

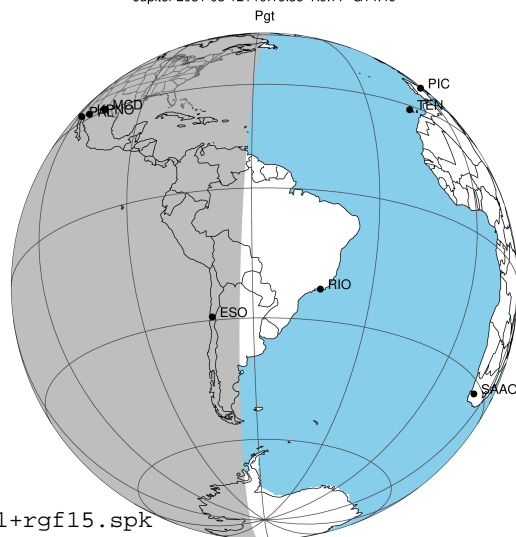
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-03-12T10:16:36.920
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068854550826215808
 2Mass ID (if available) : 17460367-2251522

Jupiter 2031-03-12T10:16:36 K9.77 G14.49 Pgt

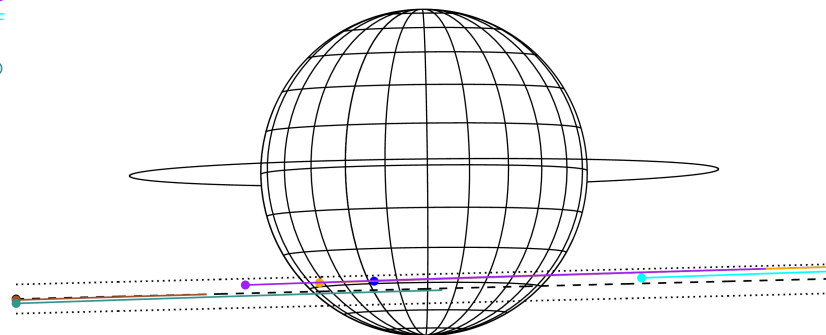
ICRS Star Coord at Epoch: 17h 46m 03.68174s -22:51:52.35059s

RUWE (>1.4 is poor) : 1.03
 K magnitude : 9.770
 G magnitude : 14.495
 RP magnitude : 13.292
 BP magnitude : 16.053
 DUPflag : 0
 Distance (au) : 5.316
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 16.04
 Sun-Target sep (deg) : 84.42
 Sun-Moon sep (deg) : 55.37
 B (ring opening deg) : -2.63
 PA of pole (deg) : 0.66
 Pole direction: RA (deg): 268.05700
 Dec (deg): 64.49651
 C/A sky separation (") : 13.220
 C/A sky separation (km) : 50969.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-03-12T10:16:36 K9.77 G14.49
 Pgt



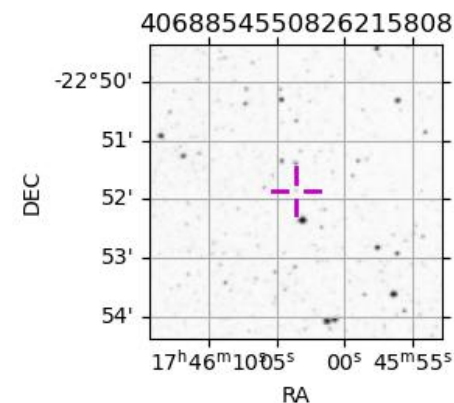
Earth
 PAL
 KPNO
 MCD
 IRTF
 RIO
 ESO



2031-03-12T10:16:36.9200 α: 17 46 03.6817 δ: -22 51 52.351 C/A ***** PA 1.42 deg v_sky +16.04 km/s D 05.32 AU
 Credit: Styled after SORA/Lucky Star

