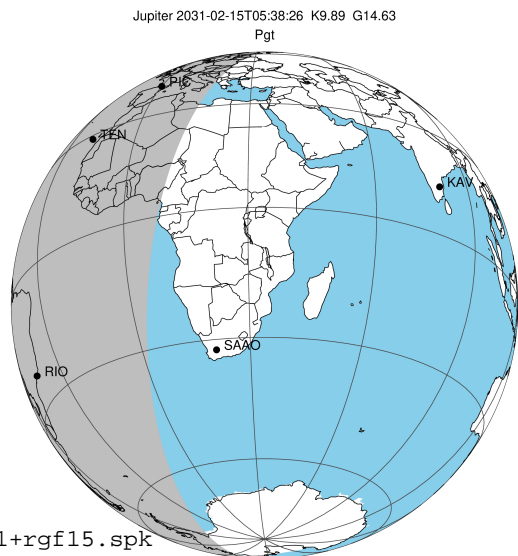


target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-02-15T05:38:26.380  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4117449842384082560  
 2Mass ID (if available) : 17315451-2244339

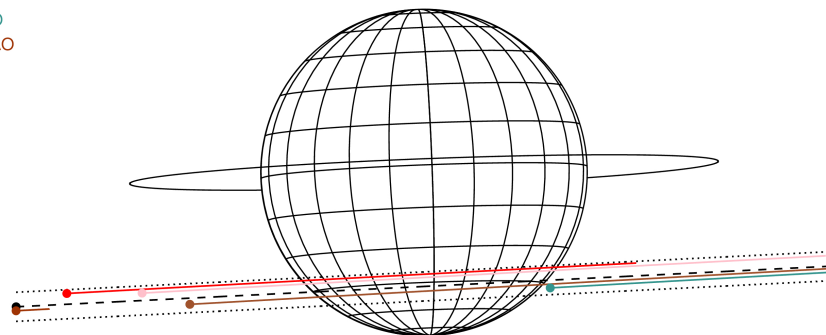
Jupiter 2031-02-15T05:38:26 K9.89 G14.63 Pgt

ICRS Star Coord at Epoch: 17h 31m 54.51143s -22:44:33.99669s  
 RUWE (>1.4 is poor) : 0.93  
 K magnitude : 9.889  
 G magnitude : 14.625  
 RP magnitude : 13.413  
 BP magnitude : 16.235  
 DUPflag : 0  
 Distance (au) : 5.705  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 26.97  
 Sun-Target sep (deg) : 62.37  
 Sun-Moon sep (deg) : 23.98  
 B (ring opening deg) : -2.67  
 PA of pole (deg) : 2.19  
 Pole direction: RA (deg): 268.05702  
 Dec (deg): 64.49651  
 C/A sky separation (") : 12.049  
 C/A sky separation (km) : 49858.8  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp



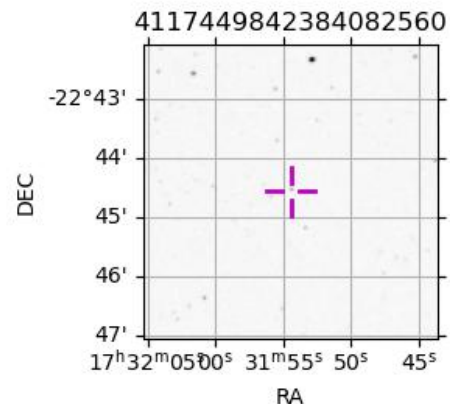
2031-02-15T05:38:26.3800 α: 17 31 54.5114 δ: -22 44 33.997 C/A \*\*\*\*\* PA 2.85 deg v\_sky +26.97 km/s D 05.71 AU  
 Credit: Styled after SORA/Lucky Star

