

target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-05-31T06:34:04.770
 Event type : Pt
 : Jupiter occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 4116565246570306944
 2Mass ID (if available) : 17403792-2252302

Jupiter 2031-05-31T06:34:04 K6.29 G11.16 Pt

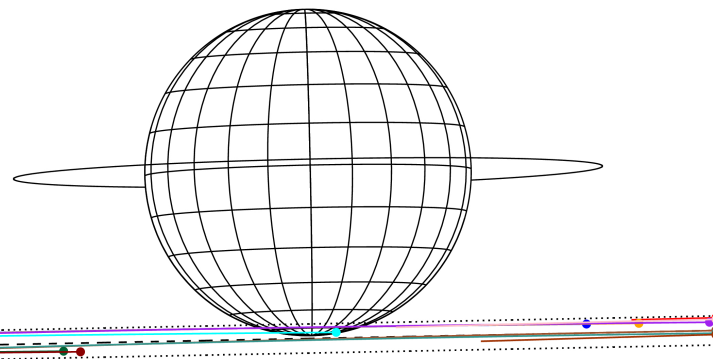
ICRS Star Coord at Epoch: 17h 40m 37.92259s -22:52:30.23408s

RUWE (>1.4 is poor) : 0.64
 K magnitude : 6.291
 G magnitude : 11.158
 RP magnitude : 9.920
 BP magnitude : 12.859
 DUPflag : 0
 Distance (au) : 4.305
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.26
 Sun-Target sep (deg) : 163.67
 Sun-Moon sep (deg) : 85.20
 B (ring opening deg) : -2.60
 PA of pole (deg) : 1.25
 Pole direction: RA (deg): 268.05693
 Dec (deg): 64.49651
 C/A sky separation (") : 23.292
 C/A sky separation (km) : 72725.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-05-31T06:34:04 K6.29 G11.16 Pt



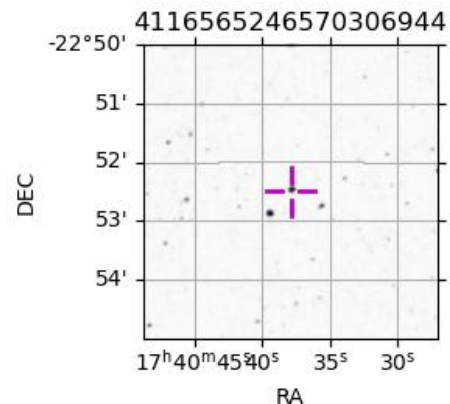
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 AAT
 SAAO
 MSO



2031-05-31T06:34:04.7700 α: 17 40 37.9226 δ: -22 52 30.234 C/A ***** PA 1.13 deg v_sky -15.26 km/s D 04.31 AU
 Credit: Styled after SORA/Lucky Star

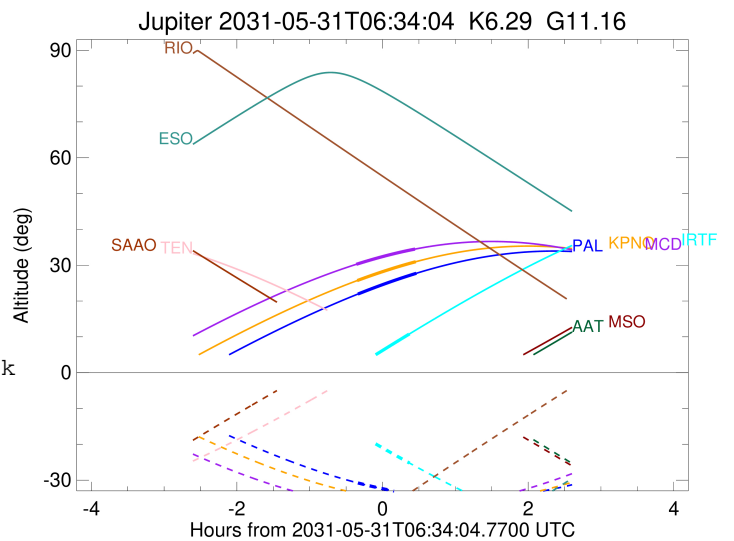
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	MAY 31 06:13 - MAY 31 07:01	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	MAY 31 06:13 - MAY 31 07:01	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	MAY 31 06:12 - MAY 31 07:00	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5			Pne
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             : 2031-05-31T06:37:53.770
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        : 4116565246570306944
2Mass ID (if available) : 17403792-2252302
ICRS Star Coord at Epoch: 17h 40m 37.92259s -22:52:30.23408s
RUWE (>1.4 is poor) : 0.64
K magnitude           : 6.291
G magnitude           : 11.158
RP magnitude          : 9.920
BP magnitude          : 12.859
DUPflag              : 0
Distance (au)         : 4.305
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.26
Sun-Target sep (deg) : 163.67
Sun-Moon sep (deg)   : 85.56
B (ring opening deg) : -2.60
PA of pole (deg)     : 1.25
Pole direction: RA (deg): 268.05693
Dec (deg): 64.49651
C/A sky separation (") : 21.732
C/A sky separation (km) : 67852.8
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
    
