

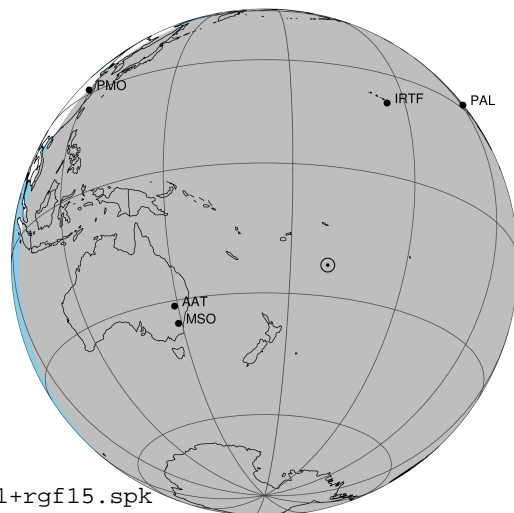
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-03T11:27:01.030
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068825418152707712
 2Mass ID (if available) : 17442748-2304292

Jupiter 2043-07-03T11:27:01 K8.18 G14.75 Pgt

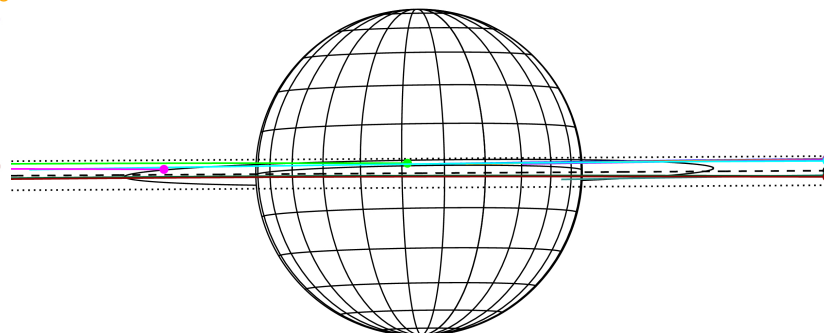
ICRS Star Coord at Epoch: 17h 44m 27.46872s -23°04:29.50569s

RUWE (>1.4 is poor) : 1.05
 K magnitude : 8.176
 G magnitude : 14.750
 RP magnitude : 13.185
 BP magnitude : 18.402
 DUPflag : 0
 Distance (au) : 4.271
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.53
 Sun-Target sep (deg) : 165.56
 Sun-Moon sep (deg) : 148.93
 B (ring opening deg) : -2.41
 PA of pole (deg) : 0.84
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 0.097
 C/A sky separation (km) : 300.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-03T11:27:01 K8.18 G14.75
 Pgt



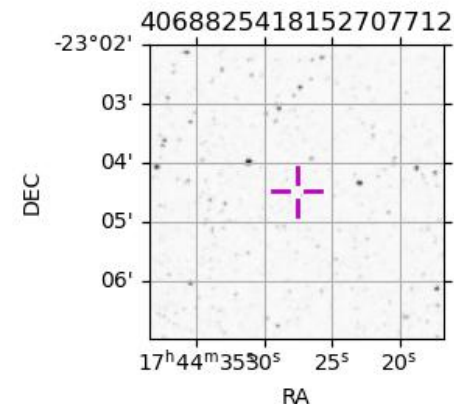
Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 KAV
 RIO
 ESO
 AAT
 MSO



2043-07-03T11:27:01.0300 a: 17 44 27.4687 & -23 04 29.506 C/A 0.108° PA 0.41 deg v_sky -15.53 km/s D 04.27 AU
 Credit: Styled after SORA/Lucky Star

