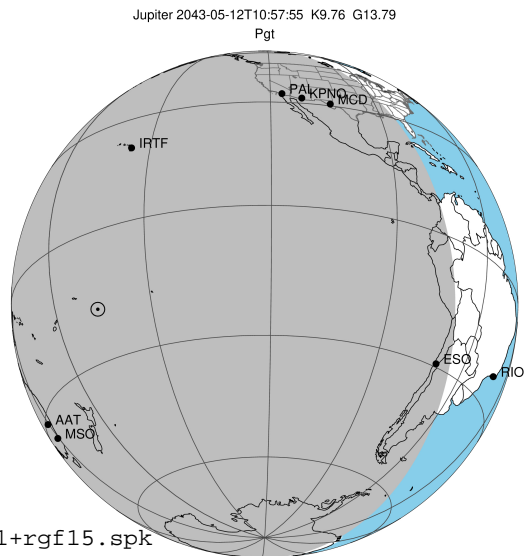


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-05-12T10:57:55.600
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4066586193954720768
 2Mass ID (if available) : 18093815-2300145

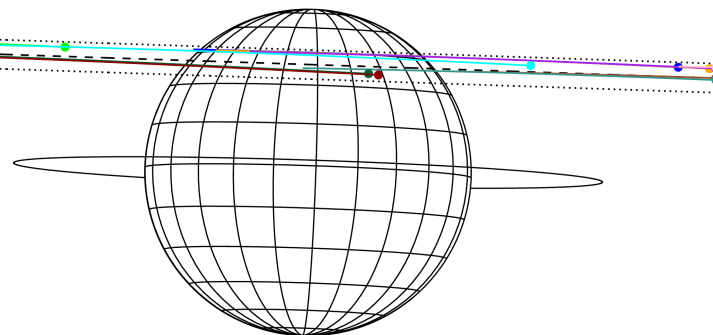
Jupiter 2043-05-12T10:57:55 K9.76 G13.79 Pgt

ICRS Star Coord at Epoch: 18h 09m 38.16364s -23°00'14.75914s

RUWE (>1.4 is poor) : 0.99
 K magnitude : 9.759
 G magnitude : 13.794
 RP magnitude : 12.732
 BP magnitude : 14.959
 DUPflag : 0
 Distance (au) : 4.477
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -9.12
 Sun-Target sep (deg) : 138.82
 Sun-Moon sep (deg) : 172.28
 B (ring opening deg) : -2.43
 PA of pole (deg) : -1.87
 Pole direction: RA (deg): 268.05666
 Dec (deg): 64.49732
 C/A sky separation (") : 14.559
 C/A sky separation (km) : 47278.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



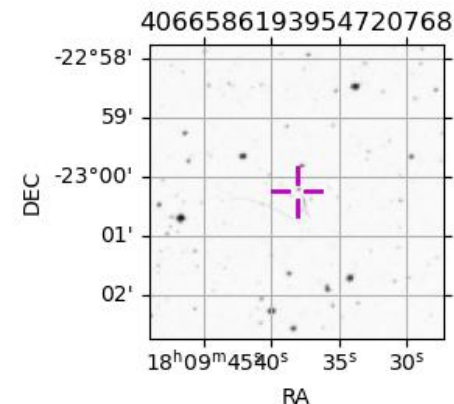
Earth
 PAL
 PMO
 KPNO
 MCD
 TEN
 IRTF
 KAV
 RIO
 ESO
 AAT
 MSO



2043-05-12T10:57:55.6000 α: 18 09 38.1636 δ: -23 00 14.759 C/A ***** PA 178.09 deg v_sky - 9.12 km/s D 04.48 AU
 Credit: Styled after SORA/Lucky Star

