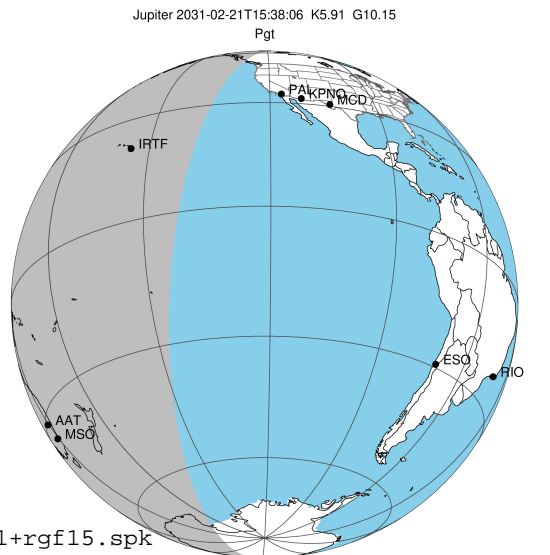


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-02-21T15:38:06.920
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116789654396613888
 2Mass ID (if available) : 17360507-2246567

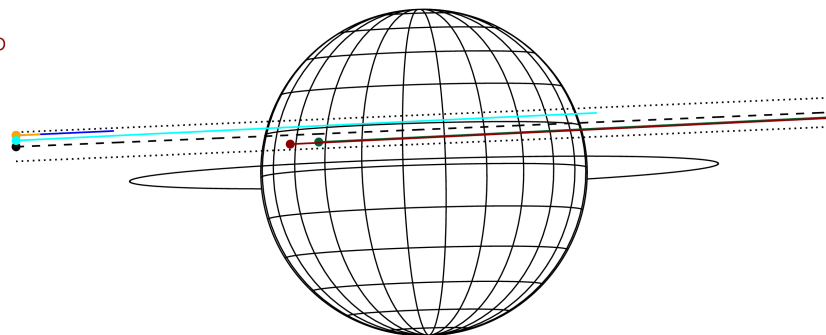
Jupiter 2031-02-21T15:38:06 K5.91 G10.15 Pgt

ICRS Star Coord at Epoch: 17h 36m 05.07176s -22:46:56.99064s

RUWE (>1.4 is poor) : 0.65
 K magnitude : 5.910
 G magnitude : 10.153
 RP magnitude : 9.019
 BP magnitude : 11.534
 DUPflag : 0
 Distance (au) : 5.611
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 24.36
 Sun-Target sep (deg) : 67.88
 Sun-Moon sep (deg) : 67.82
 B (ring opening deg) : -2.66
 PA of pole (deg) : 1.74
 Pole direction: RA (deg): 268.05702
 Dec (deg): 64.49651
 C/A sky separation (") : 4.626
 C/A sky separation (km) : 18825.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



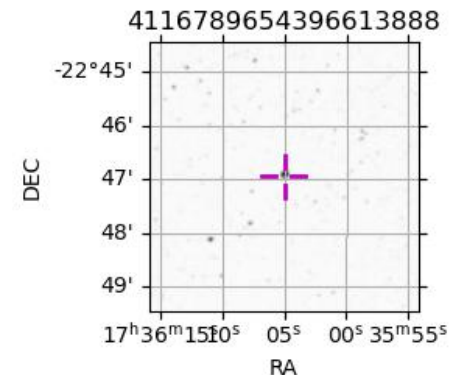
Earth
 PAL
 KPNO
 IRTF
 AAT
 MSO



2031-02-21T15:38:06.9200 cc: 17 36 05.0718 s: -22 46 56.991 C/A 4.616" PA 182.42 deg v_sky +24.36 km/s D 05.61 AU
 Credit: Styled after SORA/Lucky Star

