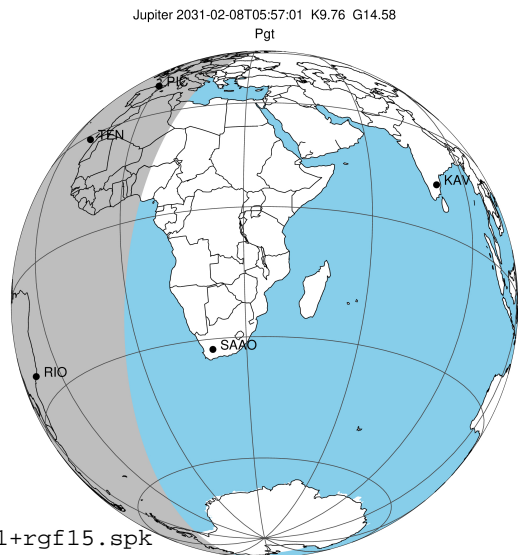


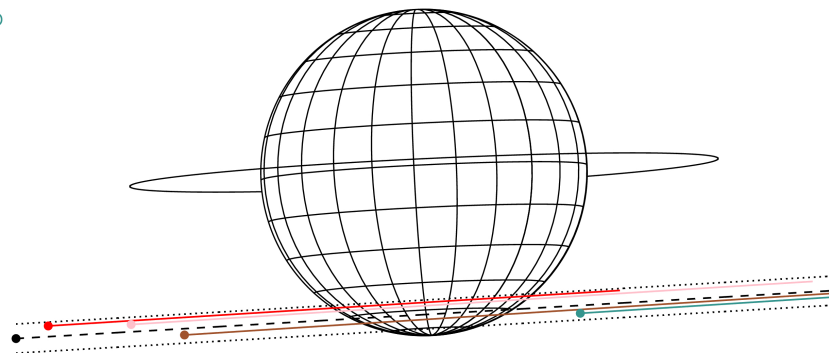
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-02-08T05:57:01.820  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4111700663525206784  
 2Mass ID (if available) : 17265906-2240548

Jupiter 2031-02-08T05:57:01 K9.76 G14.58 Pgt

ICRS Star Coord at Epoch: 17h 26m 59.05855s -22:40:55.07189s  
 RUWE (>1.4 is poor) : 1.00  
 K magnitude : 9.760  
 G magnitude : 14.575  
 RP magnitude : 13.366  
 BP magnitude : 16.181  
 DUPflag : 0  
 Distance (au) : 5.803  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 29.61  
 Sun-Target sep (deg) : 56.44  
 Sun-Moon sep (deg) : 115.30  
 B (ring opening deg) : -2.68  
 PA of pole (deg) : 2.72  
 Pole direction: RA (deg): 268.05703  
 Dec (deg): 64.49651  
 C/A sky separation (") : 14.765  
 C/A sky separation (km) : 62145.0  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp



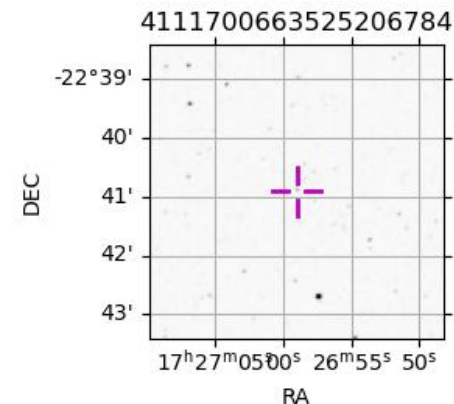
Earth  
 PIC  
 TEN  
 RIO  
 ESO



2031-02-08T05:57:01.8200 α: 17 26 59.0586 δ: -22 40 55.072 C/A \*\*\*\*\* PA 3.36 deg v\_sky +29.61 km/s D 05.80 AU  
 Credit: Styled after SORA/Lucky Star