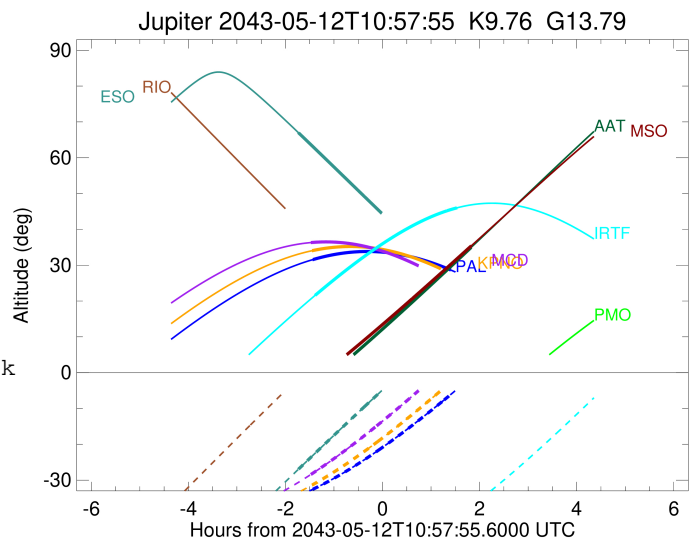
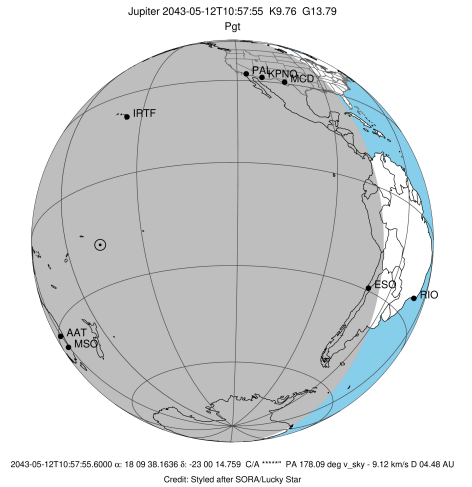
Observable events with sun below -5 deg and altitude above 5 deg

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 12 09:31 - MAY 12 12:22	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	MAY 12 09:30 - MAY 12 09:30	Pin
MCD	McDonald Obs. 2.7m	30.7	256.0	+	MAY 12 09:29 - MAY 12 09:29	Pin
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	MAY 12 09:34 - MAY 12 12:30	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	+	MAY 12 09:14 - MAY 12 09:14	Pin
AAT	Siding Spring (AAT)	-31.3	149.1	+	MAY 12 12:47 - MAY 12 12:47	Pne
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	MAY 12 12:47 - MAY 12 12:47	Pne



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-05-12T10:57:04.120
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        : 4066586193954720768
2Mass ID (if available) : 18093815-2300145
ICRS Star Coord at Epoch: 18h 09m 38.16364s -23:00:14.75914s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 9.759
G magnitude           : 13.794
RP magnitude          : 12.732
BP magnitude          : 14.959
DUPflag              : 0
Distance (au)         : 4.477
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.12
Sun-Target sep (deg) : 138.82
Sun-Moon sep (deg)   : 172.85
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.87
Pole direction: RA (deg): 268.05666
Dec (deg): 64.49732
C/A sky separation ("): 16.181
C/A sky separation (km): 52547.1
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
    