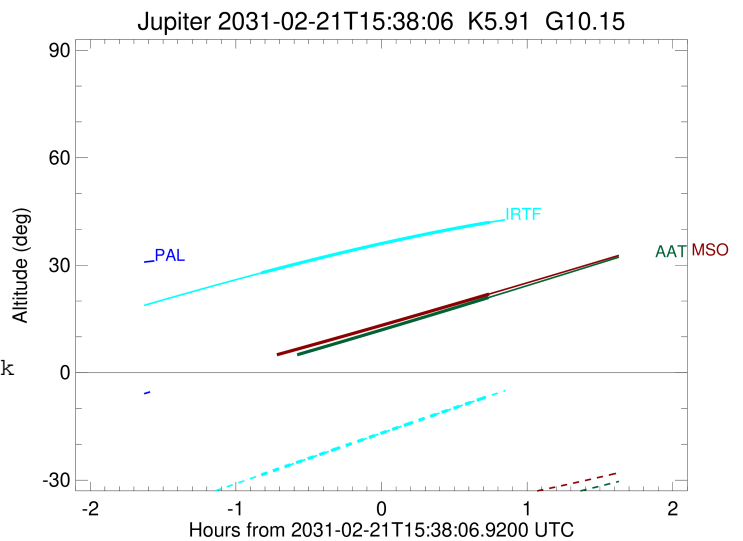
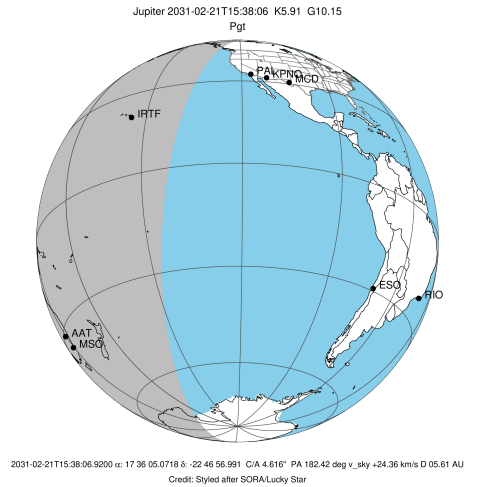
Observable events with sun below -5 deg and altitude above 5 deg

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 21 14:48 - FEB 21 16:22	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	+	FEB 21 16:22 - FEB 21 16:22	Pne
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	FEB 21 16:22 - FEB 21 16:22	Pne



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-21T15:35:36.170
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      : 4116789654396613888
2Mass ID (if available) : 17360507-2246567
ICRS Star Coord at Epoch: 17h 36m 05.07176s -22:46:56.99064s
RUWE (>1.4 is poor) : 0.65
K magnitude          : 5.910
G magnitude          : 10.153
RP magnitude         : 9.019
BP magnitude         : 11.534
DUPflag             : 0
Distance (au)       : 5.611
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 24.36
Sun-Target sep (deg) : 67.88
Sun-Moon sep (deg)  : 68.55
B (ring opening deg) : -2.66
PA of pole (deg)    : 1.74
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 5.550
C/A sky separation (km) : 22585.5
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
    
```

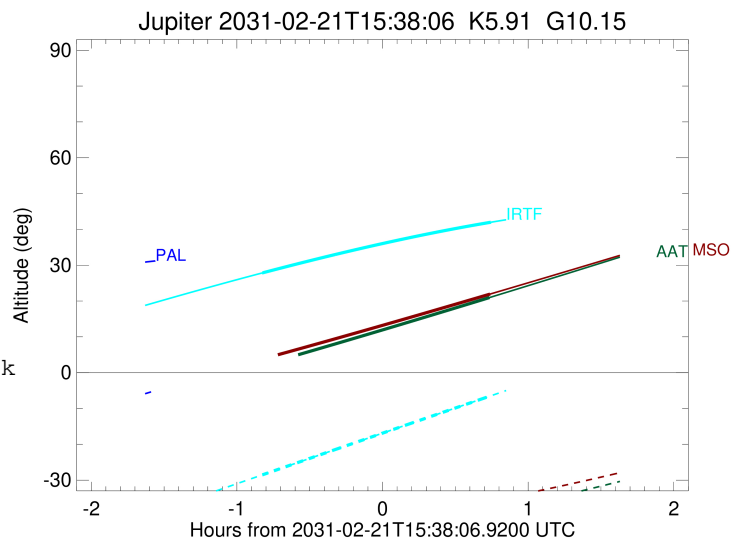
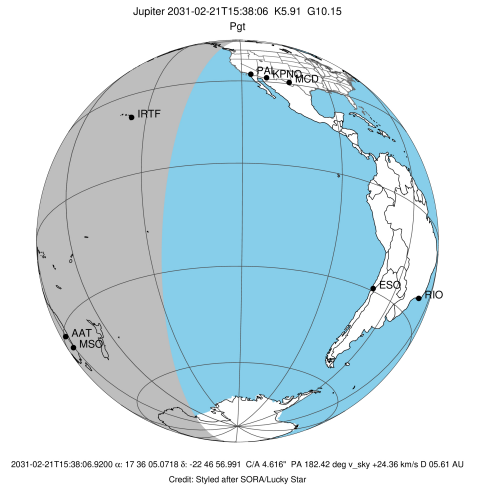


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-21T14:48:34.502	27.84	-28.53	71491.1	17.42	19.72
Jupiter	E	2031-02-21T16:22:45.932	41.99	-6.46	71490.9	19.31	21.81

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-21T15:34:23.950
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       : 4116789654396613888
2Mass ID (if available) : 17360507-2246567
ICRS Star Coord at Epoch: 17h 36m 05.07176s -22:46:56.99064s
RUWE (>1.4 is poor) : 0.65
K magnitude          : 5.910
G magnitude           : 10.153
RP magnitude         : 9.019
BP magnitude         : 11.534
DUPflag             : 0
Distance (au)        : 5.611
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 24.36
Sun-Target sep (deg) : 67.88
Sun-Moon sep (deg)   : 68.34
B (ring opening deg) : -2.66
PA of pole (deg)     : 1.74
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 3.824
C/A sky separation (km) : 15562.3
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
    
```

