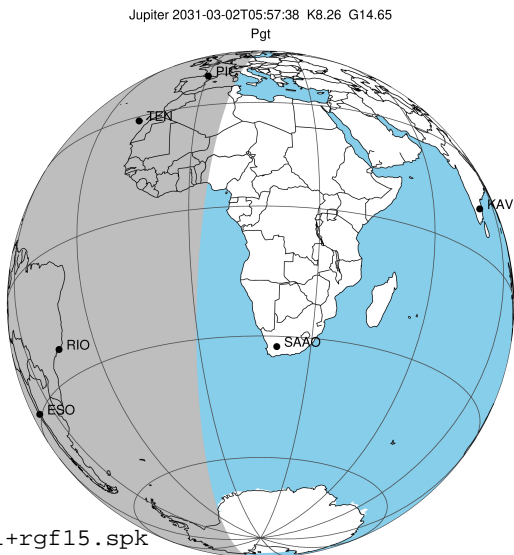


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-03-02T05:57:38.830
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116929258033509760
 2Mass ID (if available) : 17410561-2249268

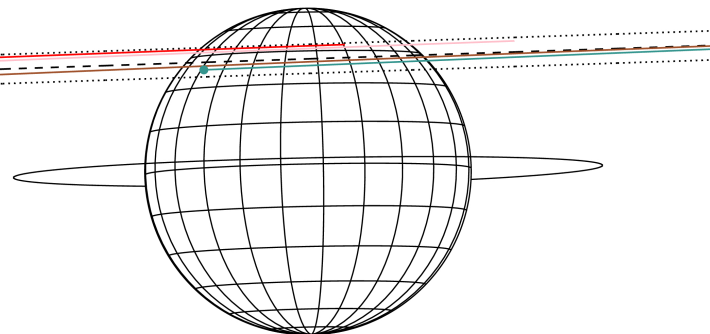
Jupiter 2031-03-02T05:57:38 K8.26 G14.65 Pgt

ICRS Star Coord at Epoch: 17h 41m 05.59619s -22:49:26.87471s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 8.260
 G magnitude : 14.652
 RP magnitude : 13.119
 BP magnitude : 18.119
 DUPflag : 0
 Distance (au) : 5.478
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 20.65
 Sun-Target sep (deg) : 75.38
 Sun-Moon sep (deg) : 176.78
 B (ring opening deg) : -2.65
 PA of pole (deg) : 1.20
 Pole direction: RA (deg): 268.05701
 Dec (deg): 64.49651
 C/A sky separation (") : 12.411
 C/A sky separation (km) : 49312.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp



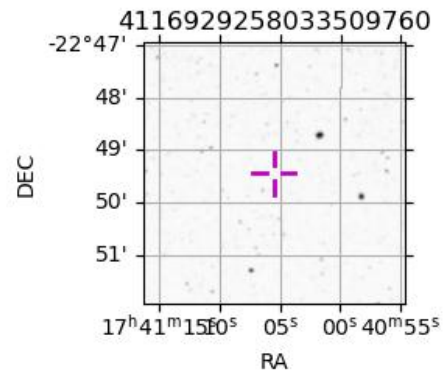
2031-03-02T05:57:38.8300 a: 17 41 05.5962 s: -22 49 26.875 C/A ***** PA 181.91 deg v_sky +20.65 km/s D 05.48 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 TEN
 RIO
 ESO
 SAAO



