

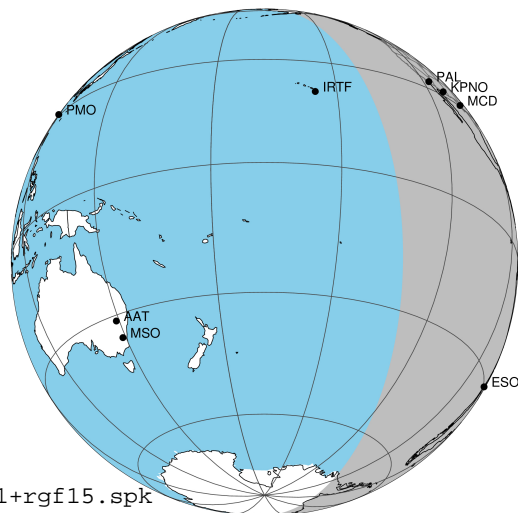
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-10-22T02:49:29.090
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116526901096525824
 2Mass ID (if available) : 17380322-2312470

Jupiter 2031-10-22T02:49:29 K9.17 G14.81 Pgt

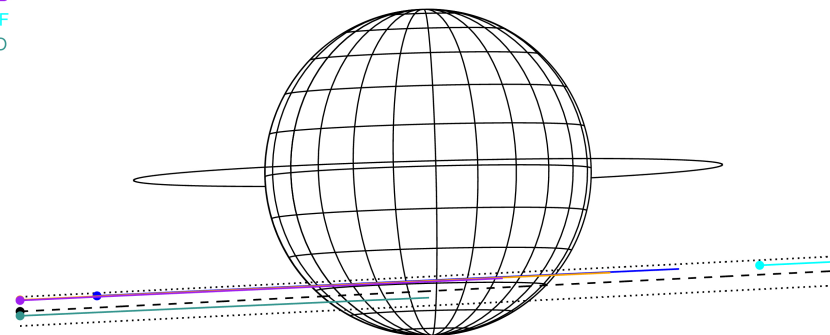
ICRS Star Coord at Epoch: 17h 38m 03.21090s -23:12:47.27454s

RUWE (>1.4 is poor) : 0.94
 K magnitude : 9.167
 G magnitude : 14.811
 RP magnitude : 13.387
 BP magnitude : 17.417
 DUPflag : 0
 Distance (au) : 5.712
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 29.46
 Sun-Target sep (deg) : 56.89
 Sun-Moon sep (deg) : 17.74
 B (ring opening deg) : -2.25
 PA of pole (deg) : 1.53
 Pole direction: RA (deg): 268.05681
 Dec (deg): 64.49652
 C/A sky separation (") : 12.531
 C/A sky separation (km) : 51917.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-10-22T02:49:29 K9.17 G14.81
 Pgt



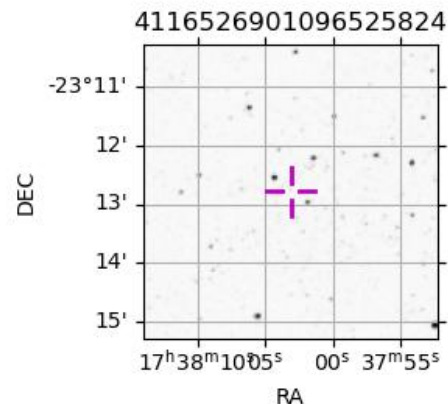
Earth
 PAL
 KPNO
 MCD
 IRTF
 ESO



2031-10-22T02:49:29.0900 α: 17 38 03.2109 δ: -23 12 47.275 C/A ***** PA 2.85 deg v_sky +29.46 km/s D 05.71 AU
 Credit: Styled after SORA/Lucky Star

