

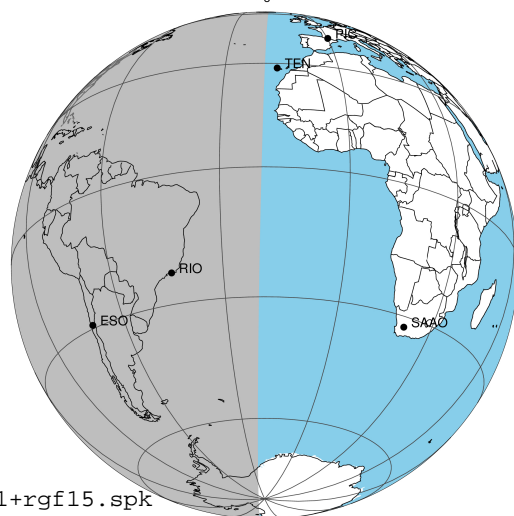
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-03-17T07:30:06.740  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068887677958254720  
 2Mass ID (if available) : 17480258-2252193

Jupiter 2031-03-17T07:30:06 K9.44 G14.60 Pgt

ICRS Star Coord at Epoch: 17h 48m 02.58258s -22:52:19.36276s

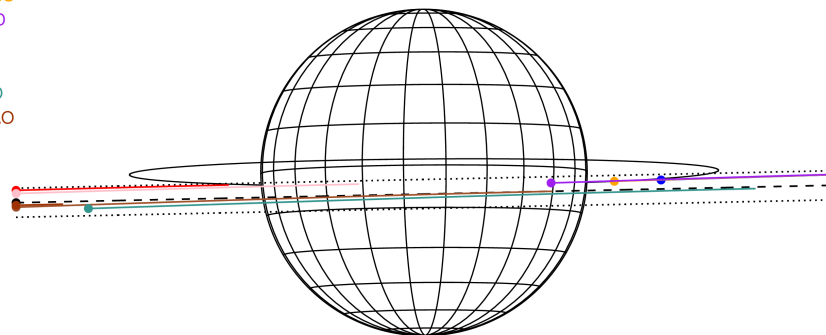
RUWE (>1.4 is poor) : 0.90  
 K magnitude : 9.438  
 G magnitude : 14.595  
 RP magnitude : 13.280  
 BP magnitude : 16.569  
 DUPflag : 0  
 Distance (au) : 5.237  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 13.76  
 Sun-Target sep (deg) : 88.83  
 Sun-Moon sep (deg) : 12.75  
 B (ring opening deg) : -2.63  
 PA of pole (deg) : 0.45  
 Pole direction: RA (deg): 268.05700  
 Dec (deg): 64.49651  
 C/A sky separation (") : 2.481  
 C/A sky separation (km) : 9421.8  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2031-03-17T07:30:06 K9.44 G14.60  
 Pgt



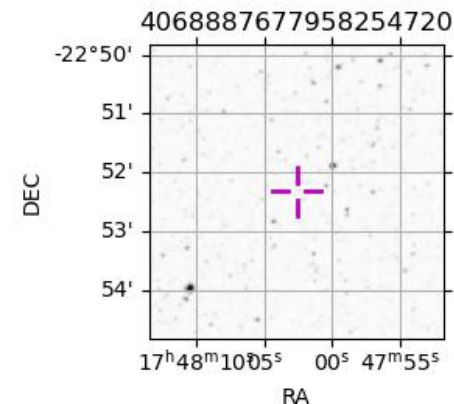
2031-03-17T07:30:06.7400 a: 17 48 02.5826 s: -22 52 19.363 C/A 2.491" PA 1.22 deg v\_sky +13.76 km/s D 05.24 AU  
 Credit: Styled after SORA/Lucky Star

