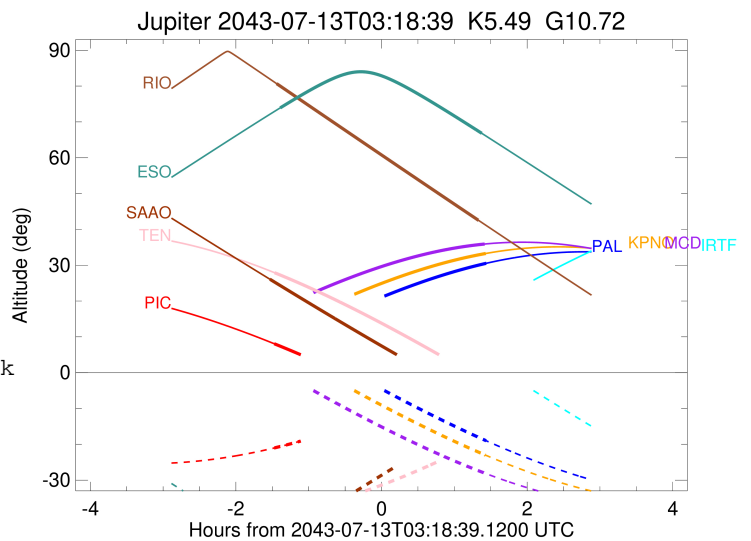
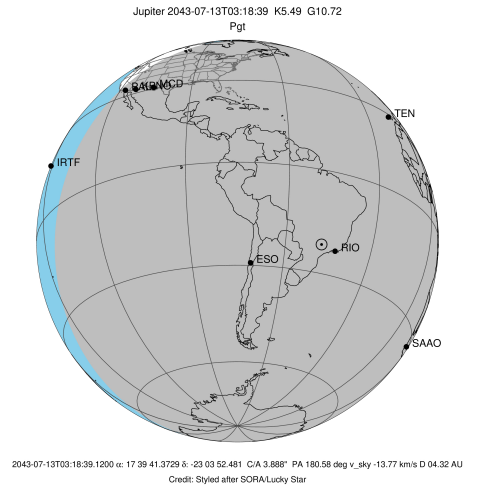


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-13T01:50:14.170	8.08	-21.01	71491.6	13.23	15.04
Jupiter	E	2043-07-13T04:37:23.973	-18.90x	-0.13x	71491.6	13.74	15.61

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-13T03:22:45.430
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       : 4116554874369464960
2Mass ID (if available) : 17394136-2303523
ICRS Star Coord at Epoch: 17h 39m 41.37292s -23:03:52.48115s
RUWE (>1.4 is poor) : 0.68
K magnitude           : 5.488
G magnitude           : 10.722
RP magnitude          : 9.429
BP magnitude          : 12.753
DUPflag              : 0
Distance (au)         : 4.318
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.77
Sun-Target sep (deg)  : 155.25
Sun-Moon sep (deg)   : 75.89
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.35
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (" ) : 5.423
C/A sky separation (km) : 16985.1
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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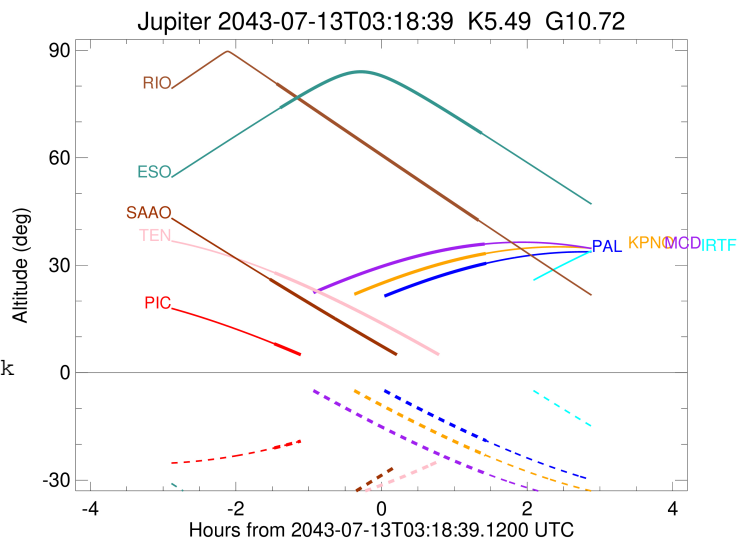
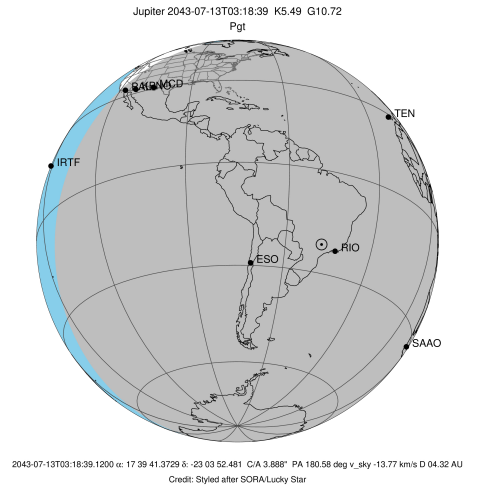