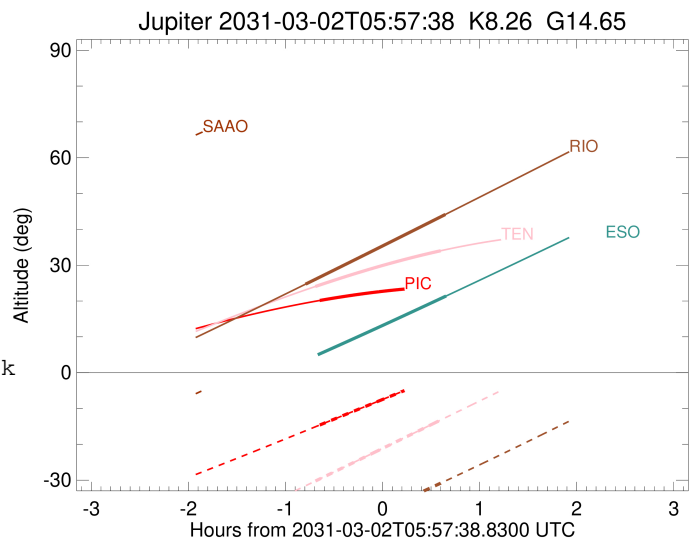
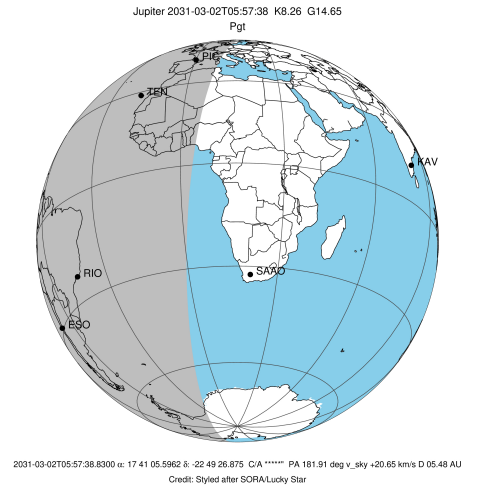
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	MAR 02 05:18 - MAR 02 05:18	Pin
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4			Pnn
MCD	McDonald Obs. 2.7m	30.7	256.0			Pnn
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	MAR 02 05:16 - MAR 02 06:33	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	+ +	MAR 02 05:10 - MAR 02 06:36	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	MAR 02 06:36 - MAR 02 06:36	Pne
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              : 2031-03-02T05:56:19.190
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        : 4116929258033509760
2Mass ID (if available) : 17410561-2249268
ICRS Star Coord at Epoch: 17h 41m 05.59619s -22:49:26.87471s
RUWE (>1.4 is poor)  : 0.97
K magnitude            : 8.260
G magnitude            : 14.652
RP magnitude           : 13.119
BP magnitude           : 18.119
DUPflag                : 0
Distance (au)         : 5.478
f0 (km)                : 0.00
g0 (km)                : 0.00
skyplane vel. (km/s)  : 20.65
Sun-Target sep (deg)  : 75.38
Sun-Moon sep (deg)    : 176.23
B (ring opening deg)  : -2.65
PA of pole (deg)      : 1.20
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 13.841
C/A sky separation (km) : 54994.0
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
    