Earth  
 PIC  
 PAL  
 KPNO  
 MCD  
 TEN  
 RIO  
 ESO  
 SAAO



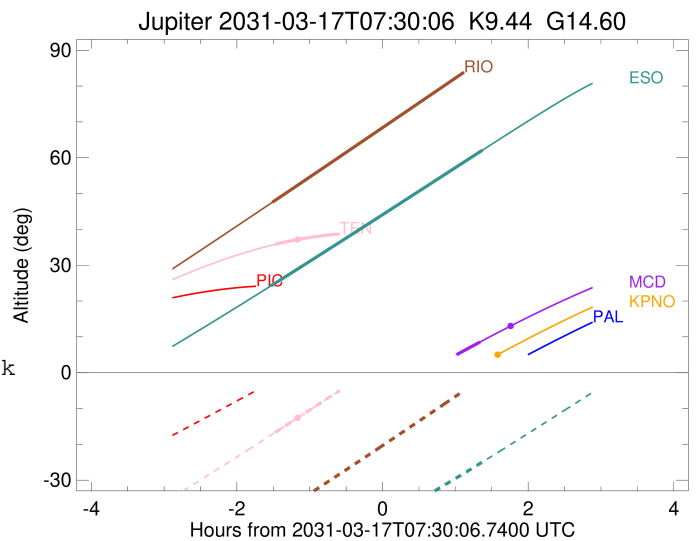
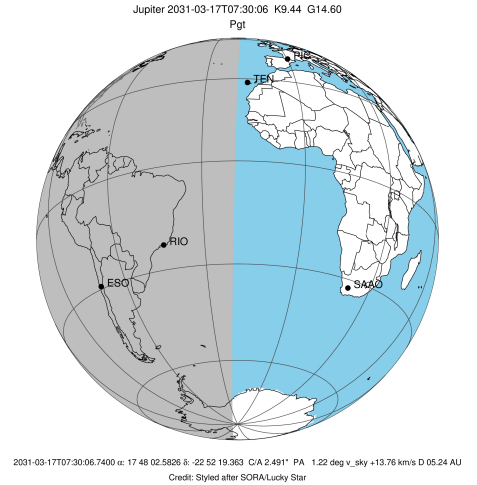
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
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	+	MAR 17 08:50 - MAR 17 08:50	Pne
TEN	Teide Obs./Tenerife	28.3	343.5	+	MAR 17 06:01 - MAR 17 06:01	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	+	MAR 17 05:59 - MAR 17 05:59	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	MAR 17 05:58 - MAR 17 08:52	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



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-17T07:23:29.830
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        : 4068887677958254720
2Mass ID (if available) : 17480258-2252193
ICRS Star Coord at Epoch: 17h 48m 02.58258s -22:52:19.36276s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 9.438
G magnitude           : 14.595
RP magnitude          : 13.280
BP magnitude          : 16.569
DUPflag              : 0
Distance (au)         : 5.237
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 13.76
Sun-Target sep (deg) : 88.83
Sun-Moon sep (deg)   : 13.45
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.45
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 1.682
C/A sky separation (km) : 6389.3
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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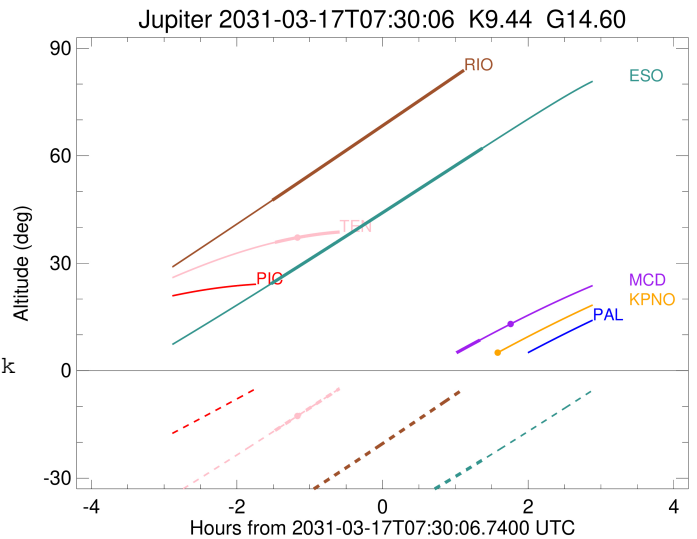
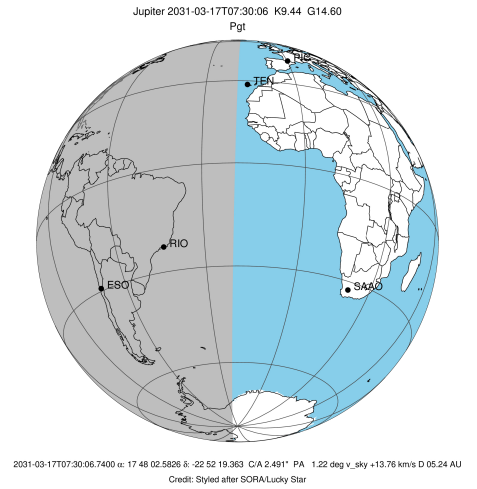


