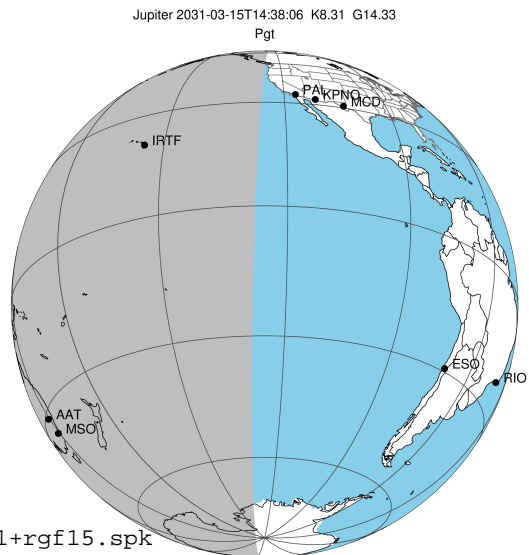


target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-03-15T14:38:06.730  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068933754382820992  
 2Mass ID (if available) : 17472298-2252208

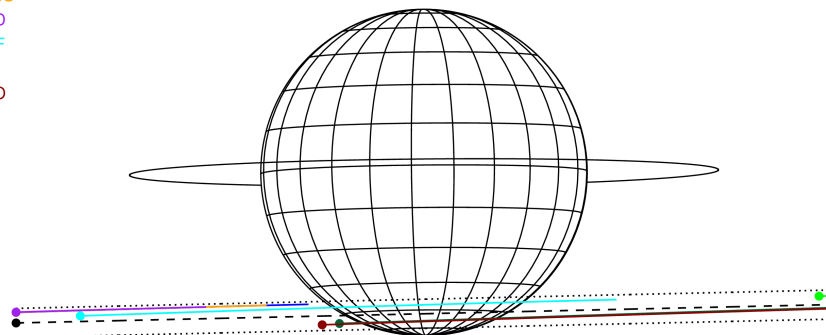
Jupiter 2031-03-15T14:38:06 K8.31 G14.33 Pgt

ICRS Star Coord at Epoch: 17h 47m 22.98502s -22:52:21.12854s

RUWE (>1.4 is poor) : 0.86  
 K magnitude : 8.308  
 G magnitude : 14.334  
 RP magnitude : 12.850  
 BP magnitude : 17.465  
 DUPflag : 0  
 Distance (au) : 5.264  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 14.56  
 Sun-Target sep (deg) : 87.29  
 Sun-Moon sep (deg) : 11.45  
 B (ring opening deg) : -2.63  
 PA of pole (deg) : 0.52  
 Pole direction: RA (deg): 268.05700  
 Dec (deg): 64.49651  
 C/A sky separation (") : 16.203  
 C/A sky separation (km) : 61863.3  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk



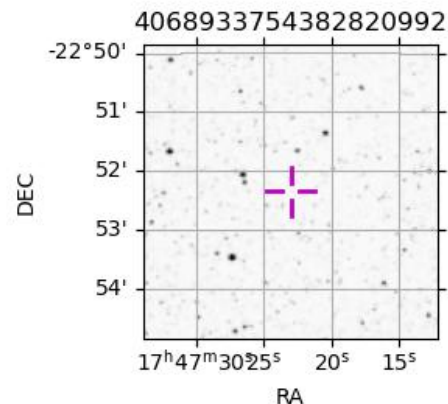
Earth  
 PAL  
 PMO  
 KPNO  
 MCD  
 IRTF  
 AAT  
 MSO



2031-03-15T14:38:06.7300 α: 17 47 22.9850 δ: -22 52 21.129 C/A \*\*\*\*\* PA 1.29 deg v\_sky +14.56 km/s D 05.26 AU  
 Credit: Styled after SORA/Lucky Star