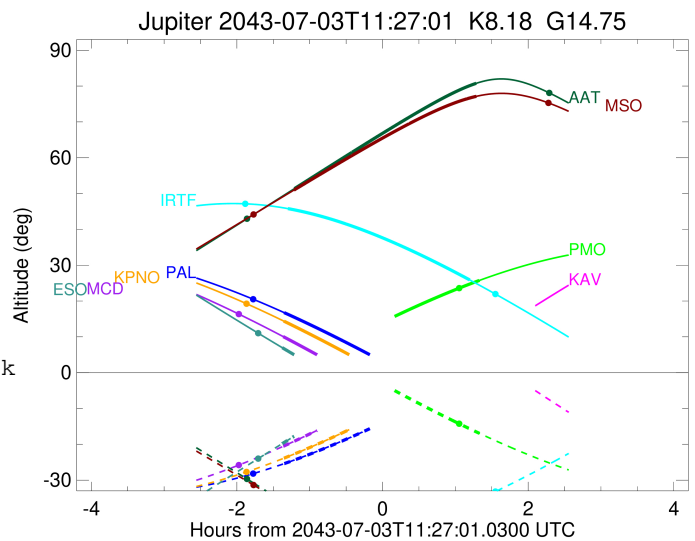
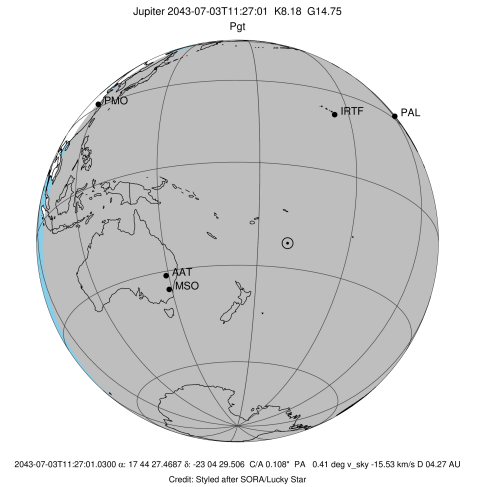
Observable events with sun below -5 deg and altitude above 5 deg

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	+	JUL 03 10:06 - JUL 03 10:06	Pin
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	JUL 03 12:46 - JUL 03 12:46	Pne
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	JUL 03 10:05 - JUL 03 10:05	Pin
MCD	McDonald Obs. 2.7m	30.7	256.0	+	JUL 03 10:05 - JUL 03 10:05	Pin
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	JUL 03 10:09 - JUL 03 12:38	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	+	JUL 03 10:04 - JUL 03 10:04	Pin
AAT	Siding Spring (AAT)	-31.3	149.1	+	JUL 03 10:14 - JUL 03 12:44	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUL 03 10:14 - JUL 03 12:44	Pie



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T11:21:44.650
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       : 4068825418152707712
2Mass ID (if available) : 17442748-2304292
ICRS Star Coord at Epoch: 17h 44m 27.46872s -23:04:29.50569s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 8.176
G magnitude          : 14.750
RP magnitude         : 13.185
BP magnitude         : 18.402
DUPflag             : 0
Distance (au)        : 4.271
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.53
Sun-Target sep (deg) : 165.56
Sun-Moon sep (deg)  : 149.69
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.84
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 1.192
C/A sky separation (km) : 3693.4
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
    