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-13T02:00:08.987	8.76	10.37x	71491.6	12.47	14.19
Jupiter	E	2043-07-13T04:44:54.500	30.52	-19.00	71491.5	14.82	16.83

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-13T03:22:22.360
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        : 4116554874369464960
2Mass ID (if available) : 17394136-2303523
ICRS Star Coord at Epoch: 17h 39m 41.37292s -23:03:52.48115s
RUWE (>1.4 is poor) : 0.68
K magnitude           : 5.488
G magnitude           : 10.722
RP magnitude          : 9.429
BP magnitude          : 12.753
DUPflag              : 0
Distance (au)         : 4.318
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.77
Sun-Target sep (deg) : 155.25
Sun-Moon sep (deg)   : 75.96
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.35
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 5.432
C/A sky separation (km) : 17010.8
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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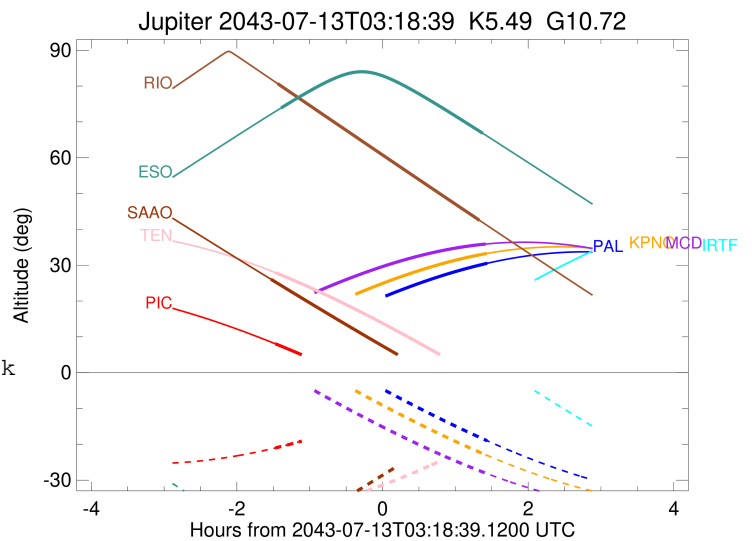
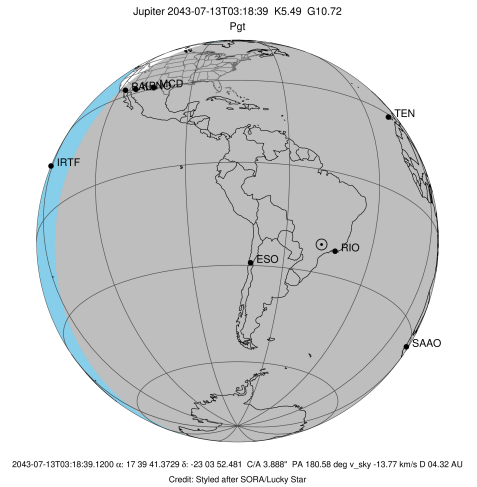


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-13T01:59:56.965	13.12	5.77x	71491.6	12.52	14.25
Jupiter	E	2043-07-13T04:44:23.490	33.25	-23.02	71491.5	14.80	16.80

