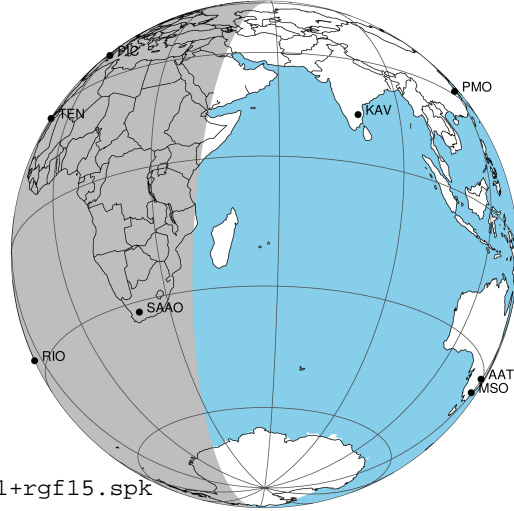


target : Jupiter  
target radius (km) : 71492.00  
C/A epoch : 2031-02-28T03:24:11.320  
Event type : Pgt  
: Jupiter occs: geocentric, topocentric  
: Not a ringed target  
Gaia source ID : 4116568854344108160  
2Mass ID (if available) : 17395587-2249049

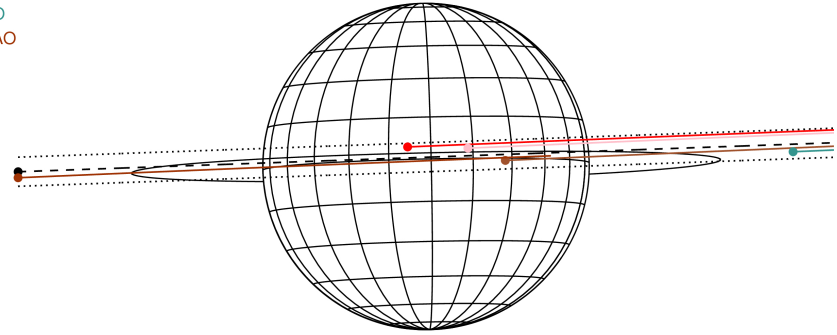
Jupiter 2031-02-28T03:24:11 K9.79 G11.59 Pgt

ICRS Star Coord at Epoch: 17h 39m 55.87090s -22:49:04.98626s  
RUWE (>1.4 is poor) : 11.53  
K magnitude : 9.788  
G magnitude : 11.590  
RP magnitude : 10.955  
BP magnitude : 11.998  
DUPflag : 0  
Distance (au) : 5.511  
f0 (km) : 0.00  
g0 (km) : 0.00  
skyplane vel. (km/s) : 21.58  
Sun-Target sep (deg) : 73.53  
Sun-Moon sep (deg) : 152.28  
B (ring opening deg) : -2.65  
PA of pole (deg) : 1.32  
Pole direction: RA (deg): 268.05701  
Dec (deg): 64.49651  
C/A sky separation (" ) : 1.015  
C/A sky separation (km) : 4056.0  
NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
URKALLv1.spk  
naif0012.tls

2031-02-28T03:24:11.3200 ct: 17.39 55.8709 s: -22.49 04.986 C/A 1.005" PA 182.03 deg v\_sky +21.58 km/s D 05.51 AU  
Credit: Styled after SORA/Lucky Star