```

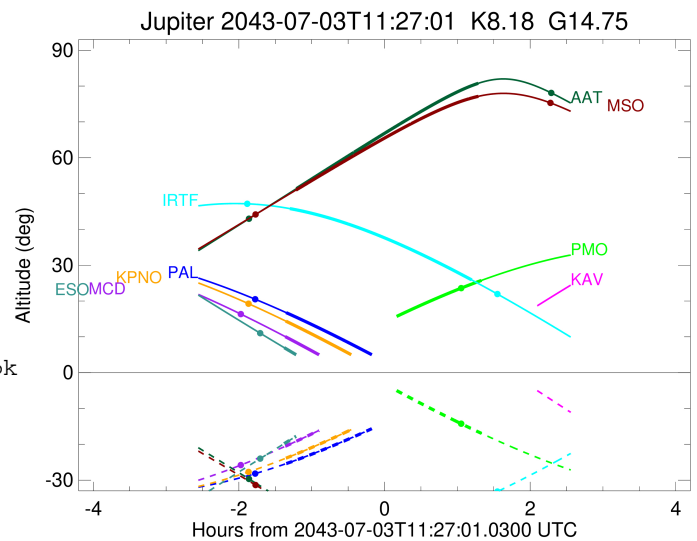
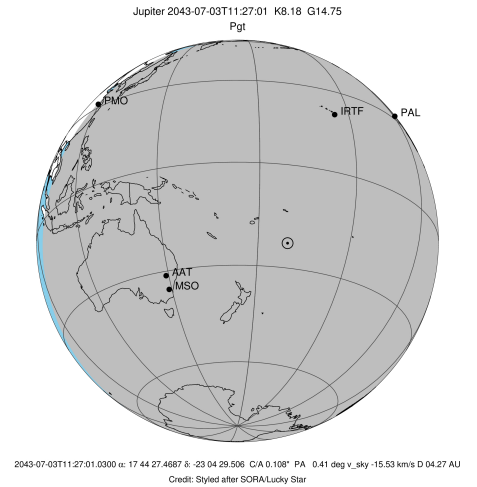


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T10:06:06.969	16.74	-25.38	71492.0	2.95	3.37
Jupiter	E	2043-07-03T12:37:58.624	-10.29x	-1.74x	71492.0	2.90	3.31

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T11:31:39.930
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : PMO
Location            : Purple Mtn Obs. Nanking
Latitude (deg)      : 32.06667
E. Longitude (deg)  : 118.82089
Altitude (km)       : 0.364
Gaia source ID      : 4068825418152707712
2Mass ID (if available) : 17442748-2304292
ICRS Star Coord at Epoch: 17h 44m 27.46872s -23:04:29.50569s
RUWE (>1.4 is poor) : 1.05
K magnitude         : 8.176
G magnitude         : 14.750
RP magnitude        : 13.185
BP magnitude        : 18.402
DUPflag            : 0
Distance (au)      : 4.271
f0 (km)            : 0.00
g0 (km)            : 0.00
skyplane vel. (km/s) : -15.53
Sun-Target sep (deg) : 165.56
Sun-Moon sep (deg)  : 148.53
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.84
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 1.307
C/A sky separation (km) : 4048.8
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
    
```

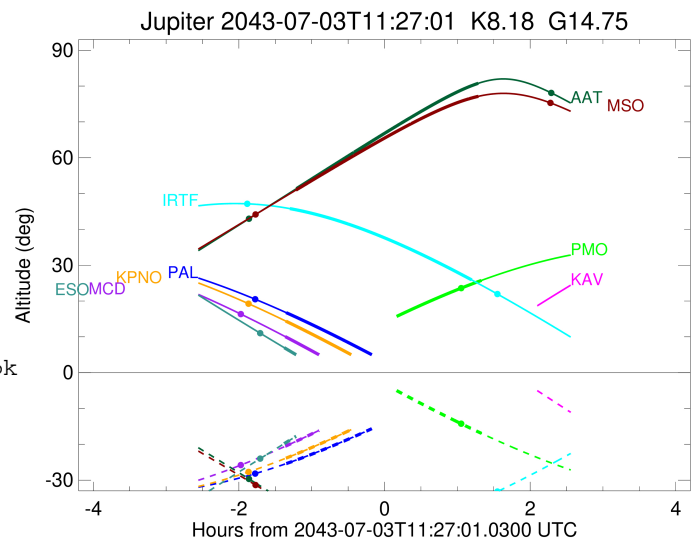
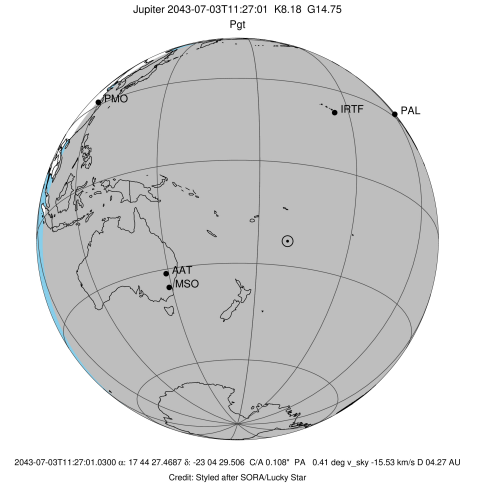