```

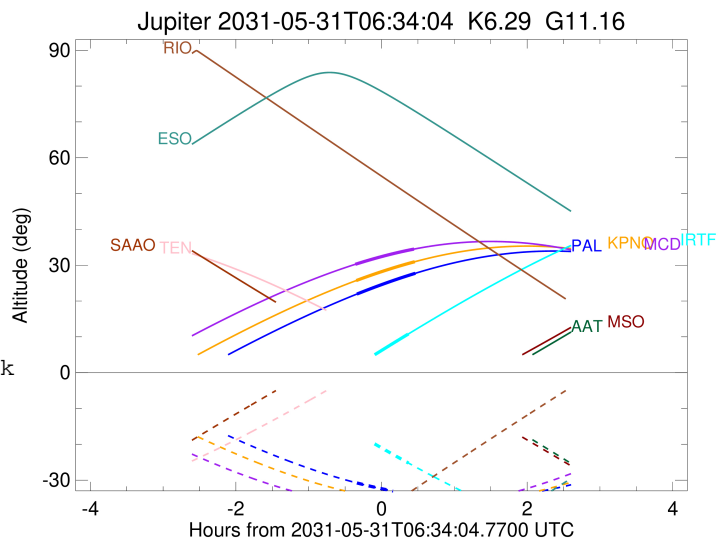
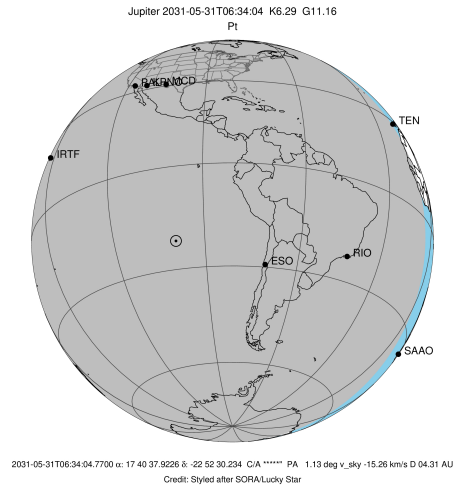


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-31T06:13:50.362	21.95	-30.78	71483.6	-71.95	-73.98
Jupiter	E	2031-05-31T07:01:54.744	27.73	-33.97	71483.7	-71.06	-73.18

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-31T06:37:26.880
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        : 4116565246570306944
2Mass ID (if available) : 17403792-2252302
ICRS Star Coord at Epoch: 17h 40m 37.92259s -22:52:30.23408s
RUWE (>1.4 is poor) : 0.64
K magnitude           : 6.291
G magnitude           : 11.158
RP magnitude          : 9.920
BP magnitude          : 12.859
DUPflag              : 0
Distance (au)         : 4.305
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.26
Sun-Target sep (deg) : 163.67
Sun-Moon sep (deg)   : 85.62
B (ring opening deg) : -2.60
PA of pole (deg)     : 1.25
Pole direction: RA (deg): 268.05693
Dec (deg): 64.49651
C/A sky separation (") : 21.727
C/A sky separation (km) : 67839.3
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
    
```

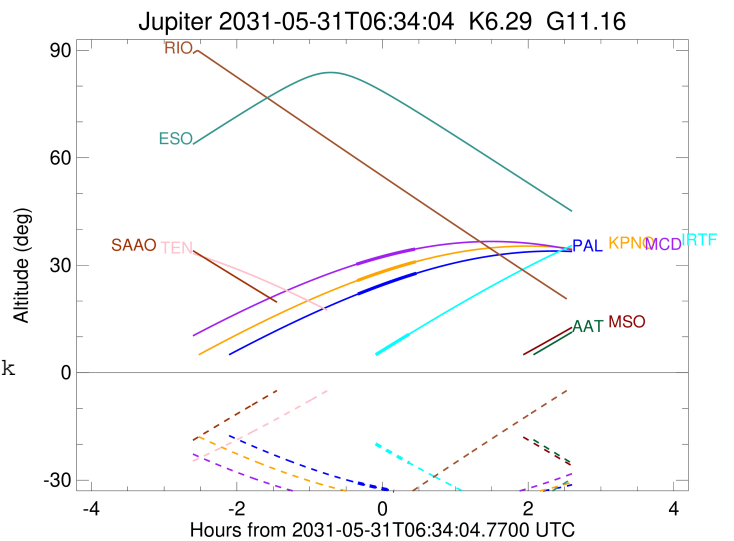
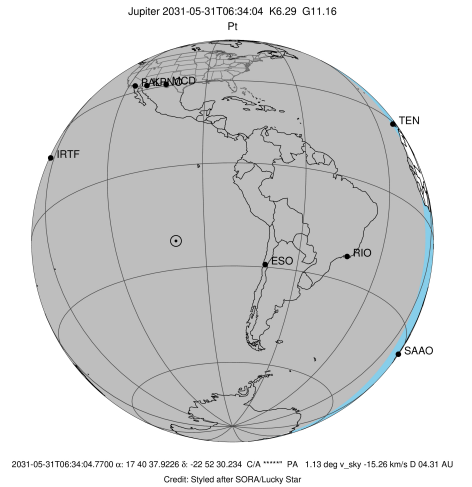


