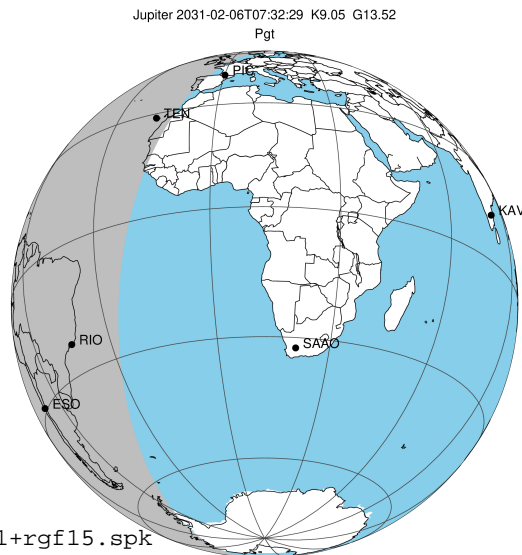


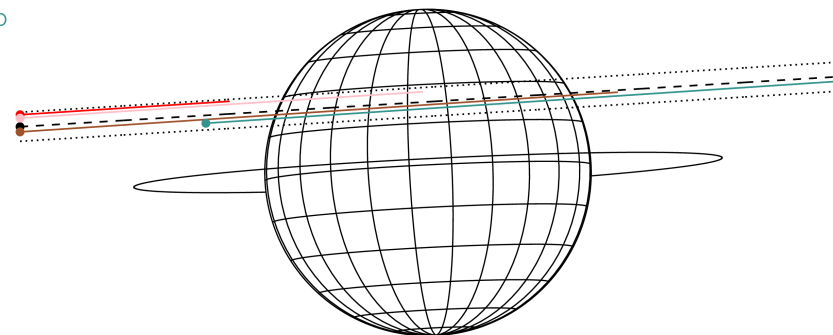
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-02-06T07:32:29.590  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4111731484210559744  
 2Mass ID (if available) : 17253356-2239218

Jupiter 2031-02-06T07:32:29 K9.05 G13.52 Pgt

ICRS Star Coord at Epoch: 17h 25m 33.57362s -22:39:22.05852s  
 RUWE (>1.4 is poor) : 0.93  
 K magnitude : 9.052  
 G magnitude : 13.515  
 RP magnitude : 12.350  
 BP magnitude : 14.955  
 DUPflag : 0  
 Distance (au) : 5.829  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 30.31  
 Sun-Target sep (deg) : 54.81  
 Sun-Moon sep (deg) : 138.83  
 B (ring opening deg) : -2.69  
 PA of pole (deg) : 2.87  
 Pole direction: RA (deg): 268.05703  
 Dec (deg): 64.49651  
 C/A sky separation (") : 7.313  
 C/A sky separation (km) : 30920.3  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk



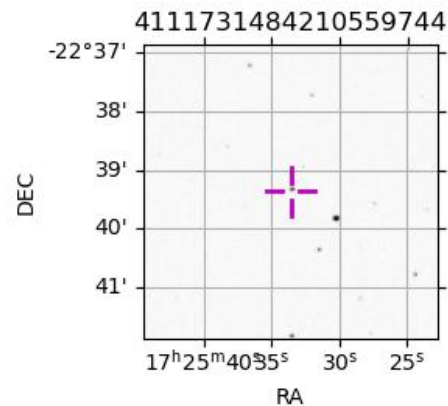
Earth  
 PIC  
 TEN  
 RIO  
 ESO



2031-02-06T07:32:29.5900 ex: 17 25 33.5736 s: -22 39 22.059 C/A 7.304" PA 183.50 deg v\_sky +30.31 km/s D 05.83 AU  
 Credit: Styled after SORA/Lucky Star