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T10:15:56.331	1.50x	10.49x	71492.0	2.26	2.58
Jupiter	E	2043-07-03T12:46:55.563	25.75	-16.94	71492.0	4.11	4.70

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T11:21:29.140
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      : 4068825418152707712
2Mass ID (if available) : 17442748-2304292
ICRS Star Coord at Epoch: 17h 44m 27.46872s -23:04:29.50569s
RUWE (>1.4 is poor) : 1.05
K magnitude         : 8.176
G magnitude         : 14.750
RP magnitude        : 13.185
BP magnitude        : 18.402
DUPflag            : 0
Distance (au)       : 4.271
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.53
Sun-Target sep (deg) : 165.56
Sun-Moon sep (deg)  : 149.69
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.84
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 1.099
C/A sky separation (km) : 3404.5
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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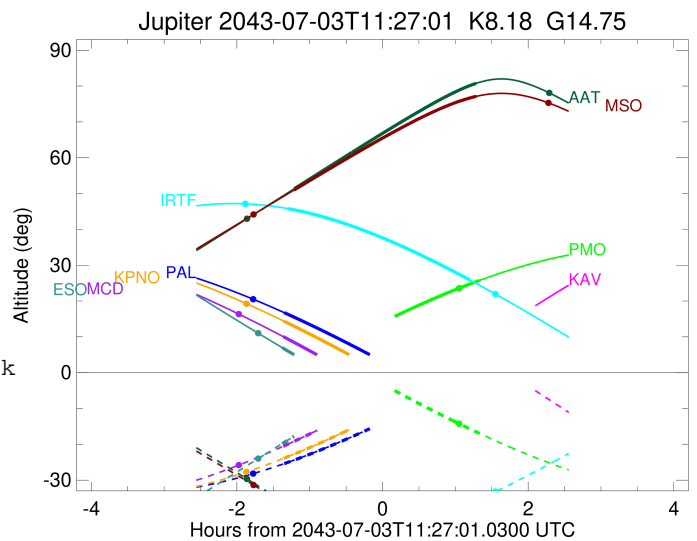
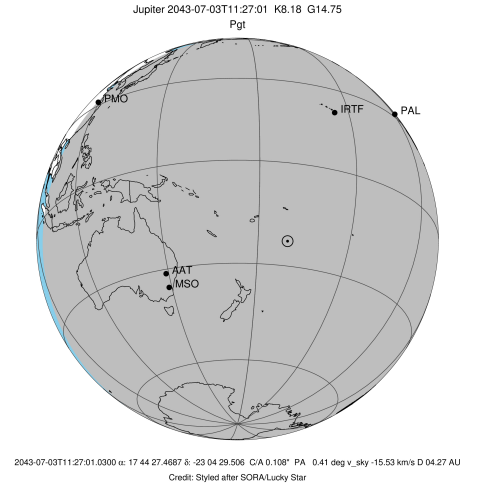


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T10:05:42.521	14.39	-23.88	71492.0	2.75	3.14
Jupiter	E	2043-07-03T12:37:53.973	-13.98x	1.53x	71492.0	2.65	3.02

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T11:21:14.070
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        : 4068825418152707712
2Mass ID (if available) : 17442748-2304292
ICRS Star Coord at Epoch: 17h 44m 27.46872s -23:04:29.50569s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 8.176
G magnitude           : 14.750
RP magnitude          : 13.185
BP magnitude          : 18.402
DUPflag              : 0
Distance (au)         : 4.271
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.53
Sun-Target sep (deg)  : 165.56
Sun-Moon sep (deg)    : 149.67
B (ring opening deg) : -2.41
PA of pole (deg)      : 0.84
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 0.977
C/A sky separation (km) : 3025.3
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
    
