

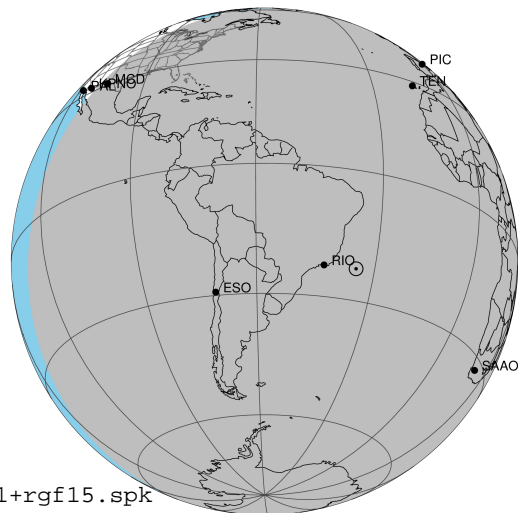
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-07-05T02:24:11.240
 Event type : Pt
 : Jupiter occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 4114644644624632064
 2Mass ID (if available) : 17220223-2244209

Jupiter 2031-07-05T02:24:11 K9.10 G13.85 Pt

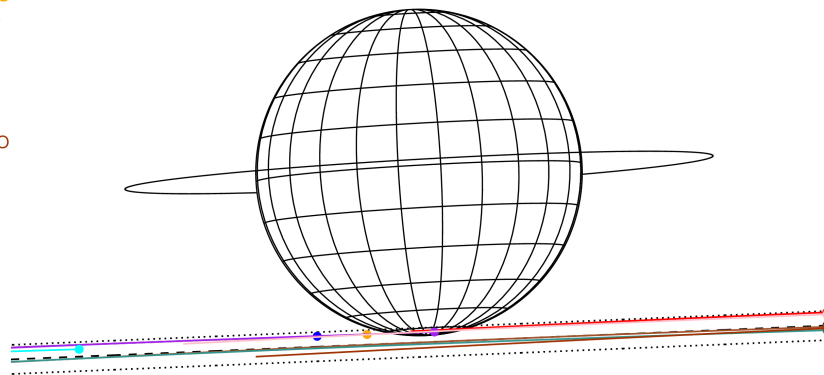
ICRS Star Coord at Epoch: 17h 22m 02.22149s -22:44:21.11866s

RUWE (>1.4 is poor) : 1.12
 K magnitude : 9.097
 G magnitude : 13.853
 RP magnitude : 12.603
 BP magnitude : 15.576
 DUPflag : 0
 Distance (au) : 4.313
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -14.50
 Sun-Target sep (deg) : 158.77
 Sun-Moon sep (deg) : 25.84
 B (ring opening deg) : -2.57
 PA of pole (deg) : 3.25
 Pole direction: RA (deg): 268.05690
 Dec (deg): 64.49651
 C/A sky separation (") : 23.786
 C/A sky separation (km) : 74409.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-07-05T02:24:11 K9.10 G13.85 Pt



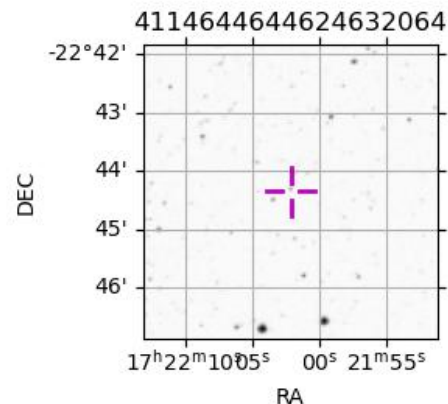
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 SAAO



2031-07-05T02:24:11.2400 α: 17 22 02.2215 δ: -22 44 21.119 C/A ***** PA 2.38 deg v_sky -14.50 km/s D 04.31 AU
 Credit: Styled after SORA/Lucky Star

