

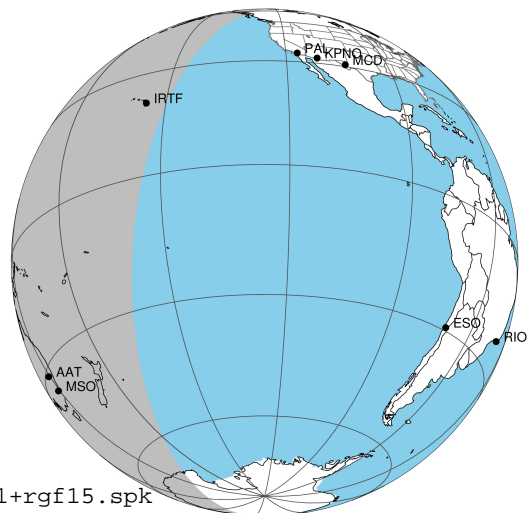
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-02-10T16:31:15.320
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4111692318448374912
 2Mass ID (if available) : 17284482-2242055

Jupiter 2031-02-10T16:31:15 K9.63 G14.28 Pgt

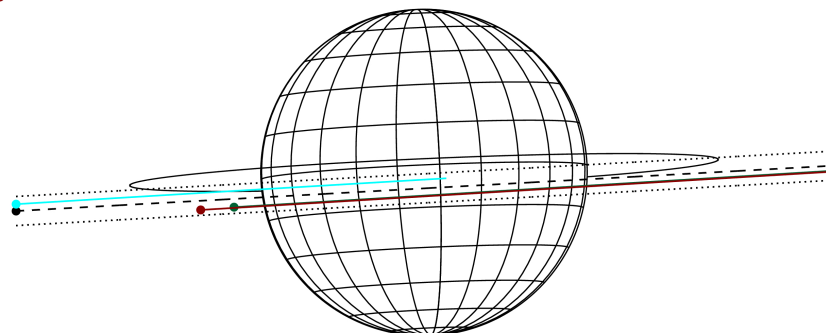
ICRS Star Coord at Epoch: 17h 28m 44.81558s -22:42:05.45272s

RUWE (>1.4 is poor) : 0.96
 K magnitude : 9.632
 G magnitude : 14.277
 RP magnitude : 13.077
 BP magnitude : 15.841
 DUPflag : 0
 Distance (au) : 5.770
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 28.71
 Sun-Target sep (deg) : 58.51
 Sun-Moon sep (deg) : 84.57
 B (ring opening deg) : -2.68
 PA of pole (deg) : 2.53
 Pole direction: RA (deg): 268.05703
 Dec (deg): 64.49651
 C/A sky separation (") : 1.659
 C/A sky separation (km) : 6944.4
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-02-10T16:31:15 K9.63 G14.28
 Pgt



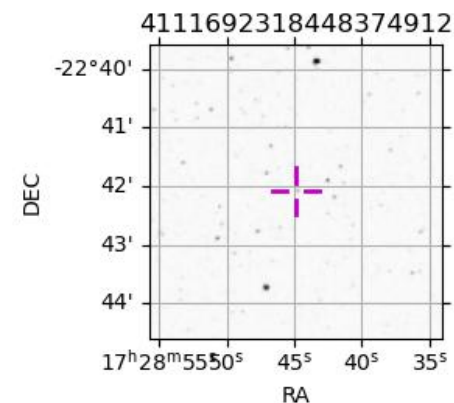
Earth
 IRTF
 AAT
 MSO



2031-02-10T16:31:15.3200 @: 17 28 44.81558 @: -22 42 05.453 C/A 1.659 PA 3.18 deg v_sky +28.71 km/s D 05.77 AU
 Credit: Styled after SORA/Lucky Star

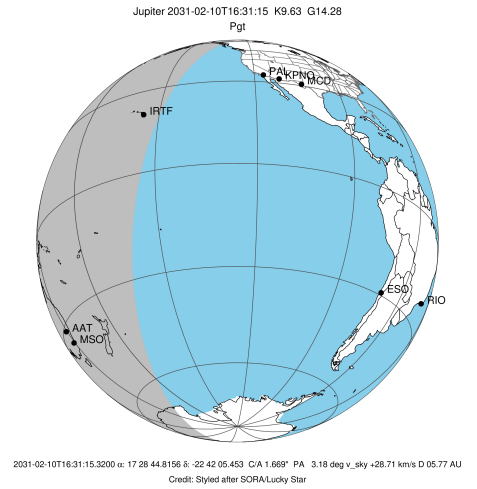
Observable events with sun below -5 deg and altitude above 5 deg