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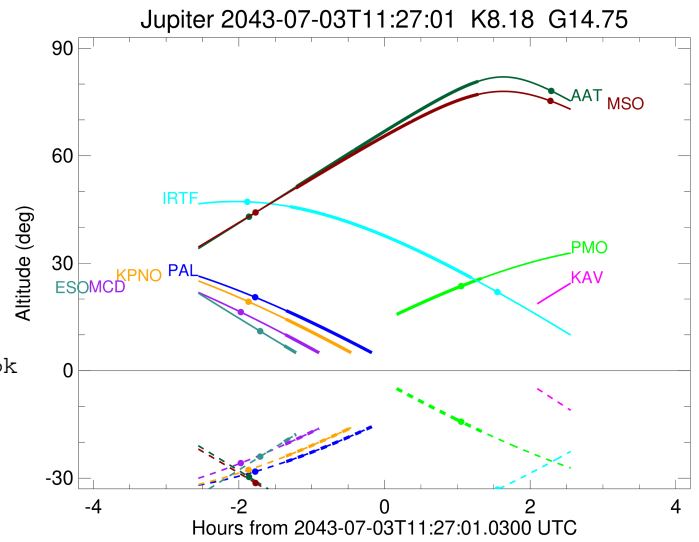
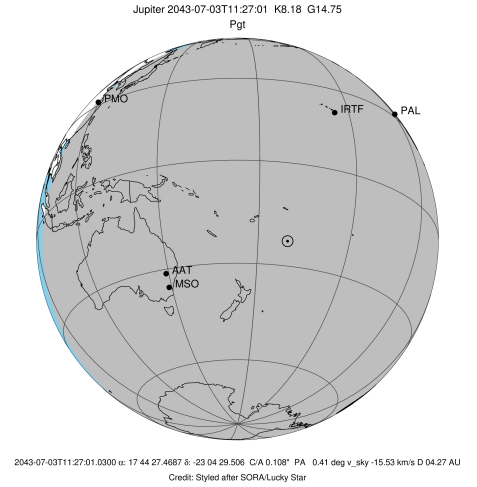


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T10:05:13.161	10.06	-20.55	71492.0	2.48	2.84
Jupiter	E	2043-07-03T12:37:55.215	-19.80x	6.91x	71492.0	2.33	2.66

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T11:23:48.680
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: 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        : 4068825418152707712
2Mass ID (if available) : 17442748-2304292
ICRS Star Coord at Epoch: 17h 44m 27.46872s -23:04:29.50569s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 8.176
G magnitude           : 14.750
RP magnitude          : 13.185
BP magnitude          : 18.402
DUPflag              : 0
Distance (au)         : 4.271
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.53
Sun-Target sep (deg)  : 165.56
Sun-Moon sep (deg)    : 149.72
B (ring opening deg) : -2.41
PA of pole (deg)      : 0.84
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 1.201
C/A sky separation (km) : 3721.4
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
    
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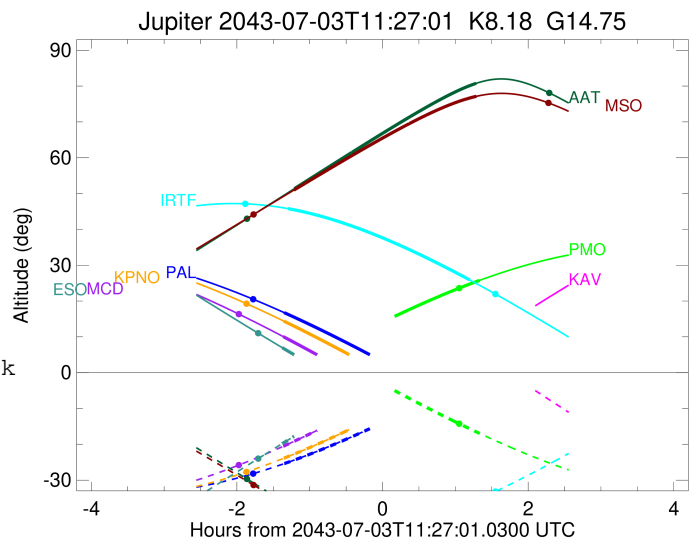
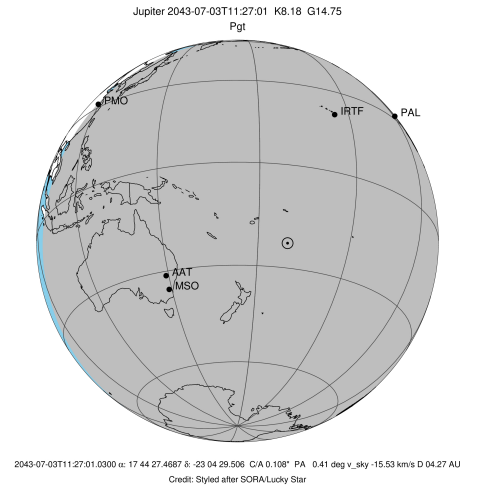


