

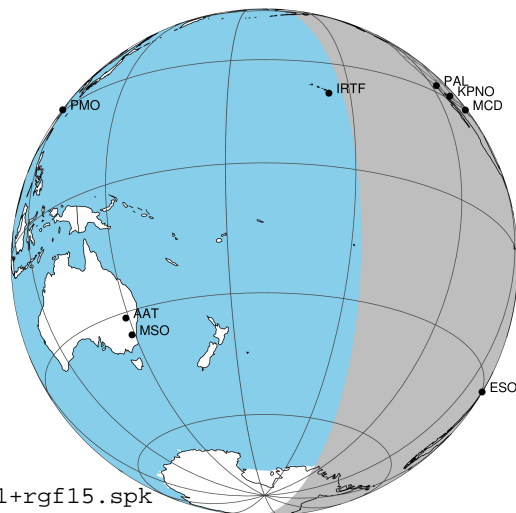
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-10-09T03:45:07.800  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4111476844191248384  
 2Mass ID (if available) : 17290736-2305334

Jupiter 2031-10-09T03:45:07 K8.80 G14.16 Pgt

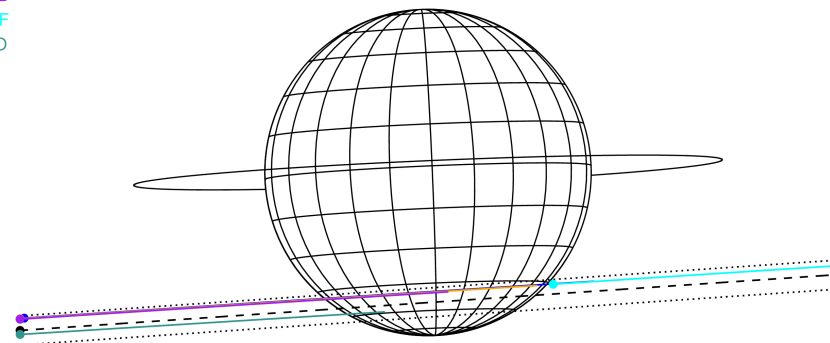
ICRS Star Coord at Epoch: 17h 29m 07.35073s -23:05:33.81630s

RUWE (>1.4 is poor) : 1.02  
 K magnitude : 8.802  
 G magnitude : 14.162  
 RP magnitude : 12.833  
 BP magnitude : 16.247  
 DUPflag : 0  
 Distance (au) : 5.537  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 24.41  
 Sun-Target sep (deg) : 67.68  
 Sun-Moon sep (deg) : 149.72  
 B (ring opening deg) : -2.30  
 PA of pole (deg) : 2.49  
 Pole direction: RA (deg): 268.05682  
 Dec (deg): 64.49652  
 C/A sky separation (") : 14.156  
 C/A sky separation (km) : 56851.4  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2031-10-09T03:45:07 K8.80 G14.16  
 Pgt



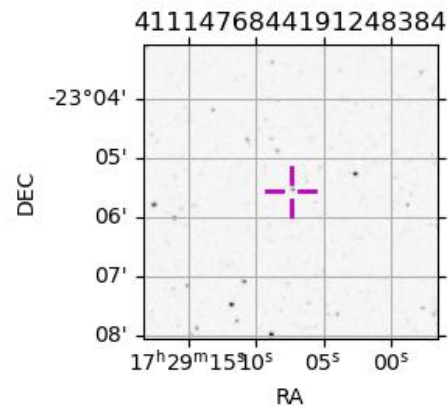
Earth  
 PAL  
 KPNO  
 MCD  
 IRTF  
 ESO



2031-10-09T03:45:07.8000 α: 17 29 07.3507 δ: -23 05 33.816 C/A \*\*\*\*\* PA 3.91 deg v\_sky +24.41 km/s D 05.54 AU  
 Credit: Styled after SORA/Lucky Star