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-13T03:21:43.140
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       : 4116554874369464960
2Mass ID (if available) : 17394136-2303523
ICRS Star Coord at Epoch: 17h 39m 41.37292s -23:03:52.48115s
RUWE (>1.4 is poor) : 0.68
K magnitude           : 5.488
G magnitude           : 10.722
RP magnitude         : 9.429
BP magnitude         : 12.753
DUPflag              : 0
Distance (au)        : 4.318
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.77
Sun-Target sep (deg) : 155.25
Sun-Moon sep (deg)   : 76.04
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.35
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 5.451
C/A sky separation (km) : 17072.2
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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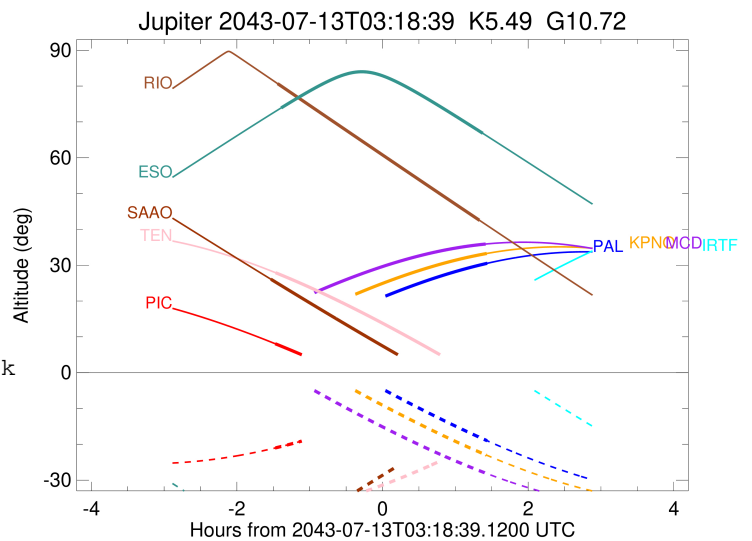
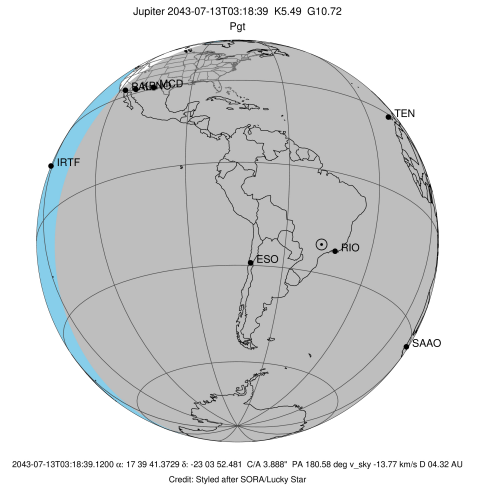


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-13T01:59:32.152	18.82	-0.60x	71491.6	12.63	14.37
Jupiter	E	2043-07-13T04:43:35.008	35.90	-28.03	71491.5	14.78	16.77

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-13T03:13:08.950
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        : 4116554874369464960
2Mass ID (if available) : 17394136-2303523
ICRS Star Coord at Epoch: 17h 39m 41.37292s -23:03:52.48115s
RUWE (>1.4 is poor) : 0.68
K magnitude           : 5.488
G magnitude           : 10.722
RP magnitude          : 9.429
BP magnitude          : 12.753
DUPflag              : 0
Distance (au)         : 4.318
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.77
Sun-Target sep (deg)  : 155.25
Sun-Moon sep (deg)   : 76.07
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.35
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 5.173
C/A sky separation (km) : 16201.0
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
    
