

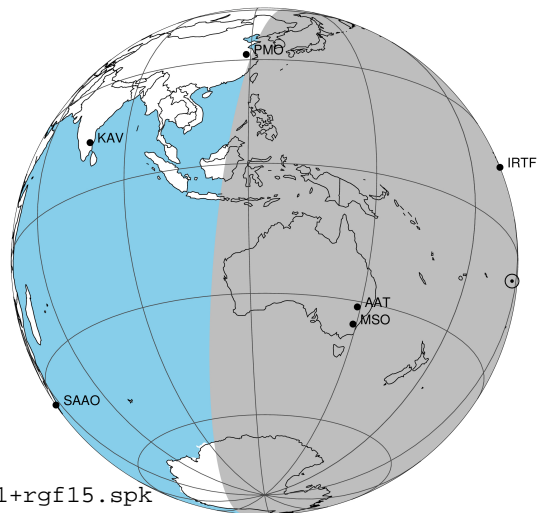
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-08-31T10:21:49.860
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4114552904104656768
 2Mass ID (if available) : 17122887-2244088

Jupiter 2031-08-31T10:21:49 K8.78 G14.81 Pgt

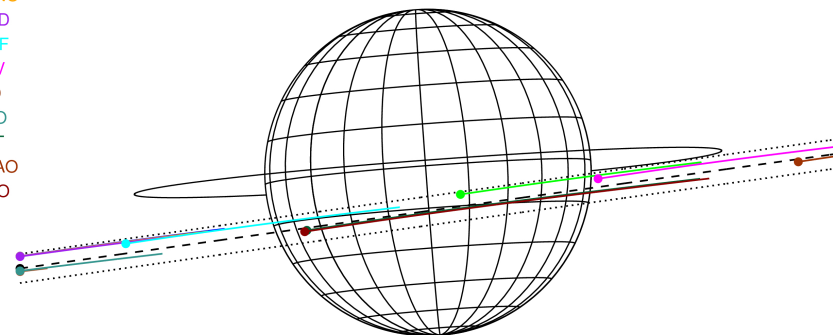
ICRS Star Coord at Epoch: 17h 12m 28.87132s -22:44:08.81127s

RUWE (>1.4 is poor) : 1.05
 K magnitude : 8.776
 G magnitude : 14.810
 RP magnitude : 13.326
 BP magnitude : 18.011
 DUPflag : 0
 Distance (au) : 4.956
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 7.03
 Sun-Target sep (deg) : 101.66
 Sun-Moon sep (deg) : 65.13
 B (ring opening deg) : -2.43
 PA of pole (deg) : 4.26
 Pole direction: RA (deg): 268.05685
 Dec (deg): 64.49652
 C/A sky separation (") : 4.636
 C/A sky separation (km) : 16664.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-08-31T10:21:49 K8.78 G14.81
 Pgt



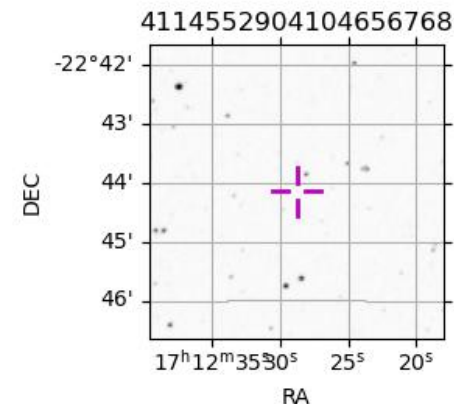
Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



2031-08-31T10:21:49.8600 α: 17 12 28.8713 δ: -22 44 08.811 C/A 4.646° PA 7.99 deg v_sky + 7.03 km/s D 04.96 AU
 Credit: Styled after SORA/Lucky Star