```

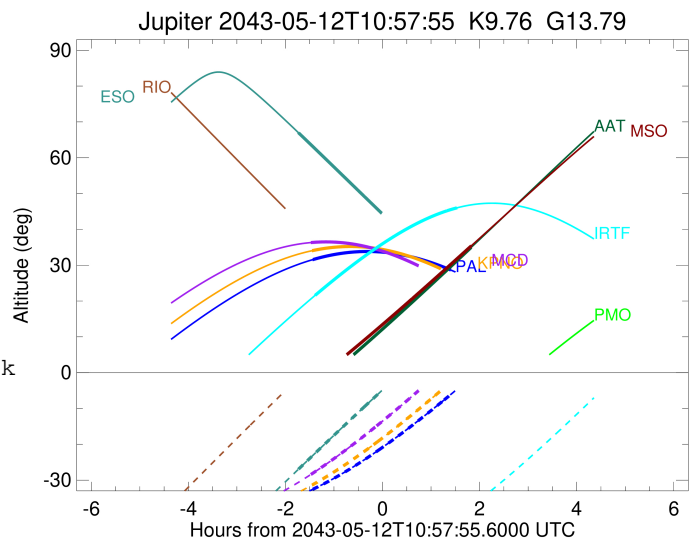
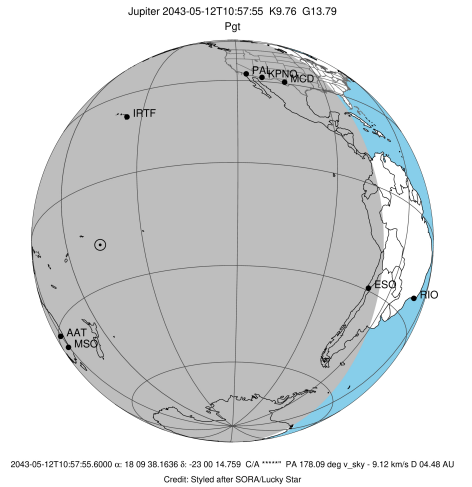


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-12T09:31:40.938	31.55	-32.56	71487.6	47.21	50.87
Jupiter	E	2043-05-12T12:22:23.279	28.65	-6.07	71487.7	46.97	50.63

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-05-12T10:56:19.950
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        : 4066586193954720768
2Mass ID (if available) : 18093815-2300145
ICRS Star Coord at Epoch: 18h 09m 38.16364s -23:00:14.75914s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 9.759
G magnitude           : 13.794
RP magnitude          : 12.732
BP magnitude          : 14.959
DUPflag              : 0
Distance (au)         : 4.477
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.12
Sun-Target sep (deg)  : 138.82
Sun-Moon sep (deg)   : 172.78
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.87
Pole direction: RA (deg): 268.05666
Dec (deg): 64.49732
C/A sky separation (") : 16.142
C/A sky separation (km) : 52419.3
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
    
```

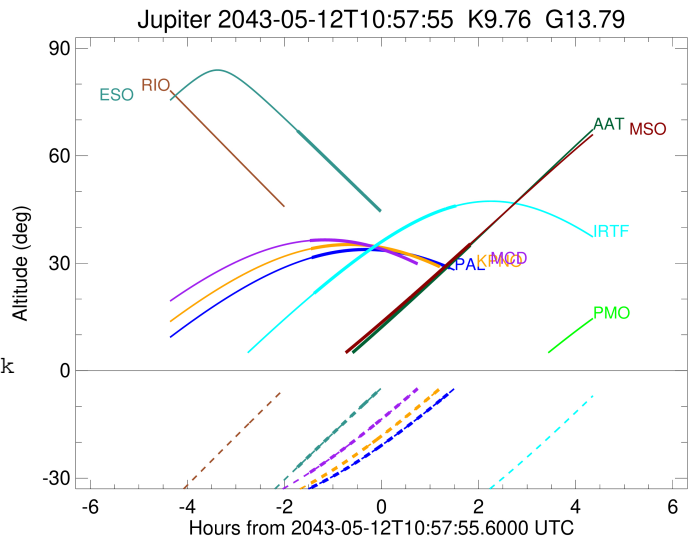
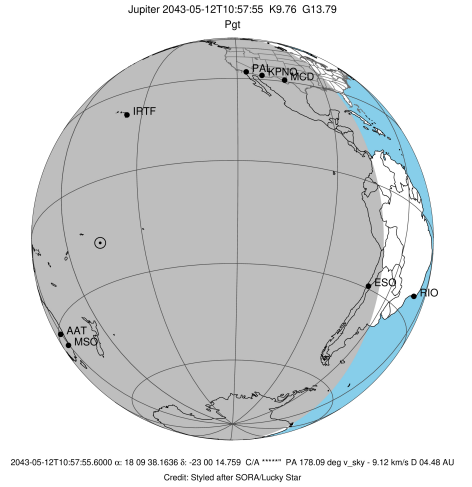


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-12T09:30:46.192	34.04	-31.38	71487.7	47.14	50.81
Jupiter	E	2043-05-12T12:21:56.357	27.69	-2.71x	71487.7	46.73	50.41

