

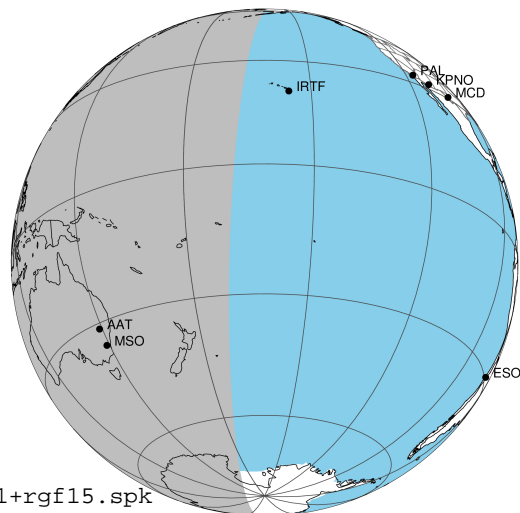
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-03-09T17:23:03.690
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116890878196541696
 2Mass ID (if available) : 17445096-2251189

Jupiter 2031-03-09T17:23:03 K8.05 G14.86 Pgt

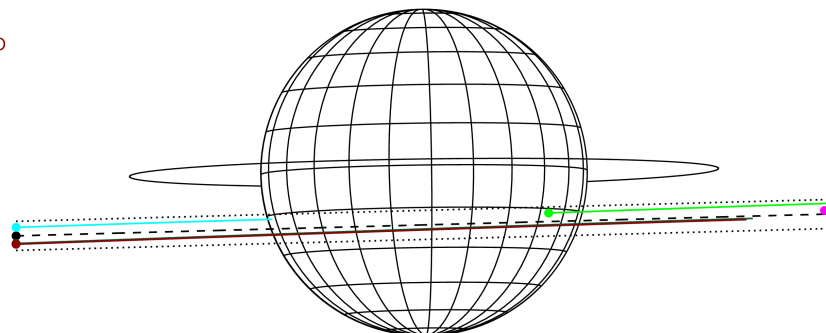
ICRS Star Coord at Epoch: 17h 44m 50.96999s -22:51:19.15933s

RUWE (>1.4 is poor) : 0.99
 K magnitude : 8.054
 G magnitude : 14.858
 RP magnitude : 13.280
 BP magnitude : 18.398
 DUPflag : 0
 Distance (au) : 5.359
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 17.28
 Sun-Target sep (deg) : 82.00
 Sun-Moon sep (deg) : 91.52
 B (ring opening deg) : -2.64
 PA of pole (deg) : 0.79
 Pole direction: RA (deg): 268.05700
 Dec (deg): 64.49651
 C/A sky separation (") : 5.905
 C/A sky separation (km) : 22951.8
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-03-09T17:23:03 K8.05 G14.86
 Pgt



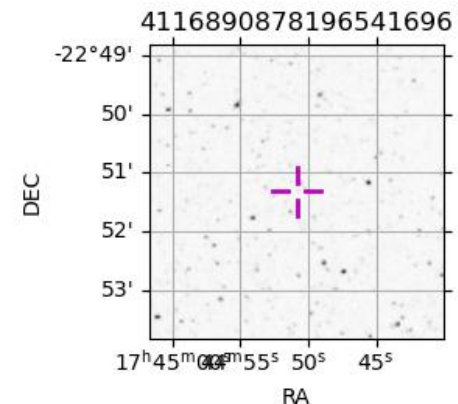
Earth
 PMO
 IRTF
 KAV
 AAT
 MSO



2031-03-09T17:23:03.6900 az: 17 44 50.9700 δ: -22 51 19.159 C/A 5.915" PA 1.54 deg v_sky +17.28 km/s D 05.36 AU
 Credit: Styled after SORA/Lucky Star

