

target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-06-22T05:26:50.520
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068704574936508032
 2Mass ID (if available) : 17503394-2305005

Jupiter 2043-06-22T05:26:50 K7.01 G14.25 Pgt

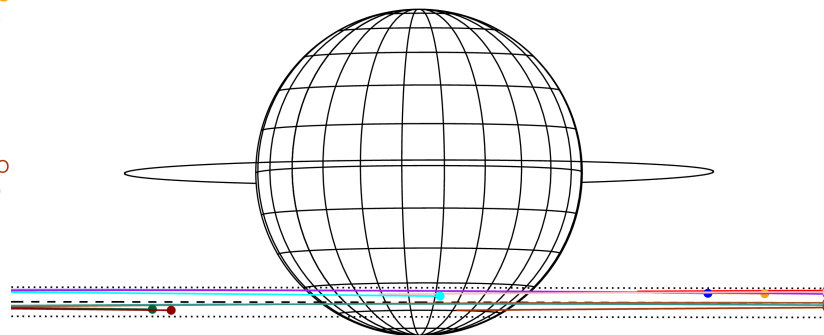
ICRS Star Coord at Epoch: 17h 50m 33.94816s -23:05:00.78326s

RUWE (>1.4 is poor) : 1.56
 K magnitude : 7.015
 G magnitude : 14.247
 RP magnitude : 12.551
 BP magnitude : 17.056
 DUPflag : 0
 Distance (au) : 4.250
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -16.39
 Sun-Target sep (deg) : 177.67
 Sun-Moon sep (deg) : 5.61
 B (ring opening deg) : -2.42
 PA of pole (deg) : 0.18
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 18.448
 C/A sky separation (km) : 56867.8
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-06-22T05:26:50 K7.01 G14.25
 Pgt



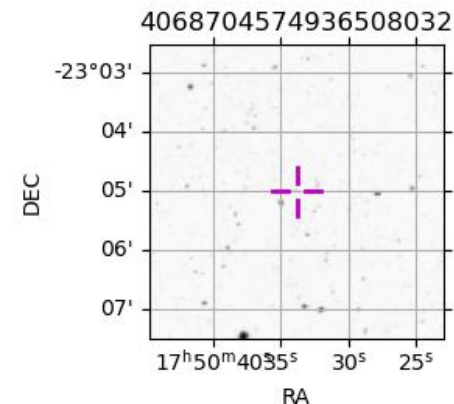
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 AAT
 SAAO
 MSO



2043-06-22T05:26:50.5200 a: 17 50 33.9482 d: -23 05 00.783 C/A ***** PA 359.92 deg v_sky -16.39 km/s D 04.25 AU
 Credit: Styled after SORA/Lucky Star