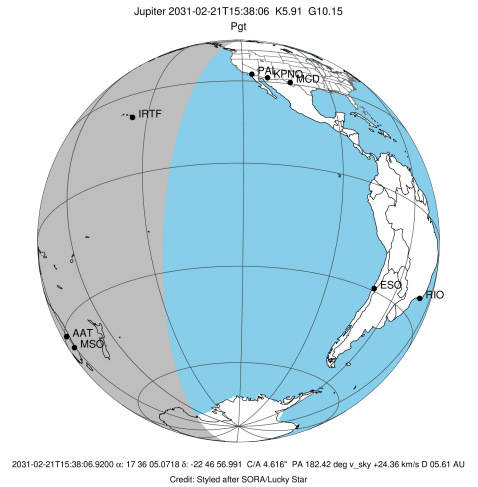


x: target alt < 5.0 deg or sun > -5.0 deg

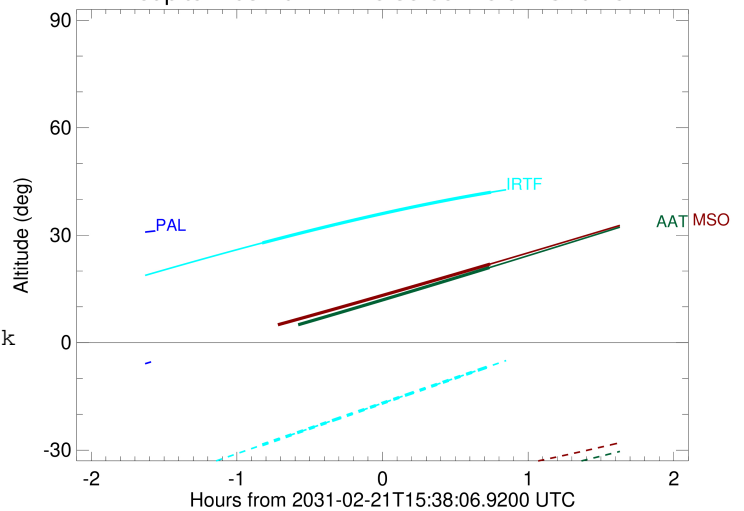
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-21T14:46:46.840	1.76x	-47.82	71491.6	11.52	13.11
Jupiter	E	2031-02-21T16:22:12.727	20.97	-38.77	71491.5	13.61	15.46

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-02-21T15:34:34.880
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        : 4116789654396613888
2Mass ID (if available) : 17360507-2246567
ICRS Star Coord at Epoch: 17h 36m 05.07176s -22:46:56.99064s
RUWE (>1.4 is poor)  : 0.65
K magnitude           : 5.910
G magnitude           : 10.153
RP magnitude          : 9.019
BP magnitude          : 11.534
DUPflag              : 0
Distance (au)         : 5.611
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 24.36
Sun-Target sep (deg)  : 67.88
Sun-Moon sep (deg)    : 68.34
B (ring opening deg)  : -2.66
PA of pole (deg)      : 1.74
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 3.742
C/A sky separation (km) : 15227.2
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
    
```



Jupiter 2031-02-21T15:38:06 K5.91 G10.15



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	2031-02-21T14:46:54.473	3.49x	-43.85	71491.6	11.26	12.82
Jupiter	E	2031-02-21T16:22:26.531	21.94	-35.68	71491.5	13.32	15.14