

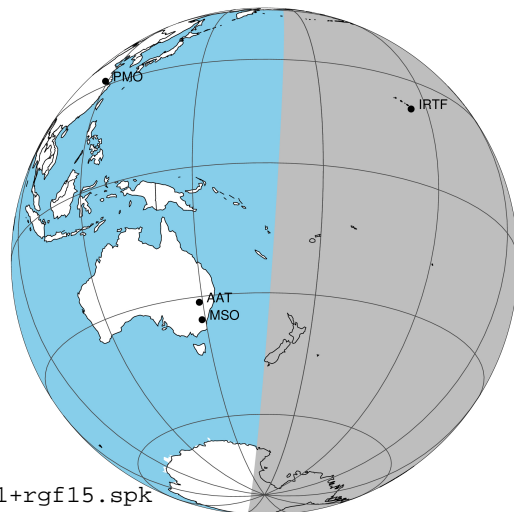
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-09-15T06:36:07.540  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4114498100320136832  
 2Mass ID (if available) : 17165083-2251250

Jupiter 2031-09-15T06:36:07 K8.06 G11.69 Pgt

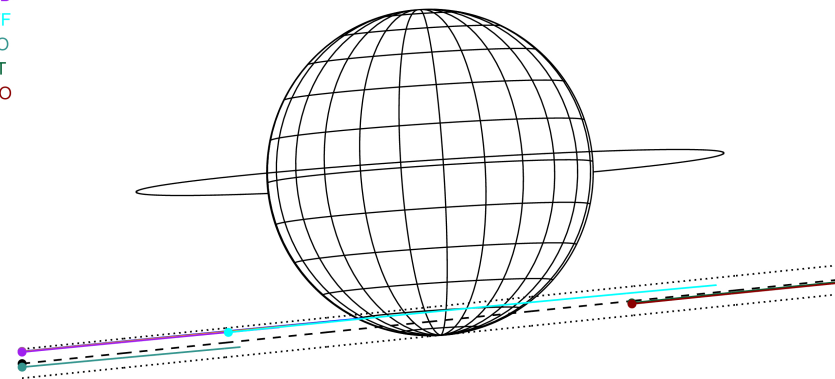
ICRS Star Coord at Epoch: 17h 16m 50.81977s -22:51:25.07530s

RUWE (>1.4 is poor) : 0.92  
 K magnitude : 8.059  
 G magnitude : 11.694  
 RP magnitude : 10.685  
 BP magnitude : 12.742  
 DUPflag : 0  
 Distance (au) : 5.182  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 13.94  
 Sun-Target sep (deg) : 88.27  
 Sun-Moon sep (deg) : 105.60  
 B (ring opening deg) : -2.38  
 PA of pole (deg) : 3.80  
 Pole direction: RA (deg): 268.05684  
 Dec (deg): 64.49652  
 C/A sky separation (") : 17.297  
 C/A sky separation (km) : 65006.2  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2031-09-15T06:36:07 K8.06 G11.69  
 Pgt



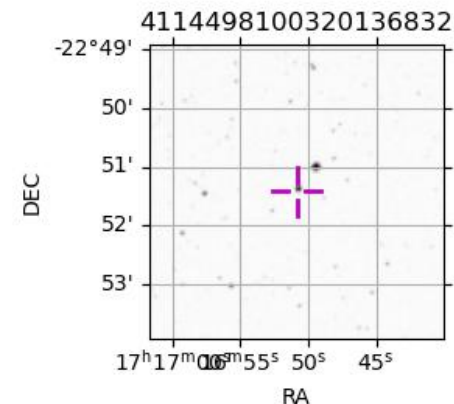
Earth  
 PAL  
 KPNO  
 MCD  
 IRTF  
 ESO  
 AAT  
 MSO



2031-09-15T06:36:07.5400 α: 17 16 50.8198 δ: -22 51 25.075 C/A \*\*\*\*\* PA 5.86 deg v\_sky +13.94 km/s D 05.18 AU  
 Credit: Styled after SORA/Lucky Star