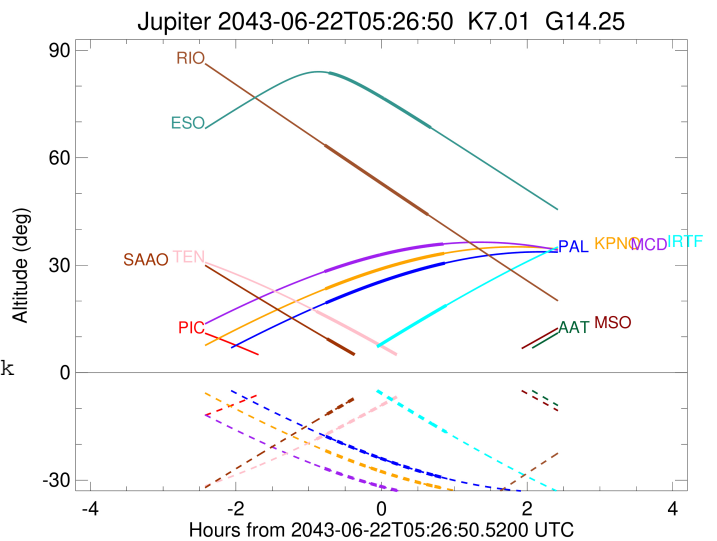
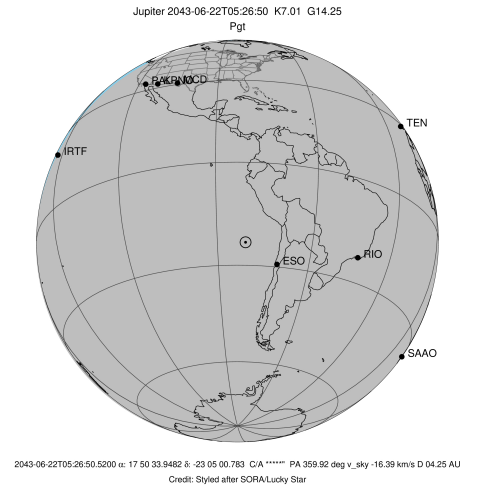
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	JUN 22 04:40 - JUN 22 06:18	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JUN 22 04:40 - JUN 22 06:18	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JUN 22 04:39 - JUN 22 06:17	Pie
TEN	Teide Obs./Tenerife	28.3	343.5	+	JUN 22 04:33 - JUN 22 04:33	Pin
IRTF	Mauna Kea/IRTF	19.8	204.5	+	JUN 22 06:20 - JUN 22 06:20	Pne
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUN 22 04:40 - JUN 22 06:05	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUN 22 04:43 - JUN 22 06:07	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	JUN 22 04:42 - JUN 22 04:42	Pin
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-22T05:29:57.890
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        : 4068704574936508032
2Mass ID (if available) : 17503394-2305005
ICRS Star Coord at Epoch: 17h 50m 33.94816s -23:05:00.78326s
RUWE (>1.4 is poor) : 1.56
K magnitude           : 7.015
G magnitude           : 14.247
RP magnitude          : 12.551
BP magnitude          : 17.056
DUPflag              : 0
Distance (au)         : 4.250
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.39
Sun-Target sep (deg) : 177.67
Sun-Moon sep (deg)   : 6.20
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.18
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 16.828
C/A sky separation (km): 51875.3
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
    
```

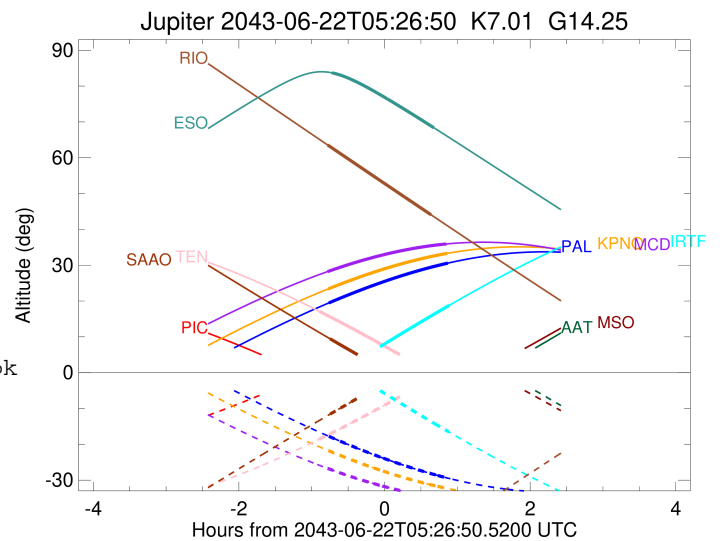
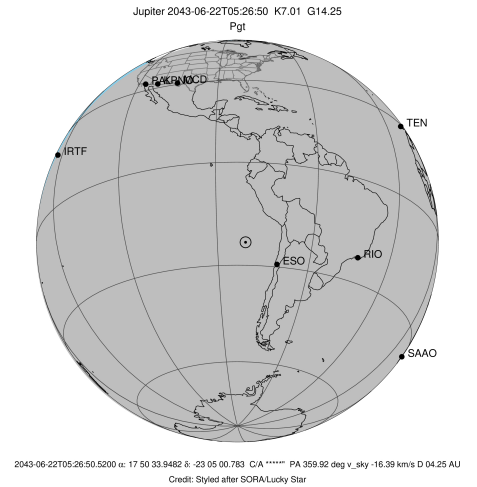


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-22T04:40:54.525	19.46	-17.76	71487.7	-47.05	-50.72
Jupiter	E	2043-06-22T06:18:53.438	30.56	-29.42	71487.8	-45.99	-49.68

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-22T05:29:32.710
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       : 4068704574936508032
2Mass ID (if available) : 17503394-2305005
ICRS Star Coord at Epoch: 17h 50m 33.94816s -23:05:00.78326s
RUWE (>1.4 is poor) : 1.56
K magnitude           : 7.015
G magnitude           : 14.247
RP magnitude          : 12.551
BP magnitude          : 17.056
DUPflag              : 0
Distance (au)         : 4.250
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.39
Sun-Target sep (deg) : 177.67
Sun-Moon sep (deg)   : 6.22
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.18
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 16.828
C/A sky separation (km) : 51874.1
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
    
```