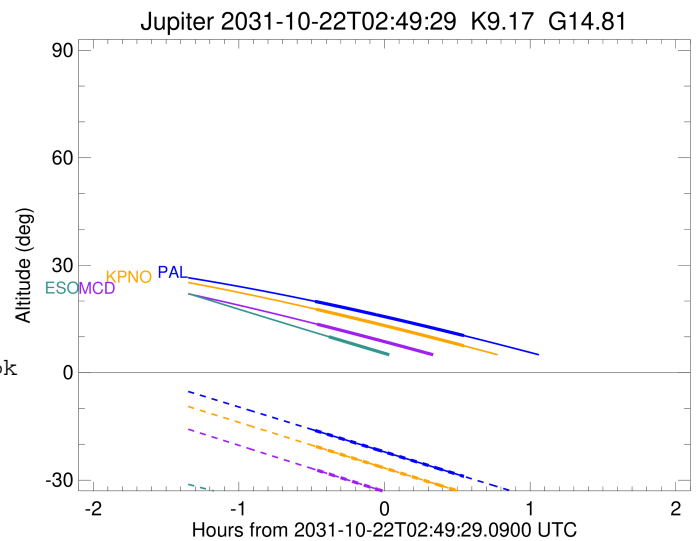
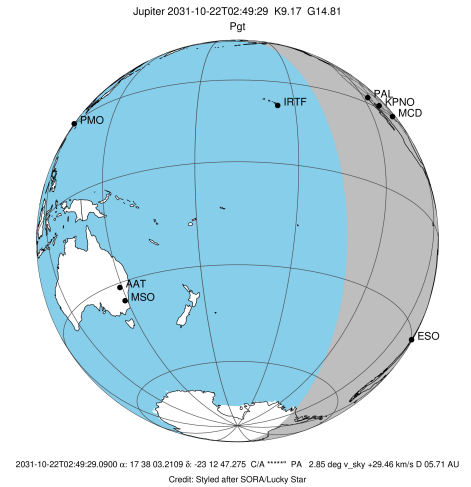
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEncode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	OCT 22 02:20 - OCT 22 03:22	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	OCT 22 02:21 - OCT 22 03:22	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+	OCT 22 02:21 - OCT 22 02:21	Pin
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			Pnn
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	OCT 22 02:26 - OCT 22 02:26	Pin
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            : 2031-10-22T02:51:37.400
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      : 4116526901096525824
2Mass ID (if available) : 17380322-2312470
ICRS Star Coord at Epoch: 17h 38m 03.21090s -23:12:47.27454s
RUWE (>1.4 is poor) : 0.94
K magnitude          : 9.167
G magnitude          : 14.811
RP magnitude         : 13.387
BP magnitude         : 17.417
DUPflag             : 0
Distance (au)       : 5.712
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 29.46
Sun-Target sep (deg) : 56.89
Sun-Moon sep (deg)  : 17.10
B (ring opening deg) : -2.25
PA of pole (deg)    : 1.53
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation ("): 11.396
C/A sky separation (km): 47211.7
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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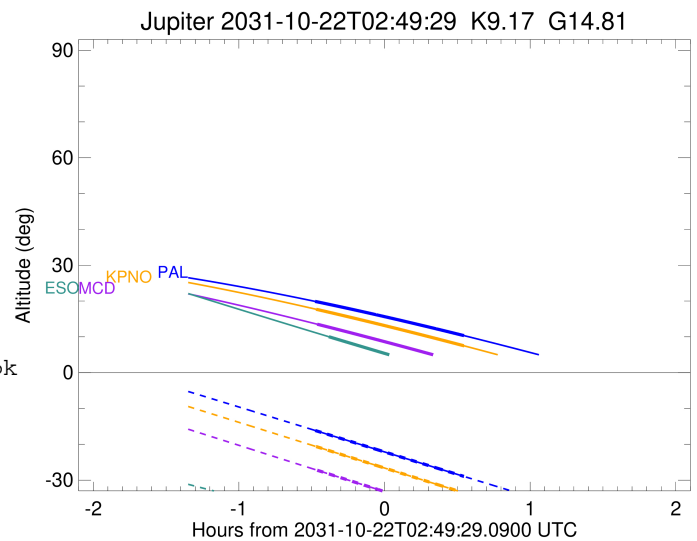
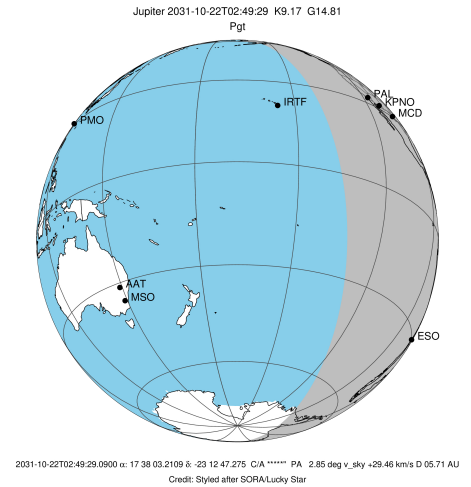