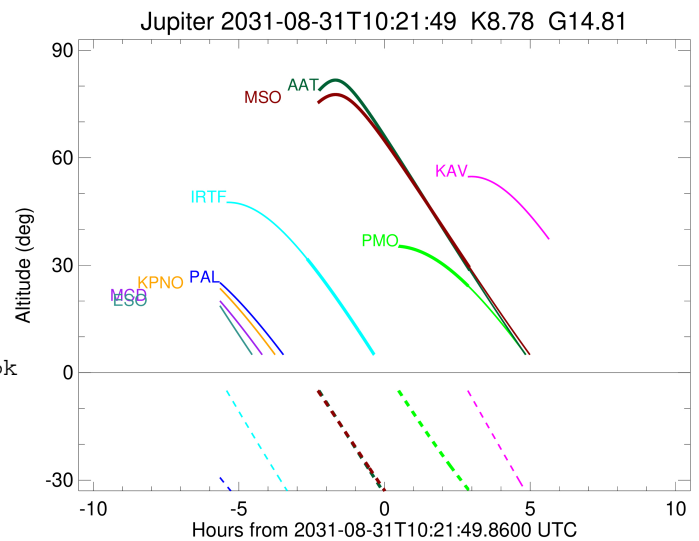
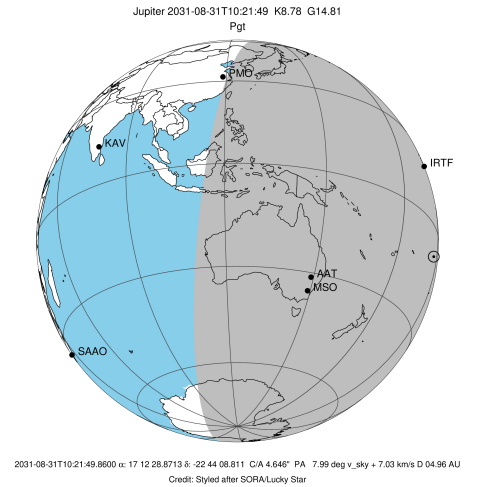
Observable events with sun below -5 deg and altitude above 5 deg

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	+	AUG 31 13:14 - AUG 31 13:14	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	+	AUG 31 07:42 - AUG 31 07:42	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	+	AUG 31 13:17 - AUG 31 13:17	Pne
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	AUG 31 13:17 - AUG 31 13:17	Pne



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target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2031-08-31T10:19:12.520
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        : 4114552904104656768
2Mass ID (if available) : 17122887-2244088
ICRS Star Coord at Epoch: 17h 12m 28.87132s -22:44:08.81127s
RUWE (>1.4 is poor)  : 1.05
K magnitude            : 8.776
G magnitude            : 14.810
RP magnitude           : 13.326
BP magnitude           : 18.011
DUPflag                : 0
Distance (au)         : 4.956
f0 (km)                : 0.00
g0 (km)                : 0.00
skyplane vel. (km/s)  : 7.03
Sun-Target sep (deg)  : 101.66
Sun-Moon sep (deg)    : 65.69
B (ring opening deg)  : -2.43
PA of pole (deg)      : 4.26
Pole direction: RA (deg): 268.05685
Dec (deg): 64.49652
C/A sky separation (") : 3.226
C/A sky separation (km) : 11595.6
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
    
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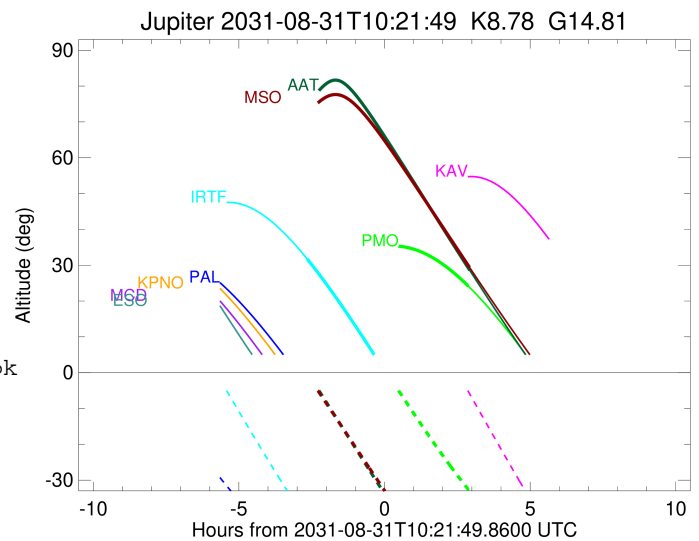
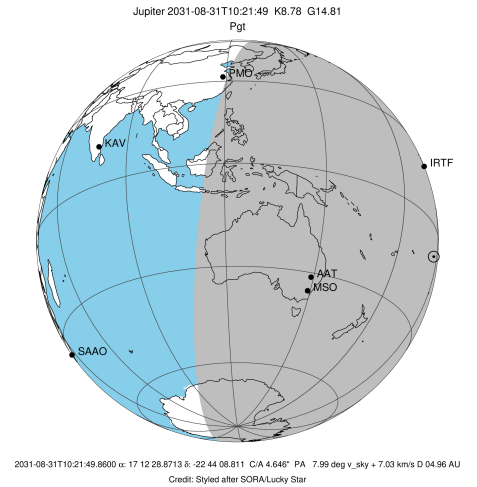


