

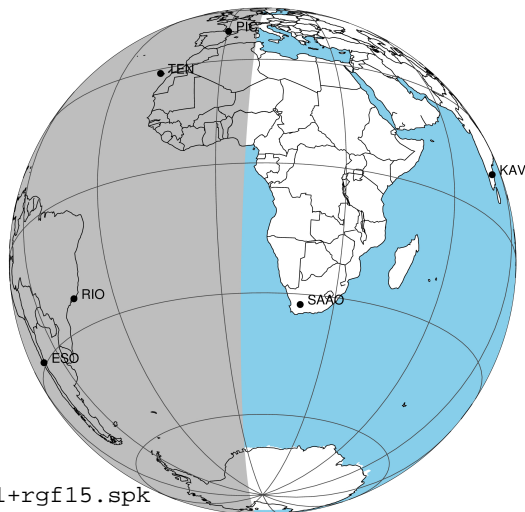
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-03-13T05:42:45.330  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068855100653223552  
 2Mass ID (if available) : 17462453-2251597

Jupiter 2031-03-13T05:42:45 K9.65 G14.81 Pgt

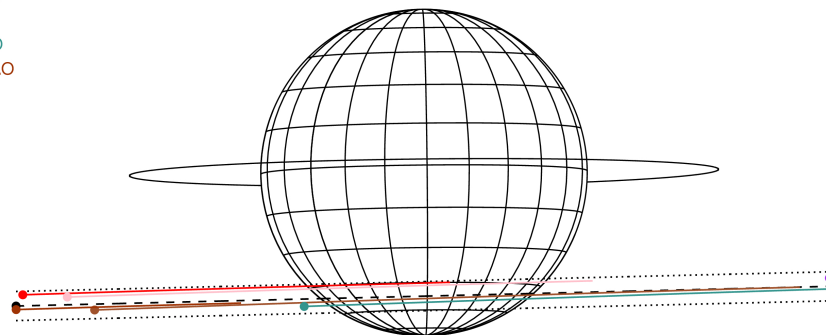
ICRS Star Coord at Epoch: 17h 46m 24.51837s -22:52:00.23125s

RUWE (>1.4 is poor) : 1.42  
 K magnitude : 9.655  
 G magnitude : 14.809  
 RP magnitude : 13.040  
 BP magnitude : 15.722  
 DUPflag : 0  
 Distance (au) : 5.303  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 15.67  
 Sun-Target sep (deg) : 85.15  
 Sun-Moon sep (deg) : 44.29  
 B (ring opening deg) : -2.63  
 PA of pole (deg) : 0.63  
 Pole direction: RA (deg): 268.05700  
 Dec (deg): 64.49651  
 C/A sky separation (") : 14.080  
 C/A sky separation (km) : 54149.3  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2031-03-13T05:42:45 K9.65 G14.81  
 Pgt



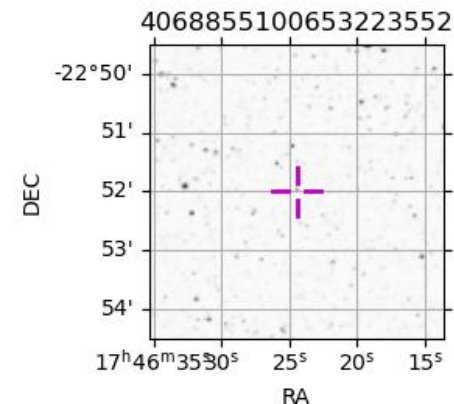
Earth  
 PIC  
 MCD  
 TEN  
 RIO  
 ESO  
 SAAO



2031-03-13T05:42:45.3300 α: 17 46 24.5184 δ: -22 52 00.231 C/A \*\*\*\*\* PA 1.39 deg v\_sky +15.67 km/s D 05.30 AU  
 Credit: Styled after SORA/Lucky Star