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-22T02:20:58.737	19.88	-16.15	71488.8	-42.41	-46.13
Jupiter	E	2031-10-22T03:22:13.025	10.34	-28.96	71489.1	-40.20	-43.91

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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-22T02:51:49.360
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: 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        : 4116526901096525824
2Mass ID (if available) : 17380322-2312470
ICRS Star Coord at Epoch: 17h 38m 03.21090s -23:12:47.27454s
RUWE (>1.4 is poor)  : 0.94
K magnitude           : 9.167
G magnitude           : 14.811
RP magnitude          : 13.387
BP magnitude          : 17.417
DUPflag              : 0
Distance (au)         : 5.712
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 29.46
Sun-Target sep (deg)  : 56.89
Sun-Moon sep (deg)   : 17.04
B (ring opening deg) : -2.25
PA of pole (deg)     : 1.53
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (") : 11.454
C/A sky separation (km) : 47454.0
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
    
```

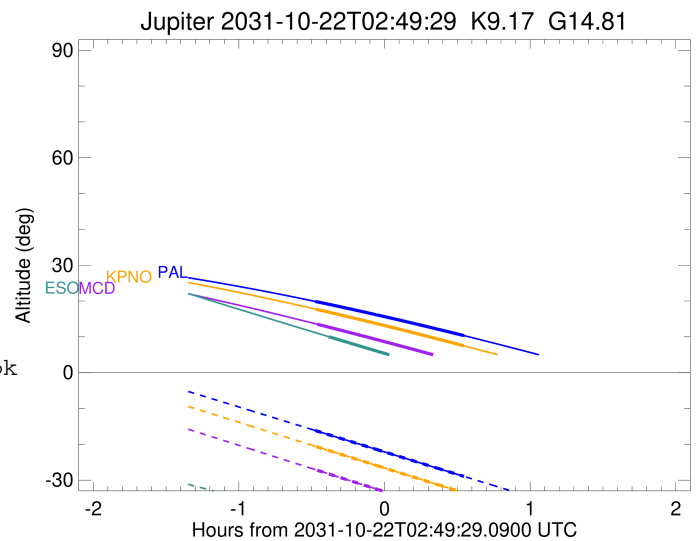
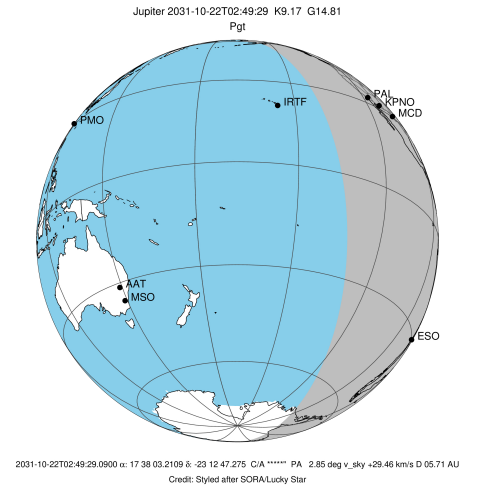


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-22T02:21:19.485	17.69	-20.63	71488.8	-42.65	-46.37
Jupiter	E	2031-10-22T03:22:16.014	7.50	-33.54	71489.1	-40.48	-44.19

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-22T02:52:03.400
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       : 4116526901096525824
2Mass ID (if available) : 17380322-2312470
ICRS Star Coord at Epoch: 17h 38m 03.21090s -23:12:47.27454s
RUWE (>1.4 is poor) : 0.94
K magnitude           : 9.167
G magnitude           : 14.811
RP magnitude         : 13.387
BP magnitude         : 17.417
DUPflag              : 0
Distance (au)        : 5.712
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 29.46
Sun-Target sep (deg) : 56.89
Sun-Moon sep (deg)  : 16.96
B (ring opening deg) : -2.25
PA of pole (deg)    : 1.53
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (") : 11.533
C/A sky separation (km) : 47781.8
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
    
```

