

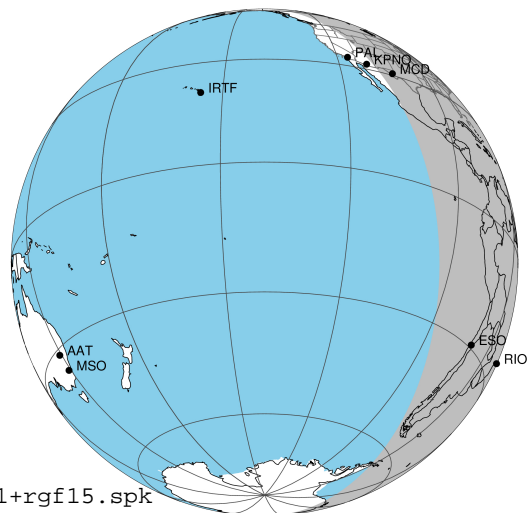
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-11-04T00:17:31.390  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068768484048685824  
 2Mass ID (if available) : 17481244-2318154

Jupiter 2031-11-04T00:17:31 K9.38 G14.48 Pgt

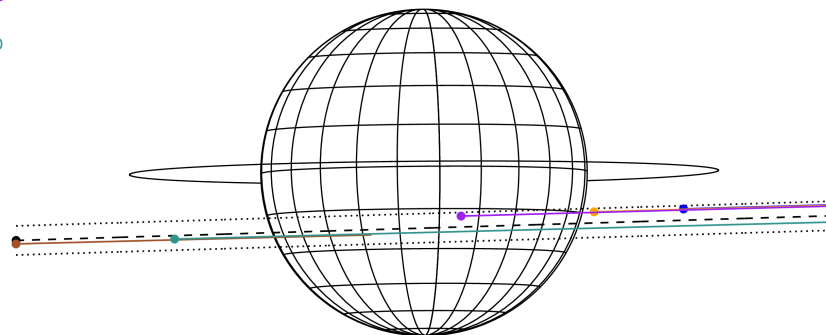
ICRS Star Coord at Epoch: 17h 48m 12.42229s -23:18:15.77616s

RUWE (>1.4 is poor) : 0.94  
 K magnitude : 9.378  
 G magnitude : 14.478  
 RP magnitude : 13.183  
 BP magnitude : 16.377  
 DUPflag : 0  
 Distance (au) : 5.866  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 33.80  
 Sun-Target sep (deg) : 46.36  
 Sun-Moon sep (deg) : 171.30  
 B (ring opening deg) : -2.20  
 PA of pole (deg) : 0.43  
 Pole direction: RA (deg): 268.05680  
 Dec (deg): 64.49652  
 C/A sky separation (") : 5.723  
 C/A sky separation (km) : 24346.5  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2031-11-04T00:17:31 K9.38 G14.48  
 Pgt



Earth  
 PAL  
 KPNO  
 MCD  
 RIO  
 ESO

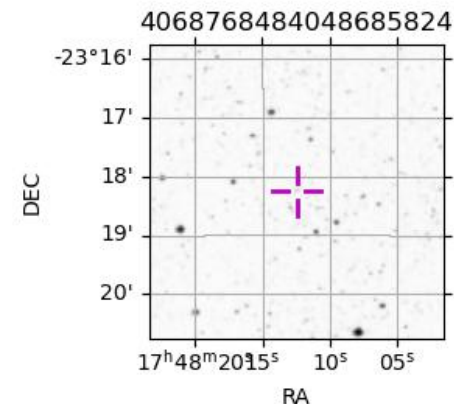


2031-11-04T00:17:31.3900 a: 17 48 12.4223 & -23 18 15.776 C/A 5.731" PA 1.73 deg v\_sky +33.80 km/s D 05.87 AU

Credit: Styled after SORA/Lucky Star

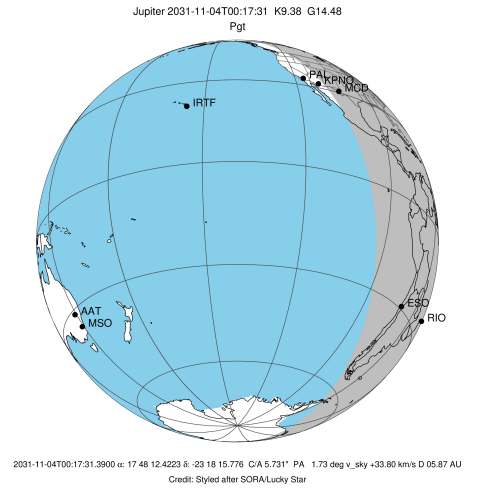
Observable events with sun below -5 deg and altitude above 5 deg