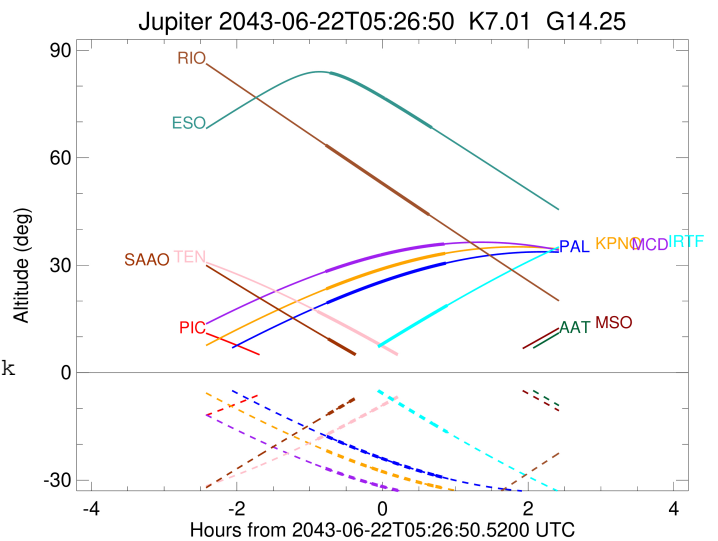
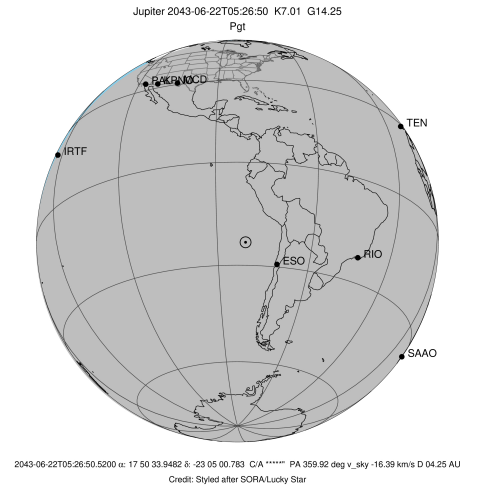


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-22T04:40:33.938	23.39	-21.75	71487.7	-47.01	-50.68
Jupiter	E	2043-06-22T06:18:24.751	33.29	-32.30	71487.8	-46.03	-49.71