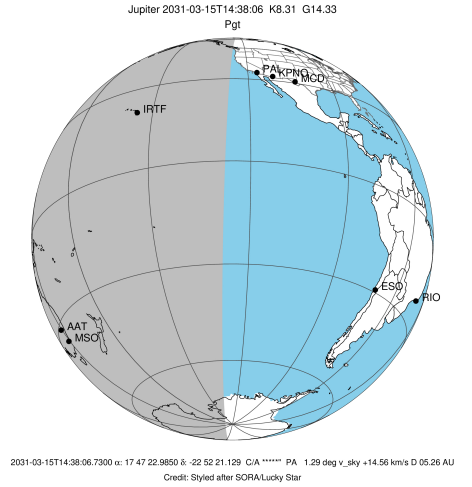
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	MAR 15 13:45 - MAR 15 15:24	Pie
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 15 13:58 - MAR 15 15:07	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	MAR 15 13:59 - MAR 15 15:06	Pie

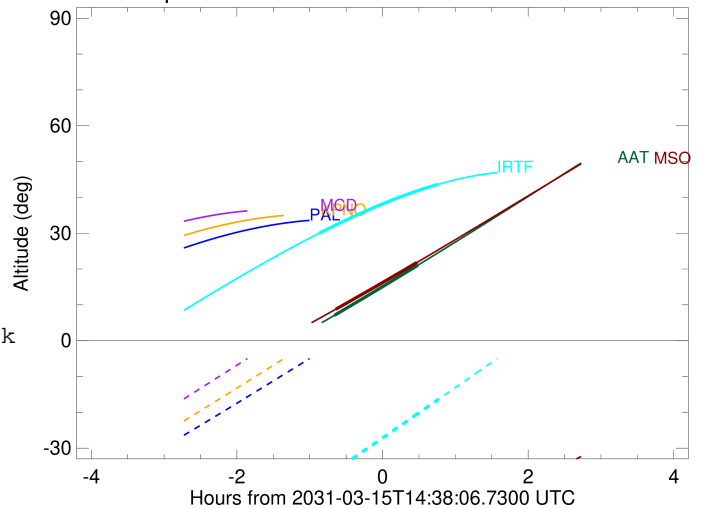


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-15T14:34:55.390
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       : 4068933754382820992
2Mass ID (if available) : 17472298-2252208
ICRS Star Coord at Epoch: 17h 47m 22.98502s -22:52:21.12854s
RUWE (>1.4 is poor) : 0.86
K magnitude           : 8.308
G magnitude           : 14.334
RP magnitude          : 12.850
BP magnitude          : 17.465
DUPflag              : 0
Distance (au)        : 5.264
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 14.56
Sun-Target sep (deg) : 87.29
Sun-Moon sep (deg)   : 11.07
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.52
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 15.176
C/A sky separation (km) : 57942.5
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
    
```



Jupiter 2031-03-15T14:38:06 K8.31 G14.33

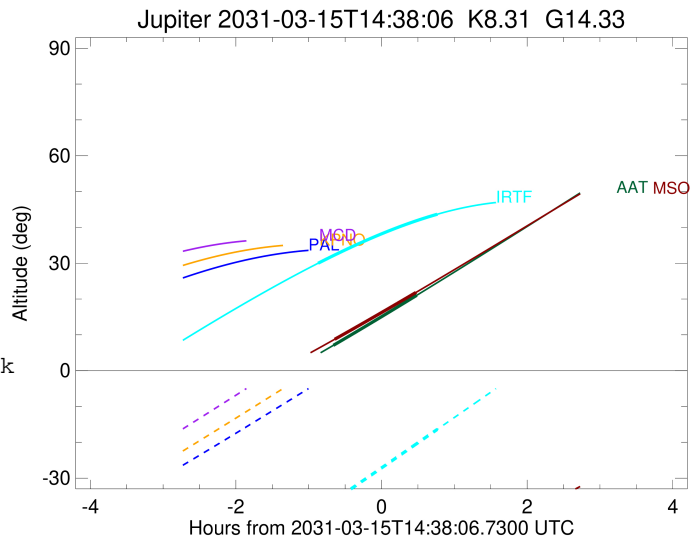
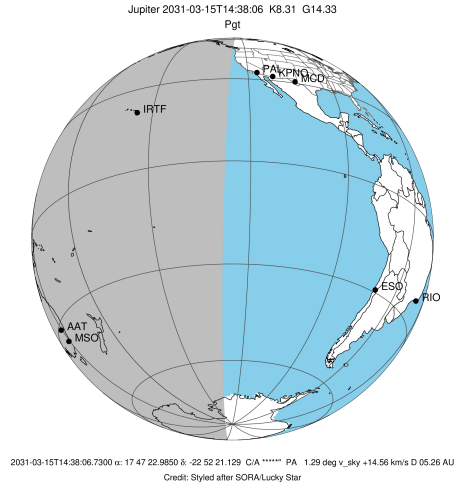


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-15T13:45:56.229	29.99	-39.21	71485.6	-55.27	-58.63
Jupiter	E	2031-03-15T15:24:07.976	43.67	-16.37	71486.0	-52.98	-56.45

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-15T14:32:43.840
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        : 4068933754382820992
2Mass ID (if available) : 17472298-2252208
ICRS Star Coord at Epoch: 17h 47m 22.98502s -22:52:21.12854s
RUWE (>1.4 is poor) : 0.86
K magnitude           : 8.308
G magnitude           : 14.334
RP magnitude          : 12.850
BP magnitude          : 17.465
DUPflag              : 0
Distance (au)         : 5.264
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 14.56
Sun-Target sep (deg)  : 87.29
Sun-Moon sep (deg)   : 10.73
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.52
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 16.997
C/A sky separation (km) : 64896.2
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
    
```

