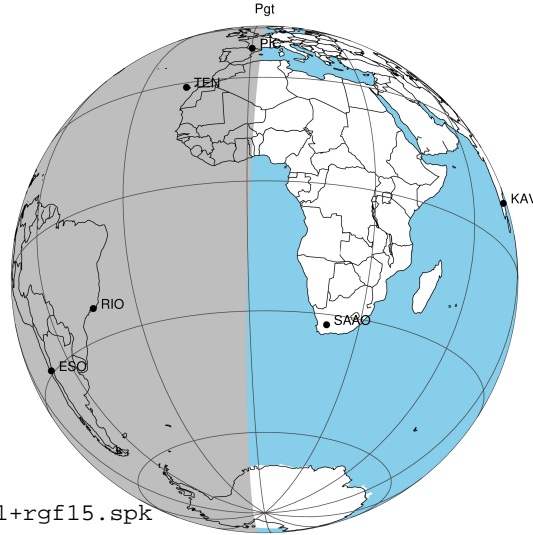


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-03-14T06:06:02.960
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068937396516796032
 2Mass ID (if available) : 17465006-2252004

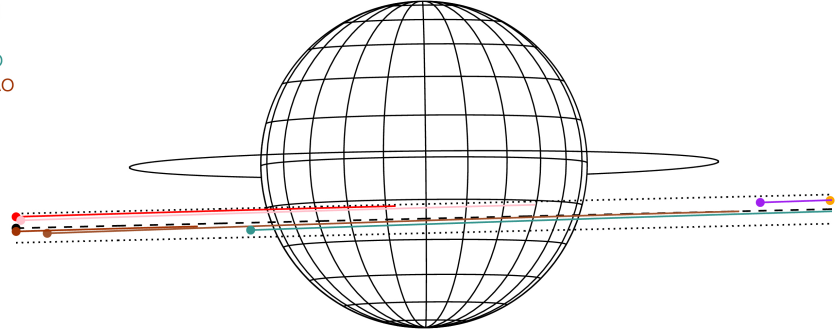
Jupiter 2031-03-14T06:06:02 K8.20 G14.41 Pgt

ICRS Star Coord at Epoch: 17h 46m 50.05375s -22:52:00.69900s
 RUWE (>1.4 is poor) : 0.87
 K magnitude : 8.202
 G magnitude : 14.405
 RP magnitude : 12.891
 BP magnitude : 17.654
 DUPflag : 0
 Distance (au) : 5.286
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 15.20
 Sun-Target sep (deg) : 86.06
 Sun-Moon sep (deg) : 30.26
 B (ring opening deg) : -2.63
 PA of pole (deg) : 0.58
 Pole direction: RA (deg): 268.05700
 Dec (deg): 64.49651
 C/A sky separation (") : 6.184
 C/A sky separation (km) : 23708.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

Jupiter 2031-03-14T06:06:02 K8.20 G14.41



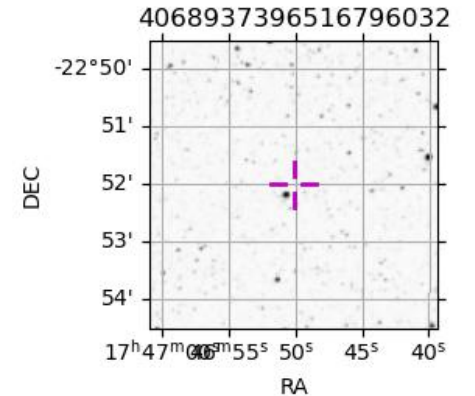
Earth
 PIC
 KPNO
 MCD
 TEN
 RIO
 ESO
 SAAO



2031-03-14T06:06:02.9600 a: 17 46 50.0538 & -22 52 00.699 C/A 6.184" PA 1.34 deg v_sky +15.20 km/s D 05.29 AU
 Credit: Styled after SORA/Lucky Star