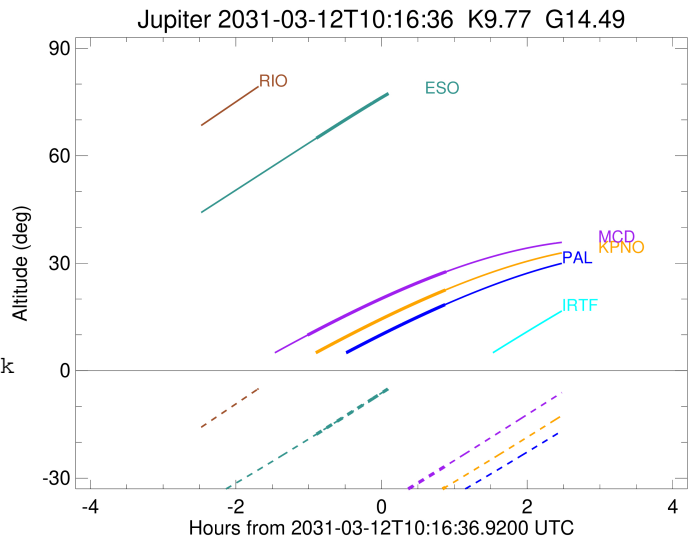
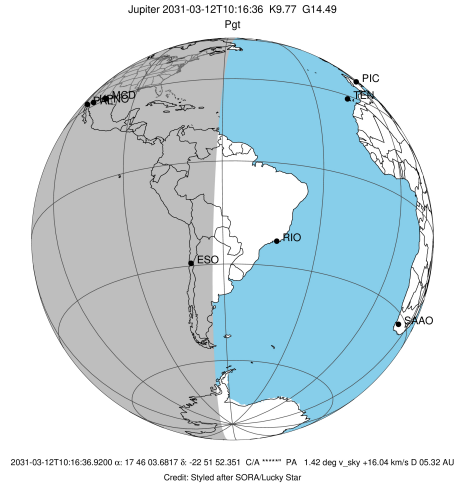
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+	MAR 12 11:09 - MAR 12 11:09	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	MAR 12 11:09 - MAR 12 11:09	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	MAR 12 09:15 - MAR 12 11:10	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
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	+	MAR 12 09:23 - MAR 12 09:23	Pin
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             : 2031-03-12T10:12:05.710
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : PAL
Location              : Palomar Mt (200")
Latitude (deg)        : 33.35622
E. Longitude (deg)    : 243.13601
Altitude (km)         : 1.706
Gaia source ID        : 4068854550826215808
2Mass ID (if available) : 17460367-2251522
ICRS Star Coord at Epoch: 17h 46m 03.68174s -22:51:52.35059s
RUWE (>1.4 is poor)  : 1.03
K magnitude           : 9.770
G magnitude           : 14.495
RP magnitude          : 13.292
BP magnitude          : 16.053
DUPflag              : 0
Distance (au)         : 5.316
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : 16.04
Sun-Target sep (deg)  : 84.42
Sun-Moon sep (deg)    : 55.13
B (ring opening deg)  : -2.63
PA of pole (deg)      : 0.66
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 12.152
C/A sky separation (km) : 46851.6
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
    
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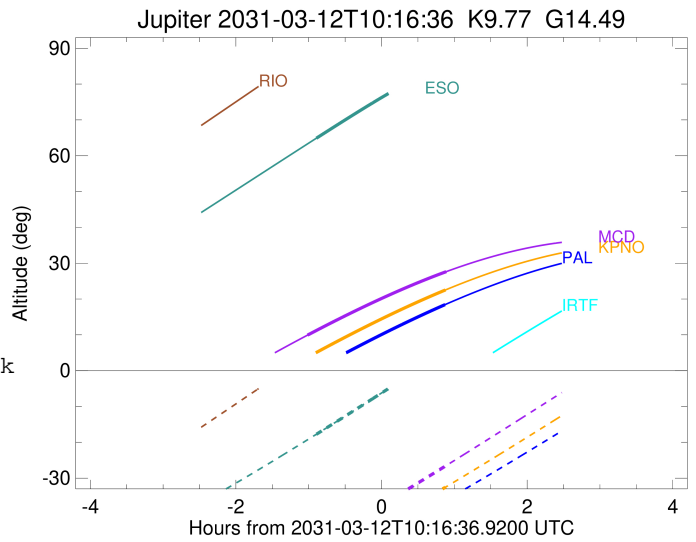
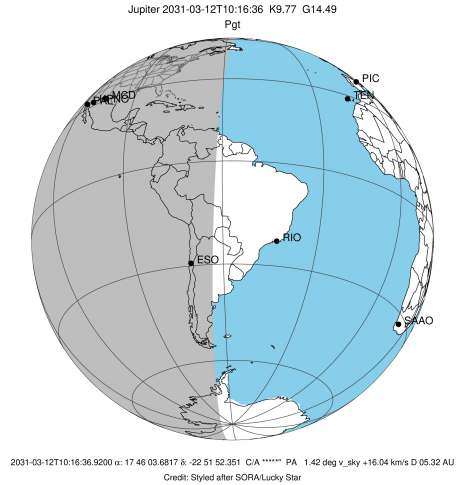