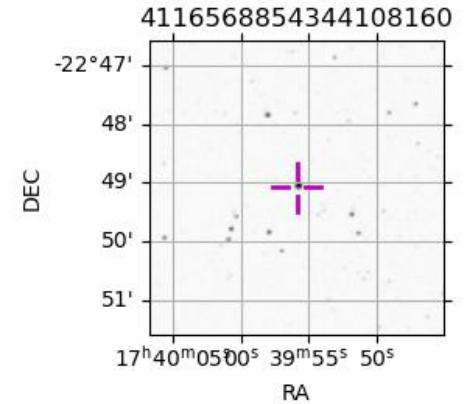


Earth  
PIC  
TEN  
RIO  
ESO  
SAAO



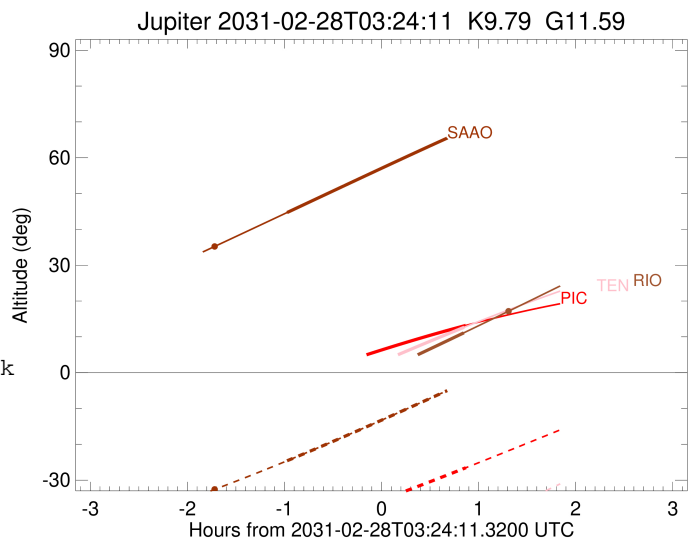
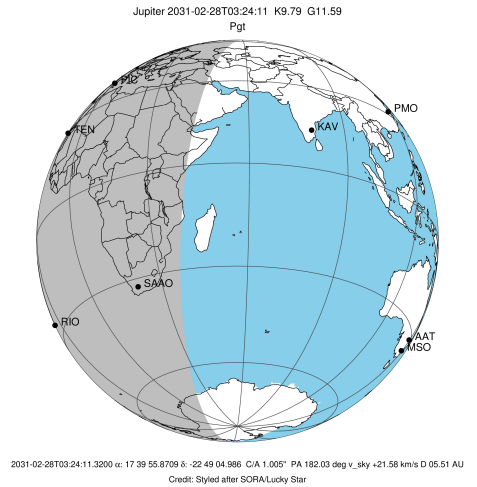
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+	FEB 28 04:16 - FEB 28 04:16	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 28 04:15 - FEB 28 04:15	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	+	FEB 28 04:14 - FEB 28 04:14	Pne
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 28 02:25 - FEB 28 02:25	Pin
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-28T03:20:59.240
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      : 4116568854344108160
2Mass ID (if available) : 17395587-2249049
ICRS Star Coord at Epoch: 17h 39m 55.87090s -22:49:04.98626s
RUWE (>1.4 is poor) : 11.53
K magnitude          : 9.788
G magnitude          : 11.590
RP magnitude         : 10.955
BP magnitude         : 11.998
DUPflag             : 0
Distance (au)       : 5.511
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 21.58
Sun-Target sep (deg) : 73.53
Sun-Moon sep (deg)  : 151.83
B (ring opening deg) : -2.65
PA of pole (deg)    : 1.32
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 2.225
C/A sky separation (km) : 8892.9
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
    
