

target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-07-05T11:04:41.920  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4116860332380504192  
 2Mass ID (if available) : 17432577-2304056

Jupiter 2043-07-05T11:04:41 K8.73 G12.85 Pgt

ICRS Star Coord at Epoch: 17h 43m 25.80155s -23:04:05.79143s

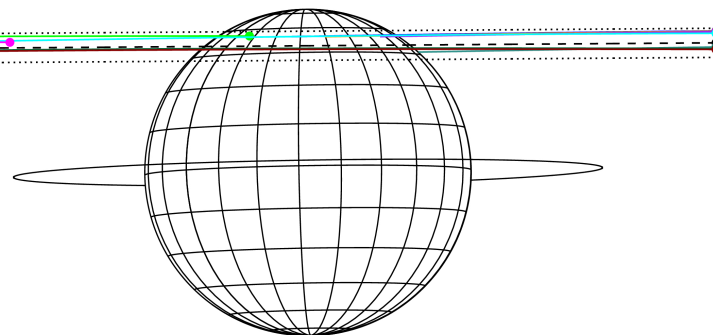
RUWE (>1.4 is poor) : 0.85  
 K magnitude : 8.733  
 G magnitude : 12.855  
 RP magnitude : 11.749  
 BP magnitude : 14.072  
 DUPflag : 0  
 Distance (au) : 4.279  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -15.24  
 Sun-Target sep (deg) : 163.43  
 Sun-Moon sep (deg) : 174.60  
 B (ring opening deg) : -2.42  
 PA of pole (deg) : 0.95  
 Pole direction: RA (deg): 268.05669  
 Dec (deg): 64.49732  
 C/A sky separation (") : 17.890  
 C/A sky separation (km) : 55517.8  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2043-07-05T11:04:41 K8.73 G12.85  
 Pgt



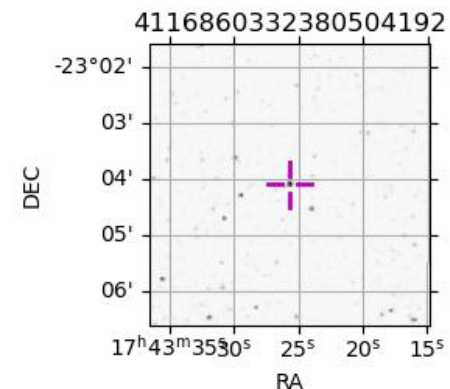
2043-07-05T11:04:41.9200 a: 17 43 25.80155 s: -23 04 05.791 C/A \*\*\*\*\* PA 180.41 deg v\_sky -15.24 km/s D 04.28 AU  
 Credit: Styled after SORA/Lucky Star

Earth  
 PAL  
 PMO  
 KPNO  
 MCD  
 IRTF  
 KAV  
 RIO  
 ESO  
 AAT  
 MSO



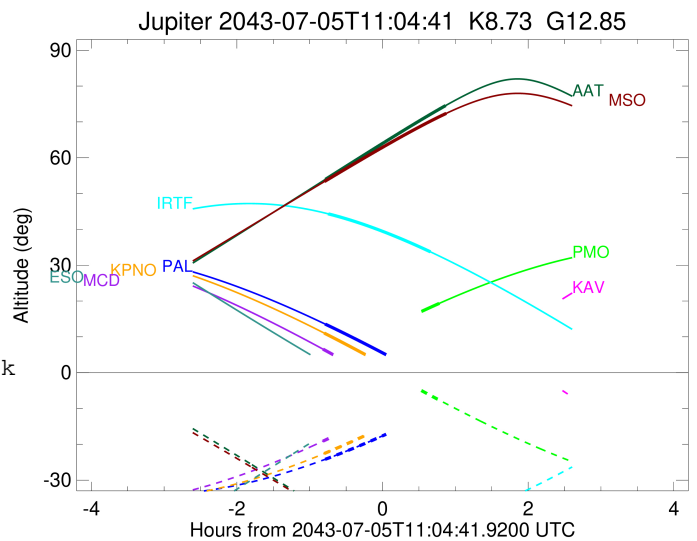
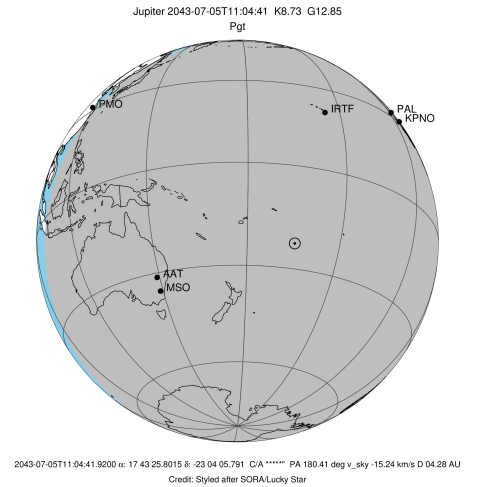
Observable events with sun below -5 deg and altitude above 5 deg