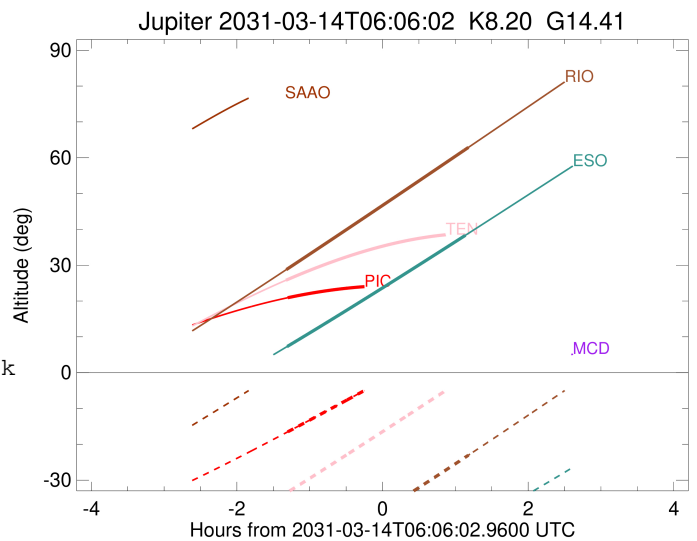
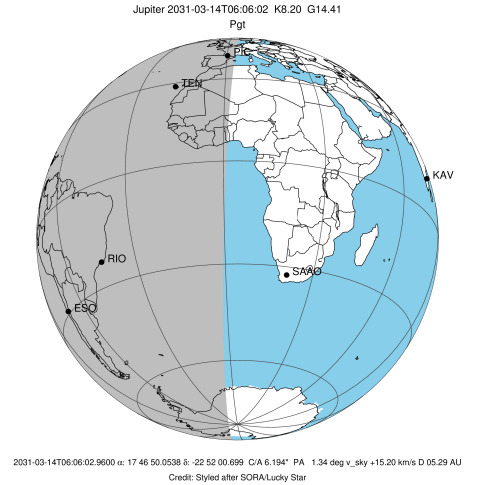
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	MAR 14 04:48 - MAR 14 04:48	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 14 04:46 - MAR 14 04:46	Pin
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 14 04:46 - MAR 14 07:16	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	MAR 14 04:47 - MAR 14 07:14	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



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-14T06:05:35.270
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       : 4068937396516796032
2Mass ID (if available) : 17465006-2252004
ICRS Star Coord at Epoch: 17h 46m 50.05375s -22:52:00.69900s
RUWE (>1.4 is poor) : 0.87
K magnitude          : 8.202
G magnitude          : 14.405
RP magnitude         : 12.891
BP magnitude         : 17.654
DUPflag             : 0
Distance (au)        : 5.286
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 15.20
Sun-Target sep (deg) : 86.06
Sun-Moon sep (deg)   : 30.44
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.58
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 4.673
C/A sky separation (km) : 17917.6
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
    
```

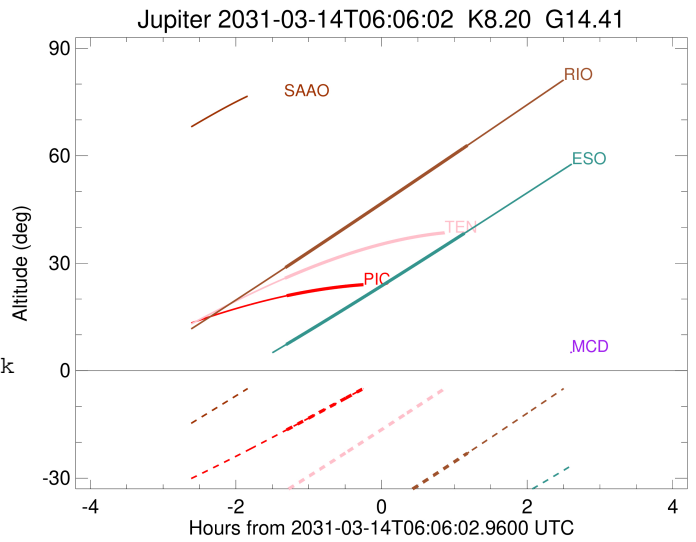
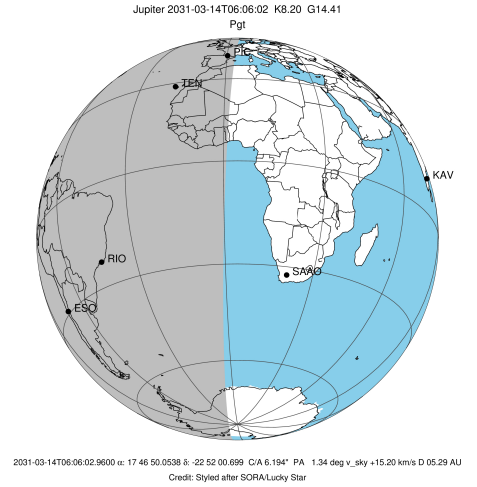


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-14T04:48:05.905	20.93	-16.49	71491.3	-15.40	-17.48
Jupiter	E	2031-03-14T07:23:15.967	22.84	11.77x	71491.5	-13.77	-15.64

