

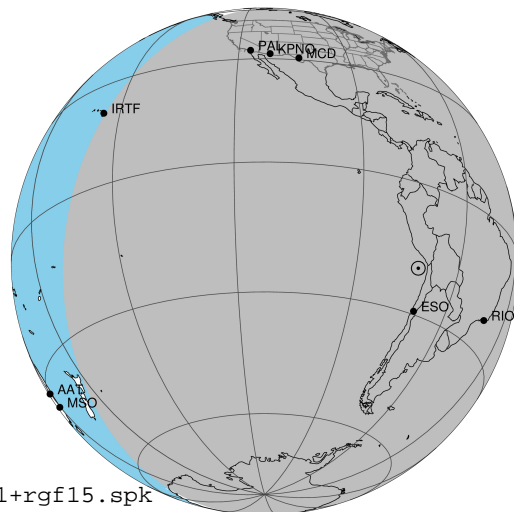
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-25T04:58:25.470
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116684719770968832
 2Mass ID (if available) : 17344994-2303254

Jupiter 2043-07-25T04:58:25 K8.57 G15.00 Pgt

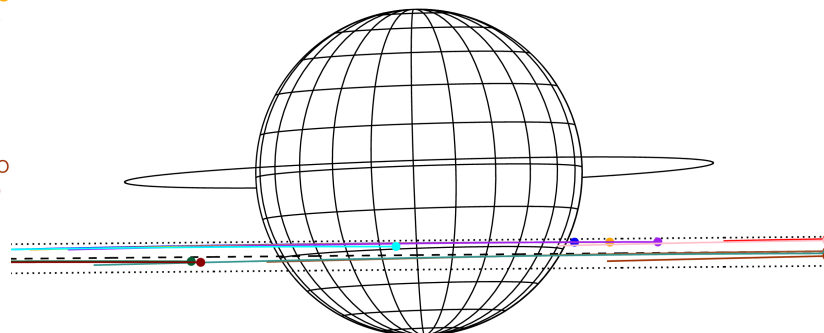
ICRS Star Coord at Epoch: 17h 34m 49.92061s -23:03:25.82001s

RUWE (>1.4 is poor) : 0.98
 K magnitude : 8.575
 G magnitude : 14.995
 RP magnitude : 13.459
 BP magnitude : 18.396
 DUPflag : 0
 Distance (au) : 4.411
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -10.45
 Sun-Target sep (deg) : 142.62
 Sun-Moon sep (deg) : 74.49
 B (ring opening deg) : -2.38
 PA of pole (deg) : 1.87
 Pole direction: RA (deg): 268.05670
 Dec (deg): 64.49731
 C/A sky separation (") : 11.306
 C/A sky separation (km) : 36169.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-25T04:58:25 K8.57 G15.00
 Pgt



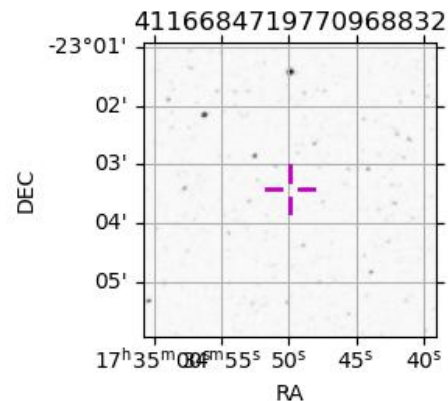
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 AAT
 SAAO
 MSO



2043-07-25T04:58:25.4700 α: 17 34 49.9206 δ: -23 03 25.8200 C/A ***** PA 0.53 deg v_sky -10.45 km/s D 04.41 AU
 Credit: Styled after SORA/Lucky Star