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 05 10:17 - JUL 05 10:17	Pin
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	JUL 05 11:51 - JUL 05 11:51	Pne
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	JUL 05 10:16 - JUL 05 10:16	Pin
MCD	McDonald Obs. 2.7m	30.7	256.0	+	JUL 05 10:15 - JUL 05 10:15	Pin
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	JUL 05 10:19 - JUL 05 11:44	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			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1	+	JUL 05 10:17 - JUL 05 11:56	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUL 05 10:16 - JUL 05 11:57	Pie



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-05T11:00:00.520
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      : 4116860332380504192
2Mass ID (if available) : 17432577-2304056
ICRS Star Coord at Epoch: 17h 43m 25.80155s -23:04:05.79143s
RUWE (>1.4 is poor) : 0.85
K magnitude          : 8.733
G magnitude          : 12.855
RP magnitude         : 11.749
BP magnitude         : 14.072
DUPflag             : 0
Distance (au)       : 4.279
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.24
Sun-Target sep (deg) : 163.43
Sun-Moon sep (deg)  : 175.37
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.95
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 19.214
C/A sky separation (km): 59626.0
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
    
```

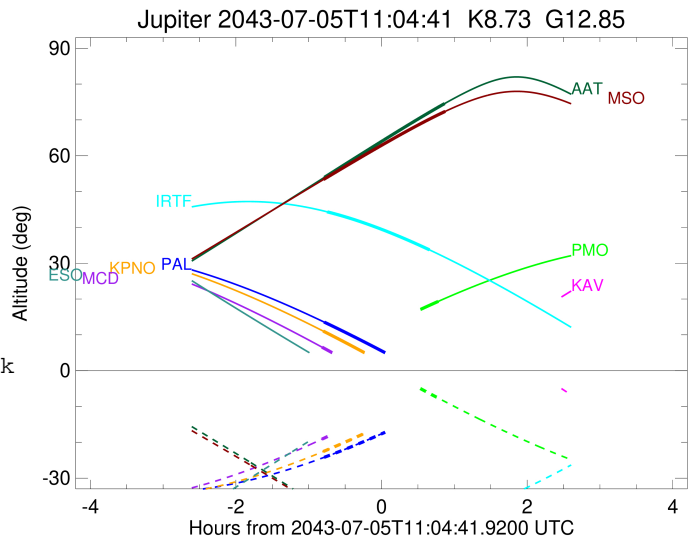
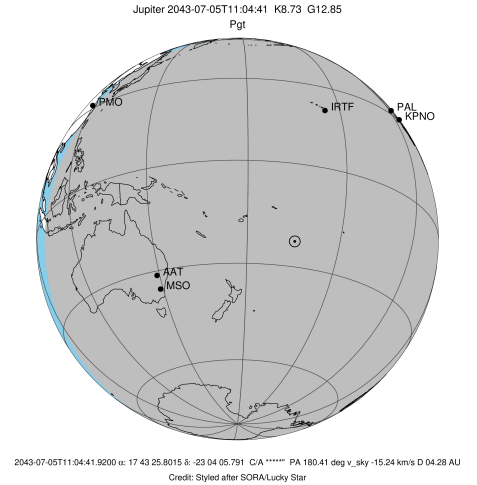


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-05T10:17:25.370	13.57	-24.19	71486.5	56.39	59.69
Jupiter	E	2043-07-05T11:42:46.847	-1.41x	-11.59	71486.5	56.45	59.74

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-05T11:09:07.400
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        : 4116860332380504192
2Mass ID (if available) : 17432577-2304056
ICRS Star Coord at Epoch: 17h 43m 25.80155s -23:04:05.79143s
RUWE (>1.4 is poor) : 0.85
K magnitude           : 8.733
G magnitude           : 12.855
RP magnitude          : 11.749
BP magnitude          : 14.072
DUPflag              : 0
Distance (au)         : 4.279
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.24
Sun-Target sep (deg)  : 163.43
Sun-Moon sep (deg)    : 175.02
B (ring opening deg) : -2.42
PA of pole (deg)      : 0.95
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 19.257
C/A sky separation (km) : 59759.4
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
    
```

