

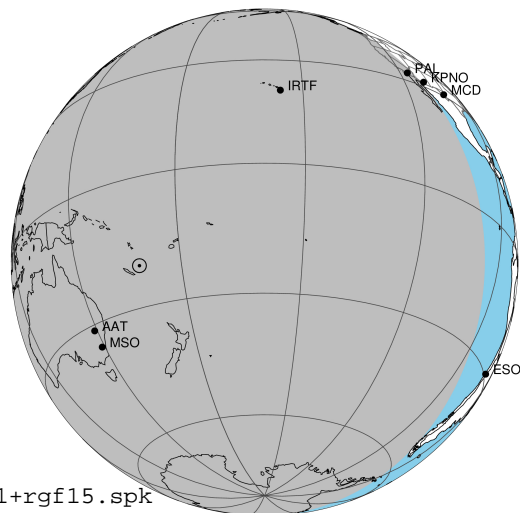
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-05-23T12:41:09.720
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4069573601376918528
 2Mass ID (if available) : 18054257-2302101

Jupiter 2043-05-23T12:41:09 K7.18 G12.45 Pgt

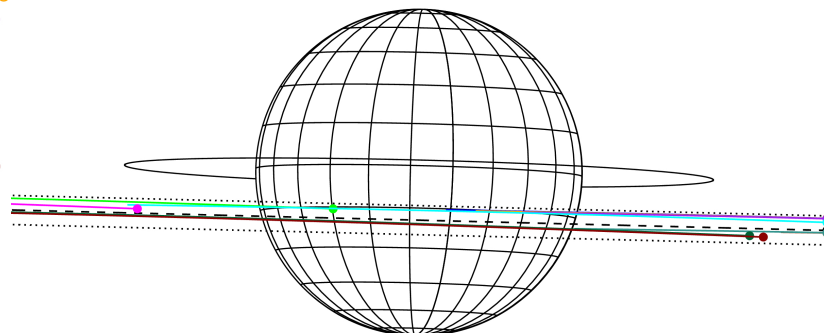
ICRS Star Coord at Epoch: 18h 05m 42.57234s -23°02'10.34303s

RUWE (>1.4 is poor) : 1.02
 K magnitude : 7.185
 G magnitude : 12.447
 RP magnitude : 11.139
 BP magnitude : 14.435
 DUPflag : 0
 Distance (au) : 4.372
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -12.54
 Sun-Target sep (deg) : 150.39
 Sun-Moon sep (deg) : 34.83
 B (ring opening deg) : -2.43
 PA of pole (deg) : -1.45
 Pole direction: RA (deg): 268.05667
 Dec (deg): 64.49732
 C/A sky separation (") : 6.585
 C/A sky separation (km) : 20881.4
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-05-23T12:41:09 K7.18 G12.45
 Pgt



Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 KAV
 RIO
 ESO
 AAT
 MSO

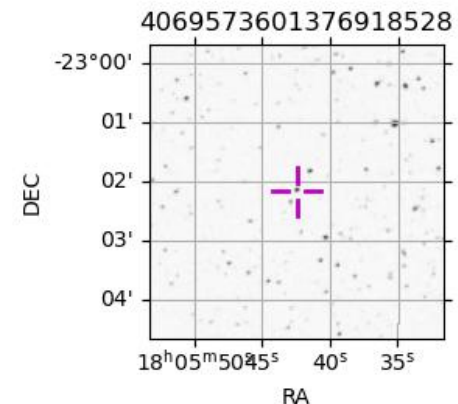


2043-05-23T12:41:09.7200 at: 18 05 42.5723 s: -23 02 10.343 C/A 6.597" PA 358.56 deg v_sky -12.54 km/s D 04.37 AU