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-17T05:57:40.066	-25.82x	-56.87	71491.9	-6.53	-7.45
Jupiter	E	2031-03-17T08:50:27.374	8.55	-51.54	71492.0	-3.72	-4.25

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-17T07:30:23.770
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       : 4068887677958254720
2Mass ID (if available) : 17480258-2252193
ICRS Star Coord at Epoch: 17h 48m 02.58258s -22:52:19.36276s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 9.438
G magnitude           : 14.595
RP magnitude          : 13.280
BP magnitude          : 16.569
DUPflag              : 0
Distance (au)        : 5.237
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 13.76
Sun-Target sep (deg) : 88.83
Sun-Moon sep (deg)   : 12.71
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.45
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation ("): 1.176
C/A sky separation (km): 4464.7
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
    
```

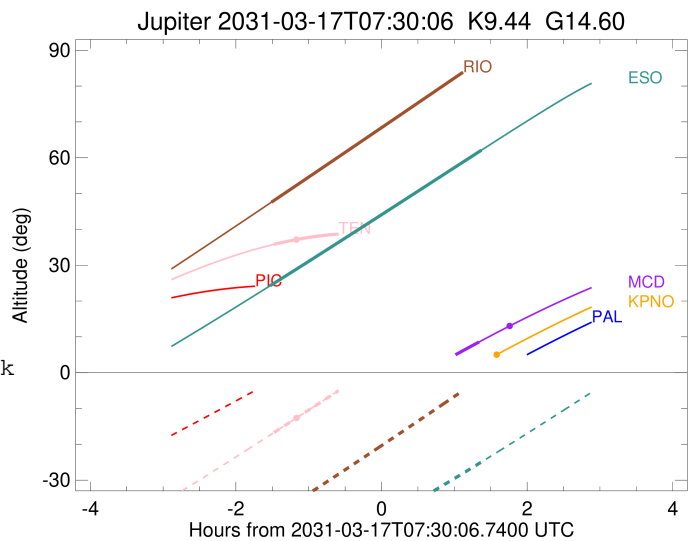
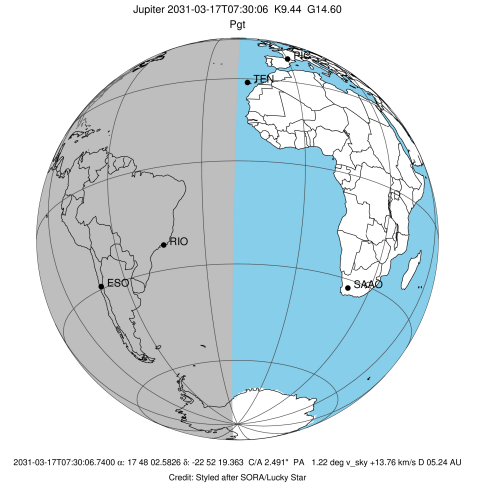


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-17T06:01:28.663	35.80	-16.71	71491.9	-4.47	-5.11
Jupiter	E	2031-03-17T08:59:28.445	33.31	22.27x	71492.0	-2.95	-3.37

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-17T07:27:15.790
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        : 4068887677958254720
2Mass ID (if available) : 17480258-2252193
ICRS Star Coord at Epoch: 17h 48m 02.58258s -22:52:19.36276s
RUWE (>1.4 is poor)  : 0.90
K magnitude           : 9.438
G magnitude           : 14.595
RP magnitude          : 13.280
BP magnitude          : 16.569
DUPflag              : 0
Distance (au)         : 5.237
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 13.76
Sun-Target sep (deg)  : 88.83
Sun-Moon sep (deg)   : 13.32
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.45
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 2.541
C/A sky separation (km) : 9652.6
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
    
```

