

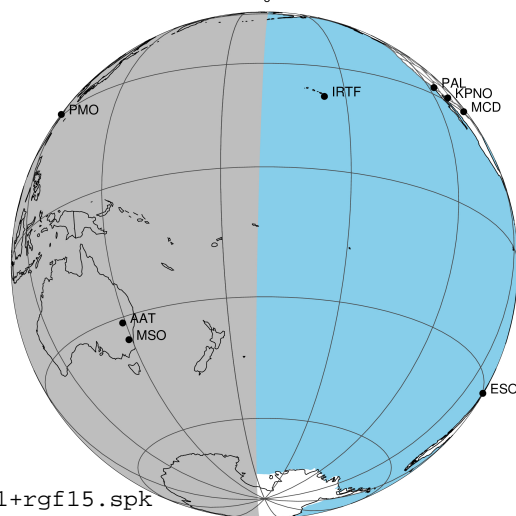
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-03-16T17:33:10.340  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068934265410244480  
 2Mass ID (if available) : 17474930-2252147

Jupiter 2031-03-16T17:33:10 K9.89 G14.35 Pgt

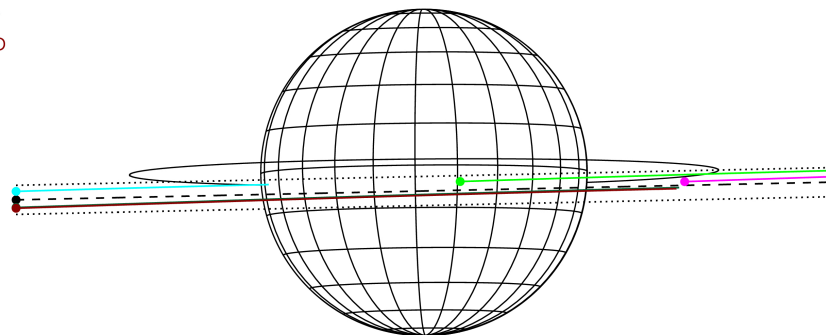
ICRS Star Coord at Epoch: 17h 47m 49.30313s -22:52:15.06731s

RUWE (>1.4 is poor) : 0.90  
 K magnitude : 9.895  
 G magnitude : 14.348  
 RP magnitude : 13.160  
 BP magnitude : 15.739  
 DUPflag : 0  
 Distance (au) : 5.246  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 14.03  
 Sun-Target sep (deg) : 88.30  
 Sun-Moon sep (deg) : 4.79  
 B (ring opening deg) : -2.63  
 PA of pole (deg) : 0.47  
 Pole direction: RA (deg): 268.05700  
 Dec (deg): 64.49651  
 C/A sky separation (") : 2.129  
 C/A sky separation (km) : 8101.6  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2031-03-16T17:33:10 K9.89 G14.35  
 Pgt



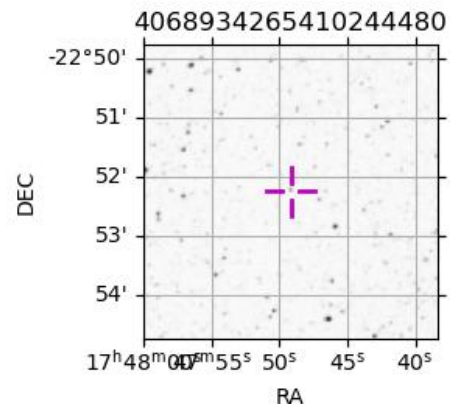
Earth  
 PMO  
 IRTF  
 KAV  
 AAT  
 MSO



2031-03-16T17:33:10.3400 a: 17 47 49.3031 s: -22 52 15.067 C/A 2.140" PA 1.24 deg v\_sky +14.03 km/s D 05.25 AU  
 Credit: Styled after SORA/Lucky Star