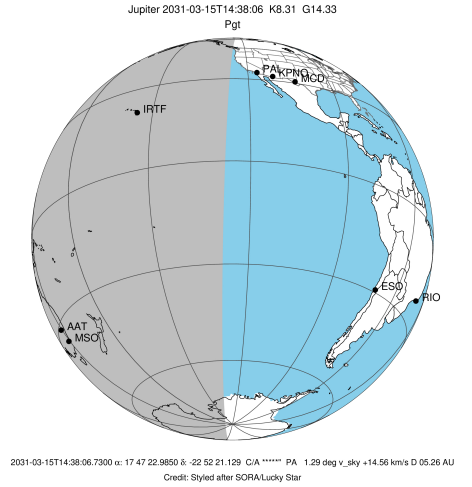


x: target alt < 5.0 deg or sun > -5.0 deg

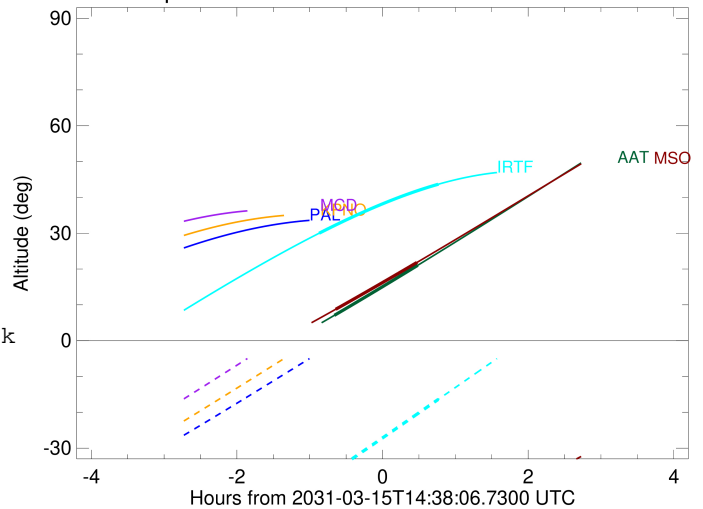
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-15T13:58:28.029	7.08	-56.65	71484.0	-66.45	-69.00
Jupiter	E	2031-03-15T15:07:09.550	21.04	-54.40	71484.4	-63.71	-66.49

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-15T14:32:59.300
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       : 4068933754382820992
2Mass ID (if available) : 17472298-2252208
ICRS Star Coord at Epoch: 17h 47m 22.98502s -22:52:21.12854s
RUWE (>1.4 is poor) : 0.86
K magnitude           : 8.308
G magnitude           : 14.334
RP magnitude          : 12.850
BP magnitude          : 17.465
DUPflag              : 0
Distance (au)        : 5.264
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 14.56
Sun-Target sep (deg) : 87.29
Sun-Moon sep (deg)   : 10.78
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.52
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 17.087
C/A sky separation (km) : 65240.9
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
    
```



Jupiter 2031-03-15T14:38:06 K8.31 G14.33



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	2031-03-15T13:59:35.265	8.77	-52.66	71484.0	-67.08	-69.58
Jupiter	E	2031-03-15T15:06:32.391	21.84	-50.75	71484.3	-64.40	-67.12