

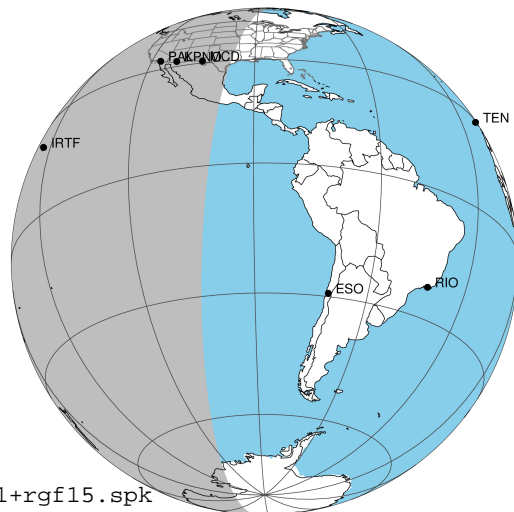
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-03-02T12:52:29.150
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116929081833866496
 2Mass ID (if available) : 17411493-2249302

Jupiter 2031-03-02T12:52:29 K9.00 G14.51 Pgt

ICRS Star Coord at Epoch: 17h 41m 14.92345s -22:49:30.44564s

RUWE (>1.4 is poor) : 0.90
 K magnitude : 9.003
 G magnitude : 14.515
 RP magnitude : 13.129
 BP magnitude : 16.908
 DUPflag : 0
 Distance (au) : 5.474
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 20.52
 Sun-Target sep (deg) : 75.63
 Sun-Moon sep (deg) : 178.37
 B (ring opening deg) : -2.65
 PA of pole (deg) : 1.18
 Pole direction: RA (deg): 268.05701
 Dec (deg): 64.49651
 C/A sky separation (") : 13.143
 C/A sky separation (km) : 52174.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

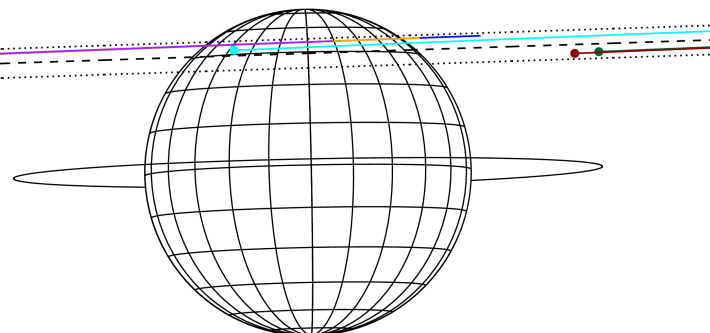
Jupiter 2031-03-02T12:52:29 K9.00 G14.51
 Pgt



2031-03-02T12:52:29.1500 a: 17 41 14.9235 s: -22 49 30.446 C/A ***** PA 181.90 deg v_sky +20.52 km/s D 05.47 AU
 Credit: Styled after SORA/Lucky Star

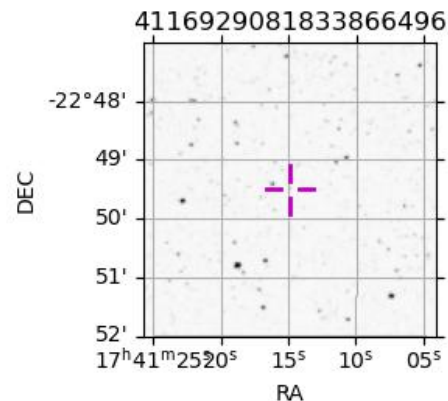
Earth

- PAL
- KPNO
- MCD
- IRTF
- AAT
- MSO



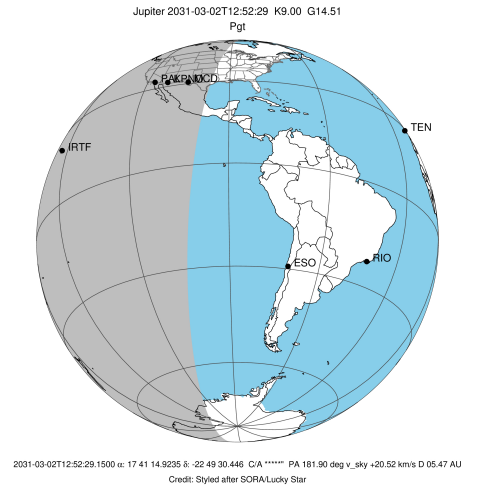
Observable events with sun below -5 deg and altitude above 5 deg