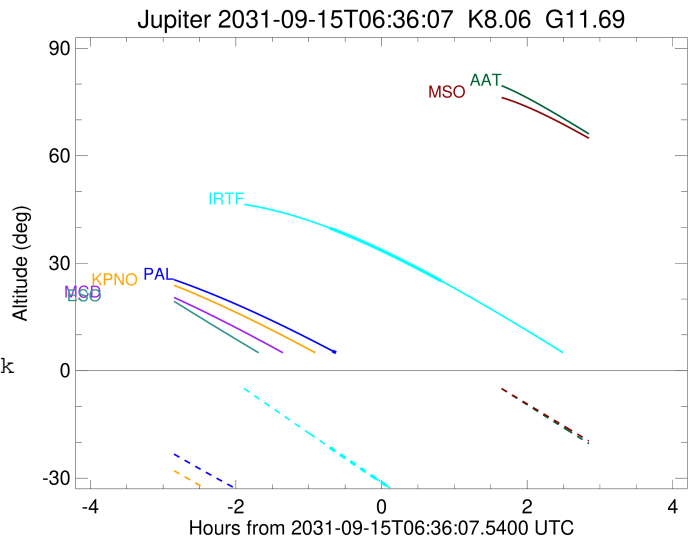
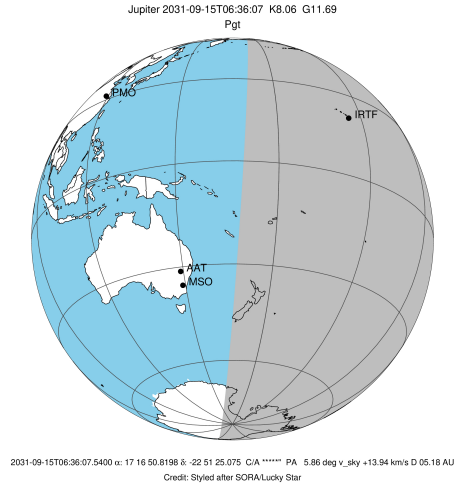
Observable events with sun below -5 deg and altitude above 5 deg

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	+	SEP 15 05:55 - SEP 15 05:55	Pin
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
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	+ +	SEP 15 05:53 - SEP 15 07:25	Pie
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



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-09-15T06:41:09.960
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       : 4114498100320136832
2Mass ID (if available) : 17165083-2251250
ICRS Star Coord at Epoch: 17h 16m 50.81977s -22:51:25.07530s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 8.059
G magnitude           : 11.694
RP magnitude         : 10.685
BP magnitude         : 12.742
DUPflag              : 0
Distance (au)        : 5.182
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 13.94
Sun-Target sep (deg) : 88.27
Sun-Moon sep (deg)   : 105.37
B (ring opening deg) : -2.38
PA of pole (deg)     : 3.80
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation ("): 16.194
C/A sky separation (km): 60859.2
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
    
```

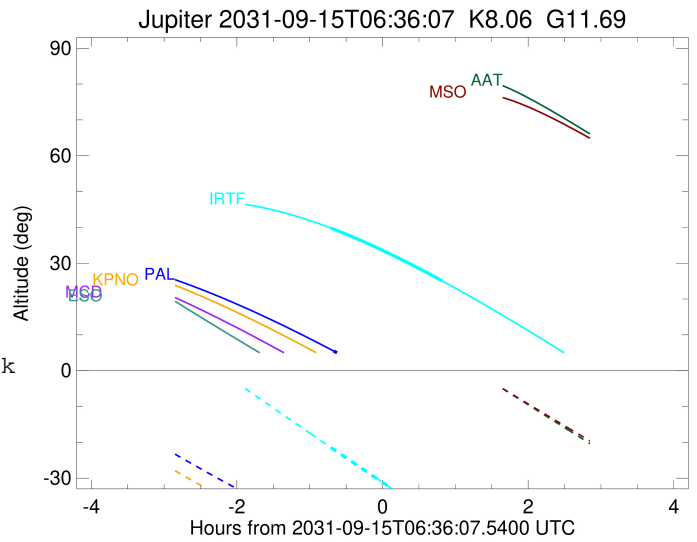
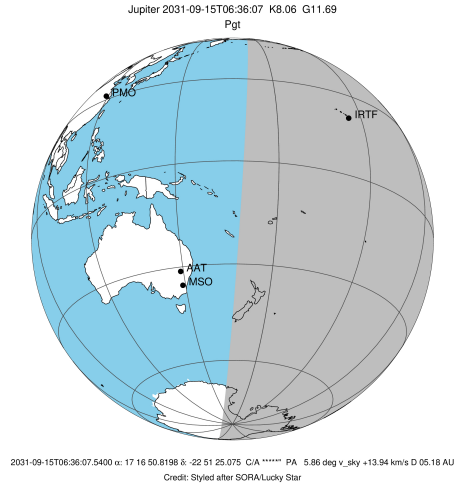


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-09-15T05:55:54.948	5.47	-45.81	71486.2	-59.79	-62.87
Jupiter	E	2031-09-15T07:26:08.098	-11.54x	-53.55	71486.6	-56.82	-60.08

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-09-15T06:39:46.060
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      : 4114498100320136832
2Mass ID (if available) : 17165083-2251250
ICRS Star Coord at Epoch: 17h 16m 50.81977s -22:51:25.07530s
RUWE (>1.4 is poor) : 0.92
K magnitude          : 8.059
G magnitude          : 11.694
RP magnitude         : 10.685
BP magnitude         : 12.742
DUPflag             : 0
Distance (au)       : 5.182
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 13.94
Sun-Target sep (deg) : 88.27
Sun-Moon sep (deg)   : 105.93
B (ring opening deg) : -2.38
PA of pole (deg)     : 3.80
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation ("): 16.192
C/A sky separation (km): 60851.7
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	2031-09-15T05:53:44.698	39.77	-21.48	71486.2	-60.09	-63.15
Jupiter	E	2031-09-15T07:25:34.039	25.02	-42.11	71486.6	-56.58	-59.86