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-22T05:28:51.700
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        : 4068704574936508032
2Mass ID (if available) : 17503394-2305005
ICRS Star Coord at Epoch: 17h 50m 33.94816s -23:05:00.78326s
RUWE (>1.4 is poor) : 1.56
K magnitude           : 7.015
G magnitude           : 14.247
RP magnitude          : 12.551
BP magnitude          : 17.056
DUPflag              : 0
Distance (au)         : 4.250
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.39
Sun-Target sep (deg) : 177.67
Sun-Moon sep (deg)   : 6.25
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.18
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 16.821
C/A sky separation (km) : 51853.4
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
    
```

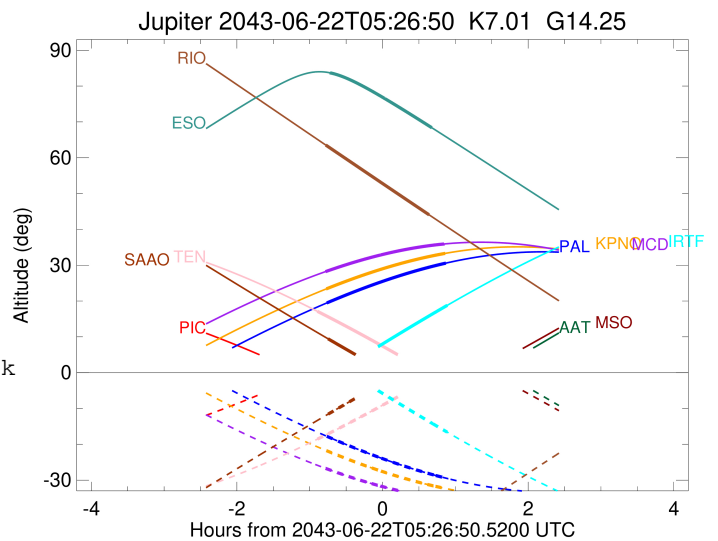
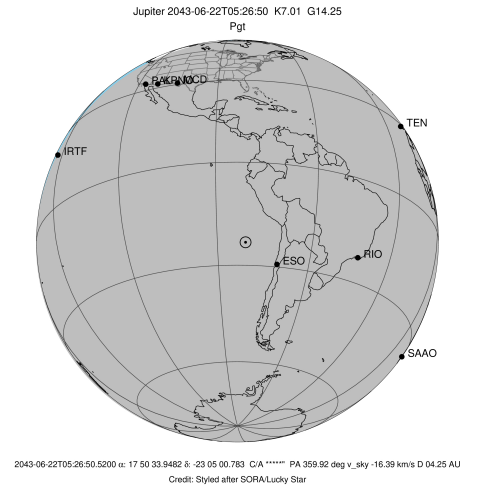


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-22T04:39:57.063	28.21	-26.72	71487.7	-46.93	-50.60
Jupiter	E	2043-06-22T06:17:41.340	35.92	-35.20	71487.8	-46.07	-49.75

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-22T05:21:07.350
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       : 4068704574936508032
2Mass ID (if available) : 17503394-2305005
ICRS Star Coord at Epoch: 17h 50m 33.94816s -23:05:00.78326s
RUWE (>1.4 is poor) : 1.56
K magnitude          : 7.015
G magnitude          : 14.247
RP magnitude         : 12.551
BP magnitude         : 17.056
DUPflag             : 0
Distance (au)        : 4.250
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.39
Sun-Target sep (deg) : 177.67
Sun-Moon sep (deg)  : 6.38
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.18
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 17.268
C/A sky separation (km) : 53231.6
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
    
```