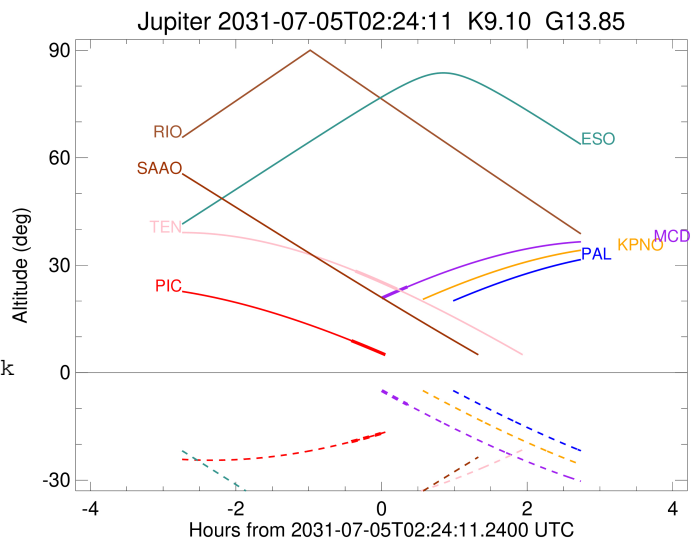
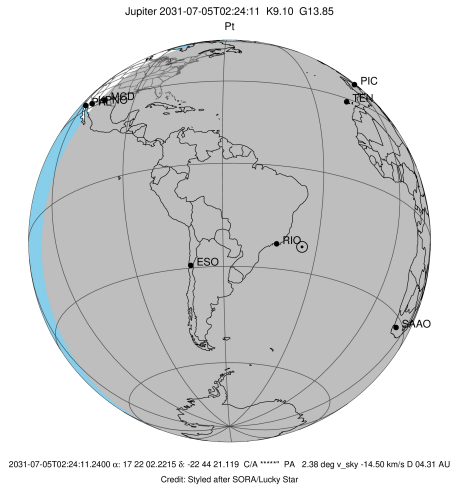
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	JUL 05 01:59 - JUL 05 01:59	Pin
PAL	Palomar Mt (200")	33.4	243.1			Pnn
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	+	JUL 05 02:45 - JUL 05 02:45	Pne
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	JUL 05 02:02 - JUL 05 02:36	Pie
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			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             : 2031-07-05T02:19:20.630
Event type            : Pt
: Jupiter occs: topocentric, not geocentric
: Not a ringed target
Observer code         : PIC
Location              : Pic du Midi
Latitude (deg)        : 42.93656
E. Longitude (deg)    : 0.14231
Altitude (km)         : 2.890
Gaia source ID        : 4114644644624632064
2Mass ID (if available) : 17220223-2244209
ICRS Star Coord at Epoch: 17h 22m 02.22149s -22:44:21.11866s
RUWE (>1.4 is poor)  : 1.12
K magnitude           : 9.097
G magnitude           : 13.853
RP magnitude          : 12.603
BP magnitude          : 15.576
DUPflag              : 0
Distance (au)         : 4.313
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.50
Sun-Target sep (deg)  : 158.77
Sun-Moon sep (deg)    : 25.26
B (ring opening deg)  : -2.57
PA of pole (deg)      : 3.25
Pole direction: RA (deg): 268.05690
Dec (deg): 64.49651
C/A sky separation (") : 22.149
C/A sky separation (km) : 69288.5
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
    
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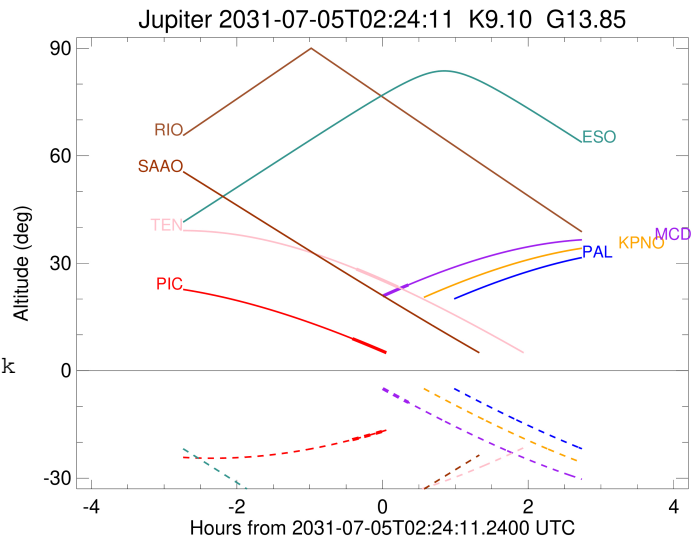
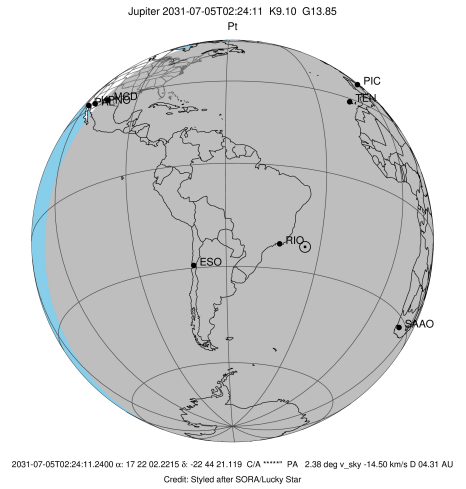