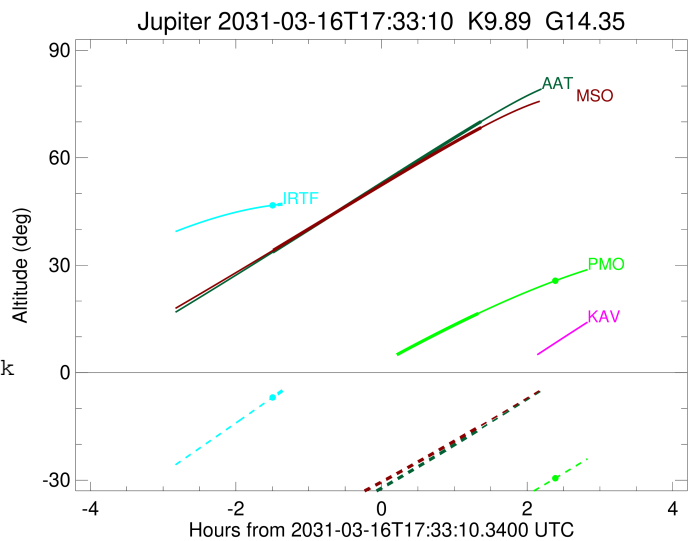
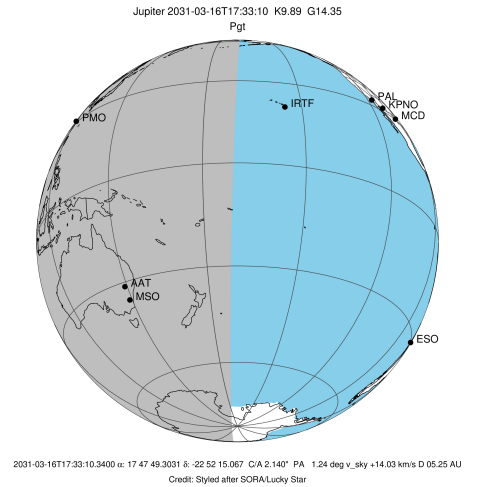
Observable events with sun below -5 deg and altitude above 5 deg

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	+	MAR 16 18:52 - MAR 16 18:52	Pne
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	+	MAR 16 16:07 - MAR 16 16:07	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	+ +	MAR 16 16:03 - MAR 16 18:55	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	MAR 16 16:03 - MAR 16 18:55	Pie



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-16T17:27:00.800
Event type          : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code       : PMO
Location           : Purple Mtn Obs. Nanking
Latitude (deg)     : 32.06667
E. Longitude (deg) : 118.82089
Altitude (km)      : 0.364
Gaia source ID     : 4068934265410244480
2Mass ID (if available) : 17474930-2252147
ICRS Star Coord at Epoch: 17h 47m 49.30313s -22:52:15.06731s
RUWE (>1.4 is poor) : 0.90
K magnitude         : 9.895
G magnitude         : 14.348
RP magnitude        : 13.160
BP magnitude        : 15.739
DUPflag            : 0
Distance (au)      : 5.246
f0 (km)            : 0.00
g0 (km)            : 0.00
skyplane vel. (km/s) : 14.03
Sun-Target sep (deg) : 88.30
Sun-Moon sep (deg)  : 5.32
B (ring opening deg) : -2.63
PA of pole (deg)   : 0.47
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 1.175
C/A sky separation (km) : 4471.3
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
    