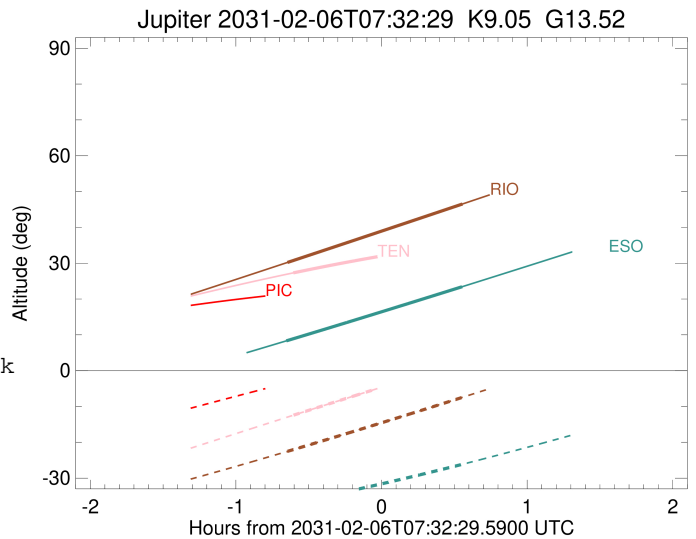
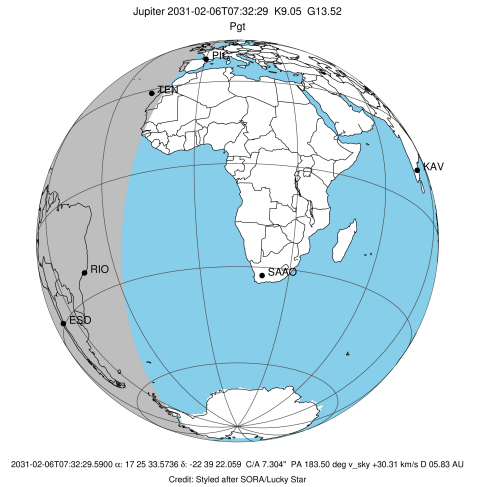
Observable events with sun below -5 deg and altitude above 5 deg

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			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	+	FEB 06 06:56 - FEB 06 06:56	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	+	FEB 06 06:53 - FEB 06 08:05	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	FEB 06 06:53 - FEB 06 08:05	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             : 2031-02-06T07:30:45.920
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        : 4111731484210559744
2Mass ID (if available) : 17253356-2239218
ICRS Star Coord at Epoch: 17h 25m 33.57362s -22:39:22.05852s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 9.052
G magnitude           : 13.515
RP magnitude          : 12.350
BP magnitude          : 14.955
DUPflag              : 0
Distance (au)         : 5.830
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 30.31
Sun-Target sep (deg)  : 54.81
Sun-Moon sep (deg)    : 139.41
B (ring opening deg) : -2.69
PA of pole (deg)      : 2.87
Pole direction: RA (deg): 268.05703
Dec (deg): 64.49651
C/A sky separation (") : 8.376
C/A sky separation (km) : 35415.4
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
    
```

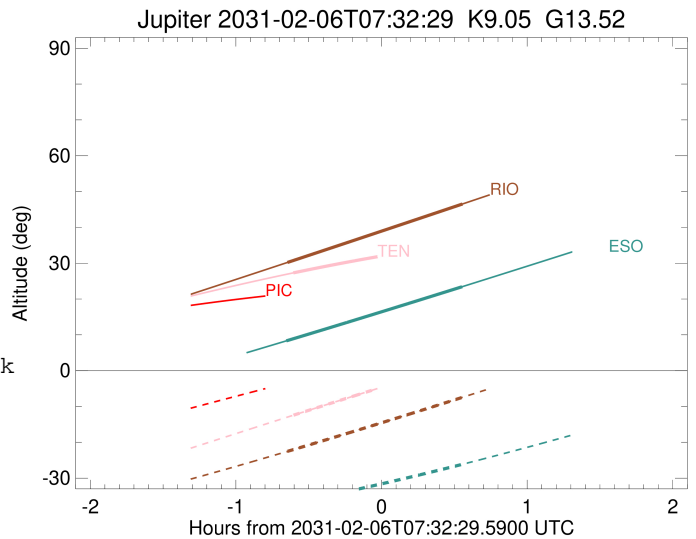
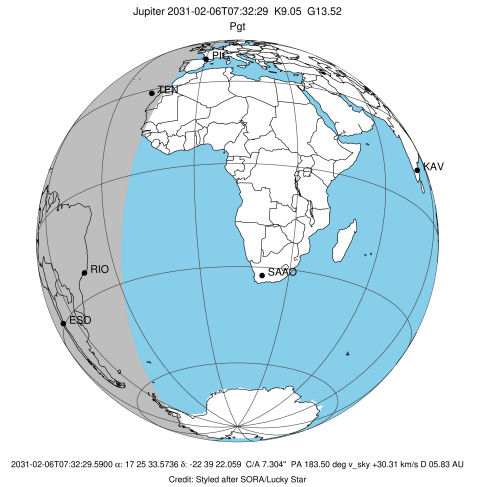


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-06T06:56:14.243	27.31	-12.42	71489.7	28.82	32.12
Jupiter	E	2031-02-06T08:05:20.520	35.38	2.28x	71489.5	30.46	33.85

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-06T07:29:45.360
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      : 4111731484210559744
2Mass ID (if available) : 17253356-2239218
ICRS Star Coord at Epoch: 17h 25m 33.57362s -22:39:22.05852s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 9.052
G magnitude          : 13.515
RP magnitude         : 12.350
BP magnitude         : 14.955
DUPflag             : 0
Distance (au)        : 5.830
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 30.31
Sun-Target sep (deg) : 54.81
Sun-Moon sep (deg)  : 139.74
B (ring opening deg) : -2.69
PA of pole (deg)    : 2.87
Pole direction: RA (deg): 268.05703
Dec (deg): 64.49651
C/A sky separation (") : 7.005
C/A sky separation (km) : 29618.8
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
    
```