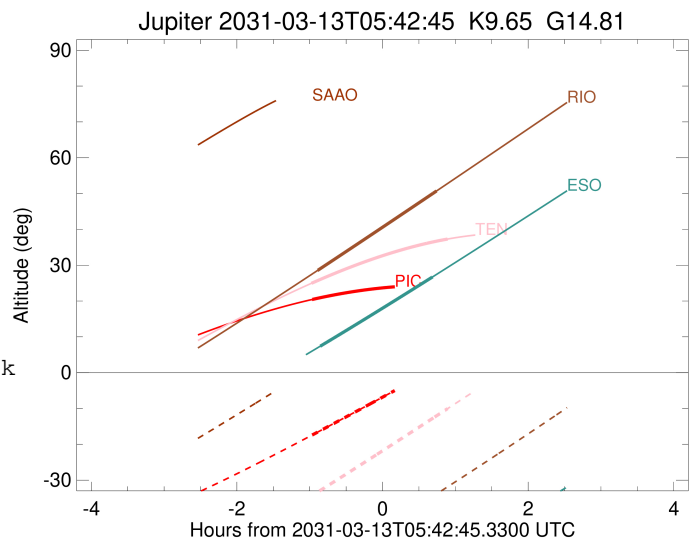
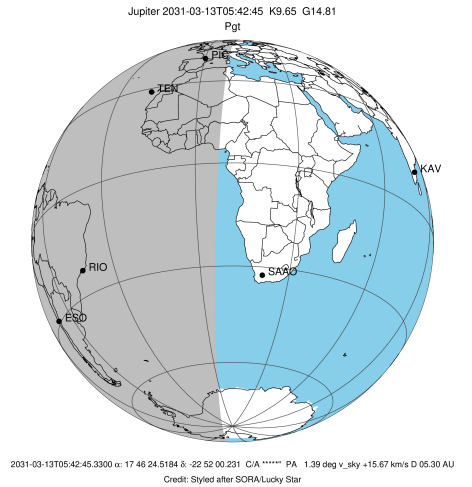
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	MAR 13 04:44 - MAR 13 04:44	Pin
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	+ +	MAR 13 04:44 - MAR 13 06:36	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	+ +	MAR 13 04:49 - MAR 13 06:27	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	MAR 13 04:51 - MAR 13 06:23	Pie
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



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-13T05:41:48.060
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        : 4068855100653223552
2Mass ID (if available) : 17462453-2251597
ICRS Star Coord at Epoch: 17h 46m 24.51837s -22:52:00.23125s
RUWE (>1.4 is poor) : 1.42
K magnitude           : 9.655
G magnitude           : 14.809
RP magnitude          : 13.040
BP magnitude          : 15.722
DUPflag              : 0
Distance (au)         : 5.303
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 15.67
Sun-Target sep (deg)  : 85.15
Sun-Moon sep (deg)   : 44.49
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.63
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 12.585
C/A sky separation (km) : 48398.2
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
    