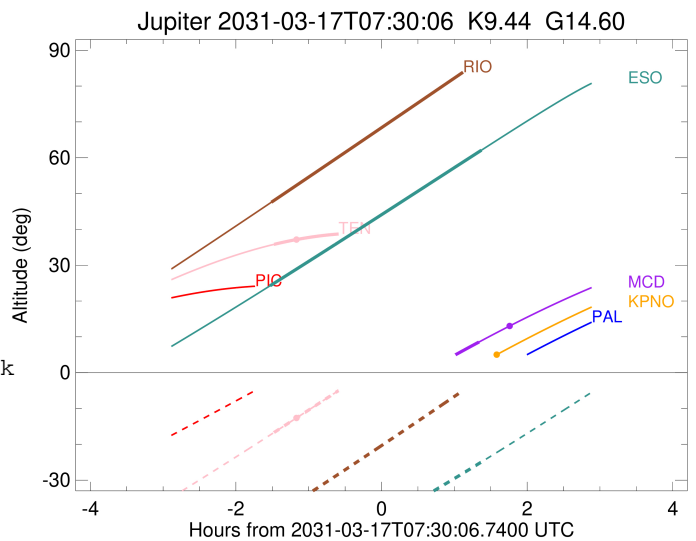
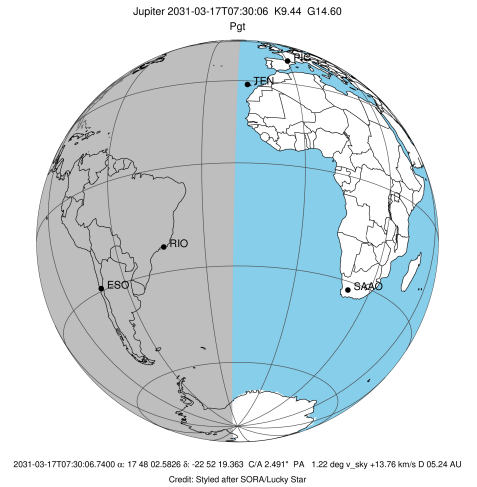


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-17T05:59:22.796	47.57	-40.39	71491.8	-8.96	-10.21
Jupiter	E	2031-03-17T08:55:48.062	88.14	-0.75x	71491.9	-6.79	-7.75

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-17T07:24:56.150
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      : 4068887677958254720
2Mass ID (if available) : 17480258-2252193
ICRS Star Coord at Epoch: 17h 48m 02.58258s -22:52:19.36276s
RUWE (>1.4 is poor) : 0.90
K magnitude          : 9.438
G magnitude          : 14.595
RP magnitude         : 13.280
BP magnitude         : 16.569
DUPflag             : 0
Distance (au)       : 5.237
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 13.76
Sun-Target sep (deg) : 88.83
Sun-Moon sep (deg)  : 13.60
B (ring opening deg) : -2.63
PA of pole (deg)    : 0.45
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (" ) : 2.905
C/A sky separation (km) : 11033.2
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	2031-03-17T05:58:22.327	24.27	-55.54	71491.7	-10.24	-11.67
Jupiter	E	2031-03-17T08:52:28.686	62.10	-24.93	71491.8	-7.63	-8.71