```

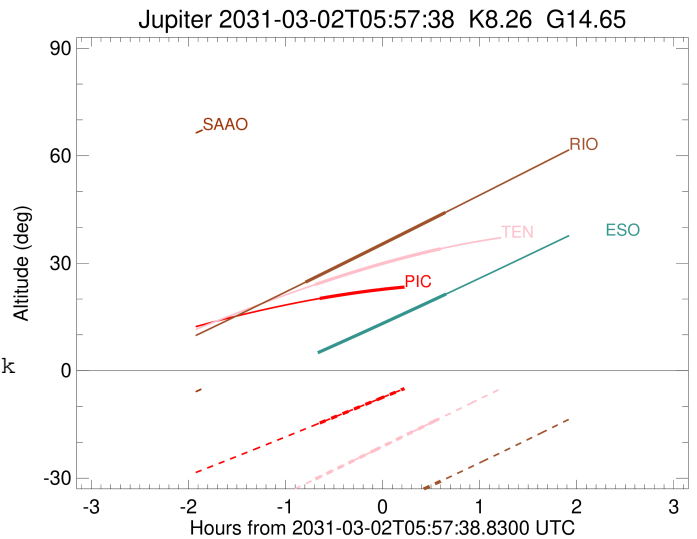
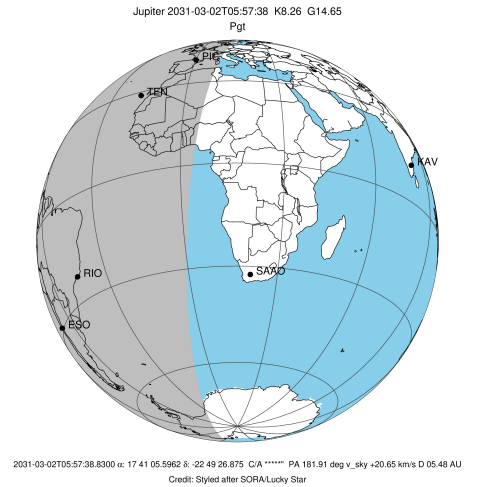


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-02T05:18:52.193	20.15	-14.61	71486.5	49.34	52.95
Jupiter	E	2031-03-02T06:33:49.509	24.07	-0.88x	71486.2	51.03	54.58

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-02T05:54:48.470
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       : 4116929258033509760
2Mass ID (if available) : 17410561-2249268
ICRS Star Coord at Epoch: 17h 41m 05.59619s -22:49:26.87471s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 8.260
G magnitude           : 14.652
RP magnitude         : 13.119
BP magnitude         : 18.119
DUPflag              : 0
Distance (au)        : 5.478
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 20.65
Sun-Target sep (deg) : 75.38
Sun-Moon sep (deg)   : 176.12
B (ring opening deg) : -2.65
PA of pole (deg)     : 1.20
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 13.542
C/A sky separation (km) : 53802.6
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
    
```

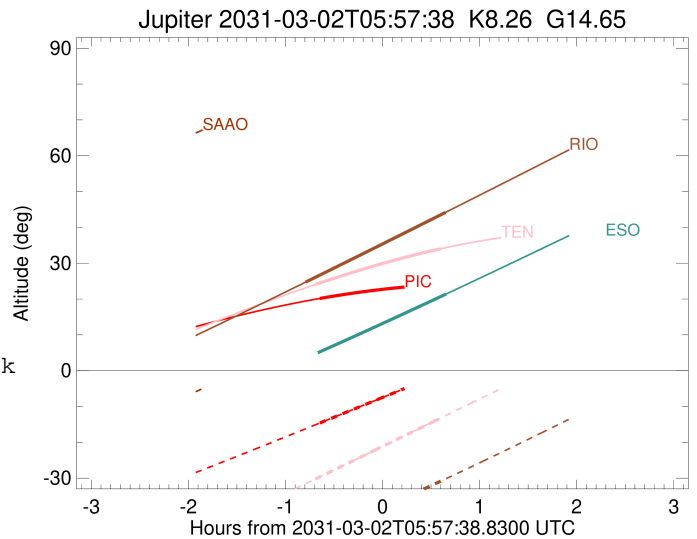
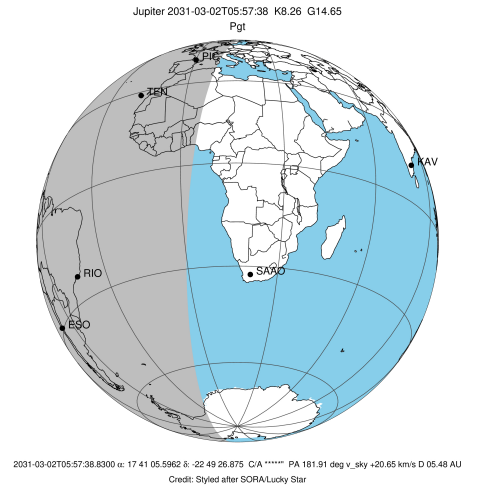