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-12T09:15:33.365	-0.84x	-54.99	71487.7	-42.17	-45.88
Jupiter	E	2031-03-12T11:08:59.964	18.43	-36.25	71488.1	-39.68	-43.39

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-12T10:12:16.660
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : KPNO
Location              : Kitt Peak Natl Obs
Latitude (deg)        : 31.96333
E. Longitude (deg)    : 248.40000
Altitude (km)         : 2.120
Gaia source ID        : 4068854550826215808
2Mass ID (if available) : 17460367-2251522
ICRS Star Coord at Epoch: 17h 46m 03.68174s -22:51:52.35059s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 9.770
G magnitude           : 14.495
RP magnitude          : 13.292
BP magnitude          : 16.053
DUPflag              : 0
Distance (au)         : 5.316
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 16.04
Sun-Target sep (deg)  : 84.42
Sun-Moon sep (deg)   : 55.21
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.66
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 12.135
C/A sky separation (km) : 46785.2
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
    
```

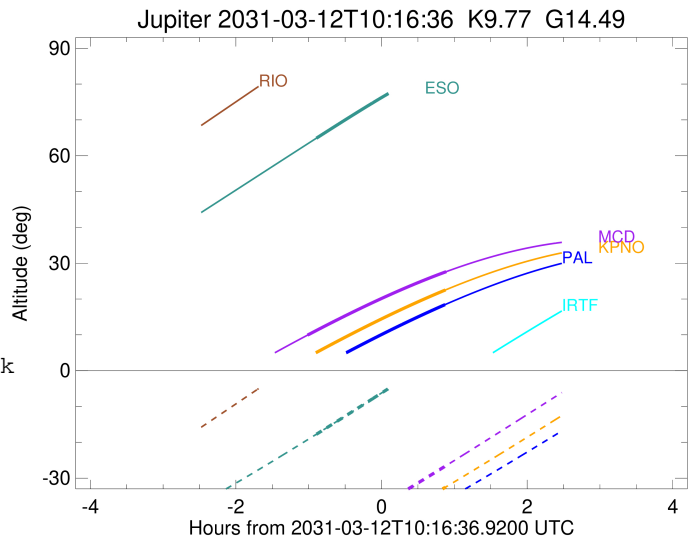
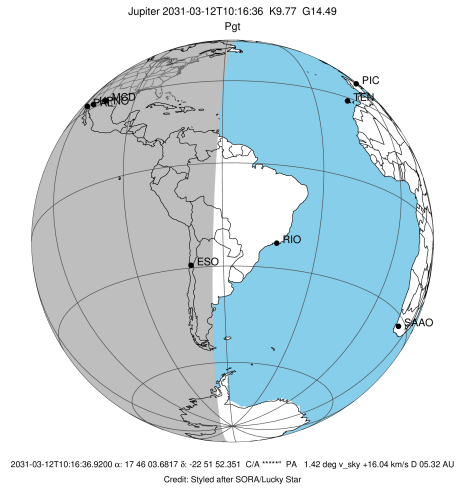


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-12T09:15:33.442	3.72x	-53.19	71487.7	-42.09	-45.80
Jupiter	E	2031-03-12T11:09:21.256	22.53	-32.52	71488.1	-39.64	-43.34

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-12T10:12:39.100
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : MCD
Location              : McDonald Obs. 2.7m
Latitude (deg)       : 30.67158
E. Longitude (deg)   : 255.97844
Altitude (km)        : 2.075
Gaia source ID       : 4068854550826215808
2Mass ID (if available) : 17460367-2251522
ICRS Star Coord at Epoch: 17h 46m 03.68174s -22:51:52.35059s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 9.770
G magnitude           : 14.495
RP magnitude         : 13.292
BP magnitude         : 16.053
DUPflag              : 0
Distance (au)        : 5.316
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 16.04
Sun-Target sep (deg) : 84.42
Sun-Moon sep (deg)   : 55.32
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.66
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 12.100
C/A sky separation (km) : 46648.5
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
    
```

