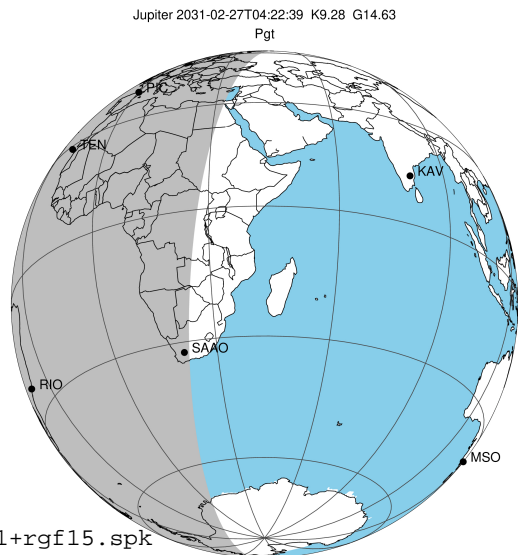


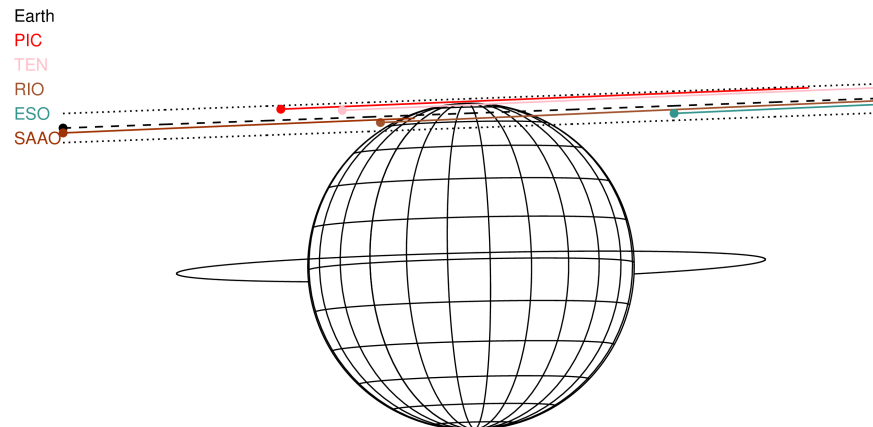
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-02-27T04:22:39.830  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4116750690444683136  
 2Mass ID (if available) : 17392332-2248327

Jupiter 2031-02-27T04:22:39 K9.28 G14.63 Pgt

ICRS Star Coord at Epoch: 17h 39m 23.30288s -22:48:33.01331s  
 RUWE (>1.4 is poor) : 0.92  
 K magnitude : 9.277  
 G magnitude : 14.635  
 RP magnitude : 13.326  
 BP magnitude : 16.540  
 DUPflag : 0  
 Distance (au) : 5.526  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 21.99  
 Sun-Target sep (deg) : 72.69  
 Sun-Moon sep (deg) : 140.72  
 B (ring opening deg) : -2.66  
 PA of pole (deg) : 1.38  
 Pole direction: RA (deg): 268.05701  
 Dec (deg): 64.49651  
 C/A sky separation (") : 16.744  
 C/A sky separation (km) : 67109.6  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

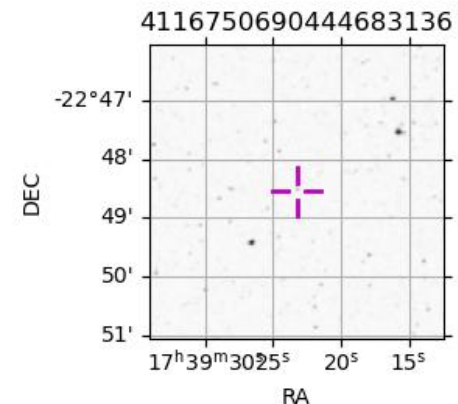


2031-02-27T04:22:39.8300 @: 17 39 23.3029 @: -22 48 33.013 C/A \*\*\*\*\* PA 182.09 deg v\_sky +21.99 km/s D 05.53 AU  
 Credit: Styled after SORA/Lucky Star