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			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			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	FEB 10 15:47 - FEB 10 15:47	Pin
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	+ +	FEB 10 15:47 - FEB 10 17:09	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	FEB 10 15:47 - FEB 10 17:09	Pie

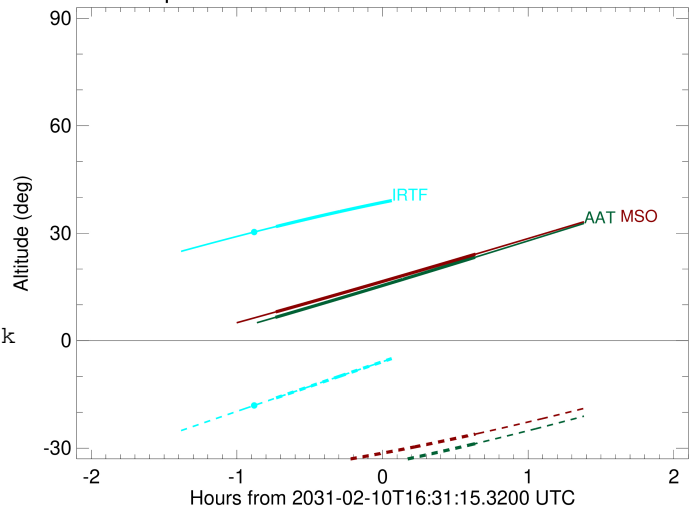


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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-10T16:29:23.330
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : IRTF
Location             : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)   : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 41116923184448374912
2Mass ID (if available) : 17284482-2242055
ICRS Star Coord at Epoch: 17h 28m 44.81558s -22:42:05.45272s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.632
G magnitude          : 14.277
RP magnitude         : 13.077
BP magnitude         : 15.841
DUPflag             : 0
Distance (au)        : 5.770
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 28.71
Sun-Target sep (deg) : 58.51
Sun-Moon sep (deg)   : 85.12
B (ring opening deg) : -2.68
PA of pole (deg)     : 2.53
Pole direction: RA (deg): 268.05703
Dec (deg): 64.49651
C/A sky separation (") : 0.745
C/A sky separation (km) : 3118.6
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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Jupiter 2031-02-10T16:31:15 K9.63 G14.28

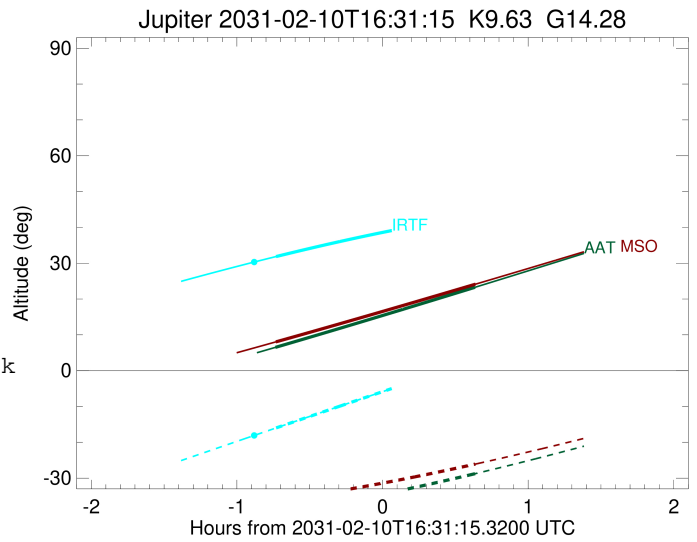
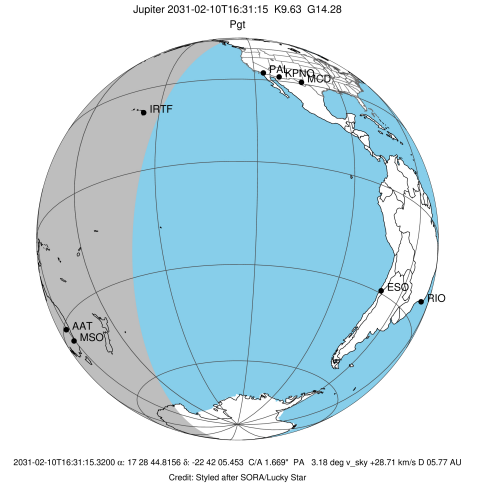