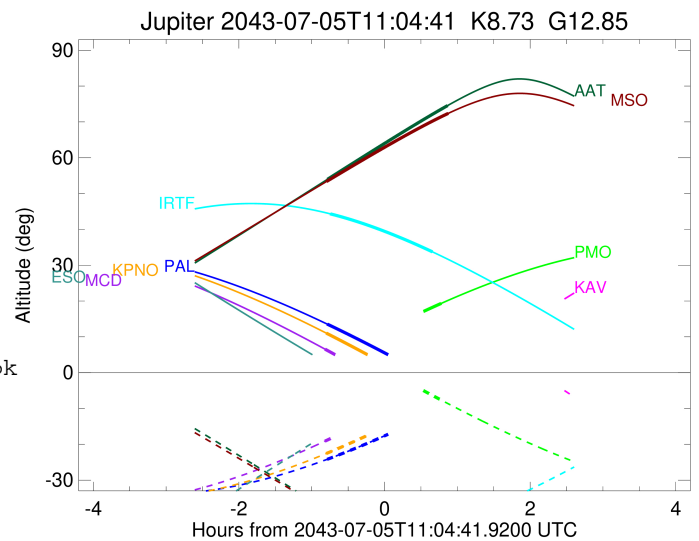
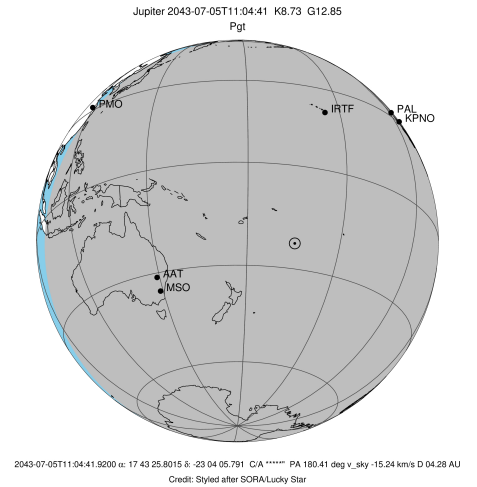


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-05T10:26:42.851	5.13	8.34x	71486.6	55.60	58.93
Jupiter	E	2043-07-05T11:51:22.893	19.32	-7.64	71486.3	57.62	60.84

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-05T10:59:45.030
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        : 4116860332380504192
2Mass ID (if available) : 17432577-2304056
ICRS Star Coord at Epoch: 17h 43m 25.80155s -23:04:05.79143s
RUWE (>1.4 is poor) : 0.85
K magnitude           : 8.733
G magnitude           : 12.855
RP magnitude          : 11.749
BP magnitude          : 14.072
DUPflag              : 0
Distance (au)         : 4.279
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.24
Sun-Target sep (deg)  : 163.43
Sun-Moon sep (deg)    : 175.33
B (ring opening deg) : -2.42
PA of pole (deg)      : 0.95
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 19.123
C/A sky separation (km) : 59343.2
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
    
