

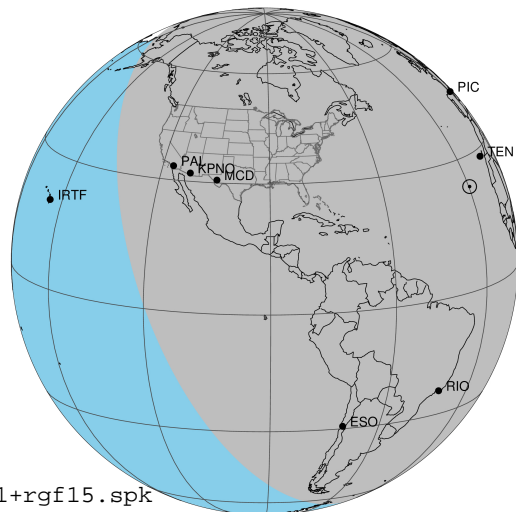
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2023-12-27T01:59:08.830
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 73387560726580224
 2Mass ID (if available) : 02133493+1208005

Jupiter 2023-12-27T01:59:08 K9.95 G12.46 Pgt

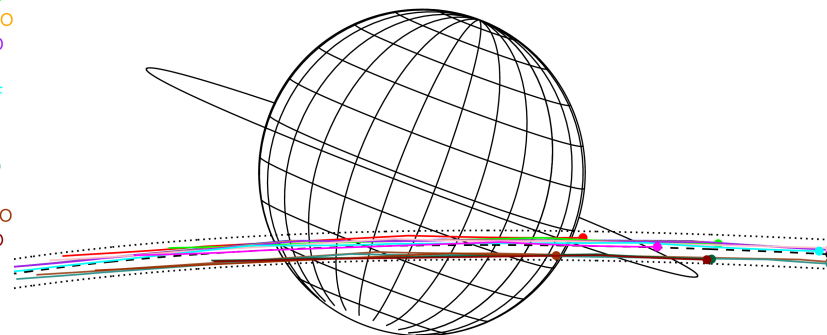
ICRS Star Coord at Epoch: 02h 13m 34.93531s +12:08:00.49303s

RUWE (>1.4 is poor) : 1.11
 K magnitude : 9.945
 G magnitude : 12.461
 RP magnitude : 11.692
 BP magnitude : 13.101
 DUPflag : 0
 Distance (au) : 4.411
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -1.98
 Sun-Target sep (deg) : 120.56
 Sun-Moon sep (deg) : 60.36
 B (ring opening deg) : 3.08
 PA of pole (deg) : -20.59
 Pole direction: RA (deg): 268.05800
 Dec (deg): 64.49677
 C/A sky separation (") : 9.988
 C/A sky separation (km) : 31956.8
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2023-12-27T01:59:08 K9.95 G12.46
 Pgt



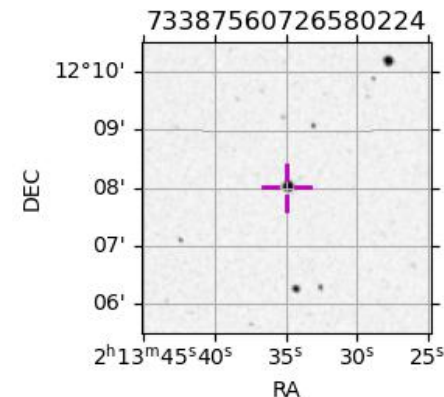
Earth
 PIC
 PAL
 PMO
 KPNO
 MCD
 TEN
 IRTF
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



2023-12-27T01:59:08.8300 az: 02 13 34.93533 az: +12 08 00.493 C/A 9.979" PA 0.73 deg v_sky - 1.98 km/s D 04.41 AU
 Credit: Styled after SORA/Lucky Star