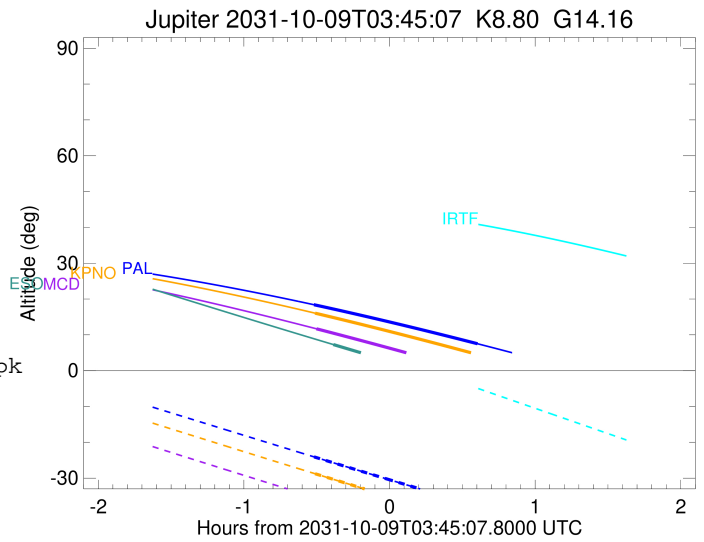
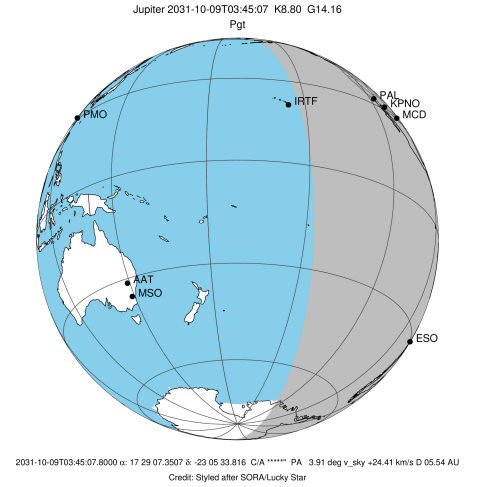
Observable events with sun below -5 deg and altitude above 5 deg

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 09 03:14 - OCT 09 04:21	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	OCT 09 03:14 - OCT 09 03:14	Pin
MCD	McDonald Obs. 2.7m	30.7	256.0	+	OCT 09 03:15 - OCT 09 03:15	Pin
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 09 03:22 - OCT 09 03:22	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             : 2031-10-09T03:47:44.720
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        : 4111476844191248384
2Mass ID (if available) : 17290736-2305334
ICRS Star Coord at Epoch: 17h 29m 07.35073s -23:05:33.81630s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 8.802
G magnitude           : 14.162
RP magnitude          : 12.833
BP magnitude          : 16.247
DUPflag              : 0
Distance (au)         : 5.537
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 24.41
Sun-Target sep (deg)  : 67.68
Sun-Moon sep (deg)    : 149.24
B (ring opening deg) : -2.30
PA of pole (deg)     : 2.49
Pole direction: RA (deg): 268.05682
Dec (deg): 64.49652
C/A sky separation (" ) : 12.990
C/A sky separation (km) : 52166.2
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
    
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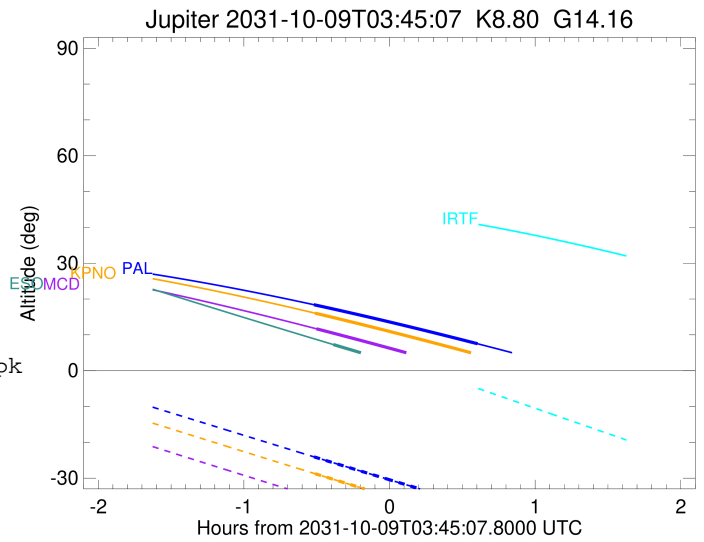
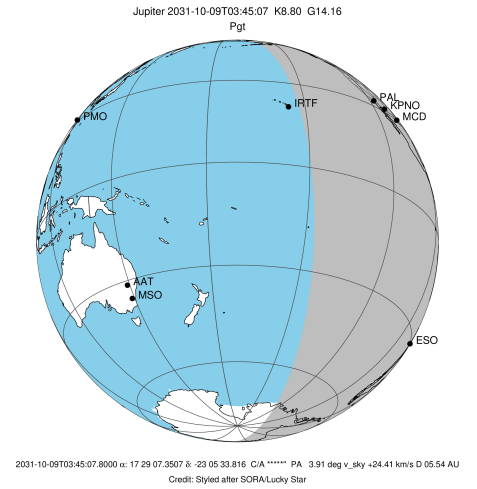