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 02 12:14 - MAR 02 13:25	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	MAR 02 12:14 - MAR 02 13:25	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+	MAR 02 12:15 - MAR 02 12:15	Pin
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	MAR 02 13:25 - MAR 02 13:25	Pne
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			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn

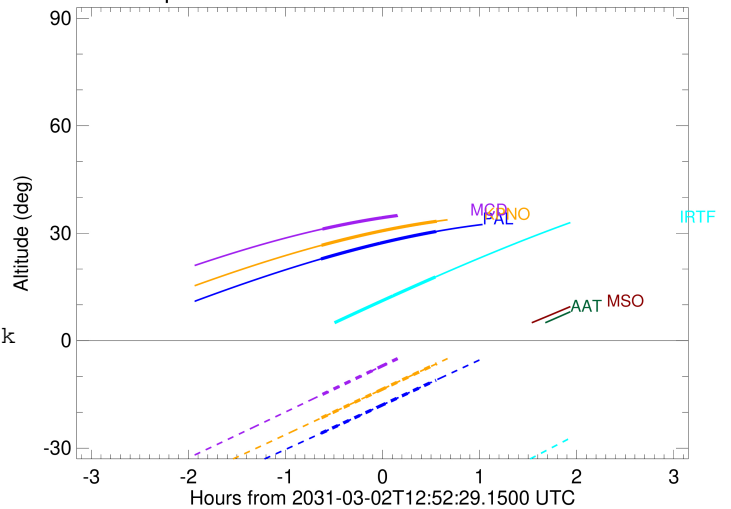


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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-02T12:50:00.060
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : PAL
Location              : Palomar Mt (200")
Latitude (deg)        : 33.35622
E. Longitude (deg)    : 243.13601
Altitude (km)         : 1.706
Gaia source ID        : 4116929081833866496
2Mass ID (if available) : 17411493-2249302
ICRS Star Coord at Epoch: 17h 41m 14.92345s -22:49:30.44564s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 9.003
G magnitude           : 14.515
RP magnitude          : 13.129
BP magnitude          : 16.908
DUPflag              : 0
Distance (au)         : 5.474
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 20.52
Sun-Target sep (deg)  : 75.63
Sun-Moon sep (deg)    : 177.74
B (ring opening deg) : -2.65
PA of pole (deg)      : 1.18
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 14.383
C/A sky separation (km) : 57099.9
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 2031-03-02T12:52:29 K9.00 G14.51