Credit: Styled after SORA/Lucky Star

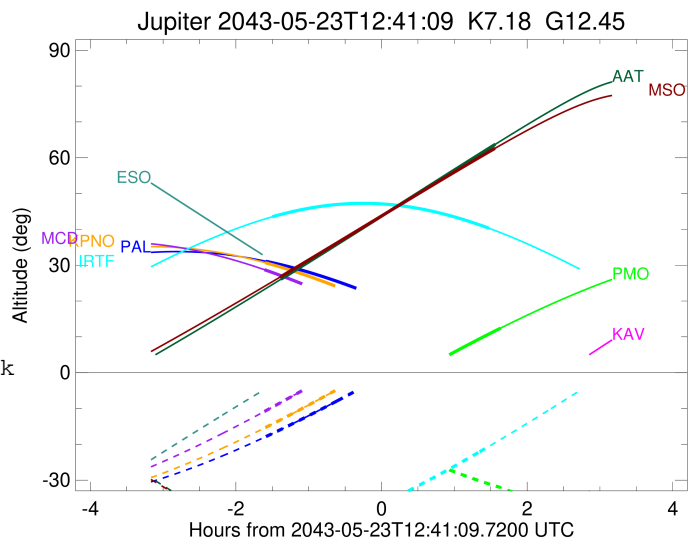
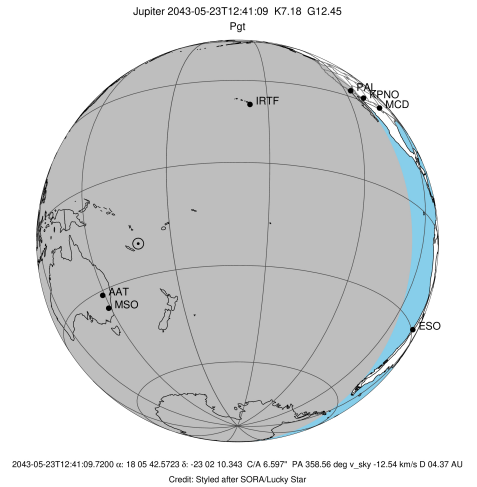
Observable events with sun below -5 deg and altitude above 5 deg

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	+	MAY 23 11:05 - MAY 23 11:05	Pin
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	MAY 23 14:19 - MAY 23 14:19	Pne
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	MAY 23 11:05 - MAY 23 11:05	Pin
MCD	McDonald Obs. 2.7m	30.7	256.0	+	MAY 23 11:04 - MAY 23 11:04	Pin
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	MAY 23 11:11 - MAY 23 14:09	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	+	MAY 23 11:18 - MAY 23 14:15	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	MAY 23 11:18 - MAY 23 14:14	Pie



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-05-23T12:36:07.780
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        : 4069573601376918528
2Mass ID (if available) : 18054257-2302101
ICRS Star Coord at Epoch: 18h 05m 42.57234s -23:02:10.34303s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 7.185
G magnitude           : 12.447
RP magnitude          : 11.139
BP magnitude          : 14.435
DUPflag              : 0
Distance (au)         : 4.372
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.54
Sun-Target sep (deg)  : 150.39
Sun-Moon sep (deg)    : 35.51
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.45
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (") : 5.111
C/A sky separation (km) : 16206.3
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
    