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-09T03:14:01.941	18.40	-24.06	71488.0	-47.99	-51.64
Jupiter	E	2031-10-09T04:21:22.830	7.52	-37.72	71488.3	-45.67	-49.37

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2031-10-09T03:47:58.210
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        : 4111476844191248384
2Mass ID (if available) : 17290736-2305334
ICRS Star Coord at Epoch: 17h 29m 07.35073s -23:05:33.81630s
RUWE (>1.4 is poor)  : 1.02
K magnitude            : 8.802
G magnitude            : 14.162
RP magnitude           : 12.833
BP magnitude           : 16.247
DUPflag               : 0
Distance (au)         : 5.537
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : 24.41
Sun-Target sep (deg)  : 67.68
Sun-Moon sep (deg)    : 149.19
B (ring opening deg)  : -2.30
PA of pole (deg)      : 2.49
Pole direction: RA (deg): 268.05682
Dec (deg): 64.49652
C/A sky separation (") : 13.050
C/A sky separation (km) : 52411.0
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
    
```

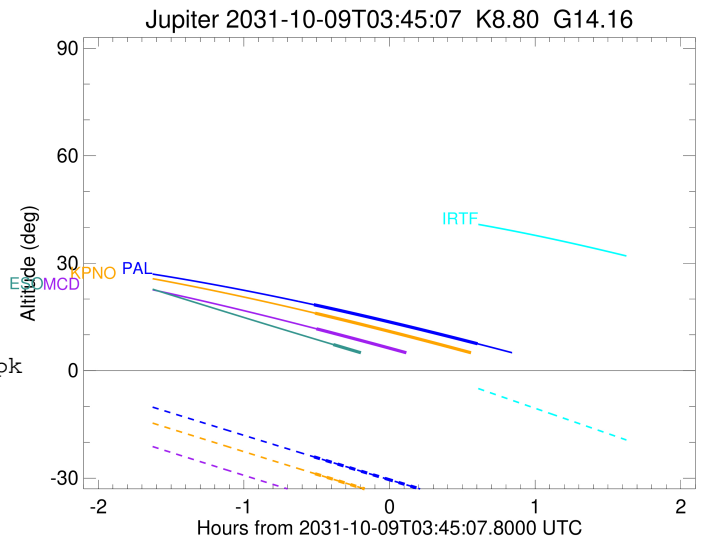
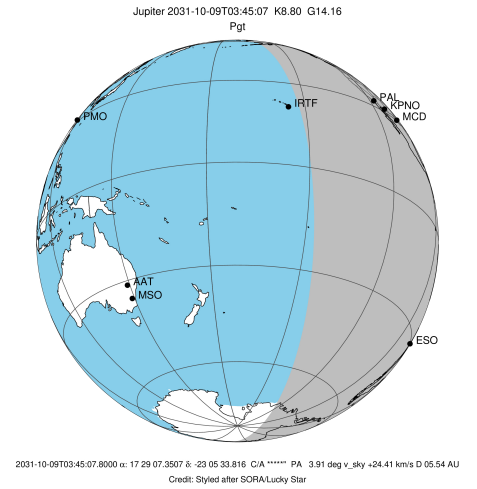


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-09T03:14:28.329	16.05	-28.77	71488.0	-48.25	-51.89
Jupiter	E	2031-10-09T04:21:23.185	4.51x	-42.36	71488.3	-45.99	-49.67

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-09T03:48:13.610
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        : 4111476844191248384
2Mass ID (if available) : 17290736-2305334
ICRS Star Coord at Epoch: 17h 29m 07.35073s -23:05:33.81630s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 8.802
G magnitude           : 14.162
RP magnitude          : 12.833
BP magnitude          : 16.247
DUPflag              : 0
Distance (au)         : 5.537
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 24.41
Sun-Target sep (deg)  : 67.68
Sun-Moon sep (deg)    : 149.11
B (ring opening deg) : -2.30
PA of pole (deg)      : 2.49
Pole direction: RA (deg): 268.05682
Dec (deg): 64.49652
C/A sky separation (") : 13.133
C/A sky separation (km) : 52741.9
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
    
```