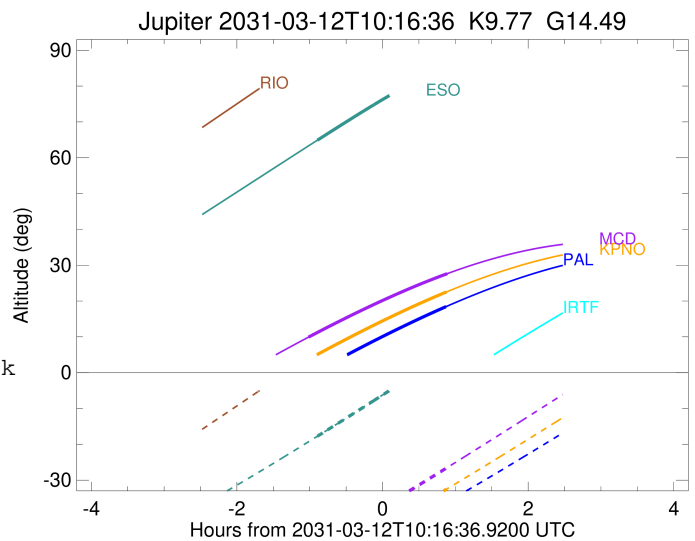
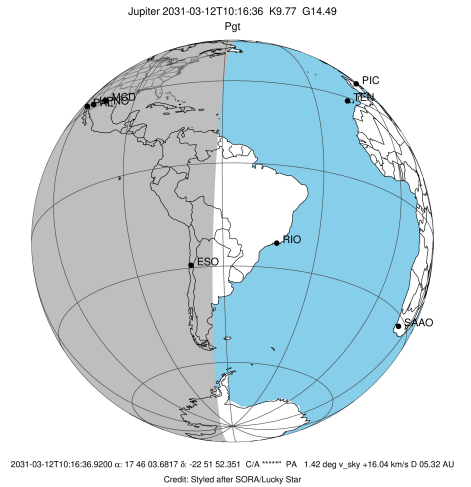


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-12T09:15:38.479	9.92	-49.06	71487.8	-41.91	-45.63
Jupiter	E	2031-03-12T11:09:59.880	27.64	-26.48	71488.2	-39.53	-43.24

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-12T10:15:23.550
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      : 4068854550826215808
2Mass ID (if available) : 17460367-2251522
ICRS Star Coord at Epoch: 17h 46m 03.68174s -22:51:52.35059s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 9.770
G magnitude          : 14.495
RP magnitude         : 13.292
BP magnitude         : 16.053
DUPflag             : 0
Distance (au)       : 5.316
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 16.04
Sun-Target sep (deg) : 84.42
Sun-Moon sep (deg)  : 56.04
B (ring opening deg) : -2.63
PA of pole (deg)    : 0.66
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 13.424
C/A sky separation (km) : 51753.4
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	2031-03-12T09:23:00.508	64.90	-17.74	71486.9	-47.31	-50.97
Jupiter	E	2031-03-12T11:07:54.829	83.73	4.92x	71487.2	-45.46	-49.15