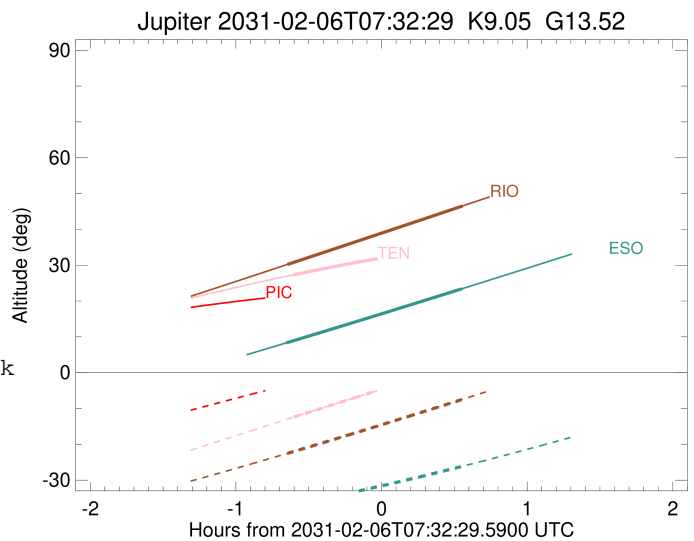
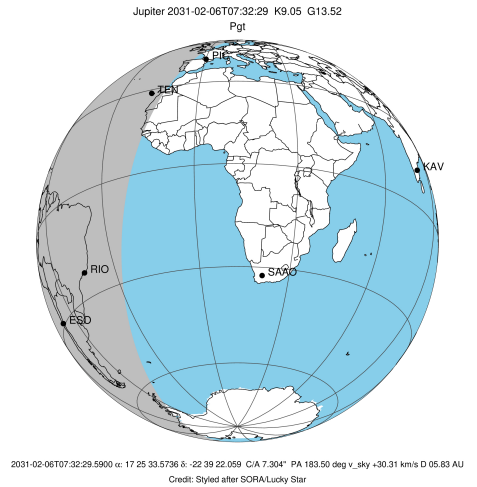


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-06T06:53:44.800	30.21	-22.52	71490.4	23.52	26.42
Jupiter	E	2031-02-06T08:05:50.832	46.52	-7.44	71490.2	25.35	28.41

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2031-02-06T07:29:27.330
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         : 4111731484210559744
2Mass ID (if available) : 17253356-2239218
ICRS Star Coord at Epoch: 17h 25m 33.57362s -22:39:22.05852s
RUWE (>1.4 is poor)  : 0.93
K magnitude             : 9.052
G magnitude             : 13.515
RP magnitude           : 12.350
BP magnitude           : 14.955
DUPflag                : 0
Distance (au)          : 5.830
f0 (km)                : 0.00
g0 (km)                : 0.00
skyplane vel. (km/s)  : 30.31
Sun-Target sep (deg)   : 54.81
Sun-Moon sep (deg)     : 139.61
B (ring opening deg)   : -2.69
PA of pole (deg)       : 2.87
Pole direction: RA (deg): 268.05703
Dec (deg): 64.49651
C/A sky separation (") : 6.615
C/A sky separation (km) : 27969.7
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	2031-02-06T06:53:17.144	8.32	-37.16	71490.6	22.08	24.85
Jupiter	E	2031-02-06T08:05:42.914	23.43	-26.15	71490.4	23.93	26.87