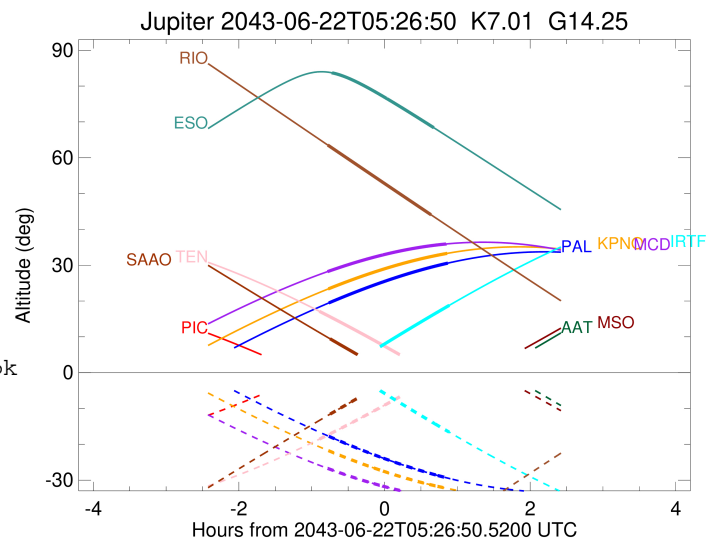
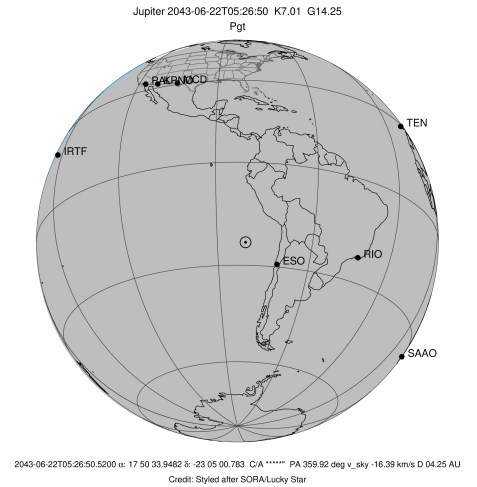


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-22T04:33:14.124	17.11	-18.55	71487.6	-47.85	-51.50
Jupiter	E	2043-06-22T06:09:14.699	-0.83x	-1.00x	71487.5	-48.34	-51.98

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-22T05:33:06.220
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       : 4068704574936508032
2Mass ID (if available) : 17503394-2305005
ICRS Star Coord at Epoch: 17h 50m 33.94816s -23:05:00.78326s
RUWE (>1.4 is poor) : 1.56
K magnitude          : 7.015
G magnitude          : 14.247
RP magnitude         : 12.551
BP magnitude         : 17.056
DUPflag             : 0
Distance (au)        : 4.250
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.39
Sun-Target sep (deg) : 177.67
Sun-Moon sep (deg)   : 5.77
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.18
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 17.537
C/A sky separation (km) : 54058.7
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
    