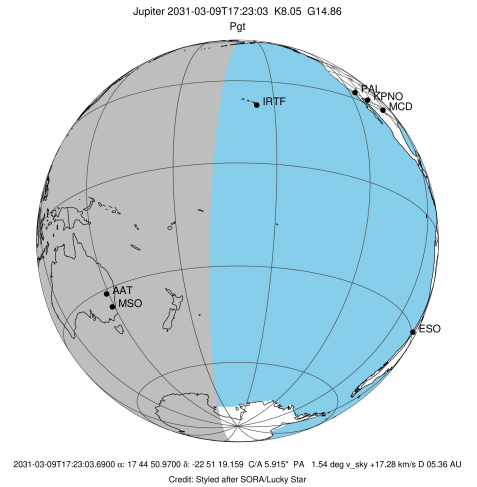
Observable events with sun below -5 deg and altitude above 5 deg

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 09 18:24 - MAR 09 18:24	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 09 16:15 - MAR 09 16:15	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 09 16:13 - MAR 09 18:25	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	MAR 09 16:14 - MAR 09 18:25	Pie

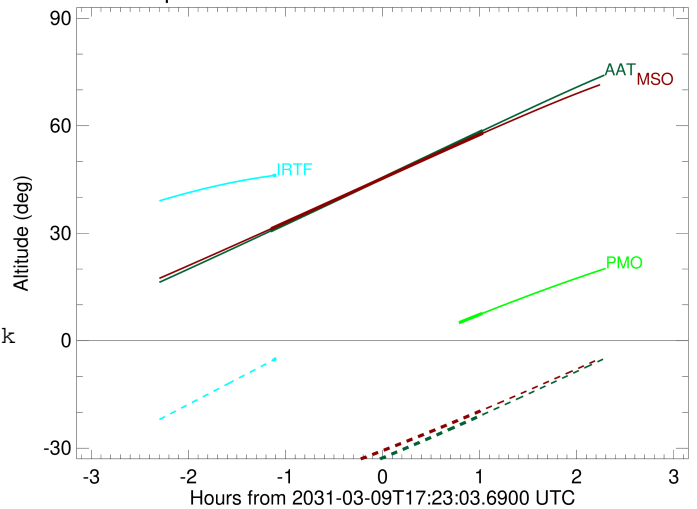


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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-09T17:17:59.900
Event type          : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code       : PMO
Location            : Purple Mtn Obs. Nanking
Latitude (deg)     : 32.06667
E. Longitude (deg) : 118.82089
Altitude (km)      : 0.364
Gaia source ID     : 4116890878196541696
2Mass ID (if available) : 17445096-2251189
ICRS Star Coord at Epoch: 17h 44m 50.96999s -22:51:19.15933s
RUWE (>1.4 is poor) : 0.99
K magnitude         : 8.054
G magnitude         : 14.858
RP magnitude        : 13.280
BP magnitude        : 18.398
DUPflag            : 0
Distance (au)      : 5.359
f0 (km)            : 0.00
g0 (km)            : 0.00
skyplane vel. (km/s) : 17.28
Sun-Target sep (deg) : 82.00
Sun-Moon sep (deg) : 91.48
B (ring opening deg) : -2.64
PA of pole (deg)   : 0.79
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 5.056
C/A sky separation (km) : 19653.9
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
    
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Jupiter 2031-03-09T17:23:03 K8.05 G14.86