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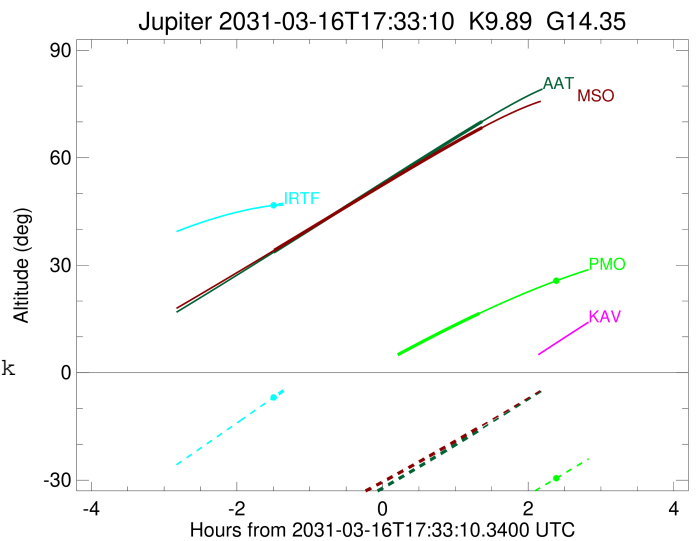
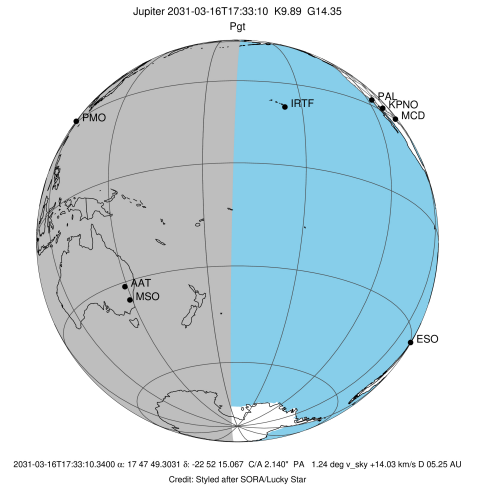


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-16T16:02:08.160	-15.08x	-59.63	71491.9	-4.97	-5.68
Jupiter	E	2031-03-16T18:52:55.865	16.54	-41.74	71492.0	-2.25	-2.57

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-16T17:34:54.390
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        : 4068934265410244480
2Mass ID (if available) : 17474930-2252147
ICRS Star Coord at Epoch: 17h 47m 49.30313s -22:52:15.06731s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 9.895
G magnitude           : 14.348
RP magnitude          : 13.160
BP magnitude          : 15.739
DUPflag              : 0
Distance (au)         : 5.246
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 14.03
Sun-Target sep (deg)  : 88.30
Sun-Moon sep (deg)    : 4.38
B (ring opening deg) : -2.63
PA of pole (deg)      : 0.47
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 1.008
C/A sky separation (km) : 3835.9
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
    
```

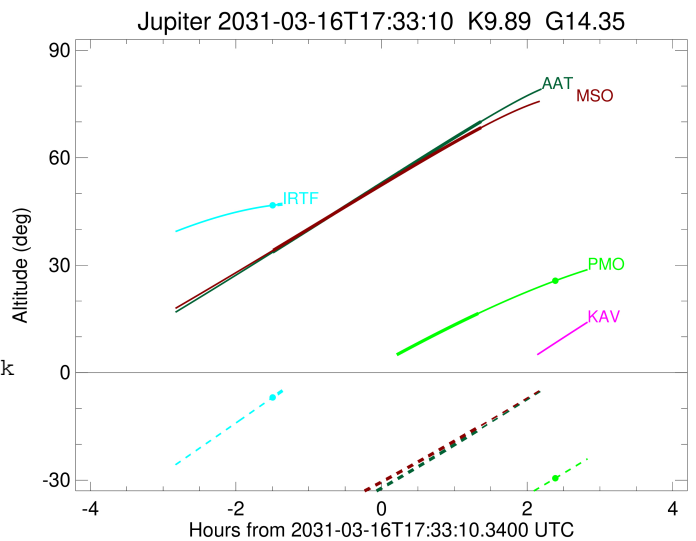
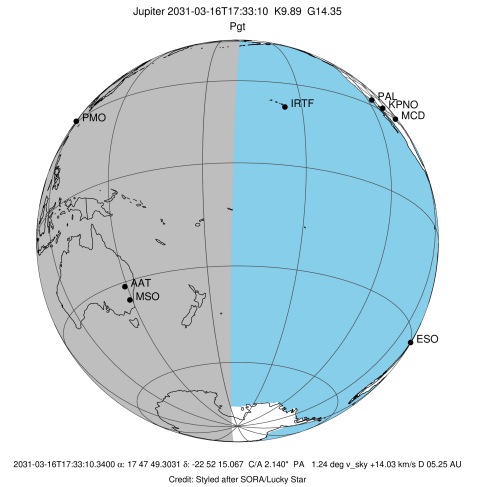


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-16T16:07:31.814	46.88	-5.96	71492.0	-3.82	-4.37
Jupiter	E	2031-03-16T19:02:13.017	34.28	34.69x	71492.0	-2.59	-2.96

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-16T17:28:57.500
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        : 4068934265410244480
2Mass ID (if available) : 17474930-2252147
ICRS Star Coord at Epoch: 17h 47m 49.30313s -22:52:15.06731s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 9.895
G magnitude           : 14.348
RP magnitude          : 13.160
BP magnitude          : 15.739
DUPflag              : 0
Distance (au)         : 5.246
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 14.03
Sun-Target sep (deg)  : 88.30
Sun-Moon sep (deg)   : 5.45
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.47
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 2.530
C/A sky separation (km) : 9626.0
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
    
```