```

target           : Jupiter
target radius (km) : 71492.00
C/A epoch       : 2031-03-14T06:03:49.190
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  : 4068937396516796032
2Mass ID (if available) : 17465006-2252004
ICRS Star Coord at Epoch: 17h 46m 50.05375s -22:52:00.69900s
RUWE (>1.4 is poor) : 0.87
K magnitude     : 8.202
G magnitude     : 14.405
RP magnitude    : 12.891
BP magnitude    : 17.654
DUPflag        : 0
Distance (au)   : 5.286
f0 (km)         : 0.00
g0 (km)         : 0.00
skyplane vel. (km/s) : 15.20
Sun-Target sep (deg) : 86.06
Sun-Moon sep (deg) : 30.30
B (ring opening deg) : -2.63
PA of pole (deg) : 0.58
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 4.940
C/A sky separation (km) : 18940.7
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
    
```

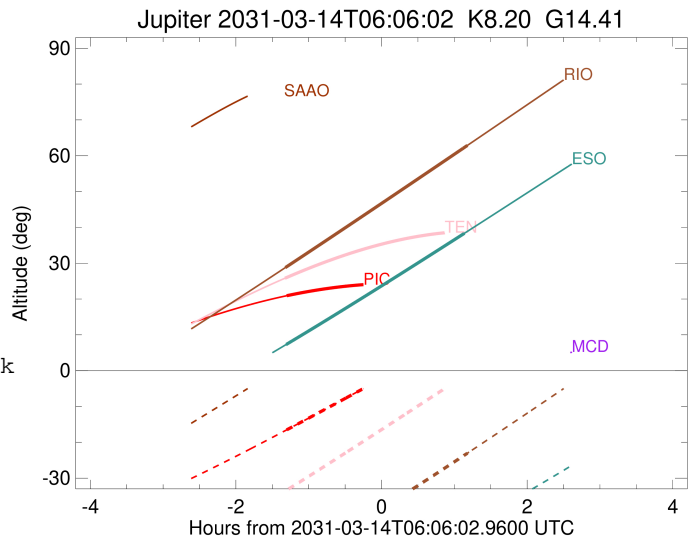
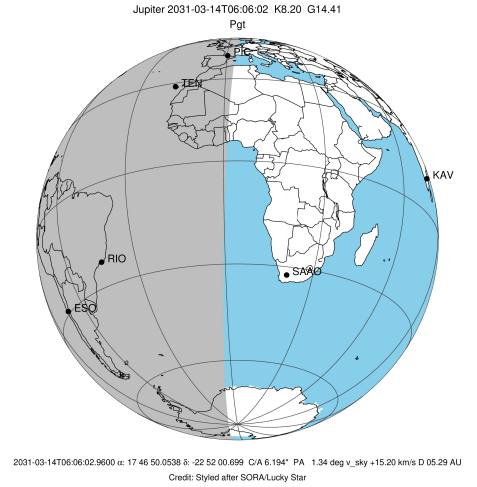


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-14T04:46:32.465	25.81	-33.64	71491.2	-16.45	-18.64
Jupiter	E	2031-03-14T07:21:30.168	38.97	0.16x	71491.4	-14.44	-16.40

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-14T06:01:29.000
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       : 4068937396516796032
2Mass ID (if available) : 17465006-2252004
ICRS Star Coord at Epoch: 17h 46m 50.05375s -22:52:00.69900s
RUWE (>1.4 is poor) : 0.87
K magnitude          : 8.202
G magnitude          : 14.405
RP magnitude         : 12.891
BP magnitude         : 17.654
DUPflag             : 0
Distance (au)        : 5.286
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 15.20
Sun-Target sep (deg) : 86.06
Sun-Moon sep (deg)   : 30.05
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.58
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation ("): 6.404
C/A sky separation (km): 24551.3
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
    
```