```

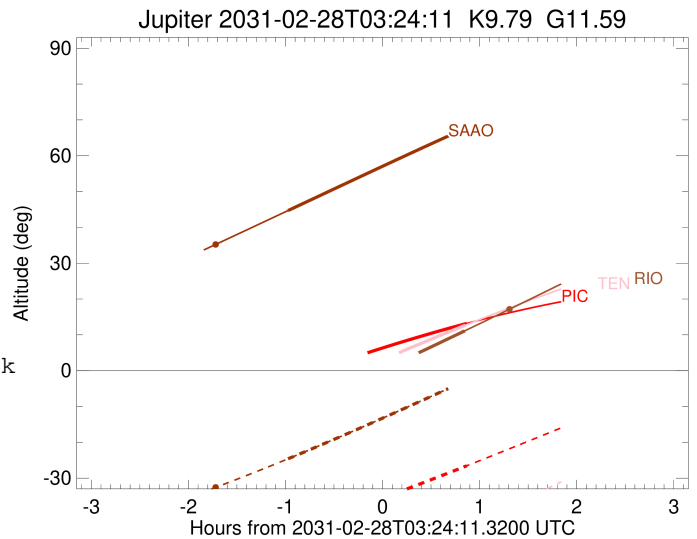
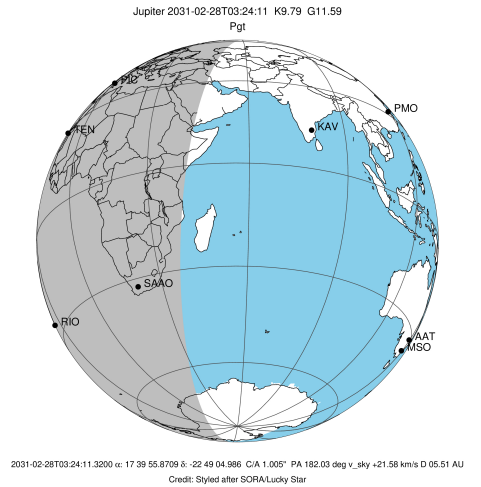


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-28T02:25:50.789	-2.54x	-44.59	71491.9	6.10	6.96
Jupiter	E	2031-02-28T04:16:21.487	13.19	-26.53	71491.8	8.14	9.29

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-28T03:19:53.200
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      : 4116568854344108160
2Mass ID (if available) : 17395587-2249049
ICRS Star Coord at Epoch: 17h 39m 55.87090s -22:49:04.98626s
RUWE (>1.4 is poor) : 11.53
K magnitude          : 9.788
G magnitude          : 11.590
RP magnitude         : 10.955
BP magnitude         : 11.998
DUPflag             : 0
Distance (au)        : 5.511
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 21.58
Sun-Target sep (deg) : 73.53
Sun-Moon sep (deg)  : 151.62
B (ring opening deg) : -2.65
PA of pole (deg)    : 1.32
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 1.812
C/A sky separation (km) : 7244.0
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
    
```

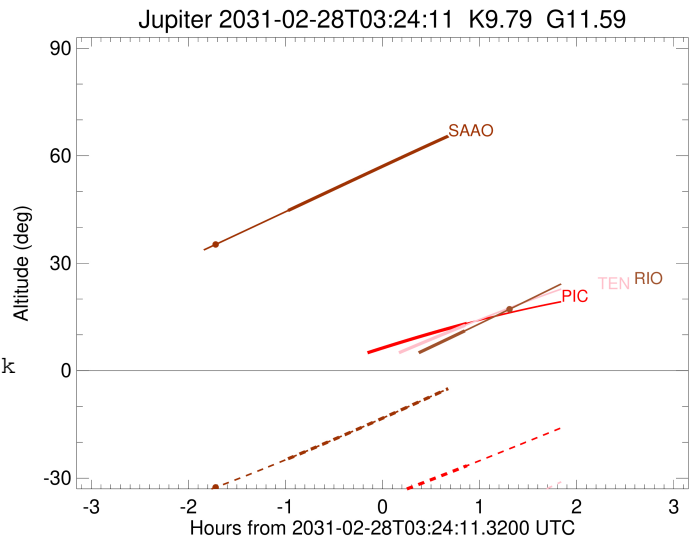
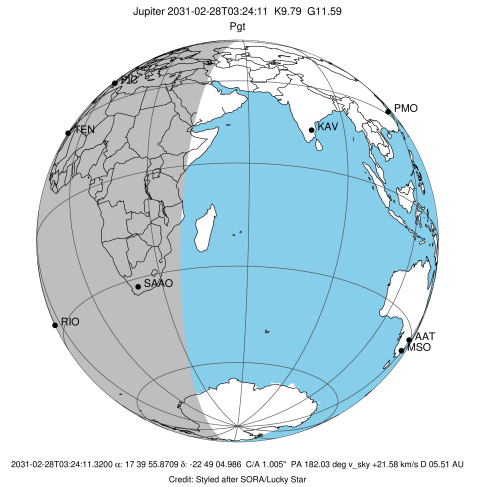