```

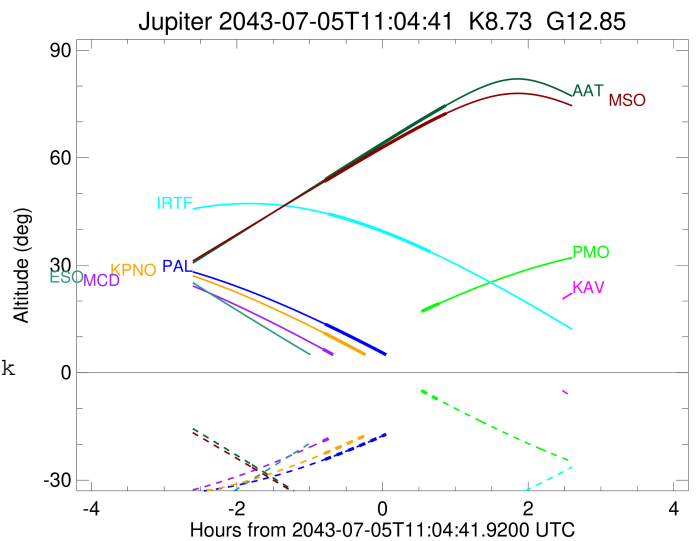
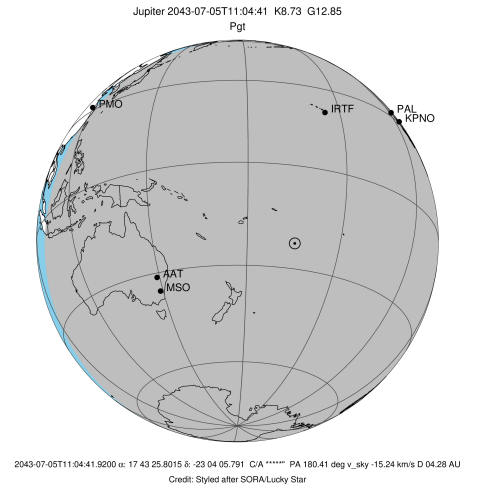


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-05T10:16:37.947	11.05	-22.58	71486.5	56.02	59.33
Jupiter	E	2043-07-05T11:43:04.185	-4.87x	-8.73	71486.5	56.01	59.33

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2043-07-05T10:59:29.170
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        : 4116860332380504192
2Mass ID (if available) : 17432577-2304056
ICRS Star Coord at Epoch: 17h 43m 25.80155s -23:04:05.79143s
RUWE (>1.4 is poor)  : 0.85
K magnitude            : 8.733
G magnitude            : 12.855
RP magnitude          : 11.749
BP magnitude          : 14.072
DUPflag               : 0
Distance (au)         : 4.279
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -15.24
Sun-Target sep (deg)  : 163.43
Sun-Moon sep (deg)    : 175.26
B (ring opening deg)  : -2.42
PA of pole (deg)      : 0.95
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 19.003
C/A sky separation (km) : 58970.3
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
    
```