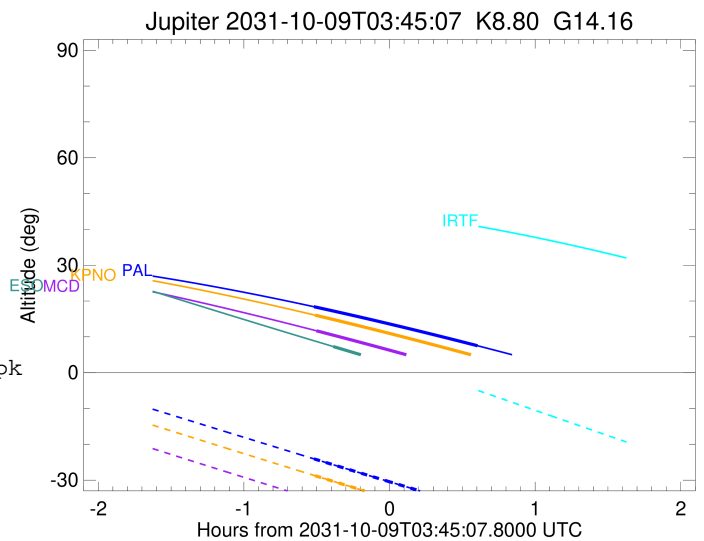
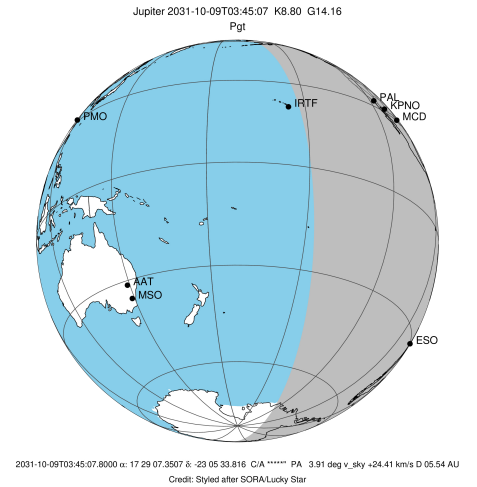


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-09T03:15:01.993	11.69	-35.49	71487.9	-48.61	-52.24
Jupiter	E	2031-10-09T04:21:20.082	-0.55x	-48.74	71488.2	-46.41	-50.09

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-10-09T03:48:43.690
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      : 4111476844191248384
2Mass ID (if available) : 17290736-2305334
ICRS Star Coord at Epoch: 17h 29m 07.35073s -23:05:33.81630s
RUWE (>1.4 is poor) : 1.02
K magnitude          : 8.802
G magnitude          : 14.162
RP magnitude         : 12.833
BP magnitude         : 16.247
DUPflag             : 0
Distance (au)       : 5.537
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 24.41
Sun-Target sep (deg) : 67.68
Sun-Moon sep (deg)  : 149.12
B (ring opening deg) : -2.30
PA of pole (deg)    : 2.49
Pole direction: RA (deg): 268.05682
Dec (deg): 64.49652
C/A sky separation (" ) : 14.883
C/A sky separation (km) : 59770.7
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	2031-10-09T03:22:00.228	7.28	-51.10	71486.8	-57.70	-60.92
Jupiter	E	2031-10-09T04:15:23.618	-3.26x	-54.55	71487.1	-55.62	-58.96