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-31T06:13:23.341	25.72	-33.72	71483.6	-71.88	-73.92
Jupiter	E	2031-05-31T07:01:28.268	30.97	-36.04	71483.7	-71.07	-73.19

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-31T06:36:42.660
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       : 4116565246570306944
2Mass ID (if available) : 17403792-2252302
ICRS Star Coord at Epoch: 17h 40m 37.92259s -22:52:30.23408s
RUWE (>1.4 is poor) : 0.64
K magnitude           : 6.291
G magnitude           : 11.158
RP magnitude         : 9.920
BP magnitude         : 12.859
DUPflag              : 0
Distance (au)        : 4.305
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.26
Sun-Target sep (deg) : 163.67
Sun-Moon sep (deg)   : 85.69
B (ring opening deg) : -2.60
PA of pole (deg)     : 1.25
Pole direction: RA (deg): 268.05693
Dec (deg): 64.49651
C/A sky separation (") : 21.714
C/A sky separation (km) : 67797.6
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
    
```

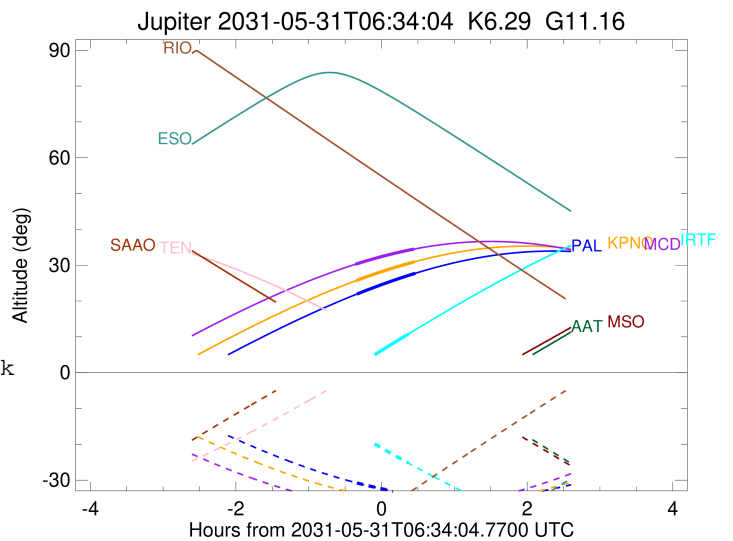
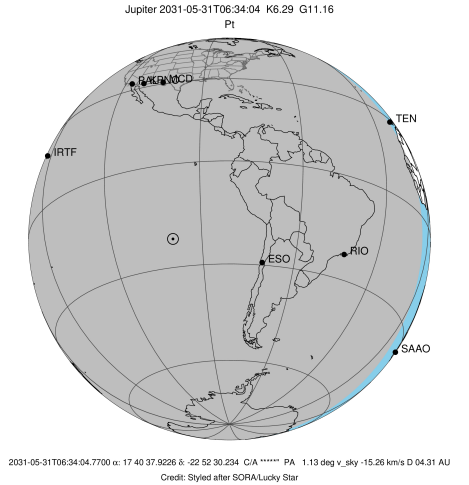


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-31T06:12:33.977	30.25	-36.68	71483.6	-71.72	-73.77
Jupiter	E	2031-05-31T07:00:49.613	34.49	-37.58	71483.7	-71.03	-73.15

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-31T06:41:11.610
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        : 4116565246570306944
2Mass ID (if available) : 17403792-2252302
ICRS Star Coord at Epoch: 17h 40m 37.92259s -22:52:30.23408s
RUWE (>1.4 is poor)  : 0.64
K magnitude           : 6.291
G magnitude           : 11.158
RP magnitude          : 9.920
BP magnitude          : 12.859
DUPflag              : 0
Distance (au)         : 4.305
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -15.26
Sun-Target sep (deg)  : 163.67
Sun-Moon sep (deg)    : 85.23
B (ring opening deg)  : -2.60
PA of pole (deg)      : 1.25
Pole direction: RA (deg): 268.05693
Dec (deg): 64.49651
C/A sky separation (") : 22.461
C/A sky separation (km) : 70129.4
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	2031-05-31T06:26:11.587	4.52x	-19.44	71483.0	-79.25	-80.50
Jupiter	E	2031-05-31T06:56:09.929	10.79	-25.20	71483.1	-77.83	-79.24