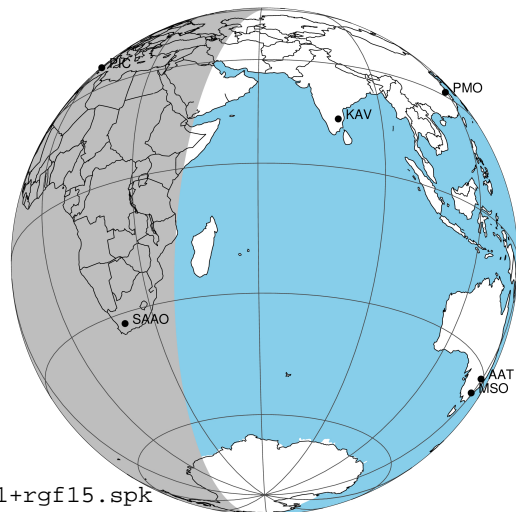


target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-02-23T03:21:28.700  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4116745051074898304  
 2Mass ID (if available) : 17370005-2247425

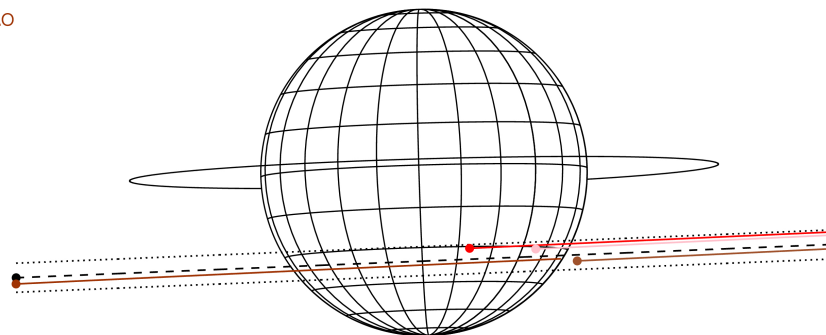
Jupiter 2031-02-23T03:21:28 K9.79 G14.97 Pgt

ICRS Star Coord at Epoch: 17h 37m 00.04411s -22:47:42.79263s  
 RUWE (>1.4 is poor) : 0.95  
 K magnitude : 9.786  
 G magnitude : 14.969  
 RP magnitude : 13.653  
 BP magnitude : 16.982  
 DUPflag : 0  
 Distance (au) : 5.588  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 23.73  
 Sun-Target sep (deg) : 69.17  
 Sun-Moon sep (deg) : 88.57  
 B (ring opening deg) : -2.66  
 PA of pole (deg) : 1.64  
 Pole direction: RA (deg): 268.05702  
 Dec (deg): 64.49651  
 C/A sky separation (") : 9.568  
 C/A sky separation (km) : 38777.3  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk



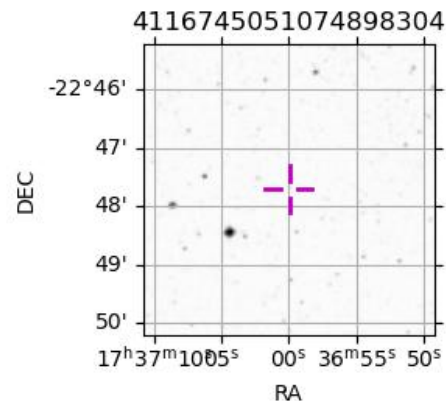
2031-02-23T03:21:28.7000 a: 17 37 00.0441 s: -22 47 42.793 C/A 9.578 PA 2.34 deg v\_sky +23.73 km/s D 05.59 AU  
 Credit: Styled after SORA/Lucky Star