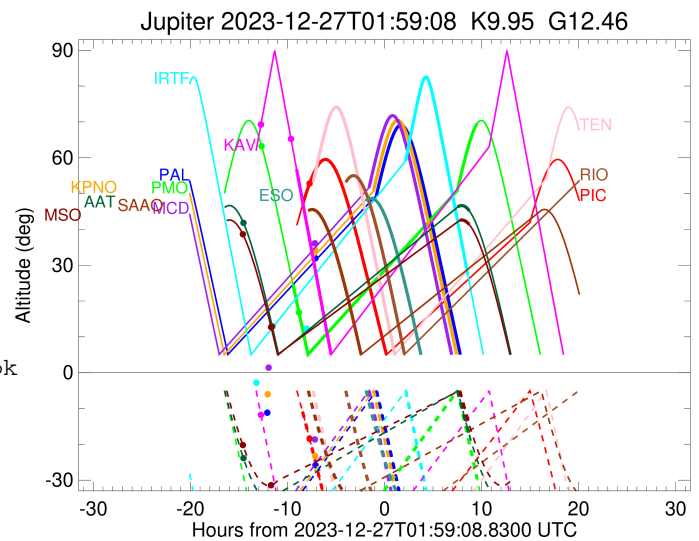
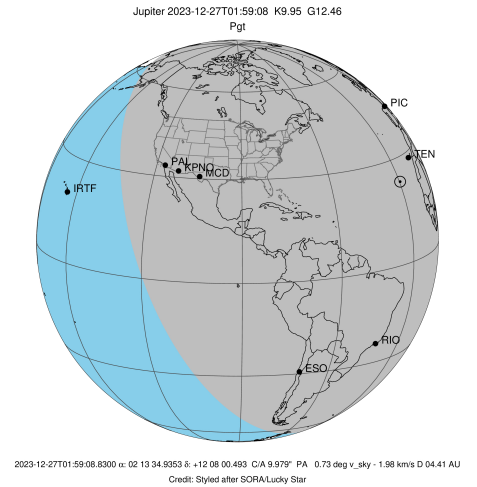
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	DEC 26 17:32 - DEC 26 17:32	Pin
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+ +	DEC 26 16:33 - DEC 27 11:31	Pie
KPNO	Kitt Peak Natl Obs	32.0	248.4			Pnn
MCD	McDonald Obs. 2.7m	30.7	256.0			Pnn
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	DEC 27 10:35 - DEC 27 10:35	Pne
KAV	Kavalur Observatory	12.6	78.8	+	DEC 26 16:55 - DEC 26 16:55	Pin
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	+	DEC 27 10:43 - DEC 27 10:43	Pne
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	DEC 27 10:42 - DEC 27 10:42	Pne



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2023-12-27T01:29:15.930
Event type          : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code       : PIC
Location           : Pic du Midi
Latitude (deg)     : 42.93656
E. Longitude (deg) : 0.14231
Altitude (km)     : 2.890
Gaia source ID     : 73387560726580224
2Mass ID (if available) : 02133493+1208005
ICRS Star Coord at Epoch: 02h 13m 34.93531s +12:08:00.49303s
RUWE (>1.4 is poor) : 1.11
K magnitude        : 9.945
G magnitude        : 12.461
RP magnitude       : 11.692
BP magnitude       : 13.101
DUPflag           : 0
Distance (au)     : 4.411
f0 (km)           : 0.00
g0 (km)           : 0.00
skyplane vel. (km/s) : -1.98
Sun-Target sep (deg) : 120.56
Sun-Moon sep (deg) : 60.02
B (ring opening deg) : 3.08
PA of pole (deg)  : -20.59
Pole direction: RA (deg): 268.05800
Dec (deg): 64.49677
C/A sky separation (") : 8.687
C/A sky separation (km) : 27791.7
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
    