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-05-12T10:55:16.170
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        : 4066586193954720768
2Mass ID (if available) : 18093815-2300145
ICRS Star Coord at Epoch: 18h 09m 38.16364s -23:00:14.75914s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 9.759
G magnitude           : 13.794
RP magnitude          : 12.732
BP magnitude          : 14.959
DUPflag              : 0
Distance (au)         : 4.477
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.12
Sun-Target sep (deg)  : 138.82
Sun-Moon sep (deg)    : 172.68
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.87
Pole direction: RA (deg): 268.05666
Dec (deg): 64.49732
C/A sky separation (") : 16.089
C/A sky separation (km) : 52247.2
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
    
```

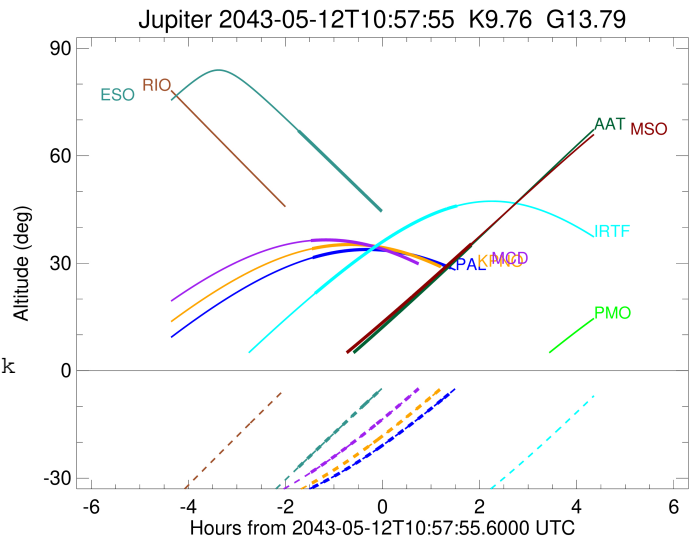
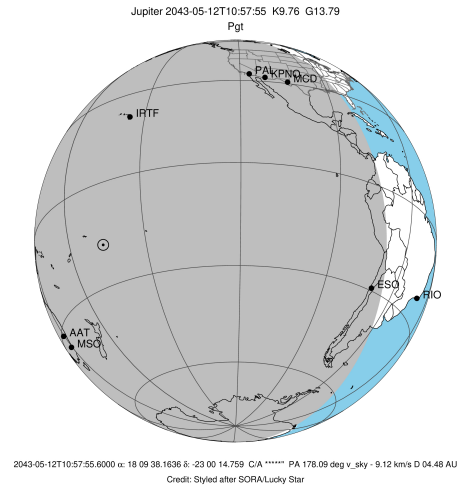


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-12T09:29:24.326	36.31	-28.42	71487.7	47.06	50.72
Jupiter	E	2043-05-12T12:21:20.417	25.01	2.74x	71487.8	46.42	50.10

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-12T11:02:48.270
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       : 4066586193954720768
2Mass ID (if available) : 18093815-2300145
ICRS Star Coord at Epoch: 18h 09m 38.16364s -23:00:14.75914s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 9.759
G magnitude           : 13.794
RP magnitude         : 12.732
BP magnitude         : 14.959
DUPflag              : 0
Distance (au)        : 4.477
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.12
Sun-Target sep (deg) : 138.82
Sun-Moon sep (deg)   : 173.14
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.87
Pole direction: RA (deg): 268.05666
Dec (deg): 64.49732
C/A sky separation ("): 15.814
C/A sky separation (km): 51354.7
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
    
```

