

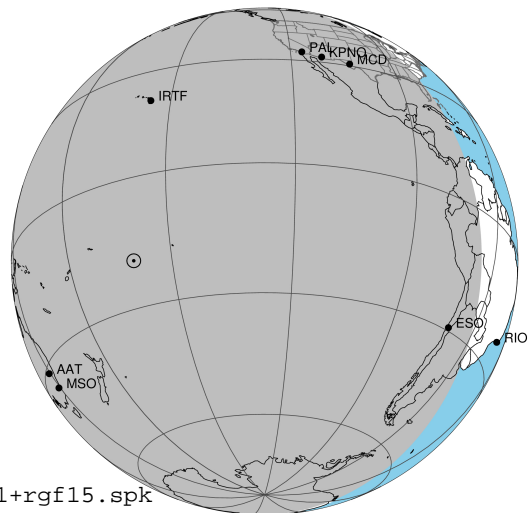
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-05-17T10:36:59.360
 Event type : Pt
 : Jupiter occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 4068936292778387072
 2Mass ID (if available) : 17465885-2253500

Jupiter 2031-05-17T10:36:59 K9.56 G14.97 Pt

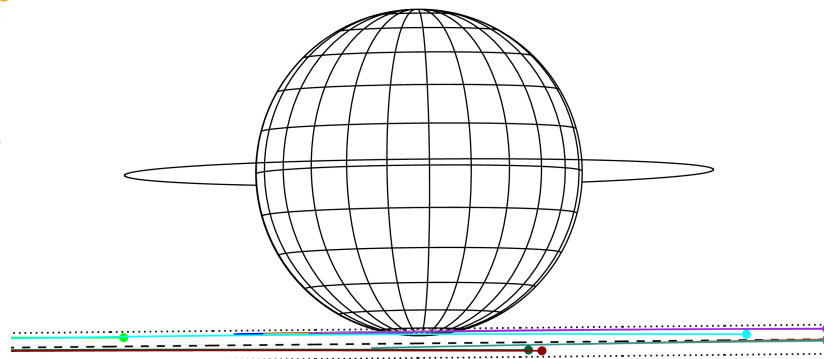
ICRS Star Coord at Epoch: 17h 46m 58.85335s -22:53:50.37346s

RUWE (>1.4 is poor) : 1.04
 K magnitude : 9.559
 G magnitude : 14.971
 RP magnitude : 13.538
 BP magnitude : 17.088
 DUPflag : 0
 Distance (au) : 4.398
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -12.21
 Sun-Target sep (deg) : 148.91
 Sun-Moon sep (deg) : 104.25
 B (ring opening deg) : -2.60
 PA of pole (deg) : 0.57
 Pole direction: RA (deg): 268.05694
 Dec (deg): 64.49651
 C/A sky separation (") : 23.469
 C/A sky separation (km) : 74868.8
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-05-17T10:36:59 K9.56 G14.97 Pt



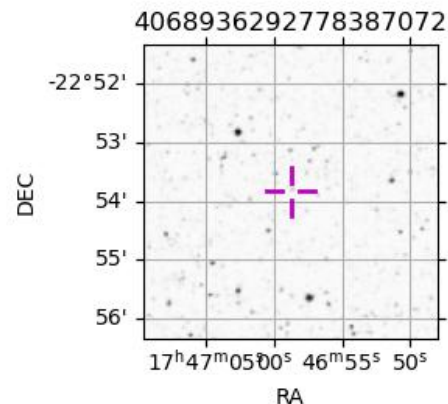
Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 RIO
 ESO
 AAT
 MSO



2031-05-17T10:36:59.3600 α: 17 46 58.8534 δ: -22 53 50.373 C/A ***** PA 0.59 deg v_sky -12.21 km/s D 04.40 AU
 Credit: Styled after SORA/Lucky Star