```

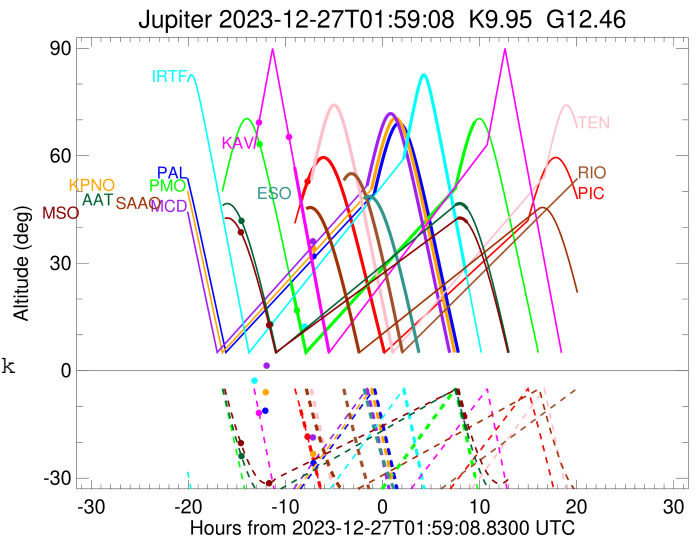
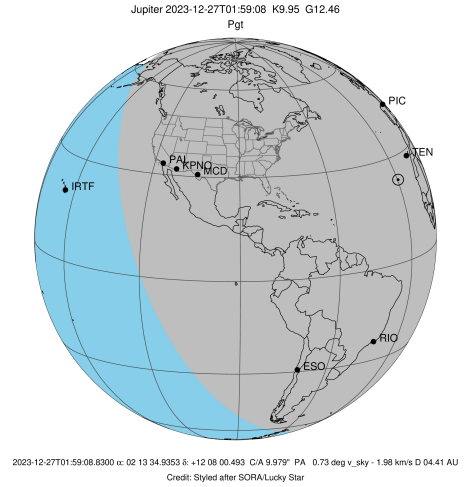


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-12-26T17:32:16.817	46.71	-10.83	71492.0	-2.98	-3.40
Jupiter	E	2023-12-27T12:15:40.264	-8.46x	23.83x	71485.5	-44.87	-48.58

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2023-12-27T02:18:02.310
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      : 73387560726580224
2Mass ID (if available) : 02133493+1208005
ICRS Star Coord at Epoch: 02h 13m 34.93531s +12:08:00.49303s
RUWE (>1.4 is poor) : 1.11
K magnitude          : 9.945
G magnitude          : 12.461
RP magnitude         : 11.692
BP magnitude         : 13.101
DUPflag             : 0
Distance (au)       : 4.412
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -1.98
Sun-Target sep (deg) : 120.56
Sun-Moon sep (deg)  : 59.92
B (ring opening deg) : 3.08
PA of pole (deg)    : -20.59
Pole direction: RA (deg): 268.05800
Dec (deg): 64.49677
C/A sky separation (") : 8.684
C/A sky separation (km) : 27785.9
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
    
```

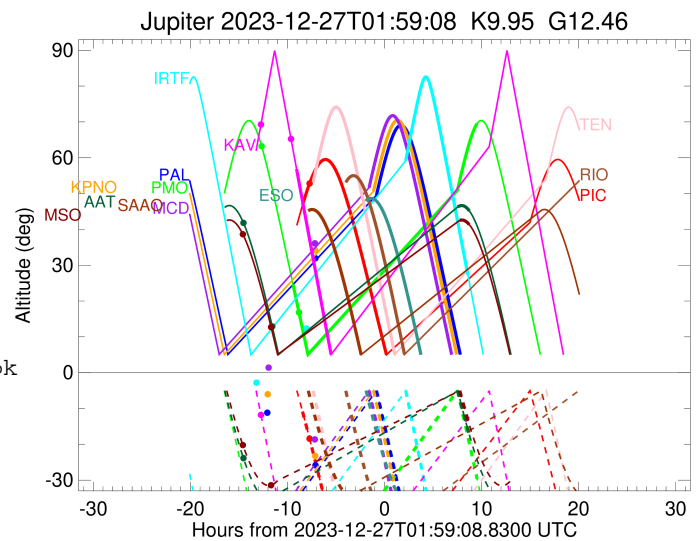
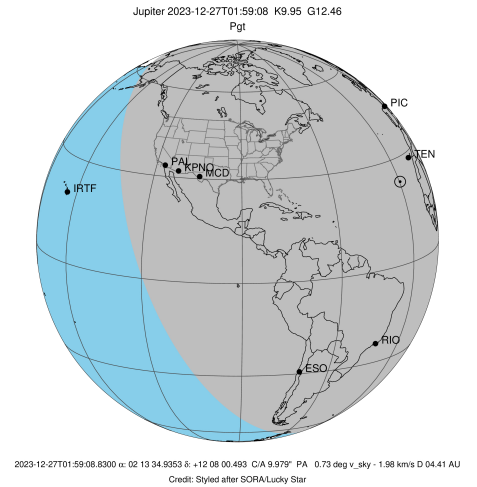