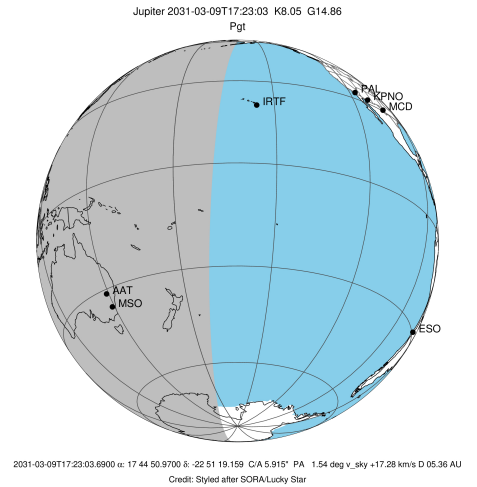


x: target alt < 5.0 deg or sun > -5.0 deg

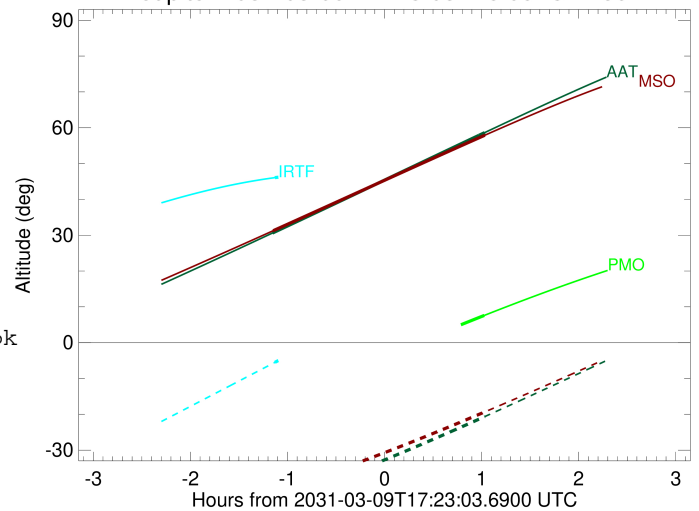
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-09T16:11:46.157	-18.11x	-62.49	71491.2	-17.19	-19.47
Jupiter	E	2031-03-09T18:24:44.941	7.61	-49.03	71491.4	-14.70	-16.69

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-09T17:23:33.320
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       : 4116890878196541696
2Mass ID (if available) : 17445096-2251189
ICRS Star Coord at Epoch: 17h 44m 50.96999s -22:51:19.15933s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 8.054
G magnitude           : 14.858
RP magnitude          : 13.280
BP magnitude          : 18.398
DUPflag              : 0
Distance (au)        : 5.359
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 17.28
Sun-Target sep (deg) : 82.00
Sun-Moon sep (deg)   : 92.21
B (ring opening deg) : -2.64
PA of pole (deg)     : 0.79
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 4.794
C/A sky separation (km) : 18635.1
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 2031-03-09T17:23:03 K8.05 G14.86

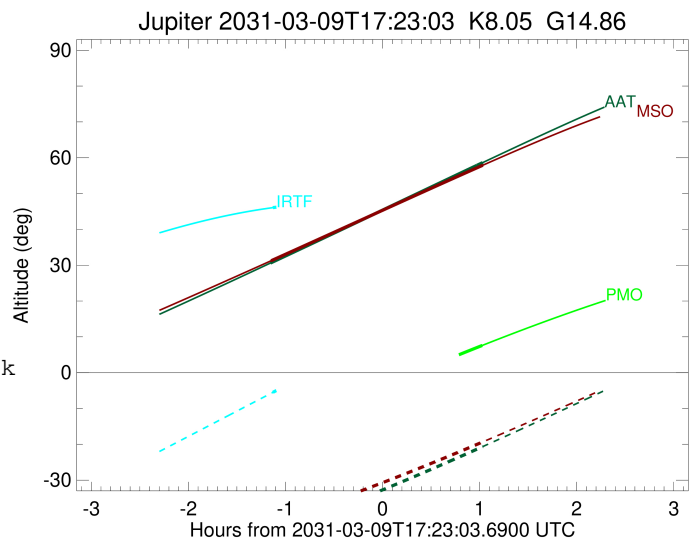
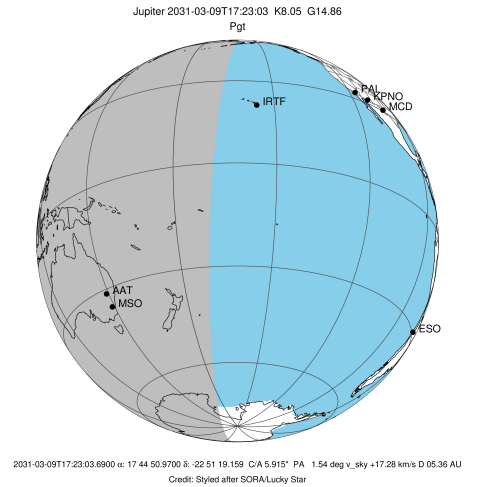