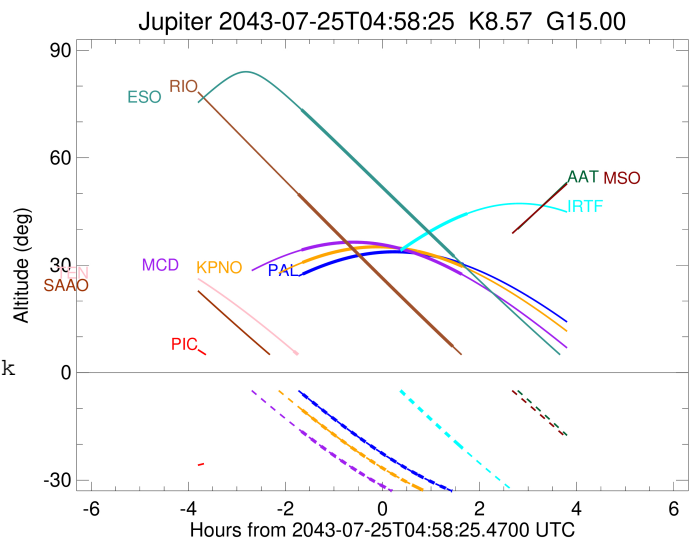
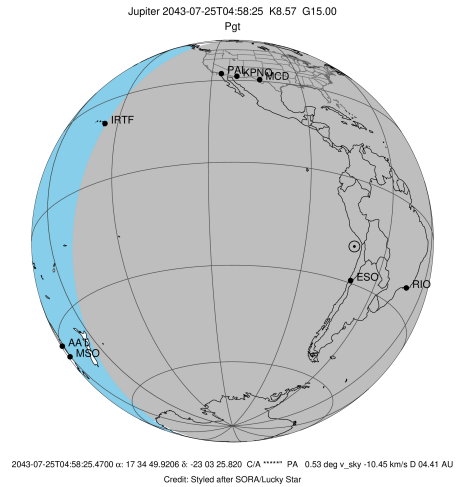
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events	Interval	OCode
PIC	Pic du Midi	42.9	0.1				Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	JUL 25 03:19	- JUL 25 06:38	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8				Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JUL 25 03:19	- JUL 25 06:37	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JUL 25 03:18	- JUL 25 06:36	Pie
TEN	Teide Obs./Tenerife	28.3	343.5	+	JUL 25 03:08	- JUL 25 03:08	Pin
IRTF	Mauna Kea/IRTF	19.8	204.5	+	JUL 25 06:43	- JUL 25 06:43	Pne
KAV	Kavalur Observatory	12.6	78.8				Pnn
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUL 25 03:14	- JUL 25 06:25	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUL 25 03:18	- JUL 25 06:27	Pie
AAT	Siding Spring (AAT)	-31.3	149.1				Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8				Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0				Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-25T04:59:03.330
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       : 4116684719770968832
2Mass ID (if available) : 17344994-2303254
ICRS Star Coord at Epoch: 17h 34m 49.92061s -23:03:25.82001s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 8.575
G magnitude           : 14.995
RP magnitude         : 13.459
BP magnitude         : 18.396
DUPflag             : 0
Distance (au)        : 4.411
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.45
Sun-Target sep (deg) : 142.62
Sun-Moon sep (deg)  : 75.03
B (ring opening deg) : -2.38
PA of pole (deg)    : 1.87
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation ("): 9.651
C/A sky separation (km): 30875.1
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
    