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-12-26T16:33:57.345	24.59	-79.36	71492.0	-3.55	-4.05
Jupiter	E	2023-12-27T11:31:45.090	69.53	-29.69	71485.1	-46.85	-50.52

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2023-12-27T02:32:16.160
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       : 73387560726580224
2Mass ID (if available) : 02133493+1208005
ICRS Star Coord at Epoch: 02h 13m 34.93531s +12:08:00.49303s
RUWE (>1.4 is poor) : 1.11
K magnitude           : 9.945
G magnitude           : 12.461
RP magnitude         : 11.692
BP magnitude         : 13.101
DUPflag              : 0
Distance (au)        : 4.412
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -1.98
Sun-Target sep (deg) : 120.56
Sun-Moon sep (deg)  : 61.04
B (ring opening deg) : 3.08
PA of pole (deg)    : -20.59
Pole direction: RA (deg): 268.05800
Dec (deg): 64.49677
C/A sky separation (") : 9.583
C/A sky separation (km) : 30662.9
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
    
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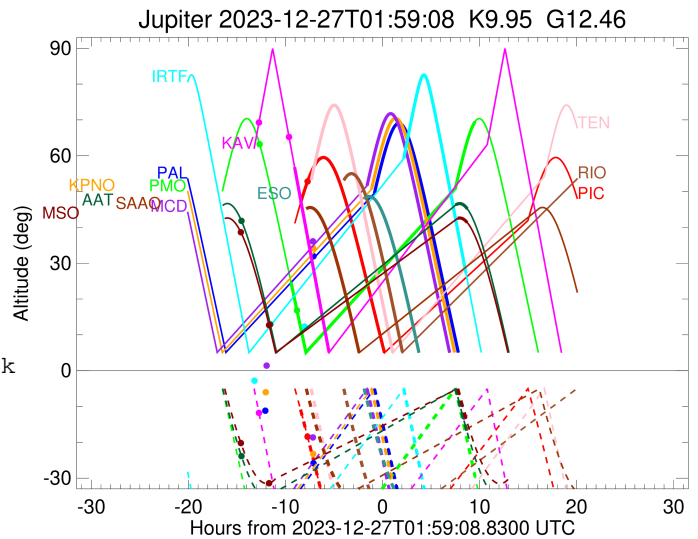
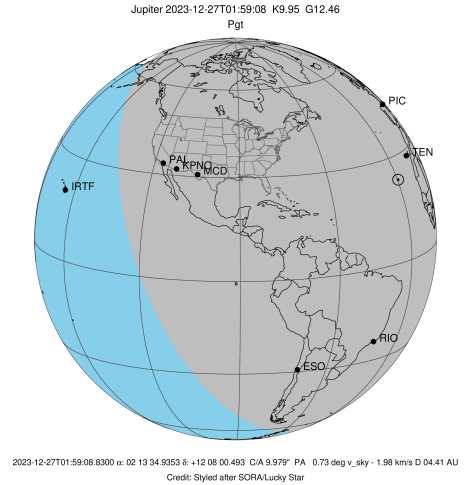