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-10T15:47:25.745	31.85	-15.98	71492.0	-3.38	-3.87
Jupiter	E	2031-02-10T17:11:25.775	43.42	3.28x	71492.0	-1.66	-1.90

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-10T16:28:13.130
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : AAT
Location            : Siding Spring (AAT)
Latitude (deg)      : -31.27703
E. Longitude (deg)  : 149.06608
Altitude (km)       : 1.164
Gaia source ID      : 41116923184448374912
2Mass ID (if available) : 17284482-2242055
ICRS Star Coord at Epoch: 17h 28m 44.81558s -22:42:05.45272s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.632
G magnitude          : 14.277
RP magnitude         : 13.077
BP magnitude         : 15.841
DUPflag             : 0
Distance (au)        : 5.770
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 28.71
Sun-Target sep (deg) : 58.51
Sun-Moon sep (deg)   : 84.74
B (ring opening deg) : -2.68
PA of pole (deg)     : 2.53
Pole direction: RA (deg): 268.05703
Dec (deg): 64.49651
C/A sky separation (") : 2.417
C/A sky separation (km) : 10113.7
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
    
```

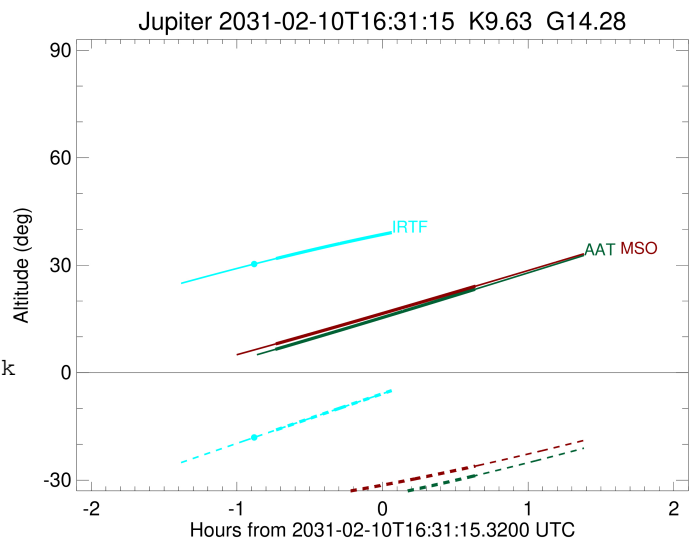
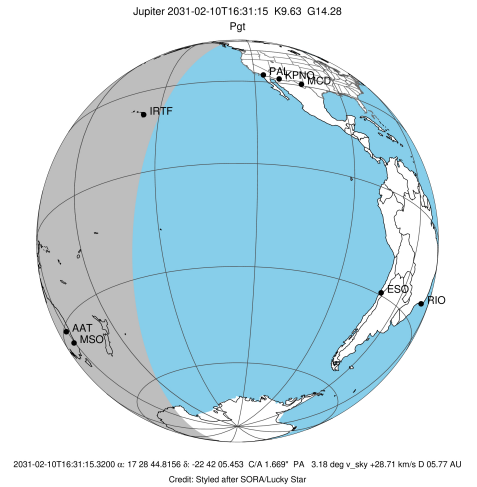


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-10T15:47:10.272	6.51	-39.82	71491.8	-9.08	-10.35
Jupiter	E	2031-02-10T17:09:23.180	23.27	-28.76	71491.8	-7.17	-8.18

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-02-10T16:28:22.290
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : MSO
Location              : Mt. Stromlo Observatory
Latitude (deg)        : -35.32000
E. Longitude (deg)    : 149.00833
Altitude (km)         : 0.770
Gaia source ID        : 41116923184448374912
2Mass ID (if available) : 17284482-2242055
ICRS Star Coord at Epoch: 17h 28m 44.81558s -22:42:05.45272s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.632
G magnitude           : 14.277
RP magnitude          : 13.077
BP magnitude          : 15.841
DUPflag              : 0
Distance (au)         : 5.770
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 28.71
Sun-Target sep (deg)  : 58.51
Sun-Moon sep (deg)    : 84.76
B (ring opening deg) : -2.68
PA of pole (deg)      : 2.53
Pole direction: RA (deg): 268.05703
Dec (deg): 64.49651
C/A sky separation (") : 2.498
C/A sky separation (km) : 10453.2
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	2031-02-10T15:47:21.093	8.04	-36.26	71491.7	-9.34	-10.65
Jupiter	E	2031-02-10T17:09:30.397	24.13	-26.08	71491.8	-7.46	-8.51