```

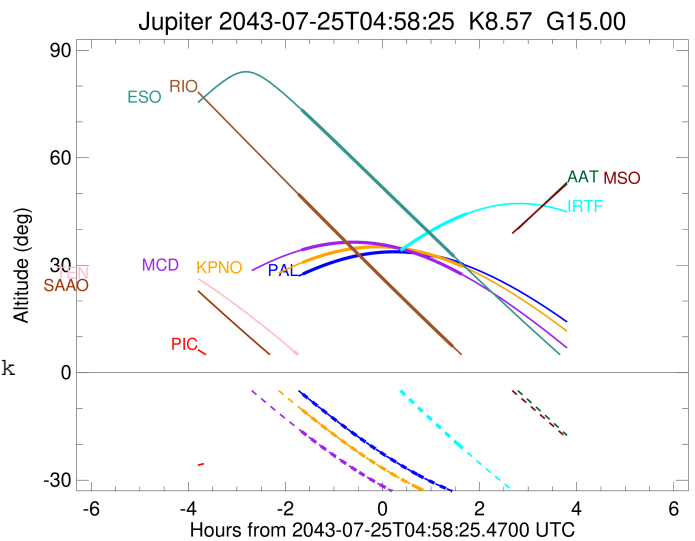
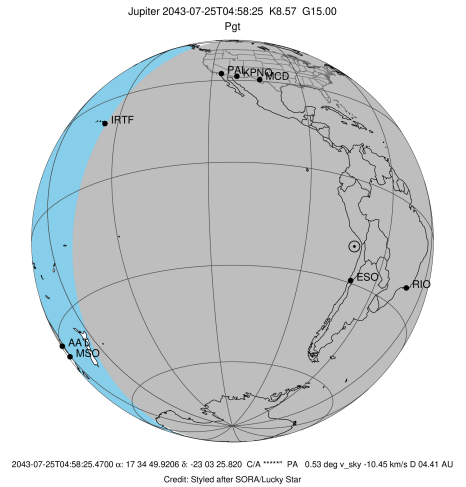


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-25T03:19:57.033	27.53	-6.00	71490.4	-27.14	-30.33
Jupiter	E	2043-07-25T06:38:14.649	30.21	-34.16	71490.7	-24.33	-27.30

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-25T04:58:14.360
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       : 4116684719770968832
2Mass ID (if available) : 17344994-2303254
ICRS Star Coord at Epoch: 17h 34m 49.92061s -23:03:25.82001s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 8.575
G magnitude          : 14.995
RP magnitude         : 13.459
BP magnitude         : 18.396
DUPflag             : 0
Distance (au)        : 4.411
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.45
Sun-Target sep (deg) : 142.62
Sun-Moon sep (deg)   : 75.03
B (ring opening deg) : -2.38
PA of pole (deg)     : 1.87
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (") : 9.677
C/A sky separation (km) : 30956.0
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
    
```

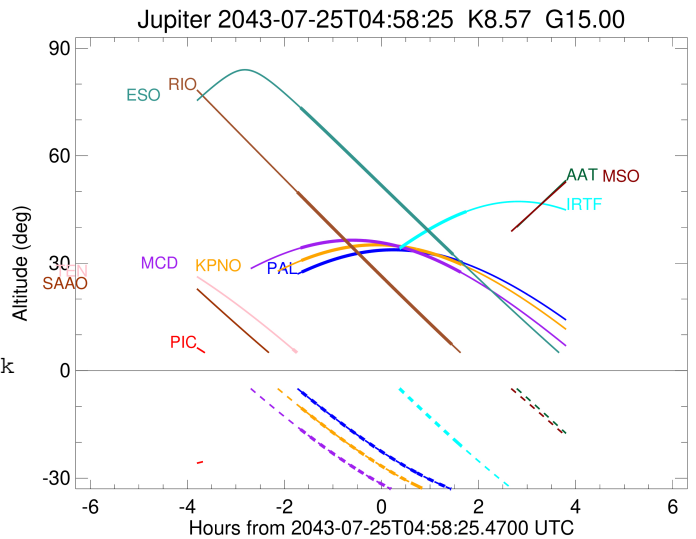
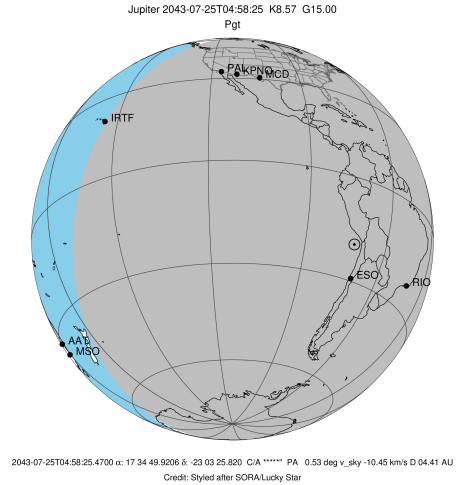


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-25T03:19:19.638	30.74	-10.43	71490.4	-27.14	-30.33
Jupiter	E	2043-07-25T06:37:22.299	29.64	-36.86	71490.7	-24.47	-27.46