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-09T16:15:21.289	46.06	-5.48	71491.3	-15.90	-18.03
Jupiter	E	2031-03-09T18:31:48.257	41.85	26.21x	71491.4	-14.46	-16.42

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-09T17:19:12.580
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        : 4116890878196541696
2Mass ID (if available) : 17445096-2251189
ICRS Star Coord at Epoch: 17h 44m 50.96999s -22:51:19.15933s
RUWE (>1.4 is poor)  : 0.99
K magnitude           : 8.054
G magnitude           : 14.858
RP magnitude          : 13.280
BP magnitude          : 18.398
DUPflag              : 0
Distance (au)         : 5.359
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 17.28
Sun-Target sep (deg)  : 82.00
Sun-Moon sep (deg)    : 92.22
B (ring opening deg) : -2.64
PA of pole (deg)      : 0.79
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 6.365
C/A sky separation (km) : 24739.7
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
    
```

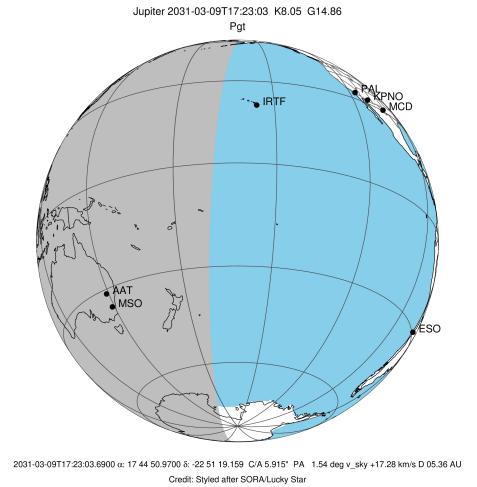


x: target alt < 5.0 deg or sun > -5.0 deg

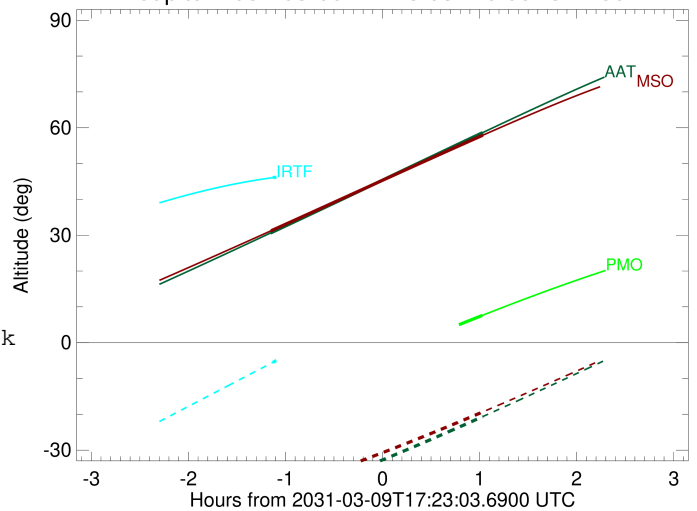
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-09T16:13:49.918	30.60	-44.47	71490.7	-21.42	-24.14
Jupiter	E	2031-03-09T18:25:00.746	58.64	-20.63	71491.0	-19.11	-21.59

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-09T17:19:23.800
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       : 4116890878196541696
2Mass ID (if available) : 17445096-2251189
ICRS Star Coord at Epoch: 17h 44m 50.96999s -22:51:19.15933s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 8.054
G magnitude           : 14.858
RP magnitude         : 13.280
BP magnitude         : 18.398
DUPflag              : 0
Distance (au)        : 5.359
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 17.28
Sun-Target sep (deg) : 82.00
Sun-Moon sep (deg)   : 92.22
B (ring opening deg) : -2.64
PA of pole (deg)     : 0.79
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 6.468
C/A sky separation (km) : 25141.3
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
    
```



Jupiter 2031-03-09T17:23:03 K8.05 G14.86



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	2031-03-09T16:14:11.895	31.23	-41.50	71490.7	-21.75	-24.49
Jupiter	E	2031-03-09T18:25:00.136	57.89	-19.33	71490.9	-19.47	-21.99