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-07-05T01:59:26.532	8.93	-19.26	71483.5	-76.01	-77.62
Jupiter	E	2031-07-05T02:39:17.016	3.24x	-15.33	71483.5	-75.09	-76.80

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-07-05T02:29:28.640
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        : 4114644644624632064
2Mass ID (if available) : 17220223-2244209
ICRS Star Coord at Epoch: 17h 22m 02.22149s -22:44:21.11866s
RUWE (>1.4 is poor) : 1.12
K magnitude           : 9.097
G magnitude           : 13.853
RP magnitude          : 12.603
BP magnitude          : 15.576
DUPflag              : 0
Distance (au)         : 4.313
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.50
Sun-Target sep (deg)  : 158.77
Sun-Moon sep (deg)    : 26.53
B (ring opening deg) : -2.57
PA of pole (deg)      : 3.25
Pole direction: RA (deg): 268.05690
Dec (deg): 64.49651
C/A sky separation (") : 22.399
C/A sky separation (km) : 70068.7
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
    
```

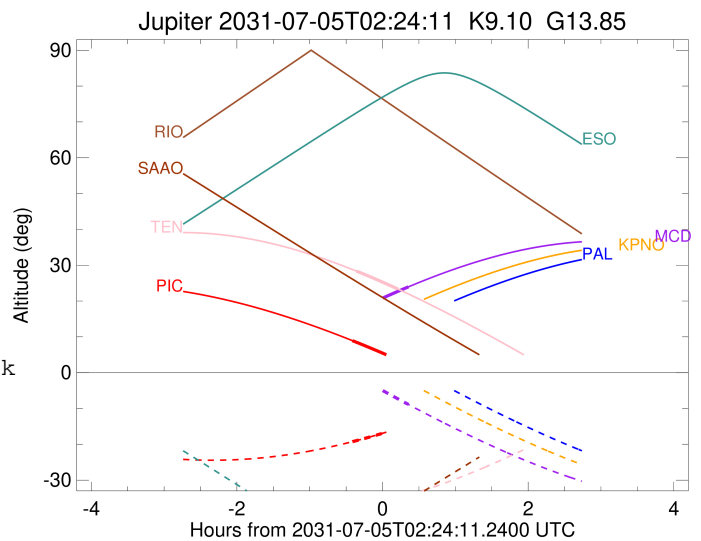
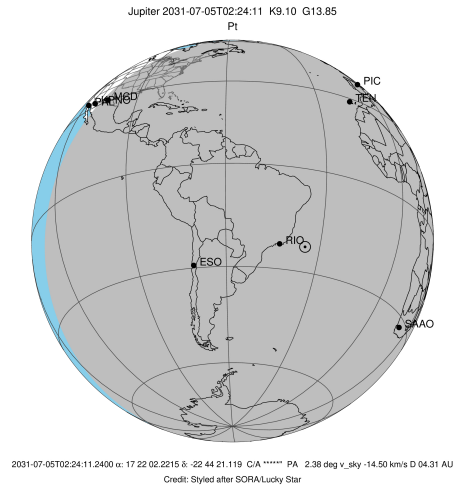


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-07-05T02:13:31.832	19.13	-2.96x	71483.2	-79.61	-80.82
Jupiter	E	2031-07-05T02:45:24.292	23.93	-8.85	71483.4	-77.01	-78.51

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-07-05T02:19:42.580
Event type          : Pt
                    : Jupiter occs: topocentric, not geocentric
                    : Not a ringed target
Observer code       : TEN
Location            : Teide Obs./Tenerife
Latitude (deg)      : 28.30050
E. Longitude (deg)  : 343.48909
Altitude (km)       : 2.395
Gaia source ID      : 4114644644624632064
2Mass ID (if available) : 17220223-2244209
ICRS Star Coord at Epoch: 17h 22m 02.22149s -22:44:21.11866s
RUWE (>1.4 is poor) : 1.12
K magnitude          : 9.097
G magnitude          : 13.853
RP magnitude         : 12.603
BP magnitude         : 15.576
DUPflag             : 0
Distance (au)       : 4.313
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.50
Sun-Target sep (deg) : 158.77
Sun-Moon sep (deg)  : 25.45
B (ring opening deg) : -2.57
PA of pole (deg)    : 3.25
Pole direction: RA (deg): 268.05690
Dec (deg): 64.49651
C/A sky separation ("): 22.327
C/A sky separation (km): 69844.5
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	2031-07-05T02:02:37.866	28.36	-37.54	71483.3	-77.97	-79.36
Jupiter	E	2031-07-05T02:36:48.854	23.35	-34.98	71483.4	-76.96	-78.46