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-08-31T07:23:09.777	17.57	38.66x	71491.5	-14.05	-15.96
Jupiter	E	2031-08-31T13:14:47.379	24.12	-32.64	71491.9	-5.54	-6.33

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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-08-31T10:34:23.600
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       : 4114552904104656768
2Mass ID (if available) : 17122887-2244088
ICRS Star Coord at Epoch: 17h 12m 28.87132s -22:44:08.81127s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 8.776
G magnitude           : 14.810
RP magnitude         : 13.326
BP magnitude         : 18.011
DUPflag              : 0
Distance (au)        : 4.956
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 7.03
Sun-Target sep (deg) : 101.66
Sun-Moon sep (deg)  : 64.74
B (ring opening deg) : -2.43
PA of pole (deg)    : 4.26
Pole direction: RA (deg): 268.05685
Dec (deg): 64.49652
C/A sky separation ("): 3.797
C/A sky separation (km): 13649.1
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
    
```

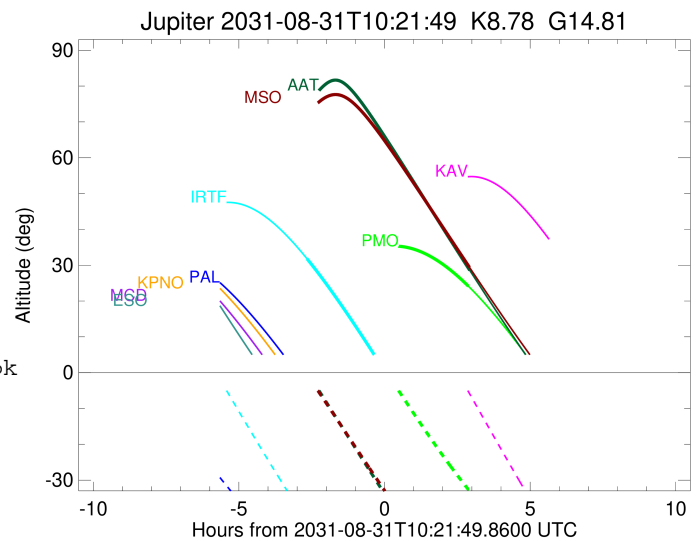
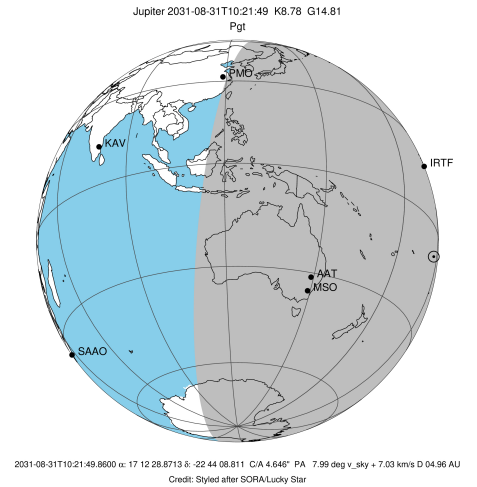


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-08-31T07:42:17.932	31.77	-41.46	71491.5	-13.74	-15.61
Jupiter	E	2031-08-31T13:17:59.708	-38.89x	-38.32	71491.8	-8.68	-9.90

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-08-31T10:27:51.650
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       : 4114552904104656768
2Mass ID (if available) : 17122887-2244088
ICRS Star Coord at Epoch: 17h 12m 28.87132s -22:44:08.81127s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 8.776
G magnitude          : 14.810
RP magnitude         : 13.326
BP magnitude         : 18.011
DUPflag             : 0
Distance (au)        : 4.956
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 7.03
Sun-Target sep (deg) : 101.66
Sun-Moon sep (deg)   : 65.82
B (ring opening deg) : -2.43
PA of pole (deg)     : 4.26
Pole direction: RA (deg): 268.05685
Dec (deg): 64.49652
C/A sky separation (") : 4.861
C/A sky separation (km) : 17470.8
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
    
```