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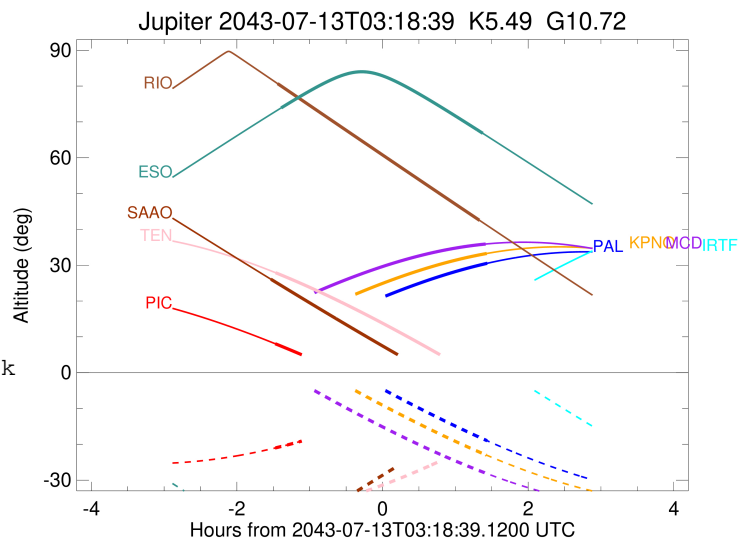
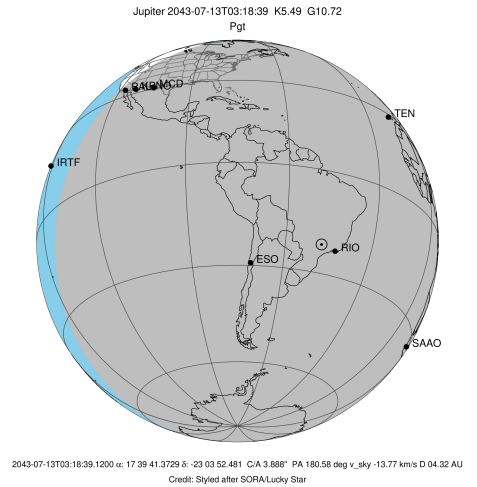


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-13T01:50:33.068	27.89	-39.14	71491.6	12.78	14.54
Jupiter	E	2043-07-13T04:36:32.533	-0.97x	-19.73	71491.6	13.25	15.06

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-13T03:15:04.940
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      : 4116554874369464960
2Mass ID (if available) : 17394136-2303523
ICRS Star Coord at Epoch: 17h 39m 41.37292s -23:03:52.48115s
RUWE (>1.4 is poor) : 0.68
K magnitude          : 5.488
G magnitude          : 10.722
RP magnitude         : 9.429
BP magnitude         : 12.753
DUPflag             : 0
Distance (au)       : 4.318
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.77
Sun-Target sep (deg) : 155.25
Sun-Moon sep (deg)  : 76.58
B (ring opening deg) : -2.40
PA of pole (deg)    : 1.35
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation ("): 3.812
C/A sky separation (km): 11938.9
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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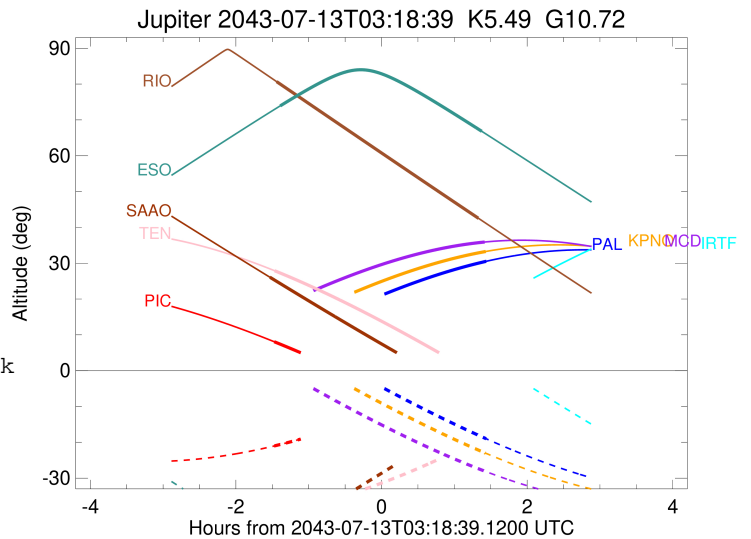
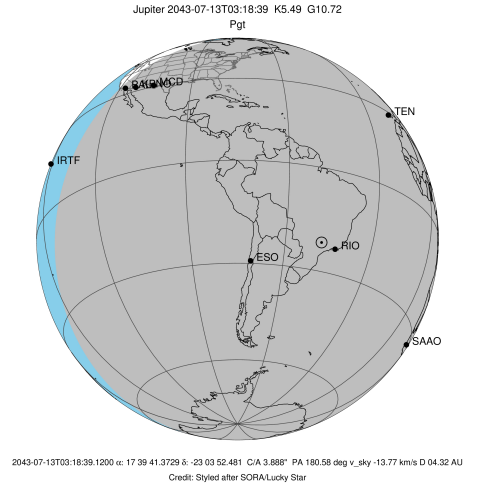