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-02T05:16:12.702	24.06	-30.24	71486.7	47.73	51.38
Jupiter	E	2031-03-02T06:33:30.350	34.02	-13.24	71486.4	49.71	53.30

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-02T05:53:14.830
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      : 4116929258033509760
2Mass ID (if available) : 17410561-2249268
ICRS Star Coord at Epoch: 17h 41m 05.59619s -22:49:26.87471s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 8.260
G magnitude          : 14.652
RP magnitude         : 13.119
BP magnitude         : 18.119
DUPflag             : 0
Distance (au)       : 5.478
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 20.65
Sun-Target sep (deg) : 75.38
Sun-Moon sep (deg)  : 176.21
B (ring opening deg) : -2.65
PA of pole (deg)    : 1.20
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 12.081
C/A sky separation (km) : 47999.1
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
    
```

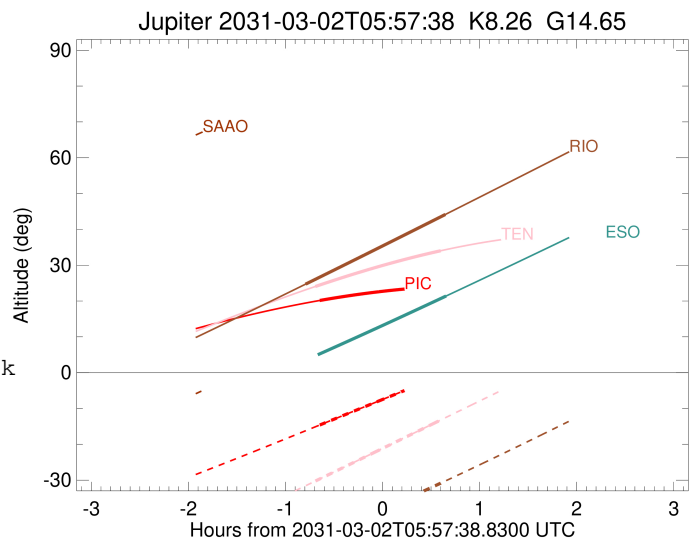
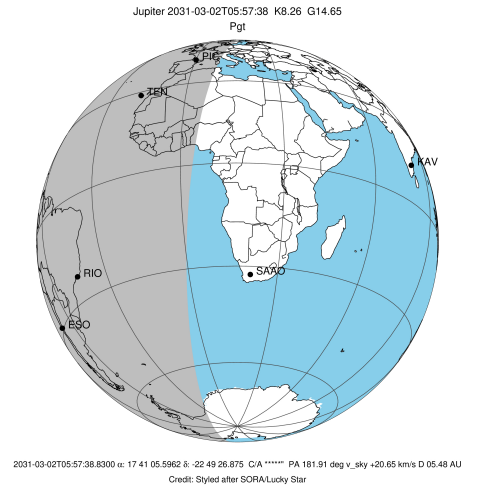


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-02T05:10:08.487	24.72	-47.13	71487.9	40.97	44.68
Jupiter	E	2031-03-02T06:36:32.263	44.17	-30.23	71487.5	43.24	46.96

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-02T05:52:56.160
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        : 4116929258033509760
2Mass ID (if available) : 17410561-2249268
ICRS Star Coord at Epoch: 17h 41m 05.59619s -22:49:26.87471s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 8.260
G magnitude           : 14.652
RP magnitude          : 13.119
BP magnitude          : 18.119
DUPflag              : 0
Distance (au)         : 5.478
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 20.65
Sun-Target sep (deg)  : 75.38
Sun-Moon sep (deg)    : 176.19
B (ring opening deg) : -2.65
PA of pole (deg)      : 1.20
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 11.666
C/A sky separation (km) : 46349.9
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	2031-03-02T05:09:05.667	3.29x	-53.47	71488.2	39.22	42.92
Jupiter	E	2031-03-02T06:36:58.726	21.40	-46.15	71487.8	41.52	45.23