Earth  
 PIC  
 TEN  
 RIO  
 SAAO



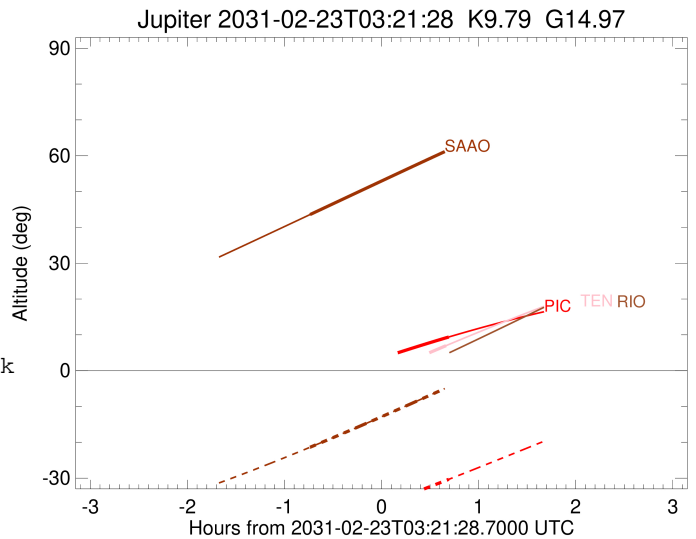
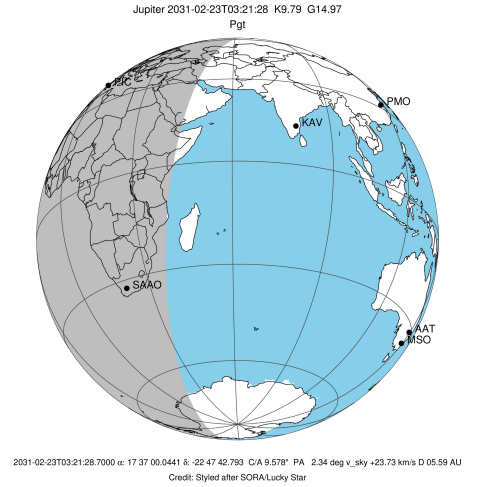
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	FEB 23 04:03 - FEB 23 04:03	Pne
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 23 04:01 - FEB 23 04:01	Pne
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			Pnn
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 23 02:37 - FEB 23 02:37	Pin
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-02-23T03:18:34.430
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       : 4116745051074898304
2Mass ID (if available) : 17370005-2247425
ICRS Star Coord at Epoch: 17h 37m 00.04411s -22:47:42.79263s
RUWE (>1.4 is poor) : 0.95
K magnitude           : 9.786
G magnitude           : 14.969
RP magnitude          : 13.653
BP magnitude          : 16.982
DUPflag              : 0
Distance (au)        : 5.588
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 23.73
Sun-Target sep (deg) : 69.17
Sun-Moon sep (deg)   : 88.64
B (ring opening deg) : -2.66
PA of pole (deg)     : 1.64
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 8.414
C/A sky separation (km) : 34101.3
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
    
```

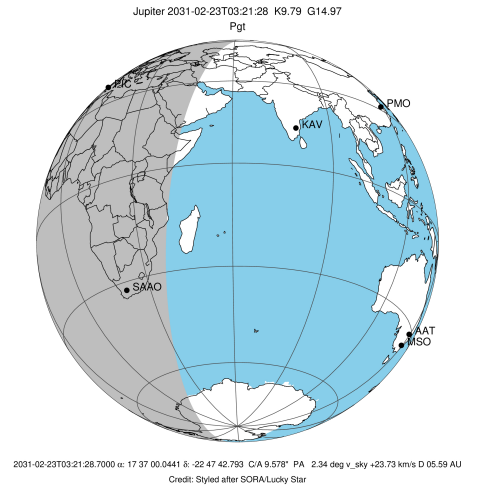


x: target alt < 5.0 deg or sun > -5.0 deg

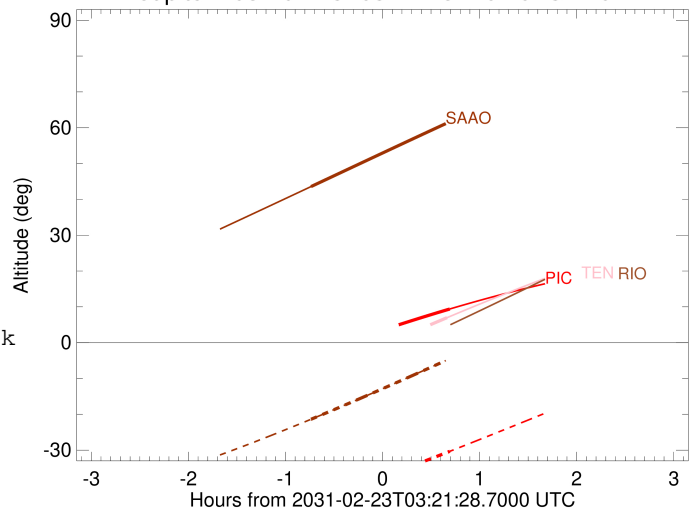
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-23T02:34:14.108	-3.88x	-45.00	71489.7	-29.46	-32.80
Jupiter	E	2031-02-23T04:03:03.028	9.40	-30.33	71489.9	-27.48	-30.69

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-02-23T03:17:41.430
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        : 4116745051074898304
2Mass ID (if available) : 17370005-2247425
ICRS Star Coord at Epoch: 17h 37m 00.04411s -22:47:42.79263s
RUWE (>1.4 is poor)  : 0.95
K magnitude           : 9.786
G magnitude           : 14.969
RP magnitude          : 13.653
BP magnitude          : 16.982
DUPflag              : 0
Distance (au)         : 5.588
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 23.73
Sun-Target sep (deg)  : 69.17
Sun-Moon sep (deg)    : 88.57
B (ring opening deg) : -2.66
PA of pole (deg)     : 1.64
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 8.833
C/A sky separation (km) : 35798.8
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
    
```