Earth  
 PIC  
 TEN  
 RIO  
 ESO  
 SAAO



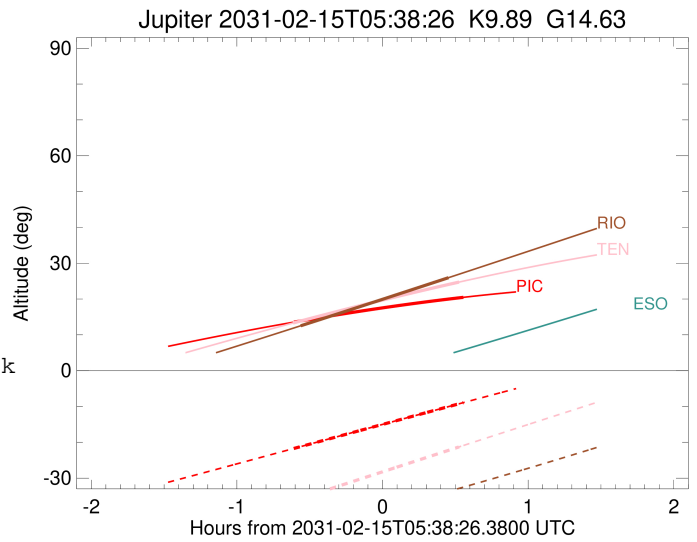
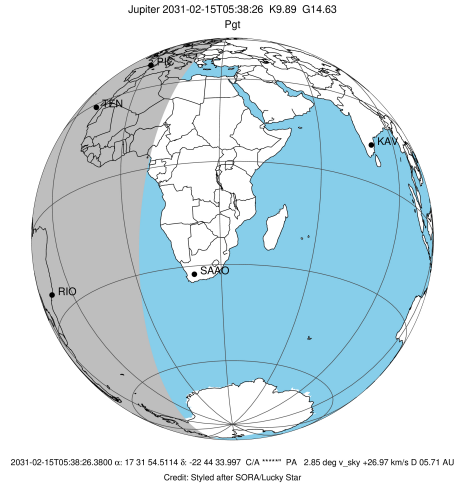
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	FEB 15 05:01 - FEB 15 06:11	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 15 05:01 - FEB 15 06:09	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 15 05:04 - FEB 15 06:05	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             : 2031-02-15T05:36:45.200
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        : 4117449842384082560
2Mass ID (if available) : 17315451-2244339
ICRS Star Coord at Epoch: 17h 31m 54.51143s -22:44:33.99669s
RUWE (>1.4 is poor)  : 0.93
K magnitude           : 9.889
G magnitude           : 14.625
RP magnitude          : 13.413
BP magnitude          : 16.235
DUPflag              : 0
Distance (au)         : 5.705
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 26.97
Sun-Target sep (deg)  : 62.37
Sun-Moon sep (deg)    : 23.74
B (ring opening deg)  : -2.67
PA of pole (deg)      : 2.19
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 10.754
C/A sky separation (km) : 44499.8
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
    
```

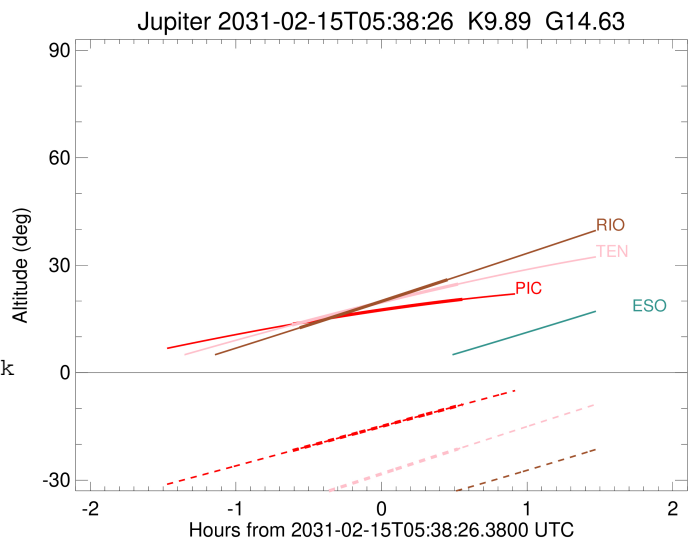
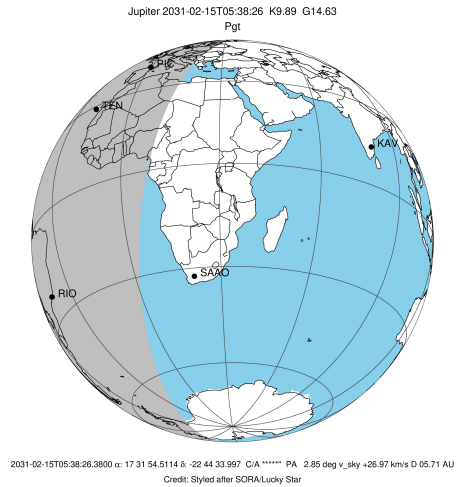


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-15T05:01:51.226	13.54	-21.72	71488.1	-39.32	-43.02
Jupiter	E	2031-02-15T06:11:42.376	20.46	-8.93	71488.4	-37.61	-41.28

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-15T05:35:46.090
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     : 4117449842384082560
2Mass ID (if available) : 17315451-2244339
ICRS Star Coord at Epoch: 17h 31m 54.51143s -22:44:33.99669s
RUWE (>1.4 is poor) : 0.93
K magnitude         : 9.889
G magnitude         : 14.625
RP magnitude        : 13.413
BP magnitude        : 16.235
DUPflag            : 0
Distance (au)      : 5.705
f0 (km)            : 0.00
g0 (km)            : 0.00
skyplane vel. (km/s) : 26.97
Sun-Target sep (deg) : 62.37
Sun-Moon sep (deg)  : 23.51
B (ring opening deg) : -2.67
PA of pole (deg)    : 2.19
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 11.098
C/A sky separation (km) : 45924.7
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
    
```