```

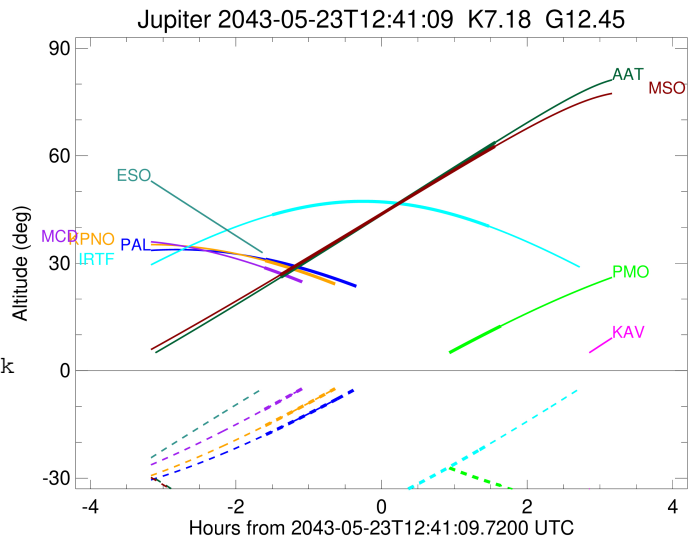
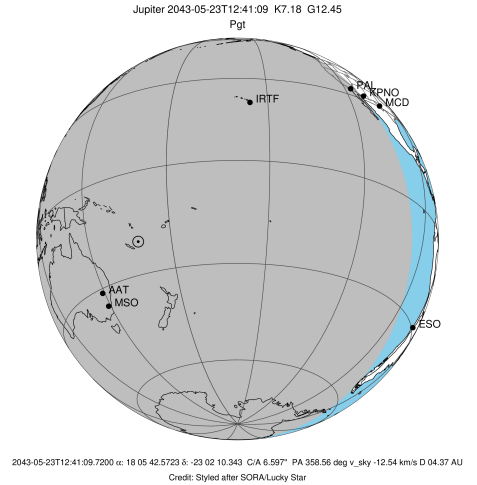


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-23T11:05:57.783	31.08	-17.84	71491.6	-12.70	-14.44
Jupiter	E	2043-05-23T14:06:54.612	7.17	15.68x	71491.6	-13.67	-15.54

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-05-23T12:48:22.730
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       : 4069573601376918528
2Mass ID (if available) : 18054257-2302101
ICRS Star Coord at Epoch: 18h 05m 42.57234s -23:02:10.34303s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 7.185
G magnitude           : 12.447
RP magnitude         : 11.139
BP magnitude         : 14.435
DUPflag              : 0
Distance (au)        : 4.372
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.54
Sun-Target sep (deg) : 150.39
Sun-Moon sep (deg)   : 34.23
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.45
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (") : 5.445
C/A sky separation (km) : 17264.2
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
    
```

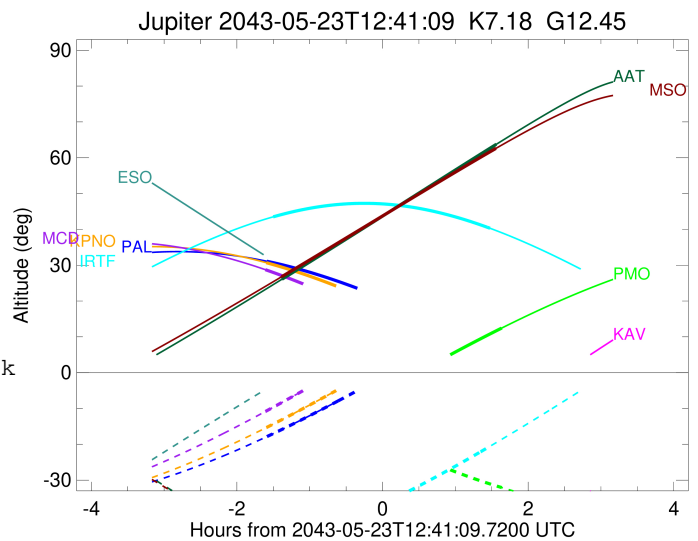
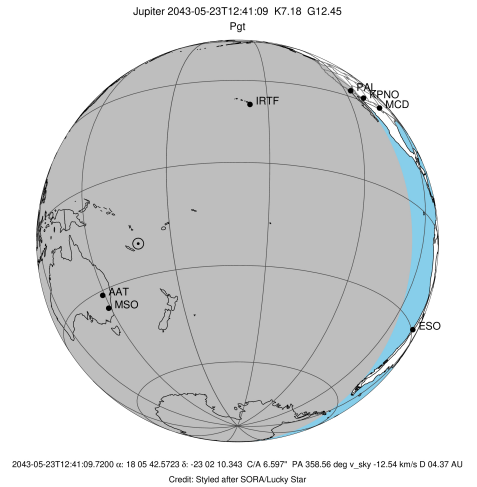


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-23T11:16:05.511	-22.70x	-3.92x	71491.5	-14.65	-16.63
Jupiter	E	2043-05-23T14:19:25.561	12.45	-32.07	71491.6	-13.35	-15.18