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-28T02:24:49.465	-8.91x	-64.58	71491.9	4.67	5.34
Jupiter	E	2031-02-28T04:15:14.615	12.66	-43.82	71491.9	6.92	7.91

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-28T03:19:47.610
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      : 4116568854344108160
2Mass ID (if available) : 17395587-2249049
ICRS Star Coord at Epoch: 17h 39m 55.87090s -22:49:04.98626s
RUWE (>1.4 is poor) : 11.53
K magnitude          : 9.788
G magnitude          : 11.590
RP magnitude         : 10.955
BP magnitude         : 11.998
DUPflag             : 0
Distance (au)        : 5.511
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 21.58
Sun-Target sep (deg) : 73.53
Sun-Moon sep (deg)   : 151.55
B (ring opening deg) : -2.65
PA of pole (deg)     : 1.32
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 0.291
C/A sky separation (km) : 1164.6
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
    
```

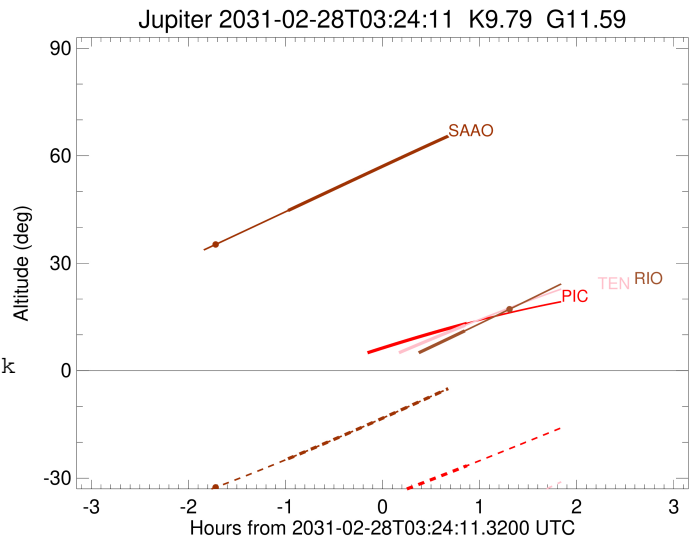
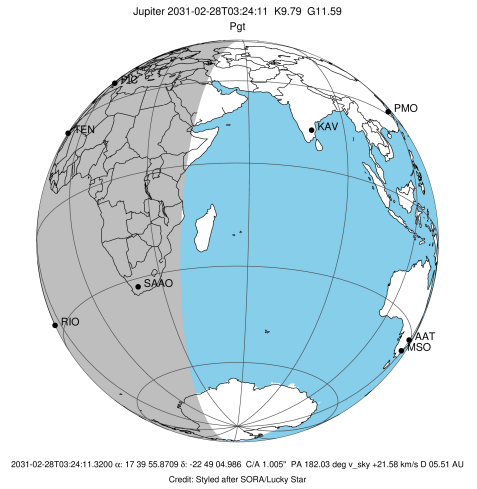


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-28T02:24:56.935	-11.84x	-57.61	71492.0	-0.19	-0.21
Jupiter	E	2031-02-28T04:14:56.491	11.09	-54.81	71492.0	2.08	2.38

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-28T03:21:44.510
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       : 4116568854344108160
2Mass ID (if available) : 17395587-2249049
ICRS Star Coord at Epoch: 17h 39m 55.87090s -22:49:04.98626s
RUWE (>1.4 is poor) : 11.53
K magnitude           : 9.788
G magnitude           : 11.590
RP magnitude         : 10.955
BP magnitude         : 11.998
DUPflag              : 0
Distance (au)        : 5.511
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 21.58
Sun-Target sep (deg) : 73.53
Sun-Moon sep (deg)   : 152.24
B (ring opening deg) : -2.65
PA of pole (deg)     : 1.32
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 0.627
C/A sky separation (km) : 2506.1
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	2031-02-28T02:25:50.781	44.70	-24.59	71492.0	0.99	1.13
Jupiter	E	2031-02-28T04:17:50.463	68.10	-2.31x	71492.0	2.95	3.37