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T10:09:09.529	45.78	-47.15	71492.0	2.71	3.10
Jupiter	E	2043-07-03T12:38:49.625	25.90	-36.46	71492.0	3.07	3.51

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T11:21:31.180
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       : 4068825418152707712
2Mass ID (if available) : 17442748-2304292
ICRS Star Coord at Epoch: 17h 44m 27.46872s -23:04:29.50569s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 8.176
G magnitude           : 14.750
RP magnitude          : 13.185
BP magnitude          : 18.402
DUPflag              : 0
Distance (au)         : 4.271
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.53
Sun-Target sep (deg) : 165.56
Sun-Moon sep (deg)   : 149.46
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.84
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 1.305
C/A sky separation (km) : 4042.5
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
    
```

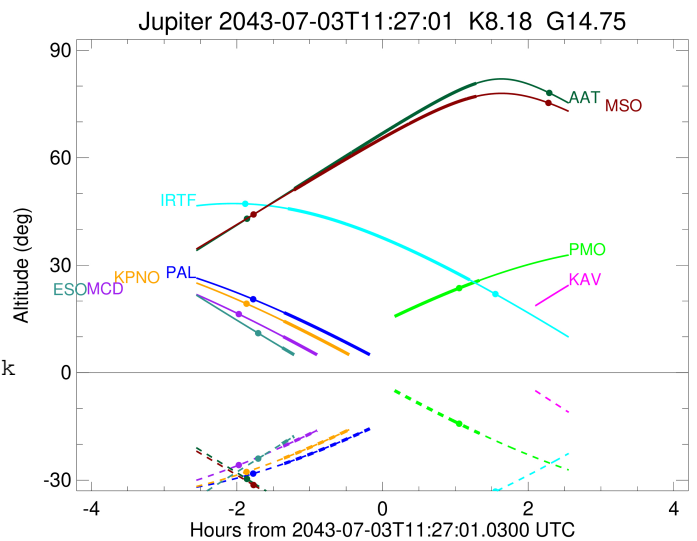
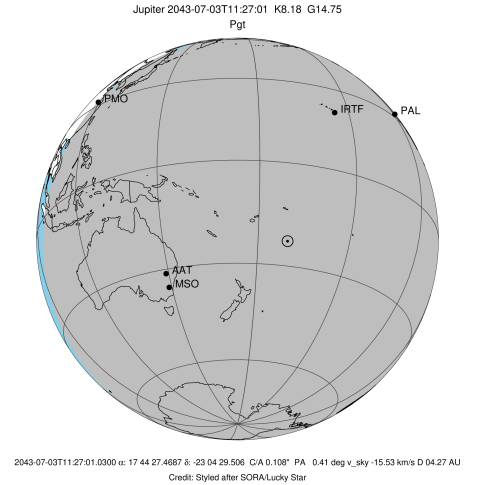


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T10:04:25.788	6.97	-19.80	71492.0	-3.15	-3.60
Jupiter	E	2043-07-03T12:39:16.247	-21.43x	10.87x	71492.0	-3.25	-3.72


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T11:29:23.910
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : AAT
Location             : Siding Spring (AAT)
Latitude (deg)       : -31.27703
E. Longitude (deg)   : 149.06608
Altitude (km)        : 1.164
Gaia source ID       : 4068825418152707712
2Mass ID (if available) : 17442748-2304292
ICRS Star Coord at Epoch: 17h 44m 27.46872s -23:04:29.50569s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 8.176
G magnitude           : 14.750
RP magnitude         : 13.185
BP magnitude         : 18.402
DUPflag             : 0
Distance (au)        : 4.271
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.53
Sun-Target sep (deg) : 165.56
Sun-Moon sep (deg)   : 149.08
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.84
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 0.444
C/A sky separation (km): 1376.7
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
    
```