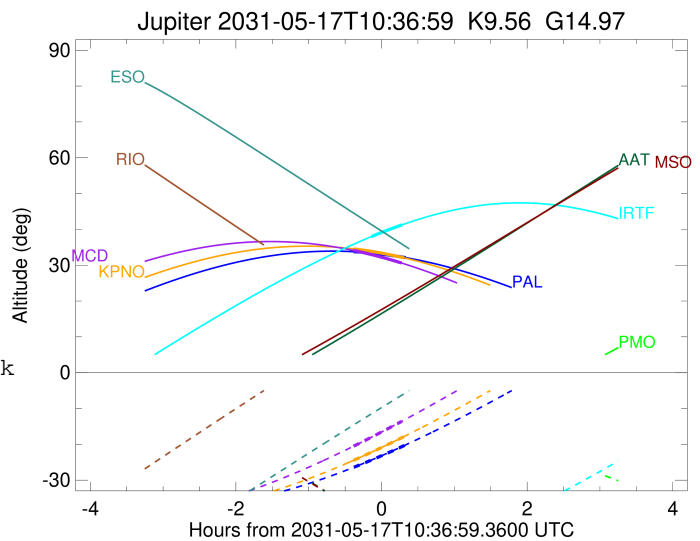
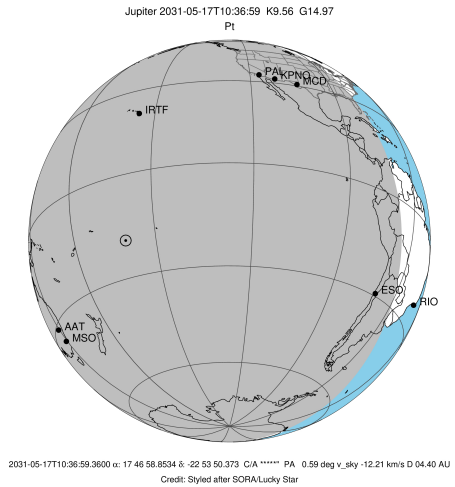
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	MAY 17 10:14 - MAY 17 10:57	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	MAY 17 10:14 - MAY 17 10:55	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	MAY 17 10:13 - MAY 17 10:53	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	MAY 17 10:28 - MAY 17 10:54	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



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-17T10:35:37.850
Event type          : Pt
                    : Jupiter occs: topocentric, not geocentric
                    : 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      : 4068936292778387072
2Mass ID (if available) : 17465885-2253500
ICRS Star Coord at Epoch: 17h 46m 58.85335s -22:53:50.37346s
RUWE (>1.4 is poor) : 1.04
K magnitude         : 9.559
G magnitude         : 14.971
RP magnitude        : 13.538
BP magnitude        : 17.088
DUPflag            : 0
Distance (au)       : 4.398
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -12.21
Sun-Target sep (deg) : 148.91
Sun-Moon sep (deg)  : 104.79
B (ring opening deg) : -2.60
PA of pole (deg)    : 0.57
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation (" ) : 21.819
C/A sky separation (km) : 69603.7
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
    
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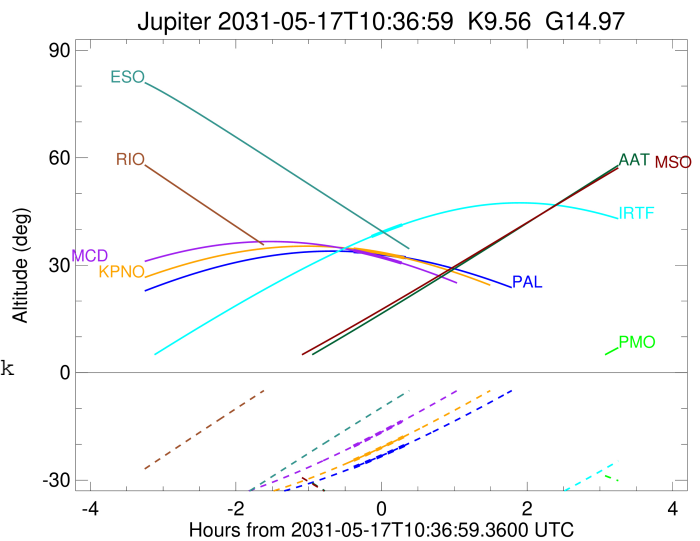
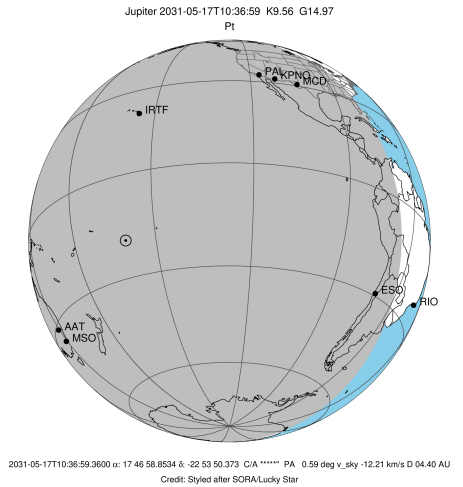