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-12-26T16:55:13.012	-52.23x	-0.60x	71492.0	-3.14	-3.59
Jupiter	E	2023-12-27T10:35:00.863	27.20	-85.39	71485.0	-47.11	-50.78

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2023-12-27T01:51:01.280
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : KAV
Location              : Kavalur Observatory
Latitude (deg)       : 12.57556
E. Longitude (deg)   : 78.83167
Altitude (km)        : 0.722
Gaia source ID       : 73387560726580224
2Mass ID (if available) : 02133493+1208005
ICRS Star Coord at Epoch: 02h 13m 34.93531s +12:08:00.49303s
RUWE (>1.4 is poor) : 1.11
K magnitude           : 9.945
G magnitude           : 12.461
RP magnitude          : 11.692
BP magnitude          : 13.101
DUPflag              : 0
Distance (au)        : 4.411
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -1.98
Sun-Target sep (deg) : 120.56
Sun-Moon sep (deg)   : 59.49
B (ring opening deg) : 3.08
PA of pole (deg)     : -20.59
Pole direction: RA (deg): 268.05800
Dec (deg): 64.49677
C/A sky separation (") : 9.158
C/A sky separation (km) : 29299.5
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
    
```

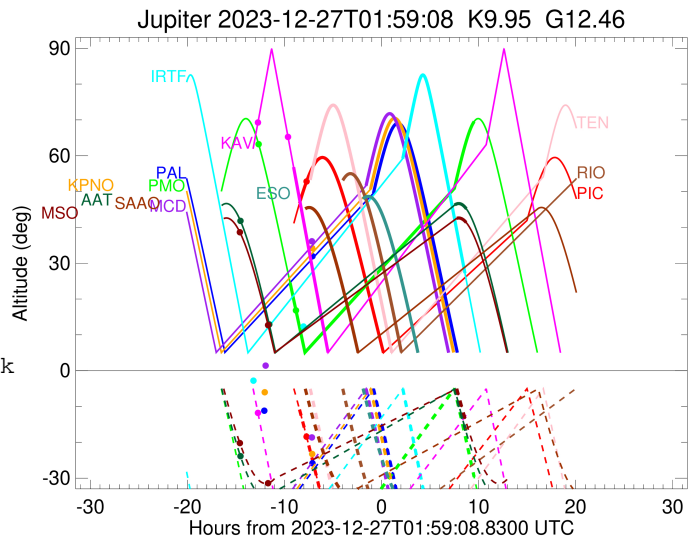
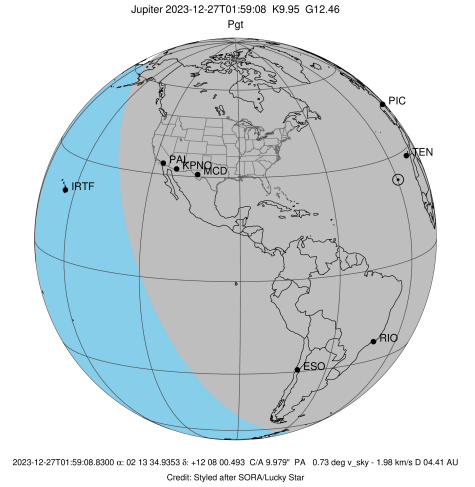


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-12-26T16:55:33.020	56.88	-61.82	71491.9	-5.83	-6.65
Jupiter	E	2023-12-27T11:54:28.970	50.43	6.47x	71484.7	-48.59	-52.22

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2023-12-27T02:27:58.040
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      : 73387560726580224
2Mass ID (if available) : 02133493+1208005
ICRS Star Coord at Epoch: 02h 13m 34.93531s +12:08:00.49303s
RUWE (>1.4 is poor) : 1.11
K magnitude          : 9.945
G magnitude          : 12.461
RP magnitude         : 11.692
BP magnitude         : 13.101
DUPflag             : 0
Distance (au)        : 4.412
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -1.98
Sun-Target sep (deg) : 120.56
Sun-Moon sep (deg)   : 60.33
B (ring opening deg) : 3.08
PA of pole (deg)     : -20.59
Pole direction: RA (deg): 268.05800
Dec (deg): 64.49677
C/A sky separation (") : 10.890
C/A sky separation (km) : 34844.6
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
    
```