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			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	+	NOV 04 00:53 - NOV 04 00:53	Pne
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	+	NOV 03 23:47 - NOV 03 23:47	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	NOV 03 23:47 - NOV 04 00:52	Pie
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

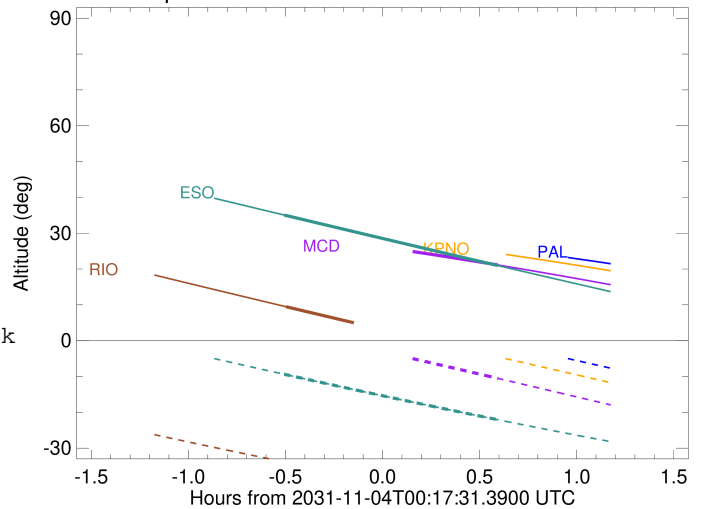


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-11-04T00:19:02.270
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        : 4068768484048685824
2Mass ID (if available) : 17481244-2318154
ICRS Star Coord at Epoch: 17h 48m 12.42229s -23:18:15.77616s
RUWE (>1.4 is poor) : 0.94
K magnitude           : 9.378
G magnitude           : 14.478
RP magnitude          : 13.183
BP magnitude          : 16.377
DUPflag              : 0
Distance (au)         : 5.866
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 33.80
Sun-Target sep (deg)  : 46.36
Sun-Moon sep (deg)    : 170.66
B (ring opening deg) : -2.20
PA of pole (deg)      : 0.43
Pole direction: RA (deg): 268.05680
Dec (deg): 64.49652
C/A sky separation (") : 4.592
C/A sky separation (km) : 19537.1
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
    
```



Jupiter 2031-11-04T00:17:31 K9.38 G14.48

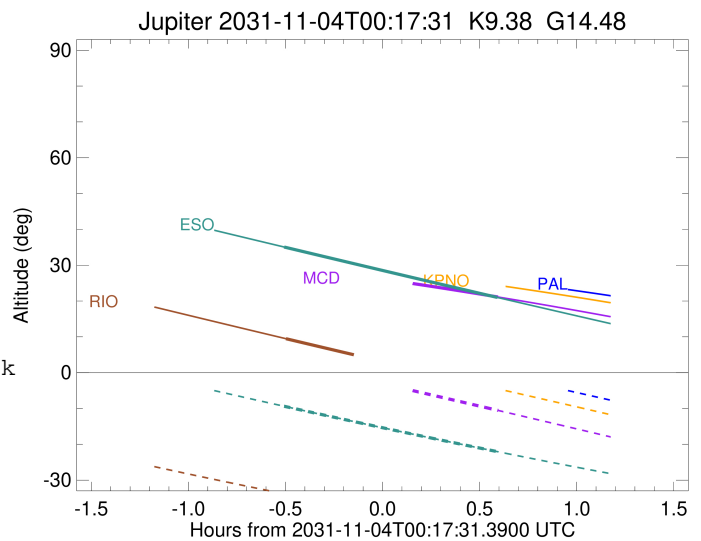
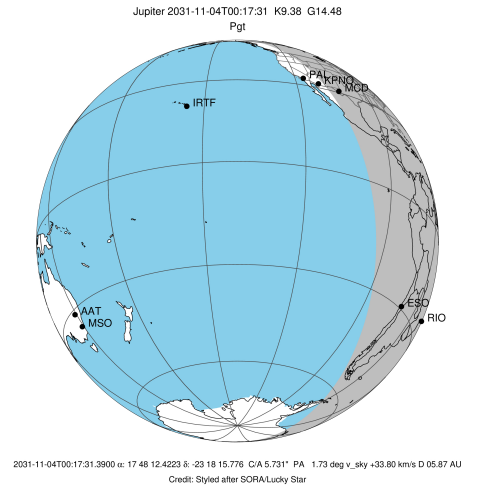


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-11-03T23:44:46.604	29.99	3.65x	71491.4	-17.02	-19.28
Jupiter	E	2031-11-04T00:53:15.269	21.11	-10.54	71491.6	-14.71	-16.70

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-11-04T00:20:21.890
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : RIO
Location              : Rio de Janeiro
Latitude (deg)        : -22.89506
E. Longitude (deg)    : 316.77708
Altitude (km)         : 0.033
Gaia source ID        : 4068768484048685824
2Mass ID (if available) : 17481244-2318154
ICRS Star Coord at Epoch: 17h 48m 12.42229s -23:18:15.77616s
RUWE (>1.4 is poor)  : 0.94
K magnitude           : 9.378
G magnitude           : 14.478
RP magnitude          : 13.183
BP magnitude          : 16.377
DUPflag              : 0
Distance (au)         : 5.866
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 33.80
Sun-Target sep (deg)  : 46.36
Sun-Moon sep (deg)    : 170.68
B (ring opening deg)  : -2.20
PA of pole (deg)      : 0.43
Pole direction: RA (deg): 268.05680
Dec (deg): 64.49652
C/A sky separation (") : 6.289
C/A sky separation (km) : 26753.7
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
    
```

