

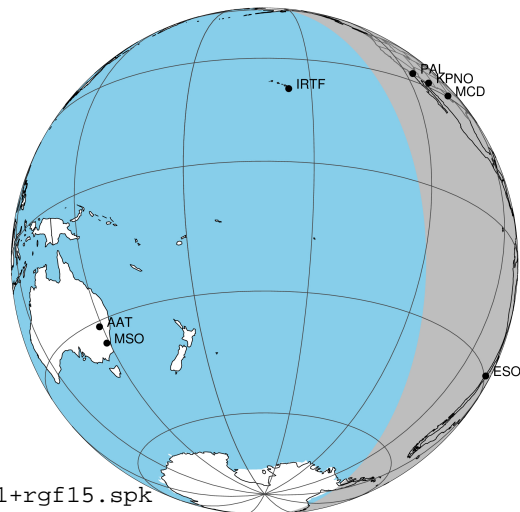
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-10-30T01:58:21.980
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068813009892638208
 2Mass ID (if available) : 17441153-2316271

Jupiter 2031-10-30T01:58:21 K8.04 G13.39 Pgt

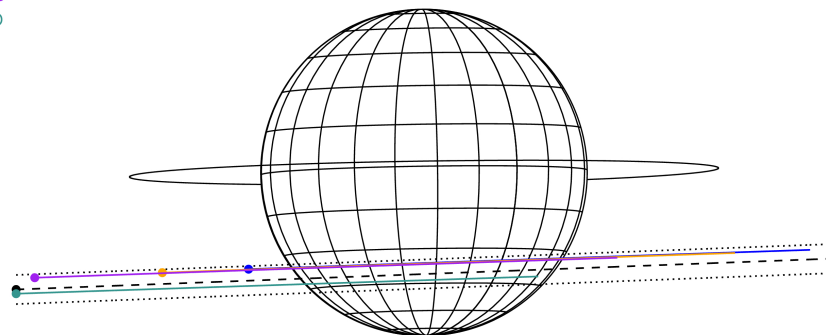
ICRS Star Coord at Epoch: 17h 44m 11.52056s -23:16:27.55633s

RUWE (>1.4 is poor) : 0.87
 K magnitude : 8.038
 G magnitude : 13.393
 RP magnitude : 12.061
 BP magnitude : 15.442
 DUPflag : 0
 Distance (au) : 5.810
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 32.21
 Sun-Target sep (deg) : 50.37
 Sun-Moon sep (deg) : 126.77
 B (ring opening deg) : -2.22
 PA of pole (deg) : 0.87
 Pole direction: RA (deg): 268.05681
 Dec (deg): 64.49652
 C/A sky separation (") : 10.550
 C/A sky separation (km) : 44456.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-10-30T01:58:21 K8.04 G13.39
 Pgt



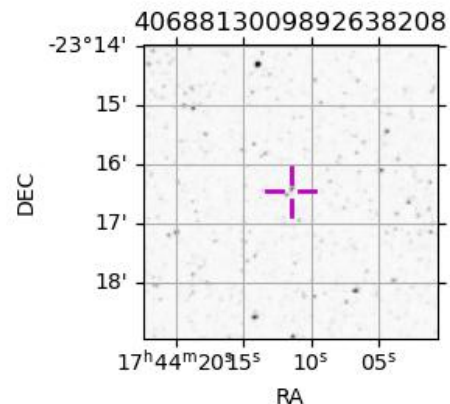
Earth
 PAL
 KPNO
 MCD
 ESO



2031-10-30T01:58:21.9800 α: 17 44 11.5206 δ: -23 16 27.556 C/A ***** PA 2.17 deg v_sky +32.21 km/s D 05.81 AU
 Credit: Styled after SORA/Lucky Star