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-25T04:57:02.200
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        : 4116684719770968832
2Mass ID (if available) : 17344994-2303254
ICRS Star Coord at Epoch: 17h 34m 49.92061s -23:03:25.82001s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 8.575
G magnitude           : 14.995
RP magnitude          : 13.459
BP magnitude          : 18.396
DUPflag              : 0
Distance (au)         : 4.411
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -10.45
Sun-Target sep (deg) : 142.62
Sun-Moon sep (deg)   : 75.01
B (ring opening deg) : -2.38
PA of pole (deg)     : 1.87
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation ("): 9.709
C/A sky separation (km): 31060.4
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
    
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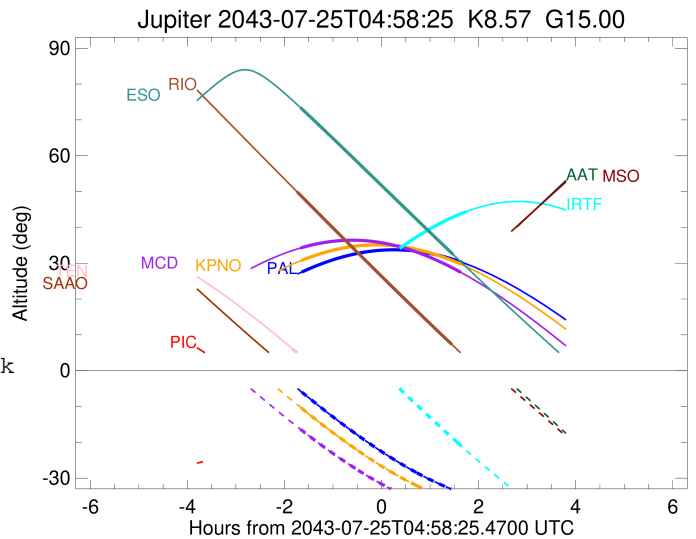
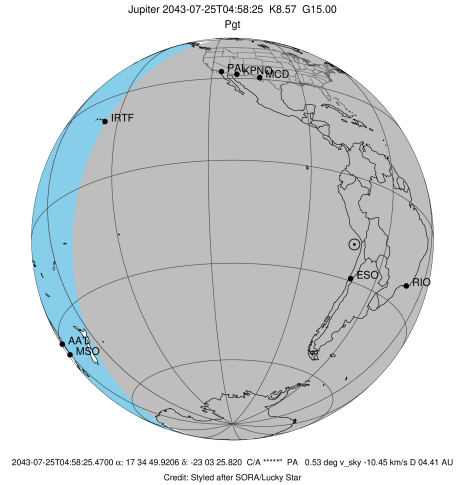


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-25T03:18:18.901	34.24	-16.37	71490.4	-27.13	-30.32
Jupiter	E	2043-07-25T06:36:10.810	27.48	-39.44	71490.6	-24.67	-27.67

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-25T04:48:40.440
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        : 4116684719770968832
2Mass ID (if available) : 17344994-2303254
ICRS Star Coord at Epoch: 17h 34m 49.92061s -23:03:25.82001s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 8.575
G magnitude           : 14.995
RP magnitude          : 13.459
BP magnitude          : 18.396
DUPflag              : 0
Distance (au)         : 4.411
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -10.45
Sun-Target sep (deg) : 142.62
Sun-Moon sep (deg)   : 74.01
B (ring opening deg) : -2.38
PA of pole (deg)     : 1.87
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (") : 10.485
C/A sky separation (km) : 33540.9
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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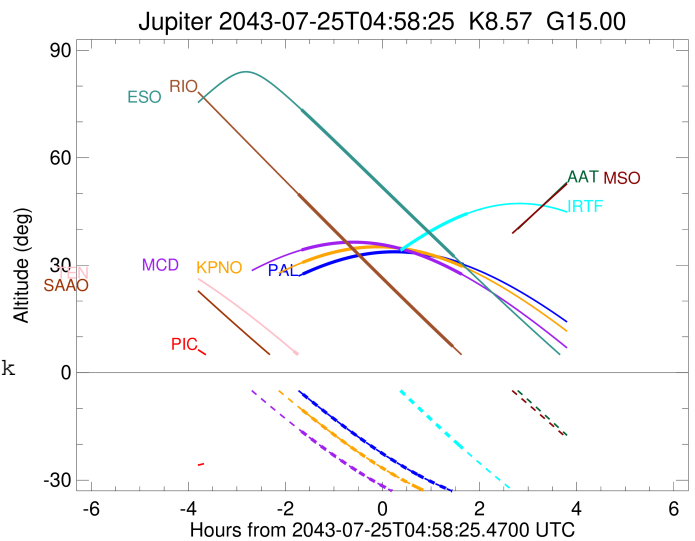
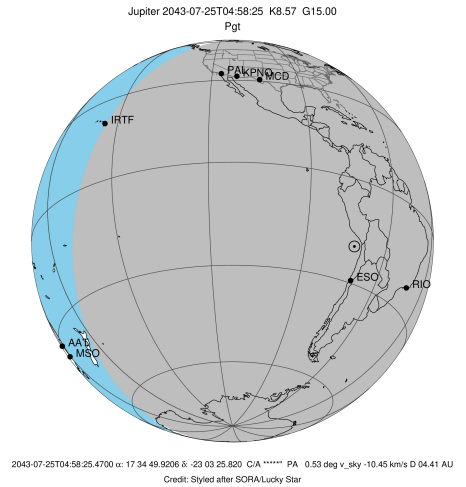