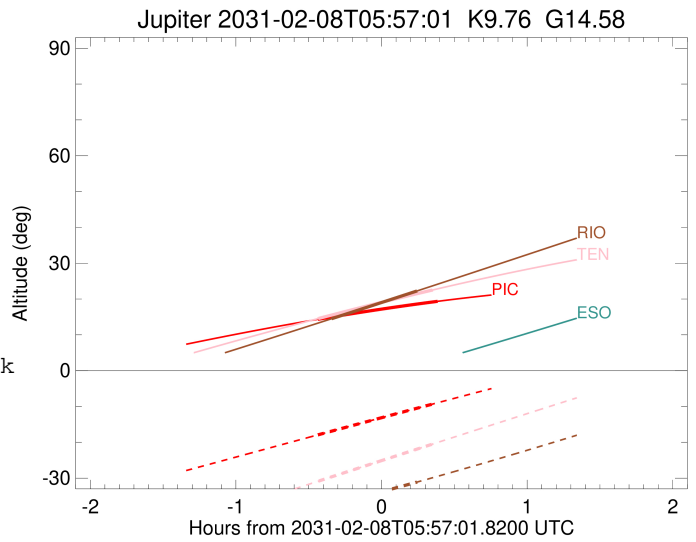
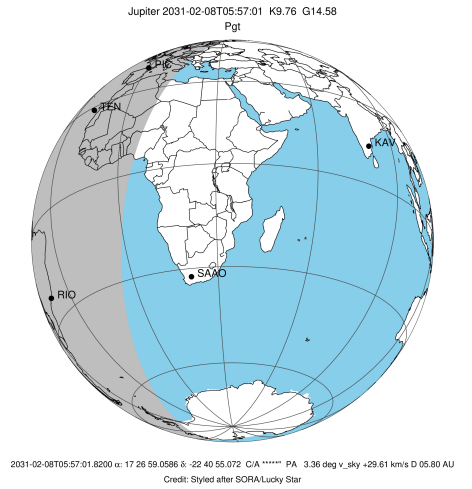
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	FEB 08 05:30 - FEB 08 06:20	Pie
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 08 05:31 - FEB 08 06:18	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 08 05:36 - FEB 08 06:11	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			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-08T05:55:26.940
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      : 4111700663525206784
2Mass ID (if available) : 17265906-2240548
ICRS Star Coord at Epoch: 17h 26m 59.05855s -22:40:55.07189s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 9.760
G magnitude          : 14.575
RP magnitude         : 13.366
BP magnitude         : 16.181
DUPflag             : 0
Distance (au)       : 5.803
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 29.61
Sun-Target sep (deg) : 56.44
Sun-Moon sep (deg)  : 115.69
B (ring opening deg) : -2.68
PA of pole (deg)    : 2.72
Pole direction: RA (deg): 268.05703
Dec (deg): 64.49651
C/A sky separation (" ) : 13.503
C/A sky separation (km) : 56834.7
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
    
```

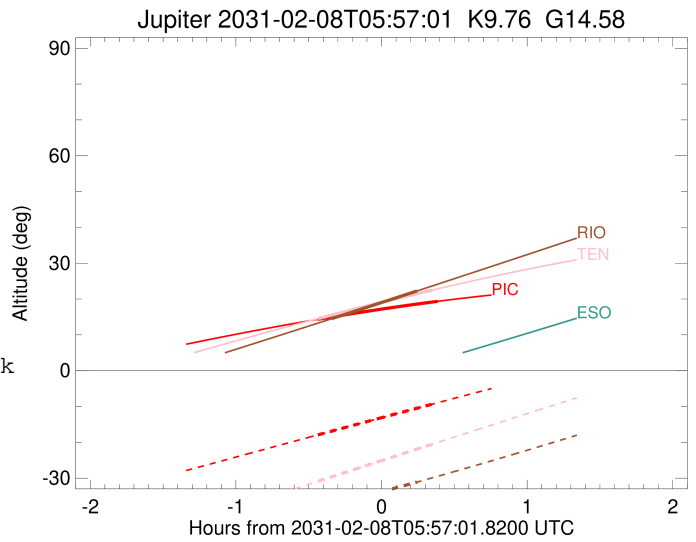
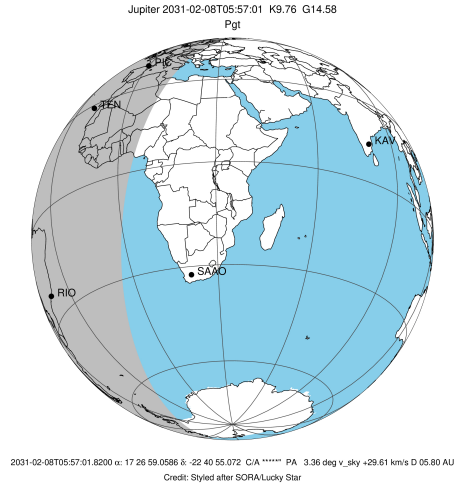


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-08T05:30:50.123	14.34	-17.92	71485.6	-53.41	-56.86
Jupiter	E	2031-02-08T06:20:05.215	19.35	-8.97	71485.9	-51.77	-55.29

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-02-08T05:54:34.190
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        : 4111700663525206784
2Mass ID (if available) : 17265906-2240548
ICRS Star Coord at Epoch: 17h 26m 59.05855s -22:40:55.07189s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 9.760
G magnitude           : 14.575
RP magnitude          : 13.366
BP magnitude          : 16.181
DUPflag              : 0
Distance (au)         : 5.803
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 29.61
Sun-Target sep (deg) : 56.44
Sun-Moon sep (deg)   : 115.83
B (ring opening deg) : -2.68
PA of pole (deg)     : 2.72
Pole direction: RA (deg): 268.05703
Dec (deg): 64.49651
C/A sky separation (") : 13.847
C/A sky separation (km) : 58284.9
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
    
```