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-13T01:52:10.232	80.69	-74.62	71491.8	9.06	10.33
Jupiter	E	2043-07-13T04:38:31.494	42.53	-66.90	71491.8	9.93	11.32


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-13T03:18:10.060
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      : 4116554874369464960
2Mass ID (if available) : 17394136-2303523
ICRS Star Coord at Epoch: 17h 39m 41.37292s -23:03:52.48115s
RUWE (>1.4 is poor) : 0.68
K magnitude          : 5.488
G magnitude          : 10.722
RP magnitude         : 9.429
BP magnitude         : 12.753
DUPflag             : 0
Distance (au)       : 4.318
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.77
Sun-Target sep (deg) : 155.25
Sun-Moon sep (deg)  : 76.60
B (ring opening deg) : -2.40
PA of pole (deg)    : 1.35
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation ("): 3.685
C/A sky separation (km): 11541.4
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
    
```

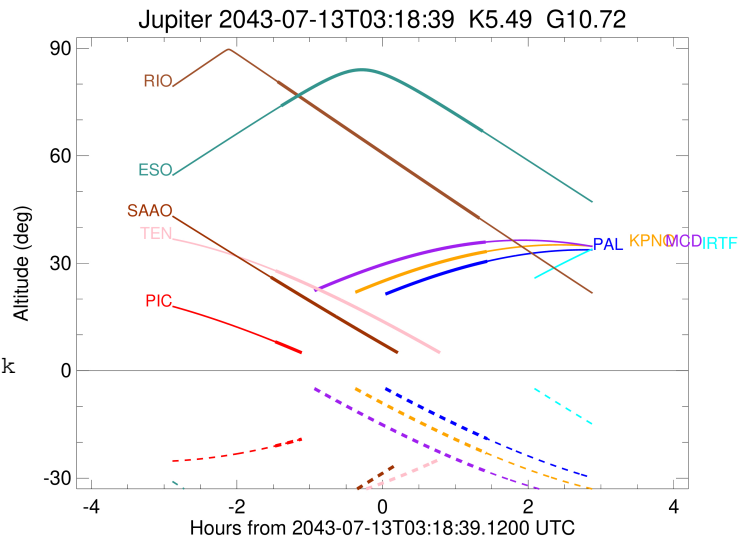
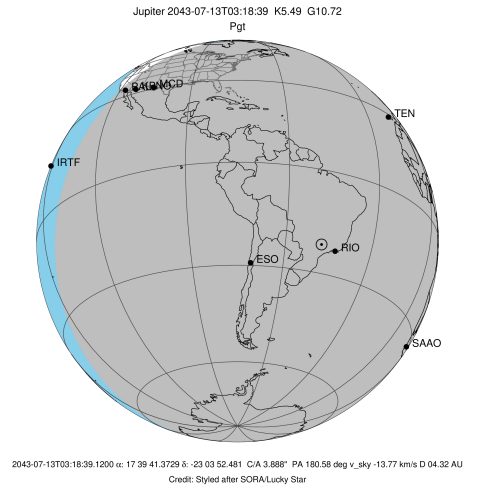


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-13T01:55:11.162	73.91	-50.41	71491.8	8.43	9.62
Jupiter	E	2043-07-13T04:41:16.745	66.81	-82.55	71491.8	9.90	11.28


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-13T03:12:14.460
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      : 4116554874369464960
2Mass ID (if available) : 17394136-2303523
ICRS Star Coord at Epoch: 17h 39m 41.37292s -23:03:52.48115s
RUWE (>1.4 is poor) : 0.68
K magnitude          : 5.488
G magnitude          : 10.722
RP magnitude         : 9.429
BP magnitude         : 12.753
DUPflag             : 0
Distance (au)        : 4.318
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.77
Sun-Target sep (deg) : 155.25
Sun-Moon sep (deg)  : 76.00
B (ring opening deg) : -2.40
PA of pole (deg)    : 1.35
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation ("): 2.862
C/A sky separation (km): 8962.4
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	2043-07-13T01:46:42.373	26.08	-48.02	71491.9	7.05	8.05
Jupiter	E	2043-07-13T04:38:45.666	-7.54x	-12.18	71491.9	7.34	8.38