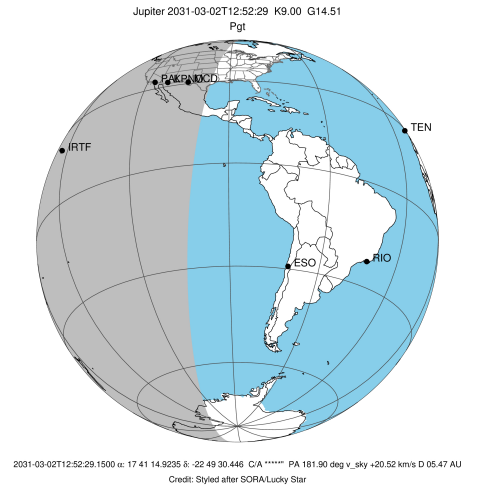


x: target alt < 5.0 deg or sun > -5.0 deg

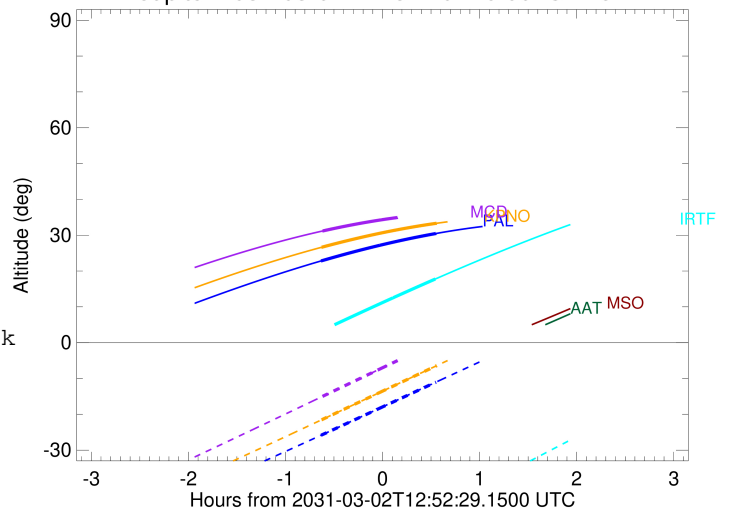
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-02T12:14:30.515	22.81	-25.84	71486.0	51.95	55.46
Jupiter	E	2031-03-02T13:25:34.262	30.47	-11.01	71485.7	53.86	57.29

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-02T12:50:21.400
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      : 4116929081833866496
2Mass ID (if available) : 17411493-2249302
ICRS Star Coord at Epoch: 17h 41m 14.92345s -22:49:30.44564s
RUWE (>1.4 is poor) : 0.90
K magnitude          : 9.003
G magnitude          : 14.515
RP magnitude         : 13.129
BP magnitude         : 16.908
DUPflag             : 0
Distance (au)       : 5.474
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 20.52
Sun-Target sep (deg) : 75.63
Sun-Moon sep (deg)  : 177.74
B (ring opening deg) : -2.65
PA of pole (deg)    : 1.18
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (" ) : 14.386
C/A sky separation (km) : 57110.6
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
    
```



Jupiter 2031-03-02T12:52:29 K9.00 G14.51

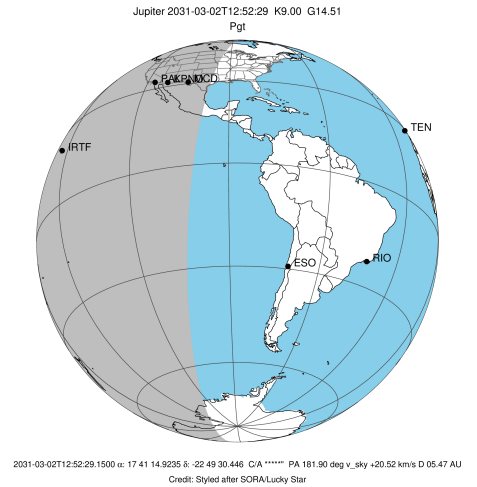


x: target alt < 5.0 deg or sun > -5.0 deg

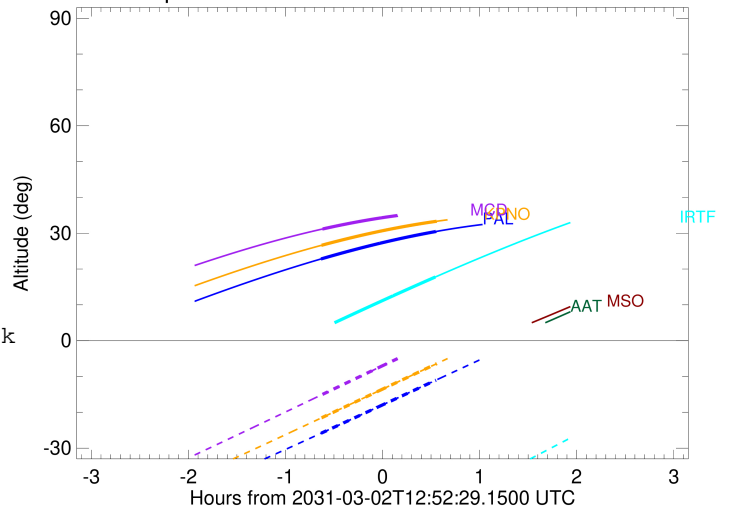
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-02T12:14:49.816	26.62	-21.53	71486.0	51.99	55.50
Jupiter	E	2031-03-02T13:25:57.156	33.33	-6.42	71485.7	53.84	57.27

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-02T12:50:56.010
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       : 4116929081833866496
2Mass ID (if available) : 17411493-2249302
ICRS Star Coord at Epoch: 17h 41m 14.92345s -22:49:30.44564s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 9.003
G magnitude           : 14.515
RP magnitude         : 13.129
BP magnitude         : 16.908
DUPflag              : 0
Distance (au)        : 5.474
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 20.52
Sun-Target sep (deg) : 75.63
Sun-Moon sep (deg)   : 177.73
B (ring opening deg) : -2.65
PA of pole (deg)     : 1.18
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation ("): 14.395
C/A sky separation (km): 57145.6
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
    
```