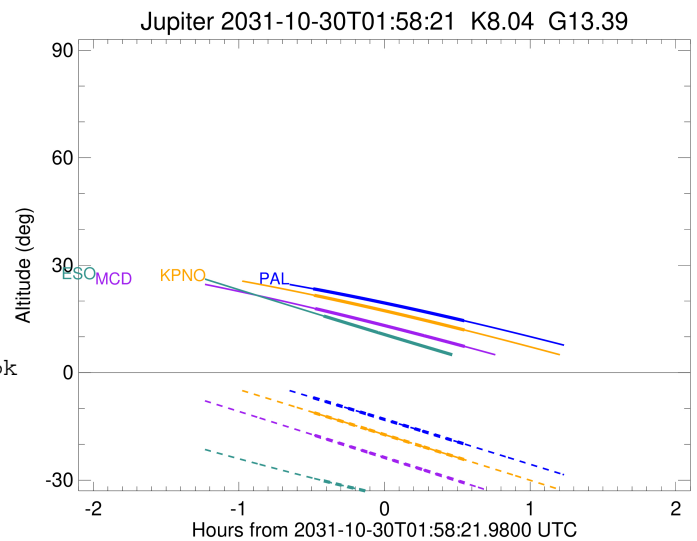
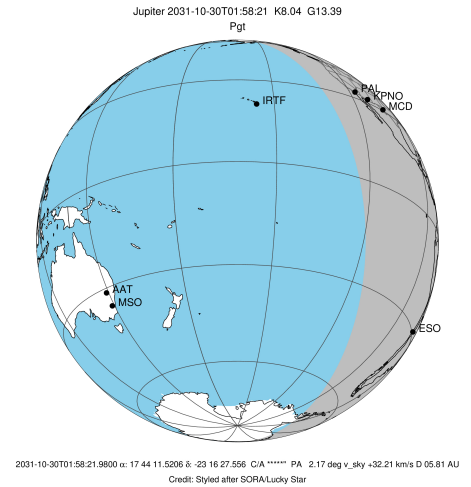
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	OCT 30 01:29 - OCT 30 02:31	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	OCT 30 01:29 - OCT 30 02:31	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	OCT 30 01:29 - OCT 30 02:31	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
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	+	OCT 30 01:33 - OCT 30 01:33	Pin
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             : 2031-10-30T02:00:09.860
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        : 4068813009892638208
2Mass ID (if available) : 17441153-2316271
ICRS Star Coord at Epoch: 17h 44m 11.52056s -23:16:27.55633s
RUWE (>1.4 is poor) : 0.87
K magnitude           : 8.038
G magnitude           : 13.393
RP magnitude          : 12.061
BP magnitude          : 15.442
DUPflag              : 0
Distance (au)         : 5.810
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 32.21
Sun-Target sep (deg)  : 50.37
Sun-Moon sep (deg)    : 127.36
B (ring opening deg) : -2.22
PA of pole (deg)      : 0.87
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (" ) : 9.405
C/A sky separation (km) : 39631.1
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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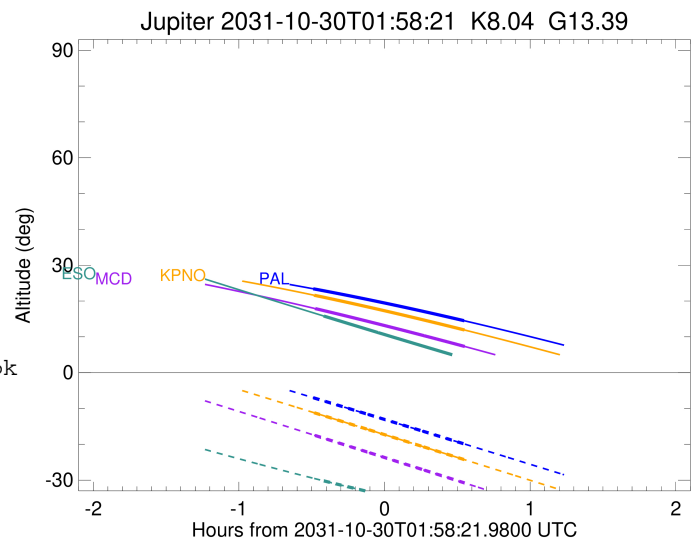
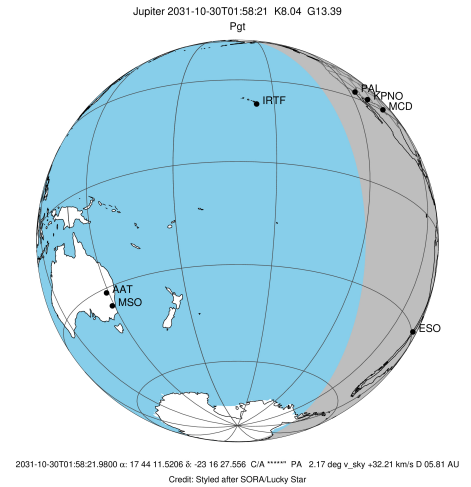