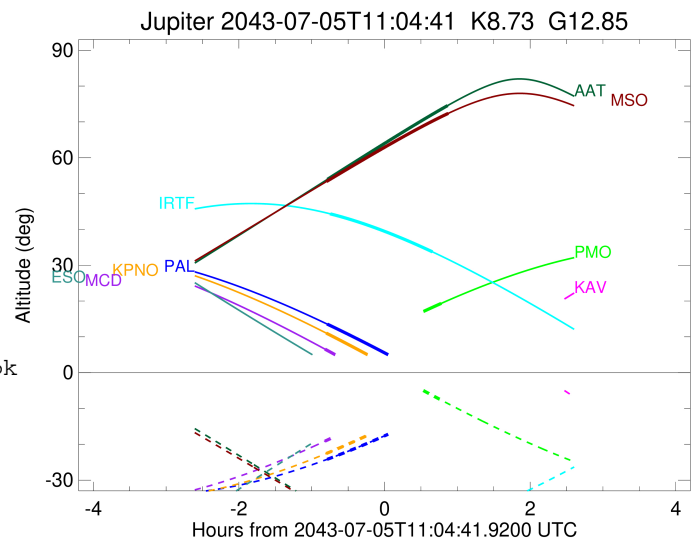
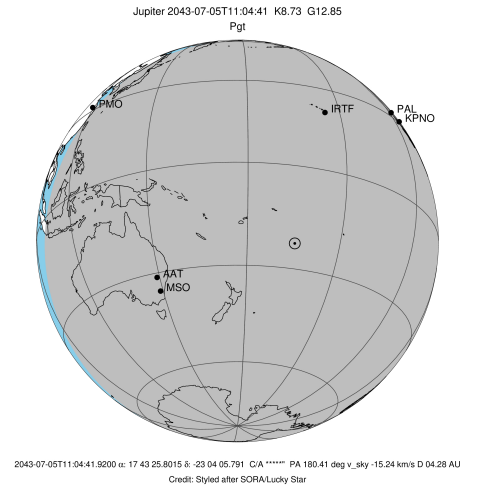


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-05T10:15:39.040	6.57	-19.11	71486.6	55.53	58.87
Jupiter	E	2043-07-05T11:43:32.450	-10.47x	-3.78x	71486.6	55.46	58.80

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-05T11:02:03.600
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      : 4116860332380504192
2Mass ID (if available) : 17432577-2304056
ICRS Star Coord at Epoch: 17h 43m 25.80155s -23:04:05.79143s
RUWE (>1.4 is poor) : 0.85
K magnitude          : 8.733
G magnitude          : 12.855
RP magnitude        : 11.749
BP magnitude        : 14.072
DUPflag            : 0
Distance (au)       : 4.279
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.24
Sun-Target sep (deg) : 163.43
Sun-Moon sep (deg)  : 175.37
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.95
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 19.207
C/A sky separation (km) : 59604.9
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
    
```

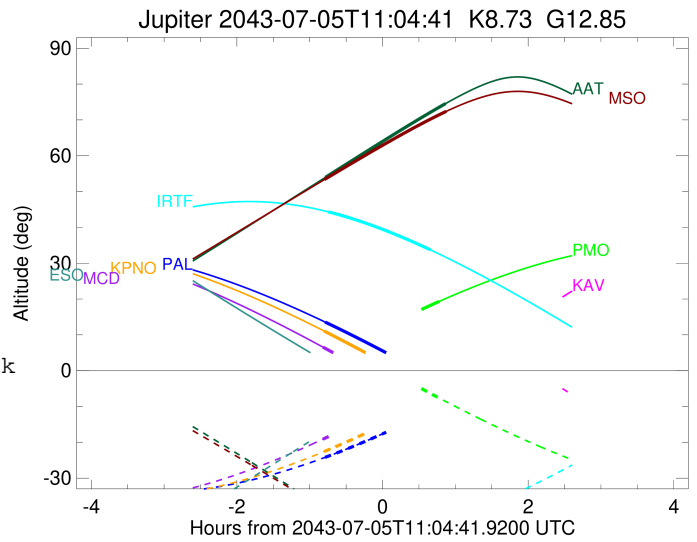
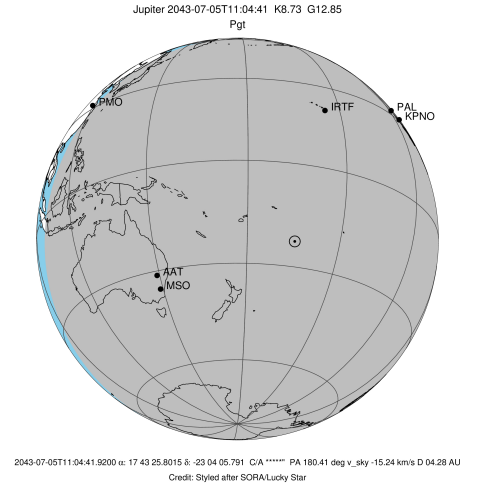


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-05T10:19:58.822	44.33	-47.50	71486.5	56.11	59.42
Jupiter	E	2043-07-05T11:44:14.689	33.72	-43.49	71486.5	56.62	59.90

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-05T11:07:09.310
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        : 4116860332380504192
2Mass ID (if available) : 17432577-2304056
ICRS Star Coord at Epoch: 17h 43m 25.80155s -23:04:05.79143s
RUWE (>1.4 is poor) : 0.85
K magnitude           : 8.733
G magnitude           : 12.855
RP magnitude          : 11.749
BP magnitude          : 14.072
DUPflag               : 0
Distance (au)         : 4.279
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.24
Sun-Target sep (deg) : 163.43
Sun-Moon sep (deg)   : 174.41
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.95
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 17.525
C/A sky separation (km) : 54384.4
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
    
```