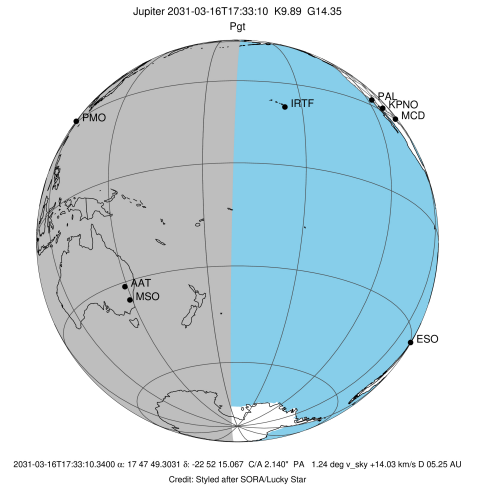


x: target alt < 5.0 deg or sun > -5.0 deg

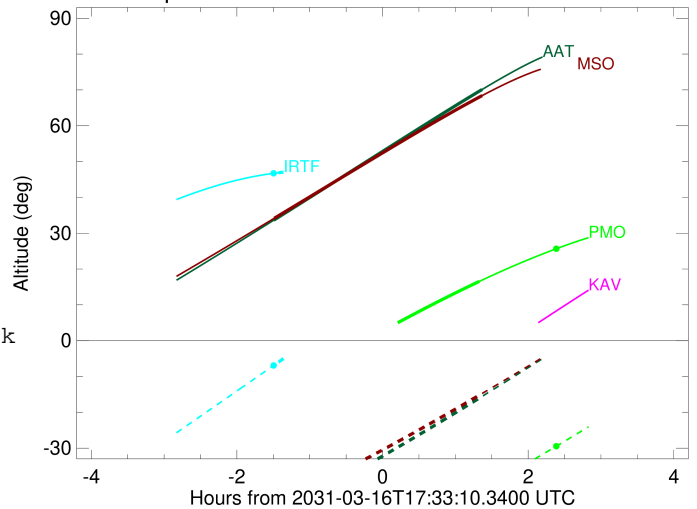
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-16T16:03:30.510	33.63	-47.94	71491.8	-9.02	-10.29
Jupiter	E	2031-03-16T18:55:13.127	70.10	-15.56	71491.9	-6.60	-7.54

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-16T17:29:09.740
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       : 4068934265410244480
2Mass ID (if available) : 17474930-2252147
ICRS Star Coord at Epoch: 17h 47m 49.30313s -22:52:15.06731s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 9.895
G magnitude           : 14.348
RP magnitude          : 13.160
BP magnitude          : 15.739
DUPflag              : 0
Distance (au)        : 5.246
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 14.03
Sun-Target sep (deg) : 88.30
Sun-Moon sep (deg)   : 5.46
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.47
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 2.639
C/A sky separation (km) : 10039.4
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
    
```



Jupiter 2031-03-16T17:33:10 K9.89 G14.35



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	2031-03-16T16:03:50.794	34.13	-44.95	71491.8	-9.33	-10.64
Jupiter	E	2031-03-16T18:55:15.424	68.40	-14.75	71491.9	-6.96	-7.94