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-25T03:08:41.099	6.04	-34.55	71490.2	-28.44	-31.72
Jupiter	E	2043-07-25T06:30:38.308	-35.93x	0.44x	71490.3	-27.46	-30.67

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-25T05:05:14.700
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : IRTF
Location             : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)   : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 4116684719770968832
2Mass ID (if available) : 17344994-2303254
ICRS Star Coord at Epoch: 17h 34m 49.92061s -23:03:25.82001s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 8.575
G magnitude           : 14.995
RP magnitude         : 13.459
BP magnitude         : 18.396
DUPflag              : 0
Distance (au)        : 4.411
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.45
Sun-Target sep (deg) : 142.62
Sun-Moon sep (deg)   : 75.12
B (ring opening deg) : -2.38
PA of pole (deg)     : 1.87
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (") : 10.136
C/A sky separation (km) : 32424.9
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
    
```

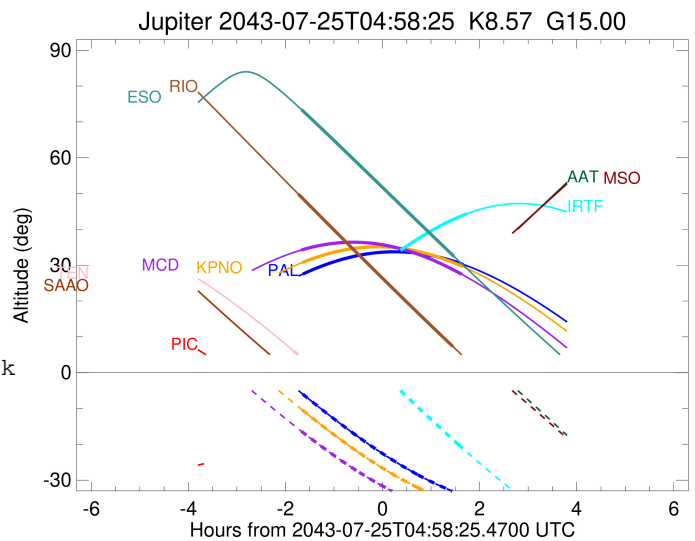
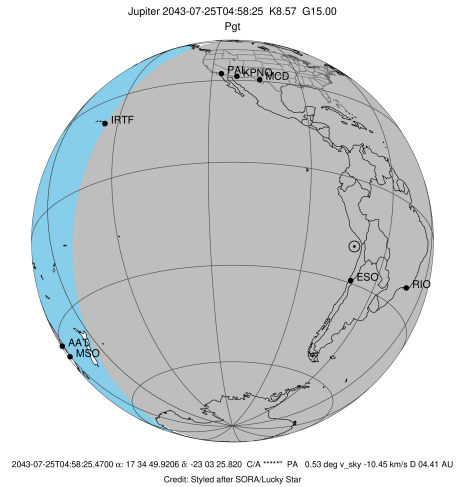


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-25T03:26:16.717	13.11	20.54x	71490.2	-29.03	-32.34
Jupiter	E	2043-07-25T06:43:15.557	44.42	-22.26	71490.6	-25.16	-28.20

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-25T04:48:52.950
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        : 4116684719770968832
2Mass ID (if available) : 17344994-2303254
ICRS Star Coord at Epoch: 17h 34m 49.92061s -23:03:25.82001s
RUWE (>1.4 is poor)  : 0.98
K magnitude           : 8.575
G magnitude           : 14.995
RP magnitude          : 13.459
BP magnitude          : 18.396
DUPflag              : 0
Distance (au)         : 4.411
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -10.45
Sun-Target sep (deg)  : 142.62
Sun-Moon sep (deg)   : 74.67
B (ring opening deg) : -2.38
PA of pole (deg)     : 1.87
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (") : 11.733
C/A sky separation (km) : 37533.2
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
    
```