```

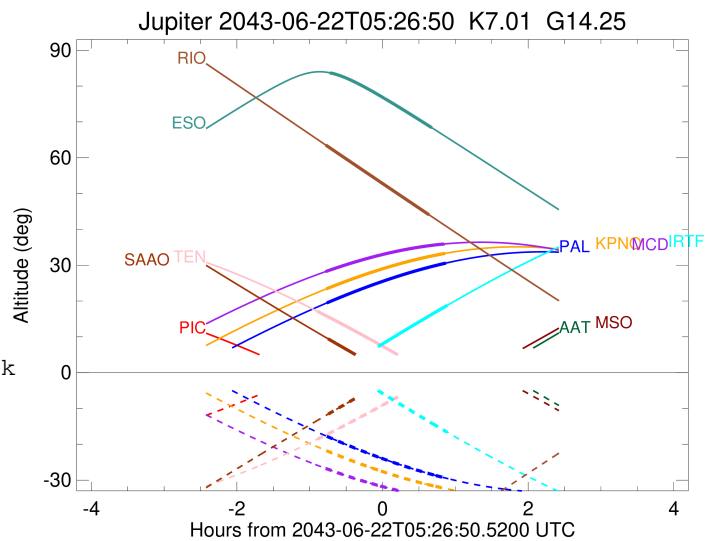
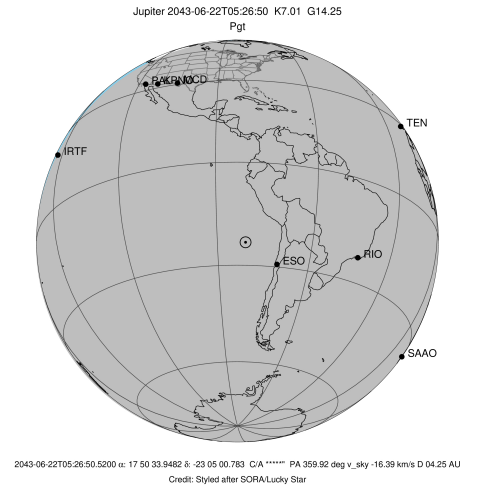


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-22T04:45:52.255	-0.68x	2.93x	71487.3	-49.91	-53.50
Jupiter	E	2043-06-22T06:20:05.481	18.77	-16.60	71487.5	-48.28	-51.92

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-22T05:22:39.980
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        : 4068704574936508032
2Mass ID (if available) : 17503394-2305005
ICRS Star Coord at Epoch: 17h 50m 33.94816s -23:05:00.78326s
RUWE (>1.4 is poor) : 1.56
K magnitude           : 7.015
G magnitude           : 14.247
RP magnitude          : 12.551
BP magnitude          : 17.056
DUPflag              : 0
Distance (au)         : 4.250
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.39
Sun-Target sep (deg) : 177.67
Sun-Moon sep (deg)   : 5.82
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.18
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 18.614
C/A sky separation (km): 57379.6
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
    
```

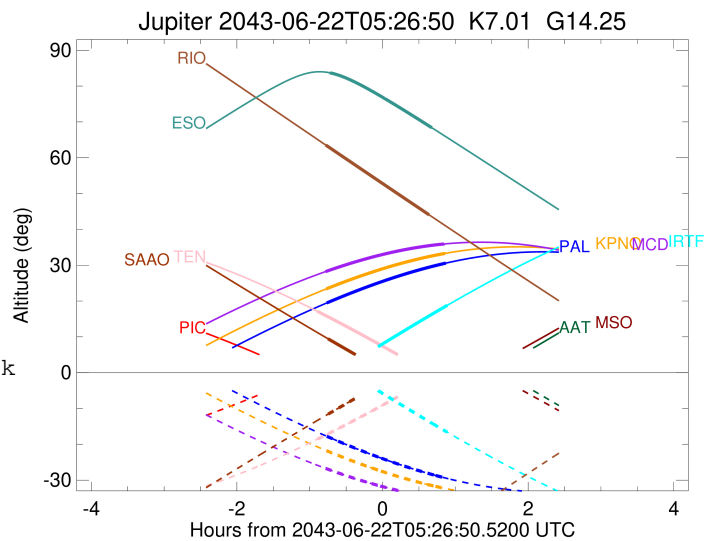
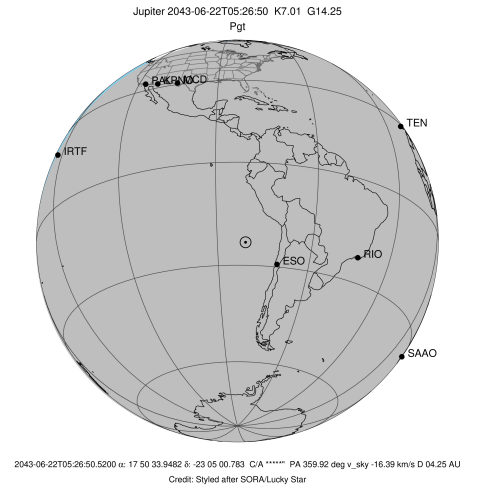


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-22T04:40:16.541	63.49	-65.77	71486.8	-53.25	-56.70
Jupiter	E	2043-06-22T06:05:11.447	44.07	-46.43	71486.8	-53.47	-56.91