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-23T12:35:34.690
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      : 4069573601376918528
2Mass ID (if available) : 18054257-2302101
ICRS Star Coord at Epoch: 18h 05m 42.57234s -23:02:10.34303s
RUWE (>1.4 is poor) : 1.02
K magnitude         : 7.185
G magnitude         : 12.447
RP magnitude        : 11.139
BP magnitude        : 14.435
DUPflag            : 0
Distance (au)       : 4.372
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -12.54
Sun-Target sep (deg) : 150.39
Sun-Moon sep (deg)  : 35.53
B (ring opening deg) : -2.43
PA of pole (deg)    : -1.45
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (" ) : 5.186
C/A sky separation (km) : 16444.2
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
    
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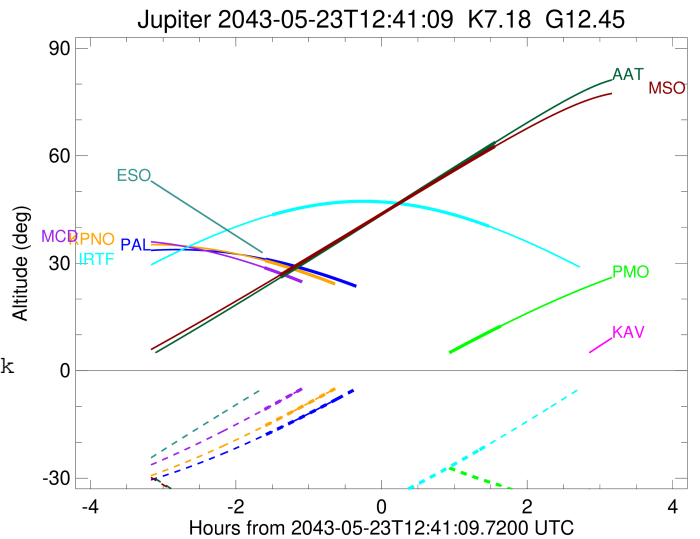
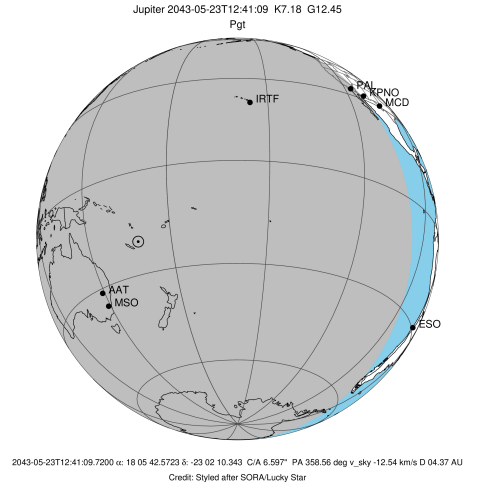


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-23T11:05:23.091	30.70	-15.34	71491.6	-12.84	-14.60
Jupiter	E	2043-05-23T14:06:28.172	4.22x	19.58x	71491.5	-13.91	-15.81

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-05-23T12:34:53.060
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        : 4069573601376918528
2Mass ID (if available) : 18054257-2302101
ICRS Star Coord at Epoch: 18h 05m 42.57234s -23:02:10.34303s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 7.185
G magnitude           : 12.447
RP magnitude          : 11.139
BP magnitude          : 14.435
DUPflag              : 0
Distance (au)         : 4.372
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.54
Sun-Target sep (deg) : 150.39
Sun-Moon sep (deg)   : 35.55
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.45
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (") : 5.287
C/A sky separation (km) : 16764.3
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
    