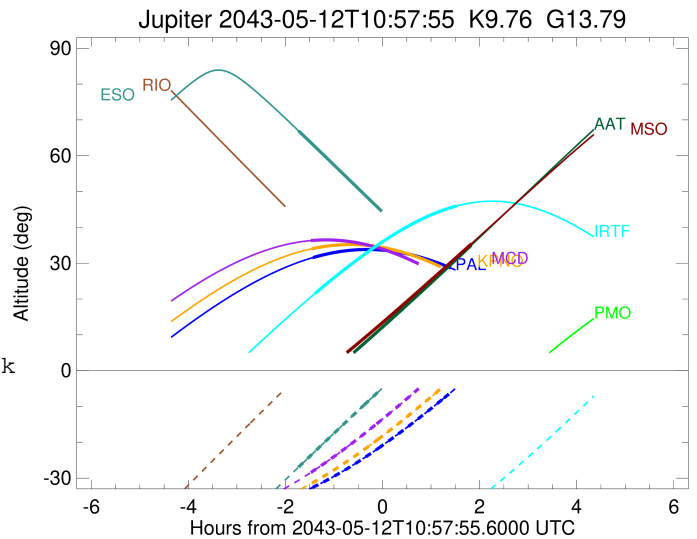
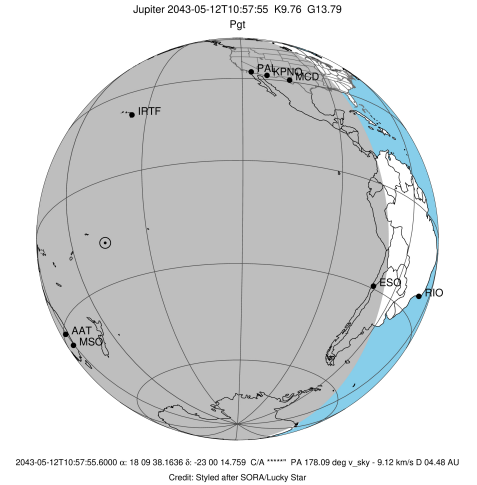


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-12T09:34:36.727	21.57	-50.66	71487.9	45.19	48.89
Jupiter	E	2043-05-12T12:30:02.052	46.01	-40.19	71487.8	46.19	49.87

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-05-12T10:51:28.800
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        : 4066586193954720768
2Mass ID (if available) : 18093815-2300145
ICRS Star Coord at Epoch: 18h 09m 38.16364s -23:00:14.75914s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 9.759
G magnitude           : 13.794
RP magnitude          : 12.732
BP magnitude          : 14.959
DUPflag              : 0
Distance (au)         : 4.478
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.12
Sun-Target sep (deg) : 138.82
Sun-Moon sep (deg)   : 171.74
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.87
Pole direction: RA (deg): 268.05666
Dec (deg): 64.49732
C/A sky separation (") : 14.070
C/A sky separation (km) : 45691.7
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
    
```

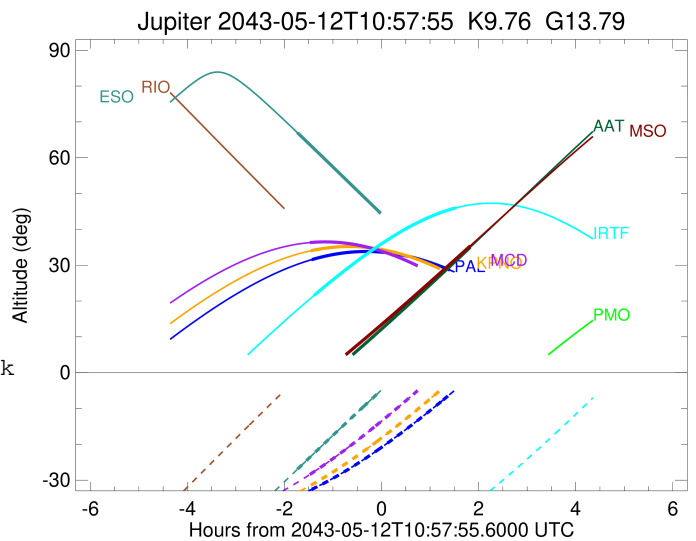
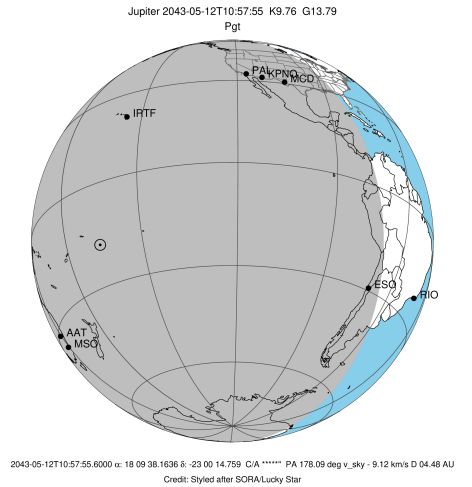


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-12T09:14:01.684	66.97	-26.95	71488.6	40.30	44.01
Jupiter	E	2043-05-12T12:30:00.501	24.39	13.53x	71488.8	38.82	42.52

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-05-12T11:06:42.610
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       : 4066586193954720768
2Mass ID (if available) : 18093815-2300145
ICRS Star Coord at Epoch: 18h 09m 38.16364s -23:00:14.75914s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 9.759
G magnitude           : 13.794
RP magnitude         : 12.732
BP magnitude         : 14.959
DUPflag              : 0
Distance (au)        : 4.477
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.12
Sun-Target sep (deg) : 138.82
Sun-Moon sep (deg)  : 172.52
B (ring opening deg) : -2.43
PA of pole (deg)    : -1.87
Pole direction: RA (deg): 268.05666
Dec (deg): 64.49732
C/A sky separation ("): 13.724
C/A sky separation (km): 44566.8
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
    
```