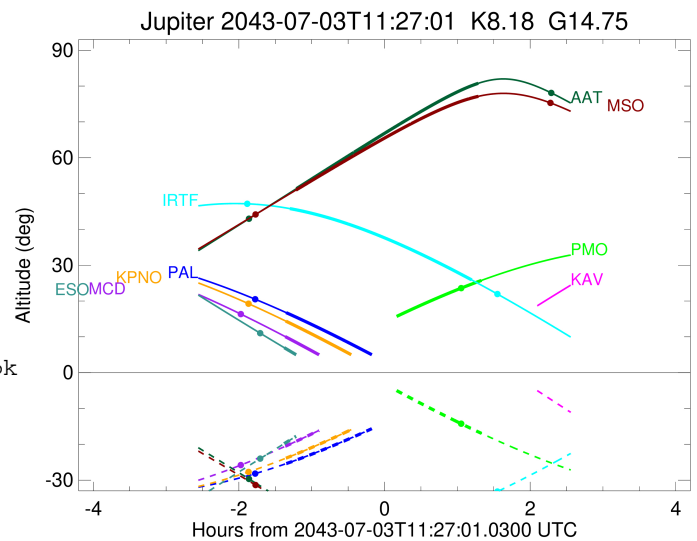
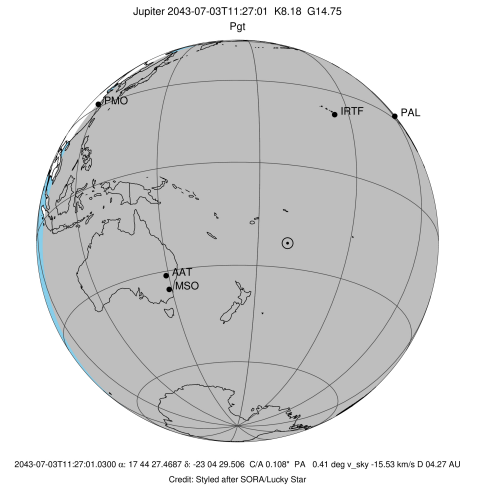


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T10:14:18.124	51.33	-37.91	71492.0	-1.89	-2.17
Jupiter	E	2043-07-03T12:44:16.608	80.76	-69.70	71492.0	-0.48	-0.55


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T11:29:17.960
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : MSO
Location             : Mt. Stromlo Observatory
Latitude (deg)       : -35.32000
E. Longitude (deg)  : 149.00833
Altitude (km)        : 0.770
Gaia source ID       : 4068825418152707712
2Mass ID (if available) : 17442748-2304292
ICRS Star Coord at Epoch: 17h 44m 27.46872s -23:04:29.50569s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 8.176
G magnitude           : 14.750
RP magnitude         : 13.185
BP magnitude         : 18.402
DUPflag             : 0
Distance (au)        : 4.271
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.53
Sun-Target sep (deg) : 165.56
Sun-Moon sep (deg)  : 149.08
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.84
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 0.584
C/A sky separation (km) : 1810.4
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	2043-07-03T10:14:08.470	50.99	-38.15	71492.0	-2.23	-2.55
Jupiter	E	2043-07-03T12:44:14.943	77.12	-68.04	71492.0	-0.83	-0.95