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-22T05:25:28.510
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      : 4068704574936508032
2Mass ID (if available) : 17503394-2305005
ICRS Star Coord at Epoch: 17h 50m 33.94816s -23:05:00.78326s
RUWE (>1.4 is poor) : 1.56
K magnitude          : 7.015
G magnitude          : 14.247
RP magnitude         : 12.551
BP magnitude         : 17.056
DUPflag             : 0
Distance (au)       : 4.250
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.39
Sun-Target sep (deg) : 177.67
Sun-Moon sep (deg)  : 5.66
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.18
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 18.684
C/A sky separation (km) : 57595.1
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
    
```

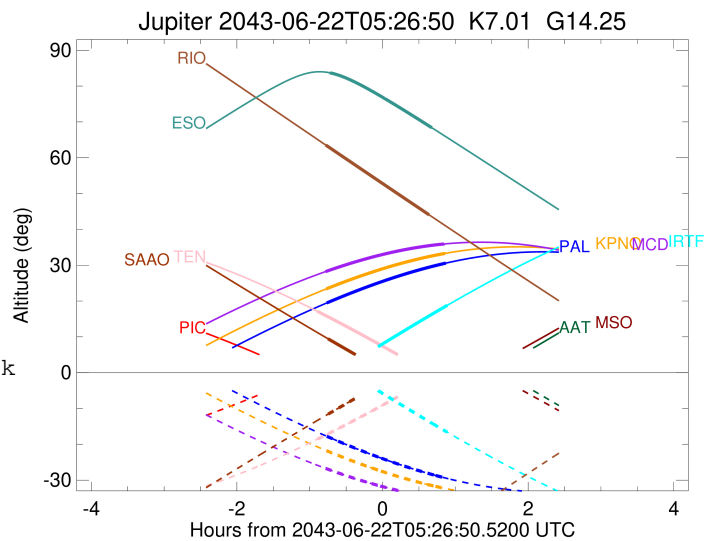
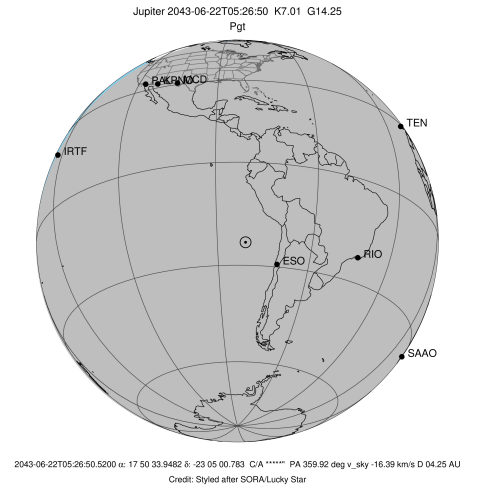


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-22T04:43:30.095	83.69	-84.33	71486.8	-53.79	-57.22
Jupiter	E	2043-06-22T06:07:29.574	68.36	-70.66	71486.8	-53.52	-56.97


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-22T05:20:57.450
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       : 4068704574936508032
2Mass ID (if available) : 17503394-2305005
ICRS Star Coord at Epoch: 17h 50m 33.94816s -23:05:00.78326s
RUWE (>1.4 is poor) : 1.56
K magnitude          : 7.015
G magnitude           : 14.247
RP magnitude         : 12.551
BP magnitude         : 17.056
DUPflag             : 0
Distance (au)        : 4.250
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.39
Sun-Target sep (deg) : 177.67
Sun-Moon sep (deg)   : 5.45
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.18
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 19.628
C/A sky separation (km) : 60505.0
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	2043-06-22T04:42:06.508	9.43	-11.56	71486.3	-57.47	-60.70
Jupiter	E	2043-06-22T05:59:58.138	-5.35x	3.30x	71486.2	-57.99	-61.19