```

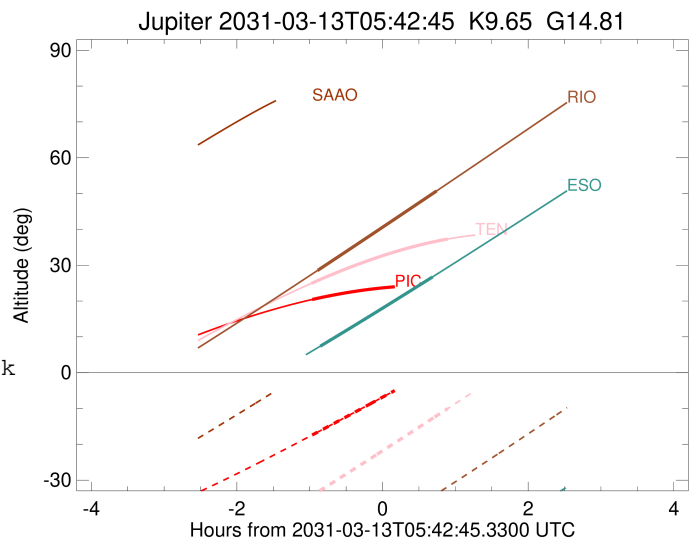
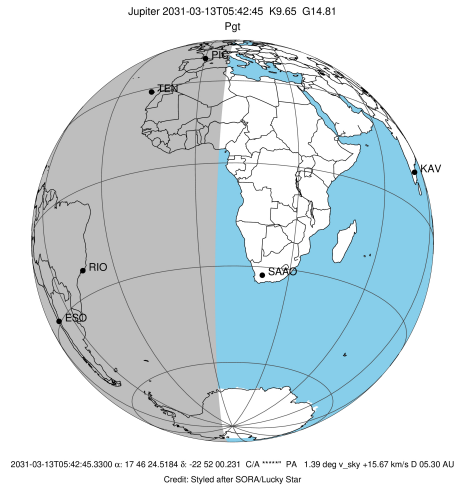


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-13T04:44:45.138	20.42	-17.41	71487.5	-43.49	-47.21
Jupiter	E	2031-03-13T06:38:59.106	24.30	3.46x	71487.8	-41.74	-45.46

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-13T05:40:08.300
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        : 4068855100653223552
2Mass ID (if available) : 17462453-2251597
ICRS Star Coord at Epoch: 17h 46m 24.51837s -22:52:00.23125s
RUWE (>1.4 is poor)  : 1.42
K magnitude           : 9.655
G magnitude           : 14.809
RP magnitude          : 13.040
BP magnitude          : 15.722
DUPflag              : 0
Distance (au)         : 5.303
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 15.67
Sun-Target sep (deg)  : 85.15
Sun-Moon sep (deg)    : 44.39
B (ring opening deg) : -2.63
PA of pole (deg)      : 0.63
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 12.872
C/A sky separation (km) : 49503.9
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
    
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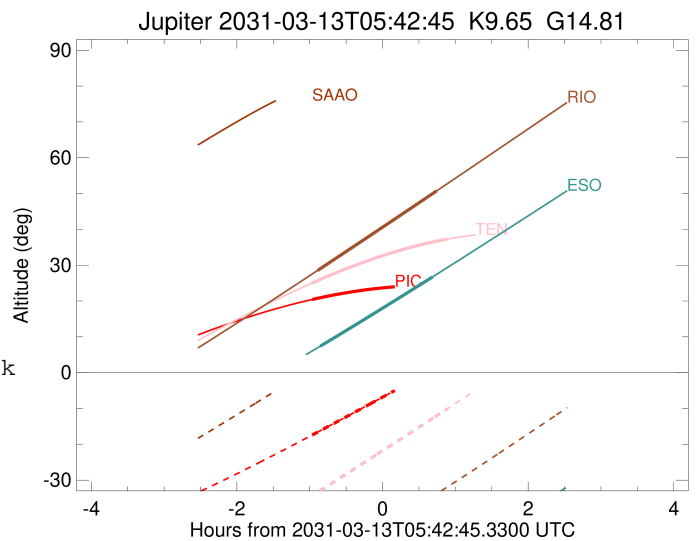
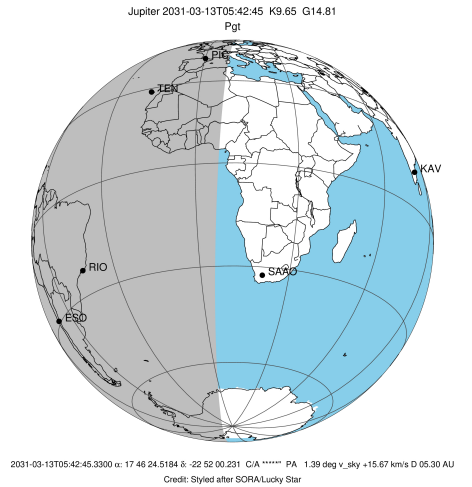


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-13T04:44:10.937	24.94	-34.41	71487.3	-44.89	-48.60
Jupiter	E	2031-03-13T06:36:20.165	37.29	-10.05	71487.6	-42.77	-46.49

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-13T05:38:11.410
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        : 4068855100653223552
2Mass ID (if available) : 17462453-2251597
ICRS Star Coord at Epoch: 17h 46m 24.51837s -22:52:00.23125s
RUWE (>1.4 is poor) : 1.42
K magnitude           : 9.655
G magnitude           : 14.809
RP magnitude          : 13.040
BP magnitude          : 15.722
DUPflag               : 0
Distance (au)         : 5.303
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 15.67
Sun-Target sep (deg) : 85.15
Sun-Moon sep (deg)   : 44.21
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.63
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 14.357
C/A sky separation (km) : 55216.0
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
    
```