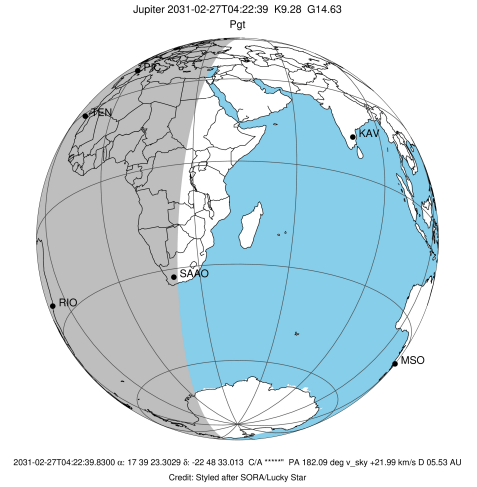
Observable events with sun below -5 deg and altitude above 5 deg

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 27 04:10 - FEB 27 04:26	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	+ +	FEB 27 03:54 - FEB 27 04:40	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	FEB 27 03:59 - FEB 27 03:59	Pin
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn

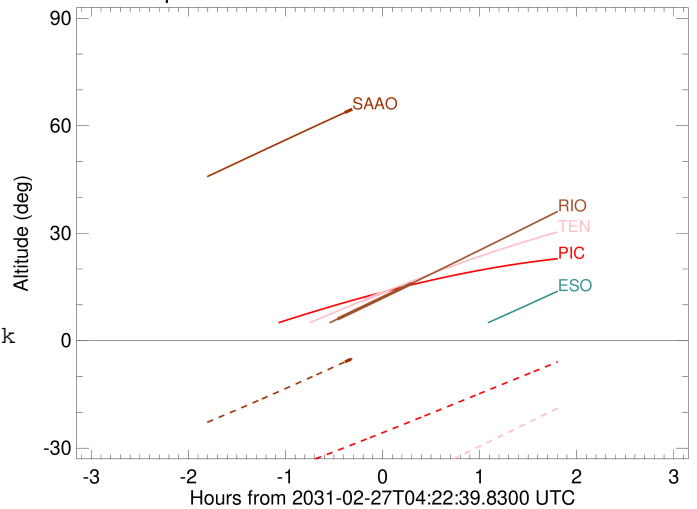


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-02-27T04:18:30.560
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        : 4116750690444683136
2Mass ID (if available) : 17392332-2248327
ICRS Star Coord at Epoch: 17h 39m 23.30288s -22:48:33.01331s
RUWE (>1.4 is poor)  : 0.92
K magnitude           : 9.277
G magnitude           : 14.635
RP magnitude          : 13.326
BP magnitude          : 16.540
DUPflag              : 0
Distance (au)         : 5.526
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 21.99
Sun-Target sep (deg)  : 72.69
Sun-Moon sep (deg)    : 140.32
B (ring opening deg) : -2.66
PA of pole (deg)     : 1.38
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 17.664
C/A sky separation (km) : 70796.2
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
    
```



Jupiter 2031-02-27T04:22:39 K9.28 G14.63

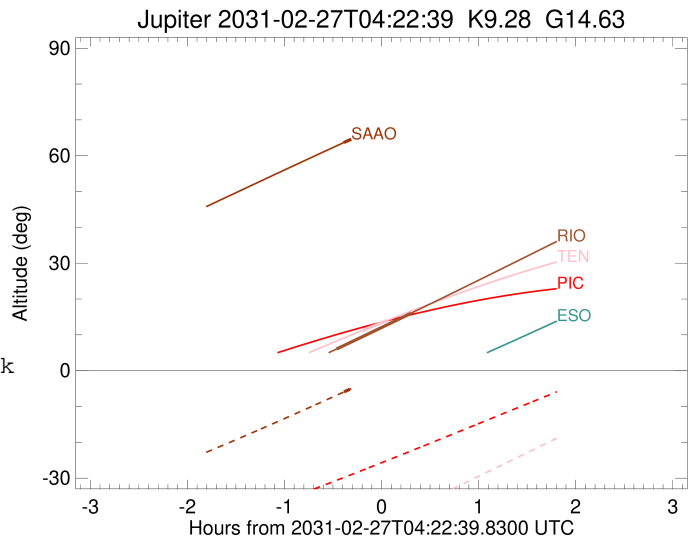
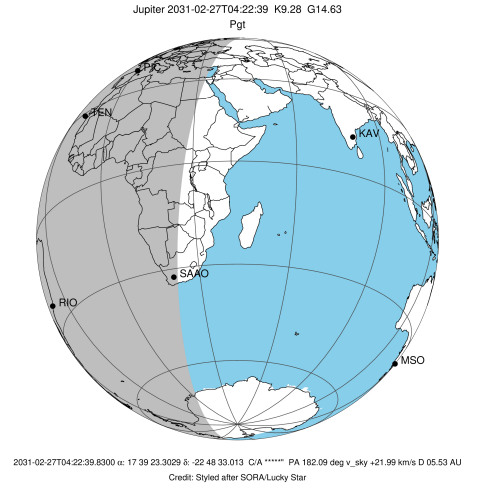


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-27T04:10:57.196	11.26	-44.96	71482.6	80.59	81.69
Jupiter	E	2031-02-27T04:26:04.199	14.01	-41.76	71482.5	82.64	83.51

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-27T04:17:53.950
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     : 4116750690444683136
2Mass ID (if available) : 17392332-2248327
ICRS Star Coord at Epoch: 17h 39m 23.30288s -22:48:33.01331s
RUWE (>1.4 is poor) : 0.92
K magnitude        : 9.277
G magnitude        : 14.635
RP magnitude       : 13.326
BP magnitude       : 16.540
DUPflag           : 0
Distance (au)     : 5.526
f0 (km)           : 0.00
g0 (km)           : 0.00
skyplane vel. (km/s) : 21.99
Sun-Target sep (deg) : 72.69
Sun-Moon sep (deg) : 140.18
B (ring opening deg) : -2.66
PA of pole (deg)   : 1.38
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 16.157
C/A sky separation (km) : 64754.6
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
    
```