Jupiter 2031-02-23T03:21:28 K9.79 G14.97

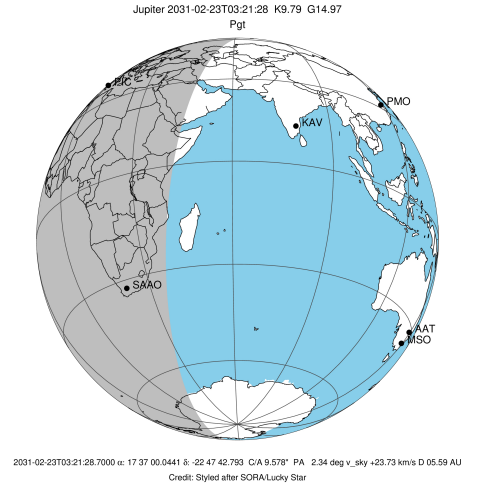


x: target alt < 5.0 deg or sun > -5.0 deg

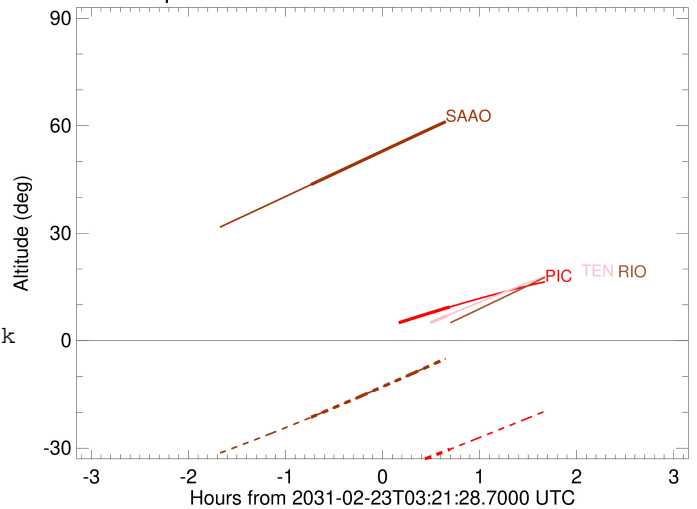
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-23T02:34:11.262	-10.42x	-64.71	71489.4	-31.10	-34.53
Jupiter	E	2031-02-23T04:01:21.590	6.98	-47.89	71489.7	-28.94	-32.25

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-02-23T03:19:09.430
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        : 4116745051074898304
2Mass ID (if available) : 17370005-2247425
ICRS Star Coord at Epoch: 17h 37m 00.04411s -22:47:42.79263s
RUWE (>1.4 is poor)  : 0.95
K magnitude           : 9.786
G magnitude           : 14.969
RP magnitude          : 13.653
BP magnitude          : 16.982
DUPflag              : 0
Distance (au)         : 5.588
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : 23.73
Sun-Target sep (deg)  : 69.17
Sun-Moon sep (deg)    : 89.35
B (ring opening deg)  : -2.66
PA of pole (deg)      : 1.64
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 9.985
C/A sky separation (km) : 40470.3
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
    
```



Jupiter 2031-02-23T03:21:28 K9.79 G14.97



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	2031-02-23T02:37:19.663	43.57	-21.38	71488.7	-35.43	-39.04
Jupiter	E	2031-02-23T04:01:05.811	61.25	-4.89x	71489.1	-33.49	-37.04