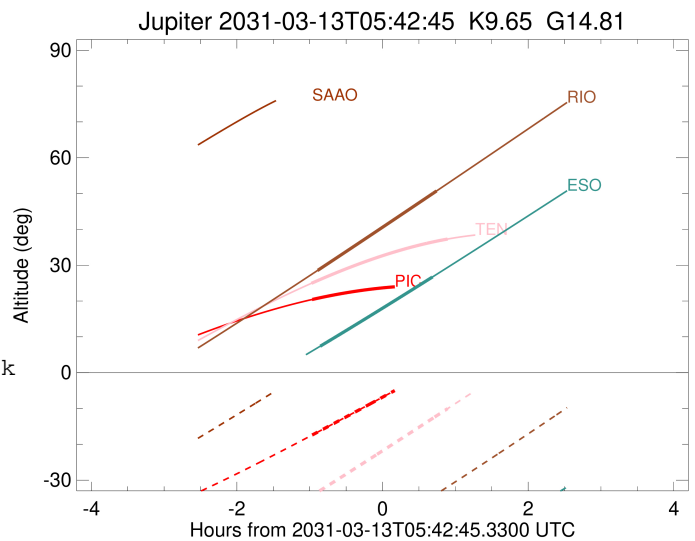
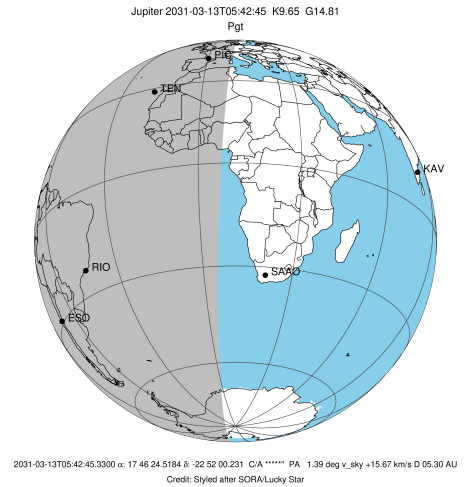


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-13T04:49:19.540	28.55	-53.35	71486.1	-51.81	-55.33
Jupiter	E	2031-03-13T06:27:20.526	50.73	-33.83	71486.6	-49.25	-52.86

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-13T05:37:32.770
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : ESO
Location              : European Southern Obs. (3.6m)
Latitude (deg)        : -29.26097
E. Longitude (deg)    : 289.26831
Altitude (km)         : 2.400
Gaia source ID        : 4068855100653223552
2Mass ID (if available) : 17462453-2251597
ICRS Star Coord at Epoch: 17h 46m 24.51837s -22:52:00.23125s
RUWE (>1.4 is poor) : 1.42
K magnitude           : 9.655
G magnitude           : 14.809
RP magnitude          : 13.040
BP magnitude          : 15.722
DUPflag              : 0
Distance (au)         : 5.303
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 15.67
Sun-Target sep (deg) : 85.15
Sun-Moon sep (deg)   : 43.88
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.63
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 14.782
C/A sky separation (km) : 56850.2
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
    
```



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	2031-03-13T04:51:27.344	7.39	-57.90	71485.8	-53.93	-57.36
Jupiter	E	2031-03-13T06:23:55.100	26.71	-51.15	71486.2	-51.27	-54.81