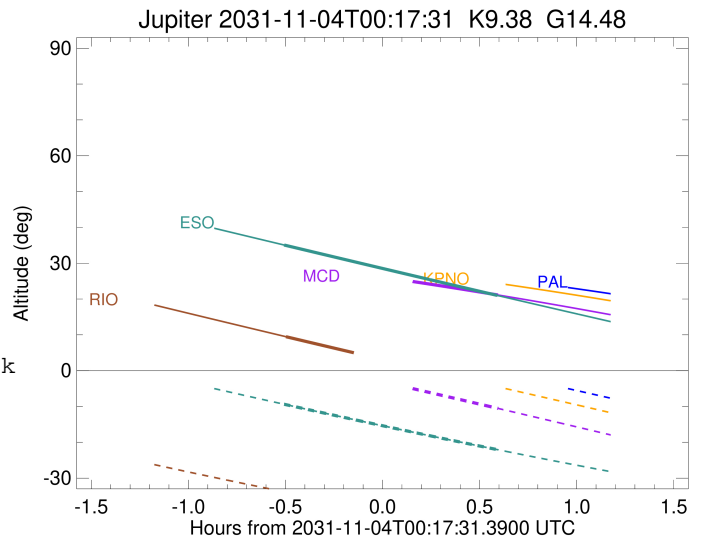
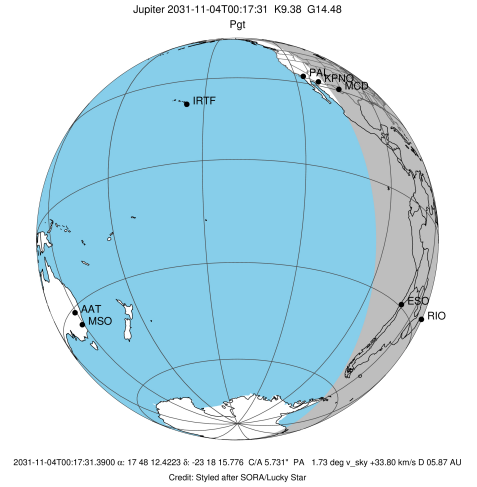


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-11-03T23:47:41.247	9.48	-33.90	71491.0	-22.97	-25.83
Jupiter	E	2031-11-04T00:52:58.576	-4.26x	-44.34	71491.2	-20.95	-23.62

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-11-04T00:20:04.300
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        : 4068768484048685824
2Mass ID (if available) : 17481244-2318154
ICRS Star Coord at Epoch: 17h 48m 12.42229s -23:18:15.77616s
RUWE (>1.4 is poor) : 0.94
K magnitude           : 9.378
G magnitude           : 14.478
RP magnitude          : 13.183
BP magnitude          : 16.377
DUPflag              : 0
Distance (au)         : 5.866
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 33.80
Sun-Target sep (deg)  : 46.36
Sun-Moon sep (deg)    : 170.80
B (ring opening deg)  : -2.20
PA of pole (deg)      : 0.43
Pole direction: RA (deg): 268.05680
Dec (deg): 64.49652
C/A sky separation (") : 6.180
C/A sky separation (km) : 26292.3
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	2031-11-03T23:47:07.140	35.07	-9.38	71491.0	-22.62	-25.44
Jupiter	E	2031-11-04T00:52:57.792	21.01	-22.03	71491.2	-20.52	-23.15