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-30T01:29:05.824	23.40	-7.01	71489.8	-34.78	-38.37
Jupiter	E	2031-10-30T02:31:11.301	14.50	-19.88	71490.1	-32.53	-36.03

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-30T02:00:21.990
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        : 4068813009892638208
2Mass ID (if available) : 17441153-2316271
ICRS Star Coord at Epoch: 17h 44m 11.52056s -23:16:27.55633s
RUWE (>1.4 is poor)  : 0.87
K magnitude           : 8.038
G magnitude           : 13.393
RP magnitude          : 12.061
BP magnitude          : 15.442
DUPflag              : 0
Distance (au)         : 5.810
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 32.21
Sun-Target sep (deg)  : 50.37
Sun-Moon sep (deg)    : 127.37
B (ring opening deg) : -2.22
PA of pole (deg)      : 0.87
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (") : 9.459
C/A sky separation (km) : 39859.6
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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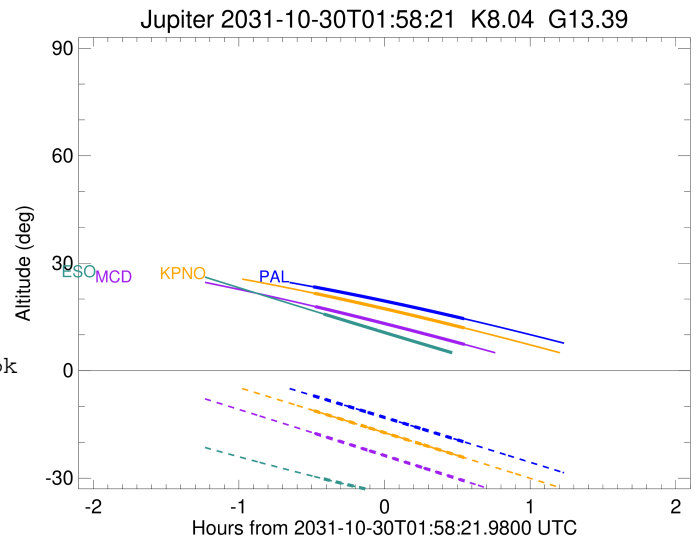
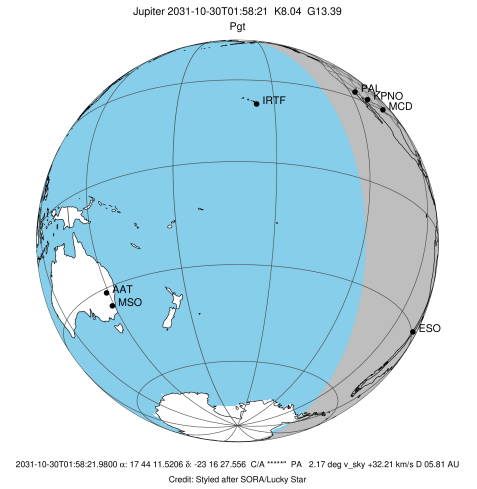


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-30T01:29:23.905	21.61	-11.19	71489.8	-34.97	-38.57
Jupiter	E	2031-10-30T02:31:17.261	11.92	-24.28	71490.0	-32.77	-36.28