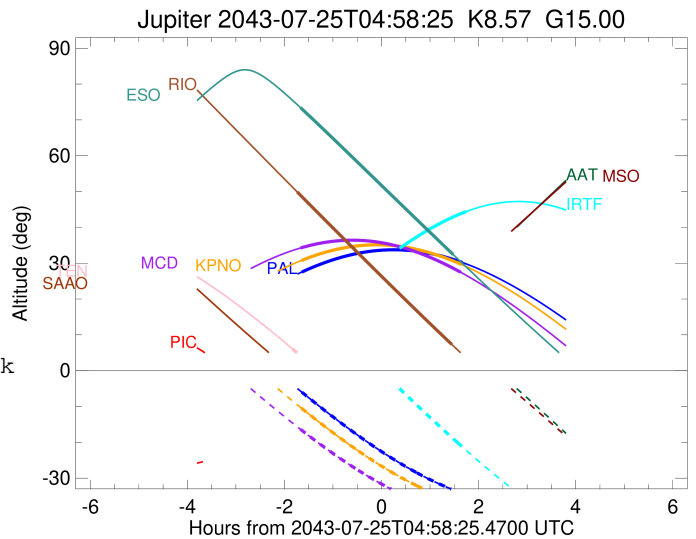
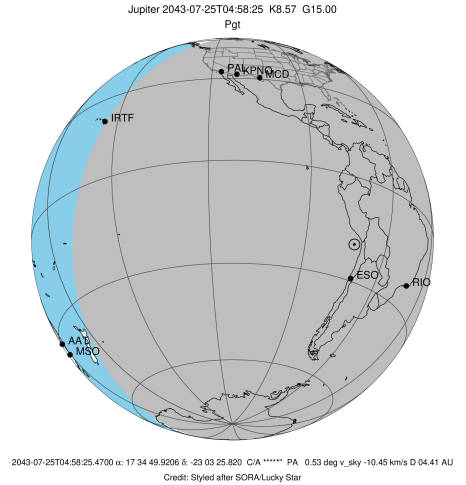


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-25T03:14:13.421	49.89	-85.38	71489.8	-32.25	-35.74
Jupiter	E	2043-07-25T06:25:13.607	7.34	-42.17	71489.9	-31.18	-34.62

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-25T04:52:02.910
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      : 4116684719770968832
2Mass ID (if available) : 17344994-2303254
ICRS Star Coord at Epoch: 17h 34m 49.92061s -23:03:25.82001s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 8.575
G magnitude          : 14.995
RP magnitude         : 13.459
BP magnitude         : 18.396
DUPflag             : 0
Distance (au)       : 4.411
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.45
Sun-Target sep (deg) : 142.62
Sun-Moon sep (deg)  : 75.06
B (ring opening deg) : -2.38
PA of pole (deg)    : 1.87
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation ("): 11.676
C/A sky separation (km): 37351.5
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	2043-07-25T03:18:13.961	73.43	-67.26	71489.8	-32.42	-35.91
Jupiter	E	2043-07-25T06:27:00.246	32.42	-65.93	71490.0	-30.79	-34.20