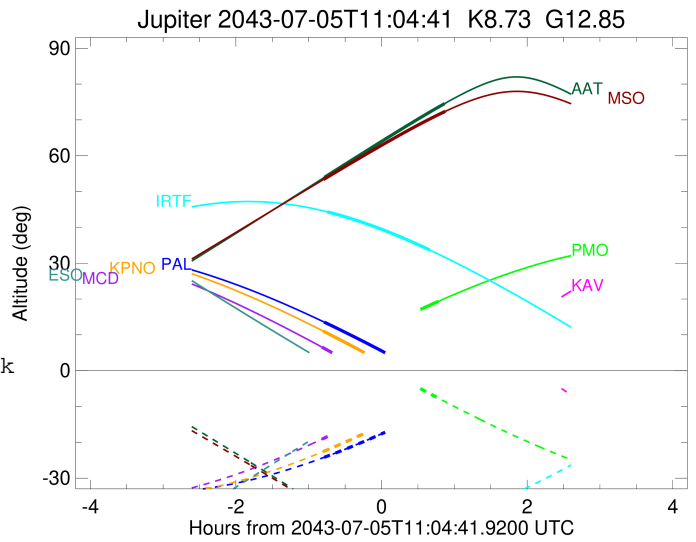
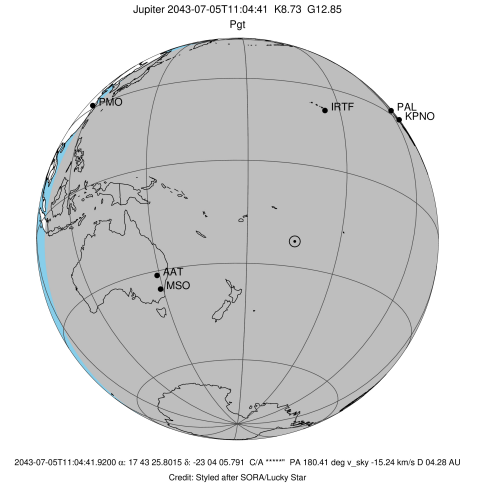
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-05T10:17:27.550	53.91	-38.44	71487.5	48.62	52.25
Jupiter	E	2043-07-05T11:56:44.649	74.56	-59.64	71487.3	50.21	53.79



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-05T11:07:03.080
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      : 4116860332380504192
2Mass ID (if available) : 17432577-2304056
ICRS Star Coord at Epoch: 17h 43m 25.80155s -23:04:05.79143s
RUWE (>1.4 is poor) : 0.85
K magnitude          : 8.733
G magnitude          : 12.855
RP magnitude         : 11.749
BP magnitude         : 14.072
DUPflag             : 0
Distance (au)       : 4.279
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.24
Sun-Target sep (deg) : 163.43
Sun-Moon sep (deg)  : 174.35
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.95
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 17.386
C/A sky separation (km): 53952.8
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	2043-07-05T10:16:46.273	53.33	-38.54	71487.6	48.10	51.74
Jupiter	E	2043-07-05T11:57:13.623	72.37	-58.91	71487.4	49.68	53.27