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-10-30T02:00:36.830
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      : 4068813009892638208
2Mass ID (if available) : 17441153-2316271
ICRS Star Coord at Epoch: 17h 44m 11.52056s -23:16:27.55633s
RUWE (>1.4 is poor) : 0.87
K magnitude          : 8.038
G magnitude          : 13.393
RP magnitude         : 12.061
BP magnitude         : 15.442
DUPflag             : 0
Distance (au)       : 5.810
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 32.21
Sun-Target sep (deg) : 50.37
Sun-Moon sep (deg)   : 127.36
B (ring opening deg) : -2.22
PA of pole (deg)     : 0.87
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (") : 9.533
C/A sky separation (km) : 40170.3
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
    
```

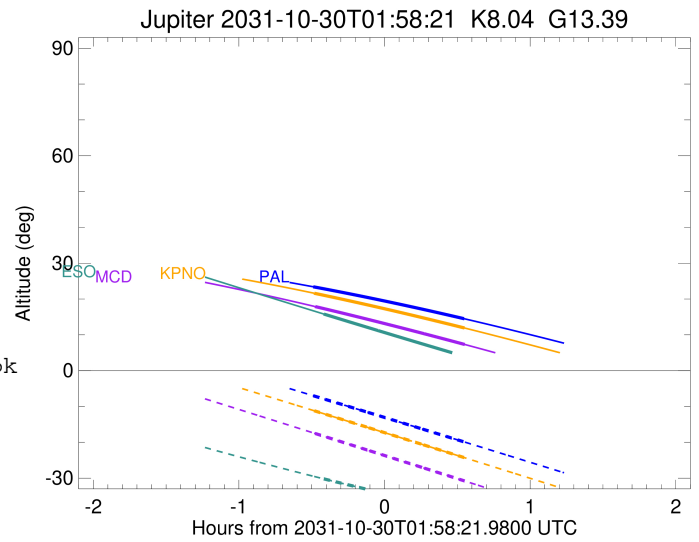
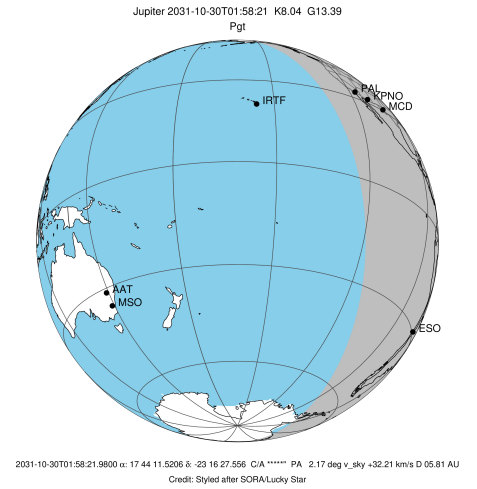


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-30T01:29:47.421	17.89	-17.53	71489.8	-35.25	-38.85
Jupiter	E	2031-10-30T02:31:23.189	7.32	-30.79	71490.0	-33.10	-36.62

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-30T02:01:10.560
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : ESO
Location              : European Southern Obs. (3.6m)
Latitude (deg)       : -29.26097
E. Longitude (deg)   : 289.26831
Altitude (km)        : 2.400
Gaia source ID       : 4068813009892638208
2Mass ID (if available) : 17441153-2316271
ICRS Star Coord at Epoch: 17h 44m 11.52056s -23:16:27.55633s
RUWE (>1.4 is poor) : 0.87
K magnitude           : 8.038
G magnitude           : 13.393
RP magnitude          : 12.061
BP magnitude          : 15.442
DUPflag              : 0
Distance (au)        : 5.810
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 32.21
Sun-Target sep (deg) : 50.37
Sun-Moon sep (deg)   : 127.41
B (ring opening deg) : -2.22
PA of pole (deg)     : 0.87
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation ("): 11.192
C/A sky separation (km): 47158.9
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
    
```



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	2031-10-30T01:33:21.533	15.81	-30.20	71489.0	-42.25	-45.97
Jupiter	E	2031-10-30T02:28:56.688	4.46x	-38.66	71489.2	-40.22	-43.93