Jupiter 2031-03-02T12:52:29 K9.00 G14.51

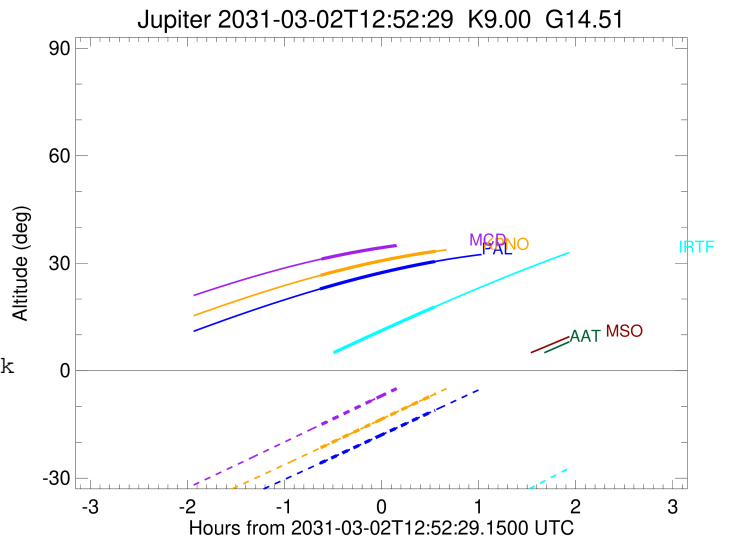
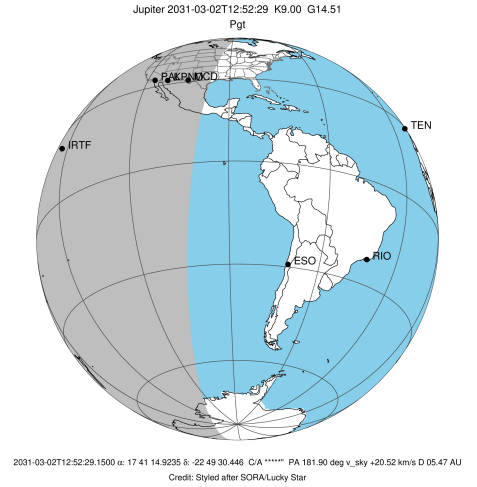


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-02T12:15:23.584	31.17	-14.99	71486.0	52.08	55.59
Jupiter	E	2031-03-02T13:26:31.812	36.10	0.29x	71485.7	53.83	57.26

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-02T12:47:30.020
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        : 4116929081833866496
2Mass ID (if available) : 17411493-2249302
ICRS Star Coord at Epoch: 17h 41m 14.92345s -22:49:30.44564s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 9.003
G magnitude           : 14.515
RP magnitude          : 13.129
BP magnitude          : 16.908
DUPflag              : 0
Distance (au)         : 5.474
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 20.52
Sun-Target sep (deg)  : 75.63
Sun-Moon sep (deg)   : 178.01
B (ring opening deg) : -2.65
PA of pole (deg)     : 1.18
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 13.808
C/A sky separation (km) : 54815.2
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	2031-03-02T12:10:01.637	2.29x	-63.56	71486.6	48.81	52.44
Jupiter	E	2031-03-02T13:25:07.487	17.77	-46.69	71486.2	51.15	54.70