```

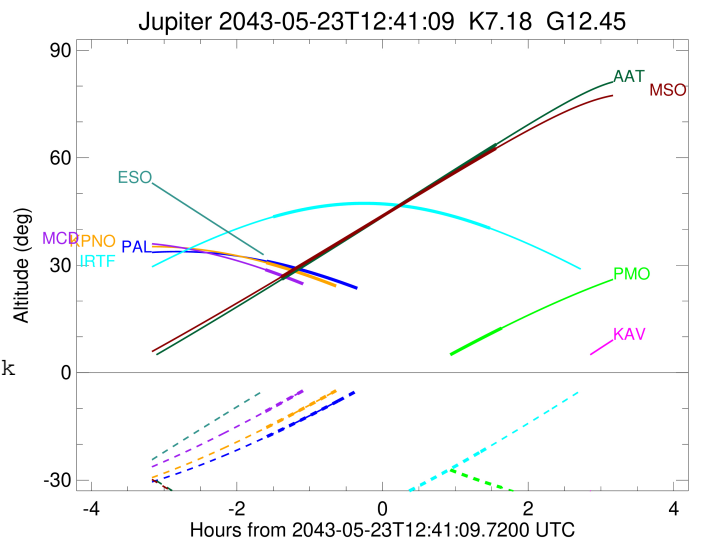
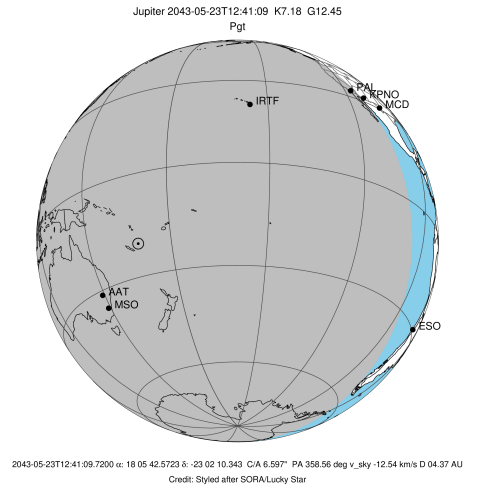


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-23T11:04:35.367	28.75	-10.85	71491.6	-13.03	-14.82
Jupiter	E	2043-05-23T14:05:59.130	-0.78x	25.59x	71491.5	-14.22	-16.16

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-23T12:40:26.980
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       : 4069573601376918528
2Mass ID (if available) : 18054257-2302101
ICRS Star Coord at Epoch: 18h 05m 42.57234s -23:02:10.34303s
RUWE (>1.4 is poor) : 1.02
K magnitude          : 7.185
G magnitude          : 12.447
RP magnitude         : 11.139
BP magnitude         : 14.435
DUPflag             : 0
Distance (au)        : 4.372
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.54
Sun-Target sep (deg) : 150.39
Sun-Moon sep (deg)   : 35.34
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.45
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (") : 5.226
C/A sky separation (km) : 16569.8
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
    
```

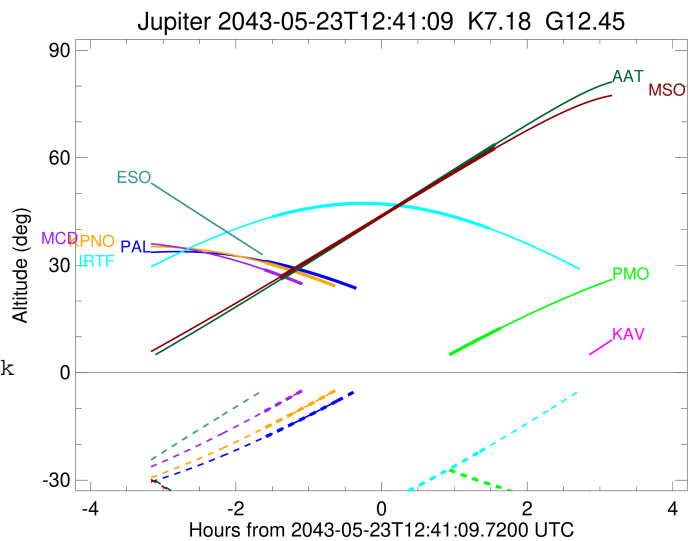
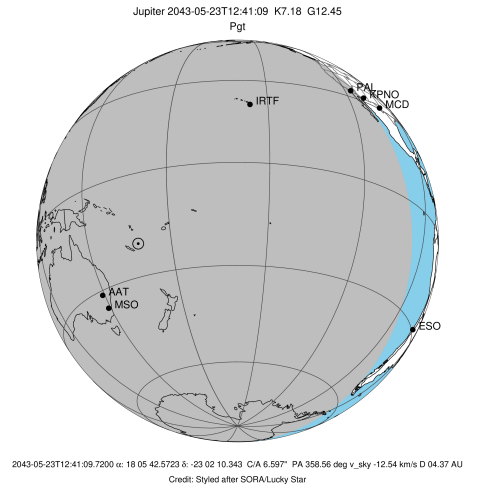