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-17T10:14:07.926	33.77	-26.42	71483.2	-76.49	-78.04
Jupiter	E	2031-05-17T10:57:08.025	32.09	-20.12	71483.2	-76.74	-78.27

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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-17T10:34:52.010
Event type            : Pt
: Jupiter occs: topocentric, not geocentric
: 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        : 4068936292778387072
2Mass ID (if available) : 17465885-2253500
ICRS Star Coord at Epoch: 17h 46m 58.85335s -22:53:50.37346s
RUWE (>1.4 is poor) : 1.04
K magnitude           : 9.559
G magnitude           : 14.971
RP magnitude          : 13.538
BP magnitude          : 17.088
DUPflag              : 0
Distance (au)         : 4.398
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.21
Sun-Target sep (deg)  : 148.91
Sun-Moon sep (deg)   : 104.81
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.57
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation (") : 21.858
C/A sky separation (km) : 69727.8
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
    
```

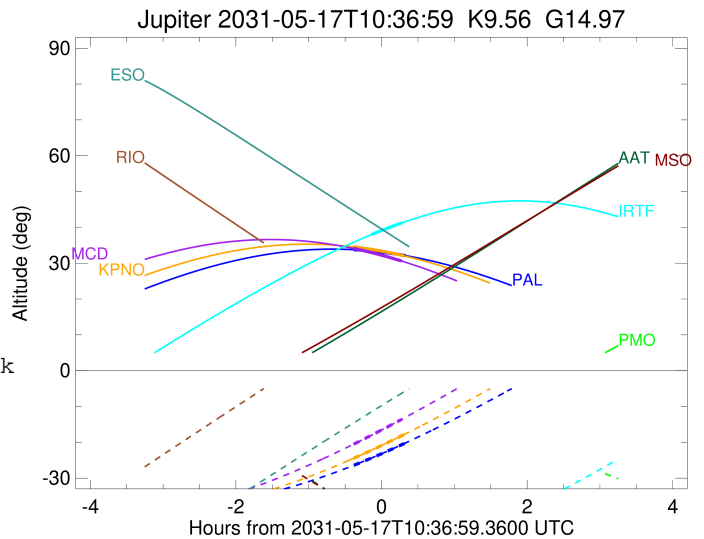
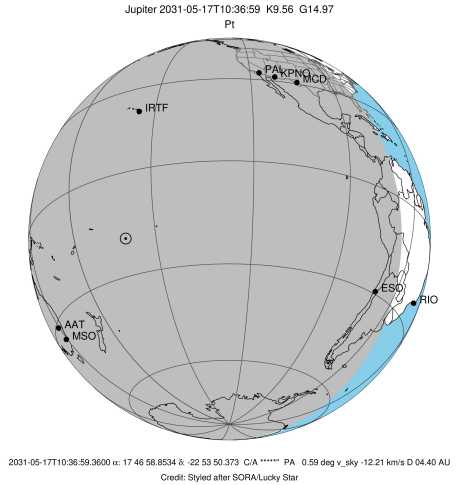


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-17T10:14:04.877	34.54	-24.45	71483.2	-76.86	-78.37
Jupiter	E	2031-05-17T10:55:39.697	32.04	-17.81	71483.2	-77.23	-78.71

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-17T10:33:47.060
Event type            : Pt
: Jupiter occs: topocentric, not geocentric
: 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        : 4068936292778387072
2Mass ID (if available) : 17465885-2253500
ICRS Star Coord at Epoch: 17h 46m 58.85335s -22:53:50.37346s
RUWE (>1.4 is poor) : 1.04
K magnitude           : 9.559
G magnitude           : 14.971
RP magnitude          : 13.538
BP magnitude          : 17.088
DUPflag              : 0
Distance (au)         : 4.398
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.21
Sun-Target sep (deg)  : 148.91
Sun-Moon sep (deg)   : 104.82
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.57
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation (") : 21.910
C/A sky separation (km) : 69894.6
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
    
```