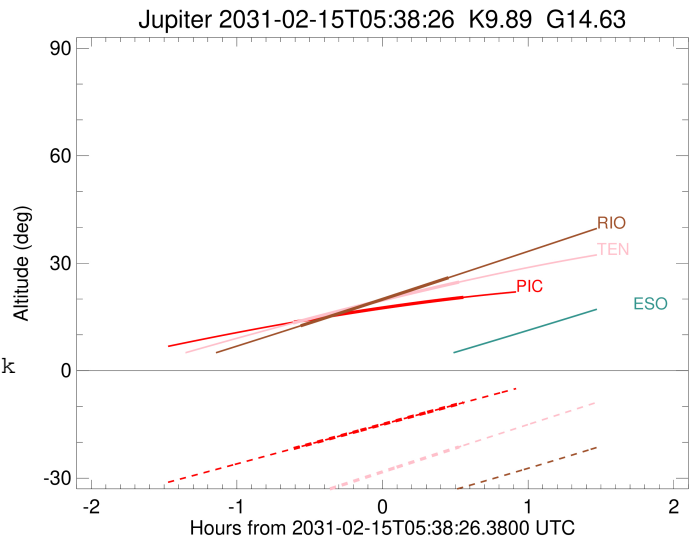
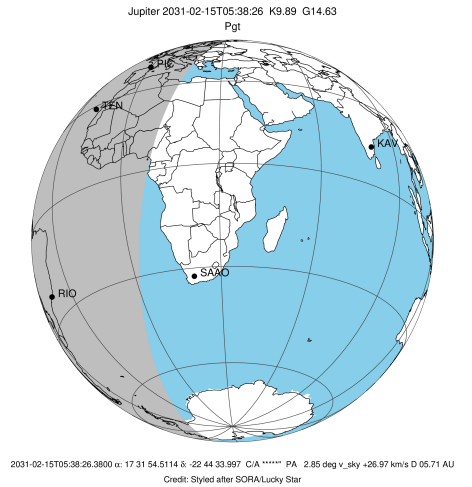


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-15T05:01:38.361	13.31	-36.34	71487.8	-40.89	-44.60
Jupiter	E	2031-02-15T06:09:58.313	24.72	-21.28	71488.1	-38.98	-42.67

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-15T05:35:08.510
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     : 4117449842384082560
2Mass ID (if available) : 17315451-2244339
ICRS Star Coord at Epoch: 17h 31m 54.51143s -22:44:33.99669s
RUWE (>1.4 is poor) : 0.93
K magnitude        : 9.889
G magnitude        : 14.625
RP magnitude       : 13.413
BP magnitude       : 16.235
DUPflag           : 0
Distance (au)     : 5.705
f0 (km)           : 0.00
g0 (km)           : 0.00
skyplane vel. (km/s) : 26.97
Sun-Target sep (deg) : 62.37
Sun-Moon sep (deg) : 23.31
B (ring opening deg) : -2.67
PA of pole (deg)   : 2.19
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 12.547
C/A sky separation (km) : 51920.1
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	2031-02-15T05:04:43.295	12.52	-44.27	71486.7	-47.53	-51.19
Jupiter	E	2031-02-15T06:05:38.145	25.95	-33.68	71487.0	-45.50	-49.19