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-23T11:11:06.077	43.50	-47.69	71491.6	-13.42	-15.25
Jupiter	E	2043-05-23T14:09:46.951	40.30	-20.54	71491.5	-13.65	-15.51

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-23T12:47:03.480
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      : 4069573601376918528
2Mass ID (if available) : 18054257-2302101
ICRS Star Coord at Epoch: 18h 05m 42.57234s -23:02:10.34303s
RUWE (>1.4 is poor) : 1.02
K magnitude          : 7.185
G magnitude          : 12.447
RP magnitude         : 11.139
BP magnitude         : 14.435
DUPflag             : 0
Distance (au)       : 4.372
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -12.54
Sun-Target sep (deg) : 150.39
Sun-Moon sep (deg)  : 34.67
B (ring opening deg) : -2.43
PA of pole (deg)    : -1.45
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (" ) : 7.071
C/A sky separation (km) : 22420.9
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
    
```

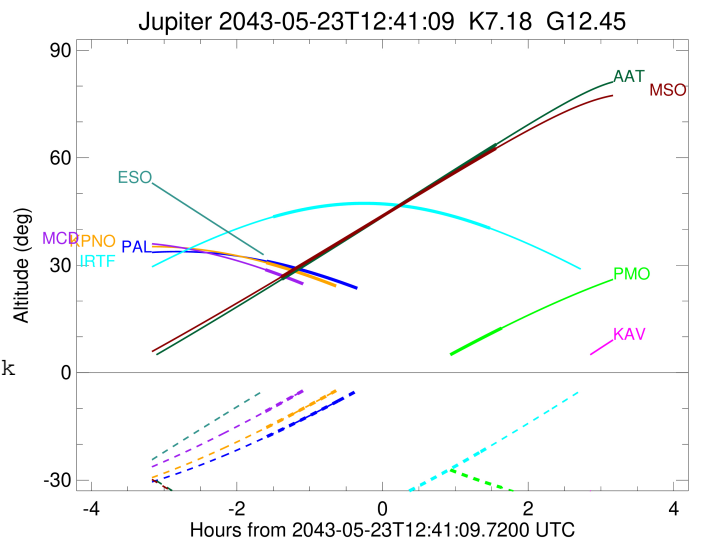
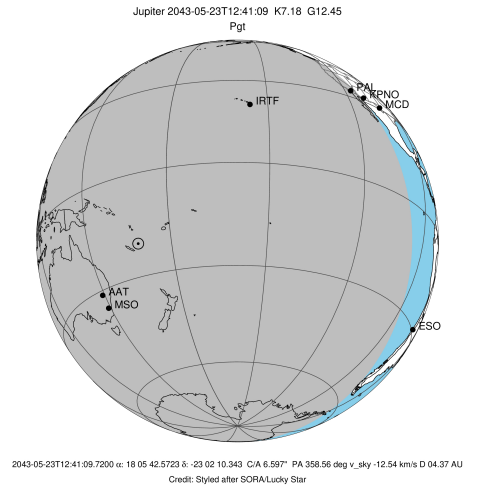


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-23T11:18:12.690	26.06	-52.25	71491.2	-18.83	-21.29
Jupiter	E	2043-05-23T14:14:59.617	63.75	-79.03	71491.2	-17.88	-20.23

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-23T12:46:49.500
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       : 4069573601376918528
2Mass ID (if available) : 18054257-2302101
ICRS Star Coord at Epoch: 18h 05m 42.57234s -23:02:10.34303s
RUWE (>1.4 is poor) : 1.02
K magnitude          : 7.185
G magnitude          : 12.447
RP magnitude         : 11.139
BP magnitude         : 14.435
DUPflag             : 0
Distance (au)        : 4.372
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.54
Sun-Target sep (deg) : 150.39
Sun-Moon sep (deg)   : 34.68
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.45
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation ("): 7.202
C/A sky separation (km): 22835.7
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	2043-05-23T11:18:05.576	26.78	-51.57	71491.1	-19.16	-21.64
Jupiter	E	2043-05-23T14:14:40.942	62.61	-75.17	71491.2	-18.25	-20.64