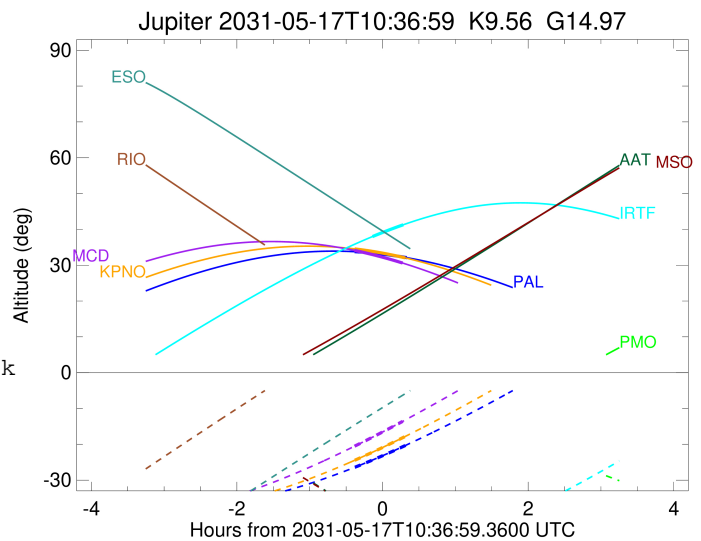
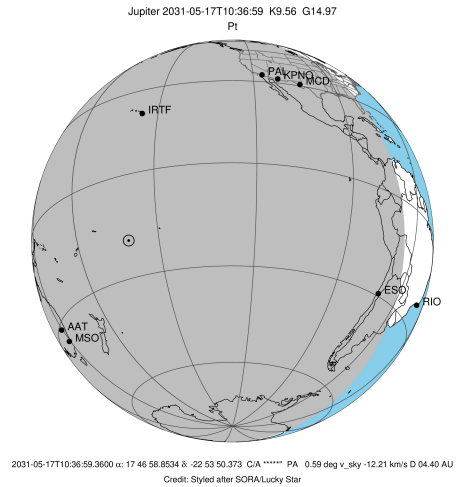


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-17T10:13:59.107	34.11	-20.52	71483.1	-77.38	-78.84
Jupiter	E	2031-05-17T10:53:35.958	30.60	-13.60	71483.1	-77.93	-79.32

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-17T10:41:25.340
Event type            : Pt
: Jupiter occs: topocentric, not geocentric
: 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        : 4068936292778387072
2Mass ID (if available) : 17465885-2253500
ICRS Star Coord at Epoch: 17h 46m 58.85335s -22:53:50.37346s
RUWE (>1.4 is poor) : 1.04
K magnitude           : 9.559
G magnitude           : 14.971
RP magnitude          : 13.538
BP magnitude          : 17.088
DUPflag              : 0
Distance (au)         : 4.398
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.21
Sun-Target sep (deg)  : 148.91
Sun-Moon sep (deg)    : 104.72
B (ring opening deg) : -2.60
PA of pole (deg)      : 0.57
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation (") : 22.204
C/A sky separation (km) : 70832.5
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	2031-05-17T10:28:43.213	37.99	-50.88	71482.9	-82.18	-83.10
Jupiter	E	2031-05-17T10:54:06.656	41.28	-49.99	71482.9	-81.53	-82.52