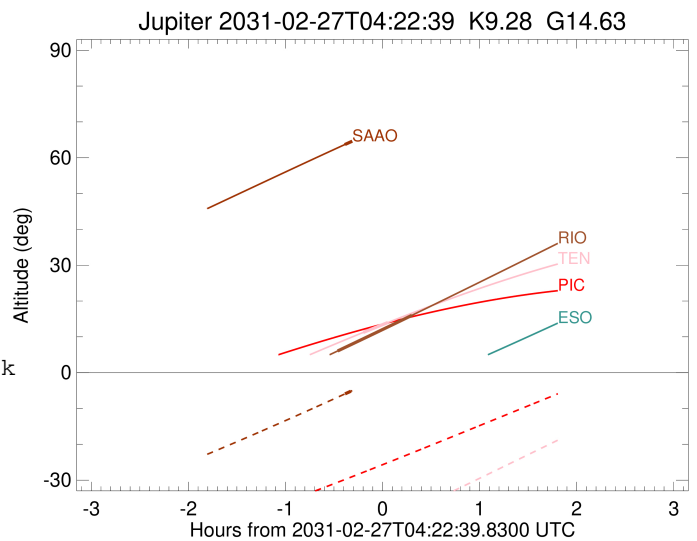
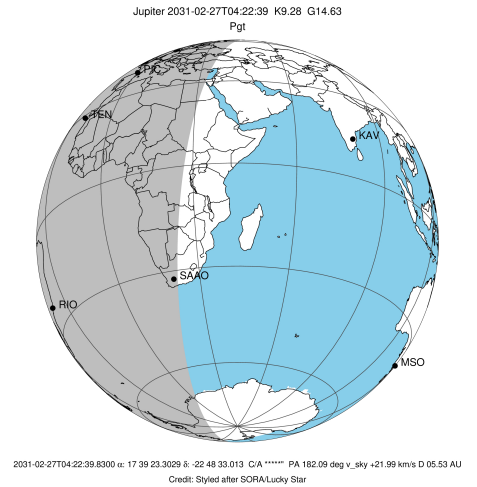


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-27T03:54:58.154	6.06	-56.56	71484.3	63.68	66.46
Jupiter	E	2031-02-27T04:40:52.970	16.01	-51.07	71484.0	65.94	68.53

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2031-02-27T04:20:58.330
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         : 4116750690444683136
2Mass ID (if available) : 17392332-2248327
ICRS Star Coord at Epoch: 17h 39m 23.30288s -22:48:33.01331s
RUWE (>1.4 is poor)  : 0.92
K magnitude            : 9.277
G magnitude            : 14.635
RP magnitude           : 13.326
BP magnitude           : 16.540
DUPflag                : 0
Distance (au)          : 5.526
f0 (km)                : 0.00
g0 (km)                : 0.00
skyplane vel. (km/s)  : 21.99
Sun-Target sep (deg)  : 72.69
Sun-Moon sep (deg)    : 141.03
B (ring opening deg)  : -2.66
PA of pole (deg)      : 1.38
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 16.429
C/A sky separation (km) : 65844.8
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	2031-02-27T03:59:31.787	63.70	-5.92	71483.9	66.04	68.63
Jupiter	E	2031-02-27T04:42:26.180	72.23	2.99x	71483.7	67.81	70.24