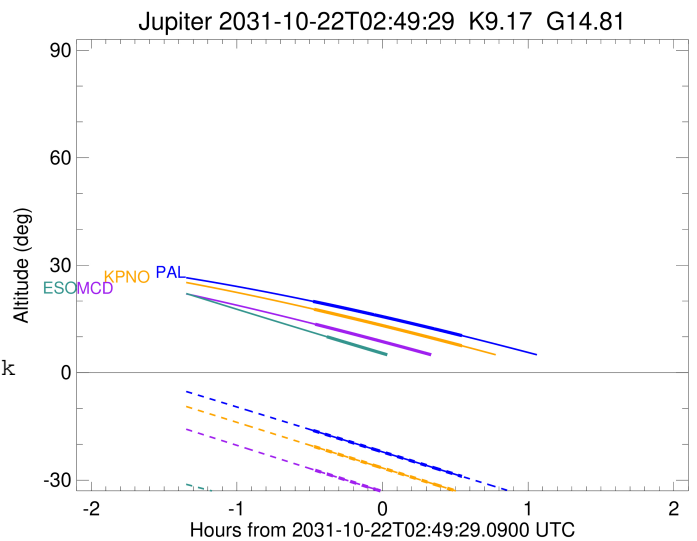
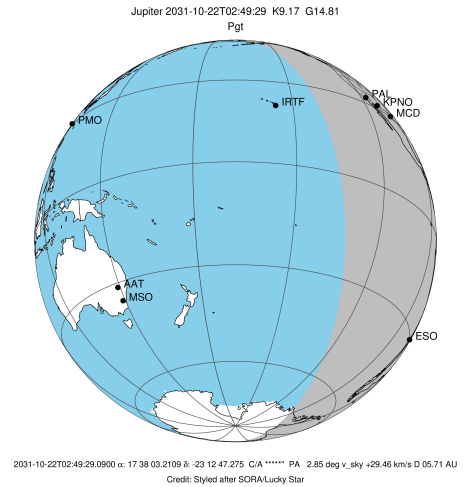


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-22T02:21:46.037	13.52	-27.24	71488.8	-42.97	-46.69
Jupiter	E	2031-10-22T03:22:17.336	2.61x	-40.16	71489.0	-40.86	-44.57

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-22T02:52:31.040
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       : 4116526901096525824
2Mass ID (if available) : 17380322-2312470
ICRS Star Coord at Epoch: 17h 38m 03.21090s -23:12:47.27454s
RUWE (>1.4 is poor) : 0.94
K magnitude          : 9.167
G magnitude          : 14.811
RP magnitude         : 13.387
BP magnitude         : 17.417
DUPflag             : 0
Distance (au)        : 5.712
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 29.46
Sun-Target sep (deg) : 56.89
Sun-Moon sep (deg)   : 17.07
B (ring opening deg) : -2.25
PA of pole (deg)     : 1.53
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation ("): 13.228
C/A sky separation (km): 54804.8
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	2031-10-22T02:26:34.130	10.03	-40.47	71487.8	-51.01	-54.56
Jupiter	E	2031-10-22T03:18:25.199	-0.34x	-46.63	71488.1	-48.99	-52.61