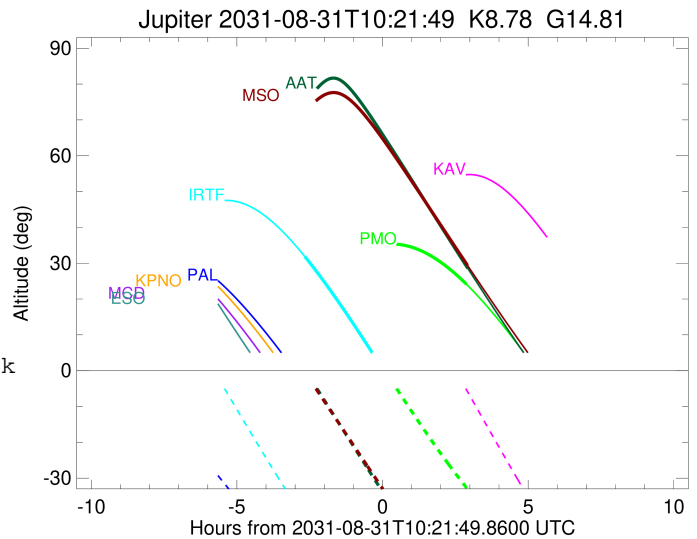
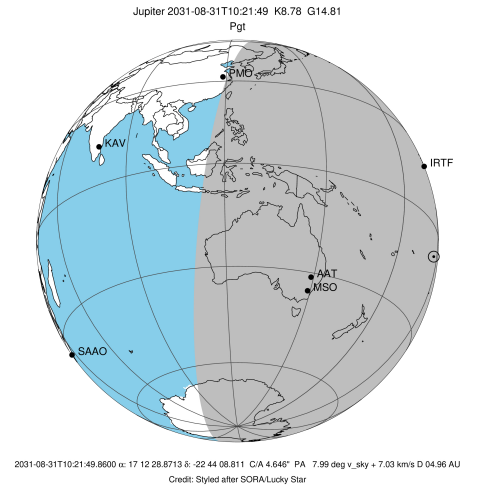


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-08-31T07:33:38.746	72.87	1.98x	71491.2	-18.21	-20.60
Jupiter	E	2031-08-31T13:17:43.372	28.52	-65.02	71491.7	-11.06	-12.60

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-08-31T10:27:43.470
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       : 4114552904104656768
2Mass ID (if available) : 17122887-2244088
ICRS Star Coord at Epoch: 17h 12m 28.87132s -22:44:08.81127s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 8.776
G magnitude           : 14.810
RP magnitude          : 13.326
BP magnitude          : 18.011
DUPflag              : 0
Distance (au)        : 4.956
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 7.03
Sun-Target sep (deg) : 101.66
Sun-Moon sep (deg)   : 65.82
B (ring opening deg) : -2.43
PA of pole (deg)     : 4.26
Pole direction: RA (deg): 268.05685
Dec (deg): 64.49652
C/A sky separation ("): 4.983
C/A sky separation (km): 17912.0
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	2031-08-31T07:34:14.309	70.89	1.11x	71491.2	-18.56	-20.99
Jupiter	E	2031-08-31T13:17:02.105	29.38	-61.32	71491.7	-11.39	-12.97