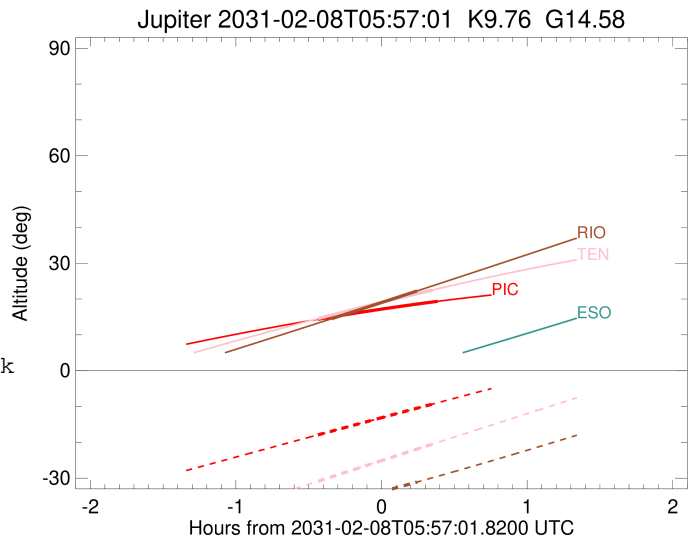
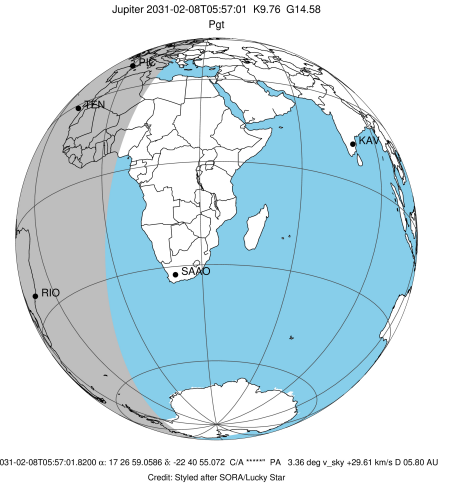


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-08T05:31:06.113	14.57	-30.82	71485.3	-55.45	-58.80
Jupiter	E	2031-02-08T06:18:04.201	22.51	-20.49	71485.6	-53.63	-57.07

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-08T05:54:03.070
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      : 4111700663525206784
2Mass ID (if available) : 17265906-2240548
ICRS Star Coord at Epoch: 17h 26m 59.05855s -22:40:55.07189s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 9.760
G magnitude          : 14.575
RP magnitude         : 13.366
BP magnitude         : 16.181
DUPflag             : 0
Distance (au)       : 5.803
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 29.61
Sun-Target sep (deg) : 56.44
Sun-Moon sep (deg)  : 115.94
B (ring opening deg) : -2.68
PA of pole (deg)    : 2.72
Pole direction: RA (deg): 268.05703
Dec (deg): 64.49651
C/A sky separation (" ) : 15.275
C/A sky separation (km) : 64295.3
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	2031-02-08T05:36:26.108	14.49	-37.41	71483.9	-64.92	-67.60
Jupiter	E	2031-02-08T06:11:41.376	22.26	-31.09	71484.2	-62.99	-65.83