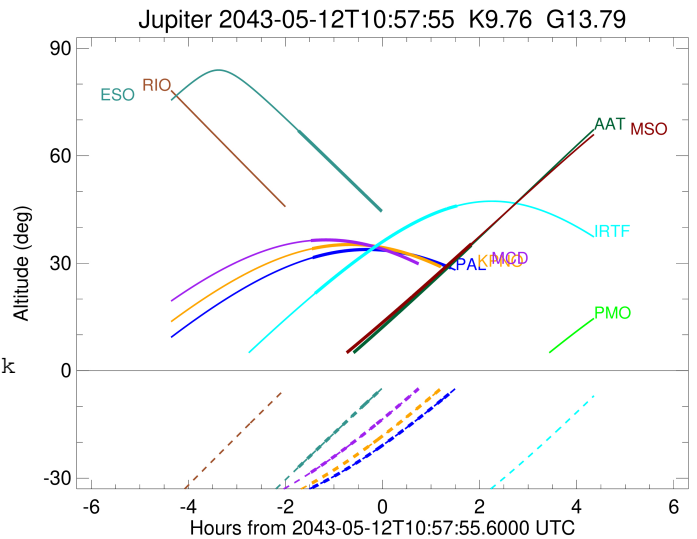
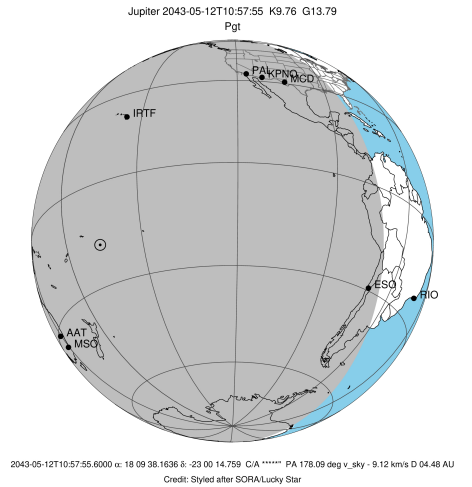


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-12T09:23:41.781	-6.10x	-26.83	71489.0	37.51	41.18
Jupiter	E	2043-05-12T12:47:36.806	34.98	-69.13	71488.7	39.45	43.15

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-12T11:06:21.490
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       : 4066586193954720768
2Mass ID (if available) : 18093815-2300145
ICRS Star Coord at Epoch: 18h 09m 38.16364s -23:00:14.75914s
RUWE (>1.4 is poor) : 0.99
K magnitude          : 9.759
G magnitude          : 13.794
RP magnitude         : 12.732
BP magnitude         : 14.959
DUPflag             : 0
Distance (au)        : 4.477
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.12
Sun-Target sep (deg) : 138.82
Sun-Moon sep (deg)   : 172.45
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.87
Pole direction: RA (deg): 268.05666
Dec (deg): 64.49732
C/A sky separation ("): 13.612
C/A sky separation (km): 44202.5
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	2043-05-12T09:22:49.749	-4.17x	-26.95	71489.1	37.19	40.85
Jupiter	E	2043-05-12T12:47:50.266	35.43	-66.65	71488.8	39.04	42.74