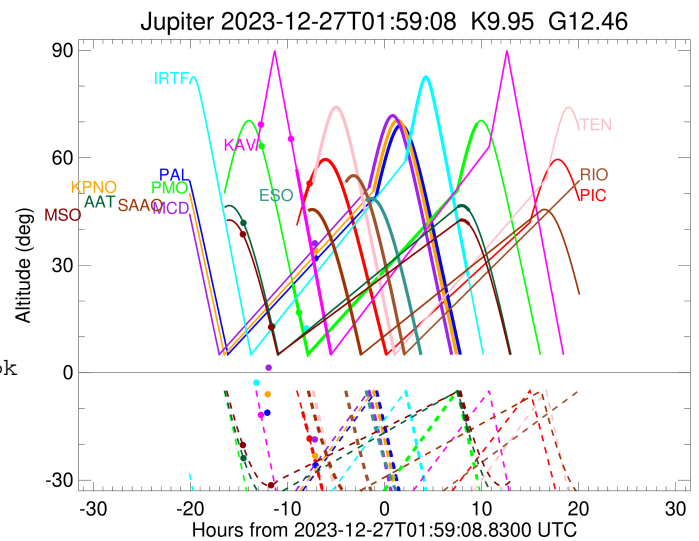
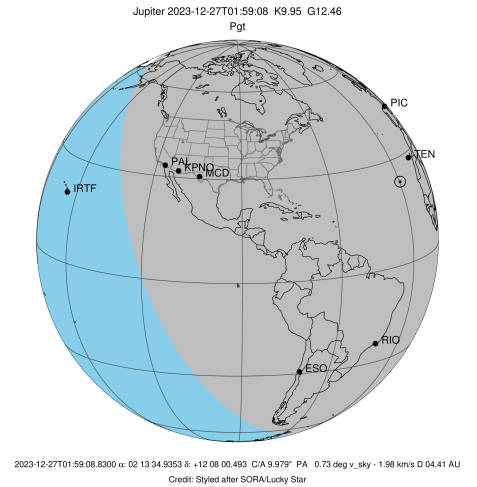


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-12-26T16:54:28.903	-18.09x	-21.98	71491.7	-8.72	-9.94
Jupiter	E	2023-12-27T10:43:46.248	45.15	-17.37	71483.8	-52.58	-56.07


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2023-12-27T02:26:24.090
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      : 73387560726580224
2Mass ID (if available) : 02133493+1208005
ICRS Star Coord at Epoch: 02h 13m 34.93531s +12:08:00.49303s
RUWE (>1.4 is poor) : 1.11
K magnitude         : 9.945
G magnitude         : 12.461
RP magnitude        : 11.692
BP magnitude        : 13.101
DUPflag            : 0
Distance (au)       : 4.412
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -1.98
Sun-Target sep (deg) : 120.56
Sun-Moon sep (deg)  : 60.33
B (ring opening deg) : 3.08
PA of pole (deg)    : -20.59
Pole direction: RA (deg): 268.05800
Dec (deg): 64.49677
C/A sky separation (") : 11.006
C/A sky separation (km) : 35215.5
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	2023-12-26T16:58:03.870	-18.99x	-18.51	71491.7	-9.04	-10.31
Jupiter	E	2023-12-27T10:42:42.262	41.35	-14.44	71483.7	-52.87	-56.35