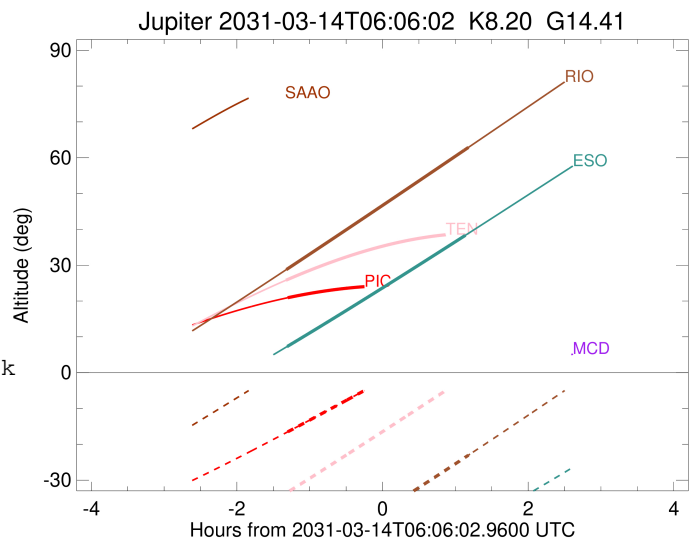
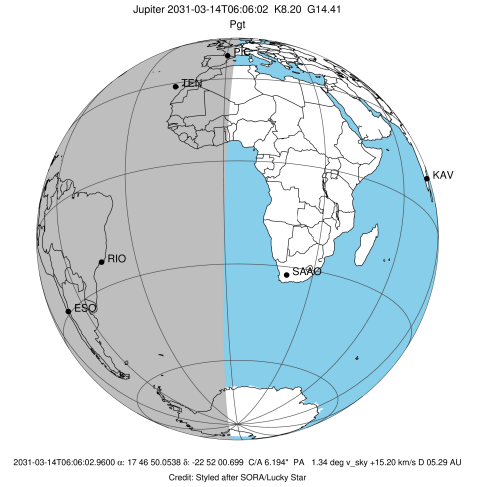


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-14T04:46:50.146	28.78	-54.02	71490.7	-21.38	-24.08
Jupiter	E	2031-03-14T07:16:47.003	62.86	-23.05	71491.0	-18.88	-21.34

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-14T06:00:27.910
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      : 4068937396516796032
2Mass ID (if available) : 17465006-2252004
ICRS Star Coord at Epoch: 17h 46m 50.05375s -22:52:00.69900s
RUWE (>1.4 is poor) : 0.87
K magnitude          : 8.202
G magnitude          : 14.405
RP magnitude         : 12.891
BP magnitude         : 17.654
DUPflag             : 0
Distance (au)       : 5.286
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 15.20
Sun-Target sep (deg) : 86.06
Sun-Moon sep (deg)  : 29.74
B (ring opening deg) : -2.63
PA of pole (deg)    : 0.58
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 6.822
C/A sky separation (km) : 26155.2
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	2031-03-14T04:47:25.366	7.29	-58.27	71490.6	-22.79	-25.63
Jupiter	E	2031-03-14T07:14:14.139	38.31	-43.53	71490.9	-20.12	-22.70