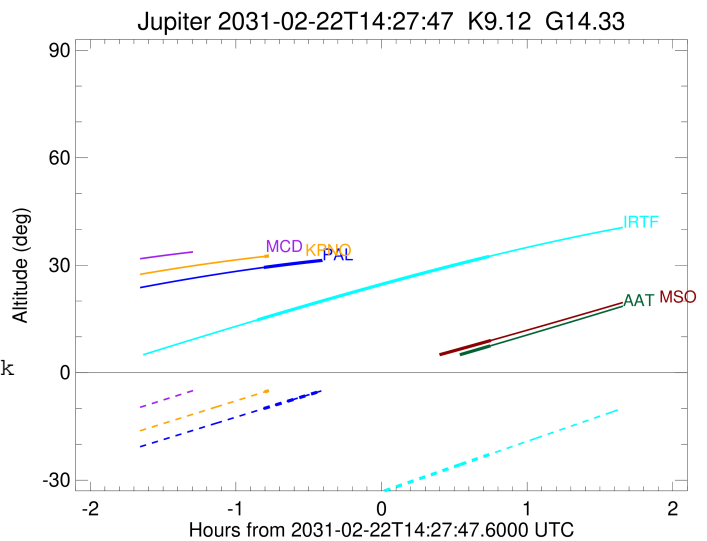
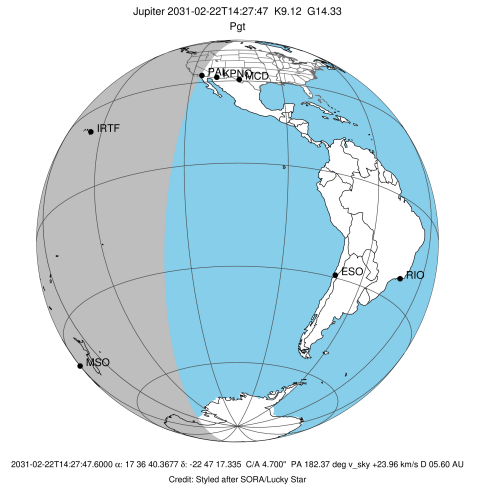




```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-22T14:26:49.140
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      : 4116791784660661376
2Mass ID (if available) : 17364038-2247169
ICRS Star Coord at Epoch: 17h 36m 40.36773s -22:47:17.33521s
RUWE (>1.4 is poor) : 0.89
K magnitude          : 9.120
G magnitude          : 14.326
RP magnitude         : 13.013
BP magnitude         : 16.298
DUPflag             : 0
Distance (au)       : 5.596
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 23.96
Sun-Target sep (deg) : 68.71
Sun-Moon sep (deg)  : 81.71
B (ring opening deg) : -2.66
PA of pole (deg)    : 1.68
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation ("): 5.987
C/A sky separation (km): 24301.6
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
    
```

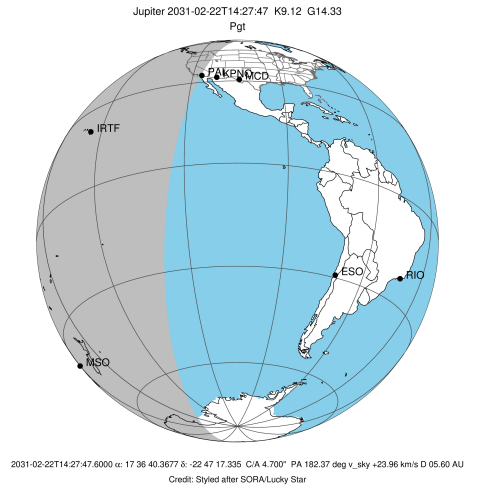


x: target alt < 5.0 deg or sun > -5.0 deg

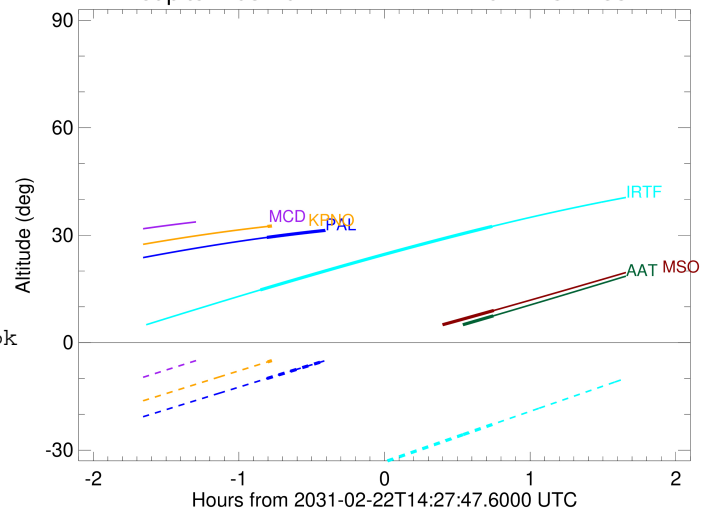
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-22T13:39:19.659	29.37	-10.01	71491.0	19.01	21.48
Jupiter	E	2031-02-22T15:14:22.847	34.01	9.41x	71490.8	20.62	23.25

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-22T14:27:09.820
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       : 4116791784660661376
2Mass ID (if available) : 17364038-2247169
ICRS Star Coord at Epoch: 17h 36m 40.36773s -22:47:17.33521s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 9.120
G magnitude           : 14.326
RP magnitude         : 13.013
BP magnitude         : 16.298
DUPflag              : 0
Distance (au)        : 5.596
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 23.96
Sun-Target sep (deg) : 68.71
Sun-Moon sep (deg)   : 81.73
B (ring opening deg) : -2.66
PA of pole (deg)     : 1.68
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation ("): 5.978
C/A sky separation (km): 24265.2
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
    
```



Jupiter 2031-02-22T14:27:47 K9.12 G14.33

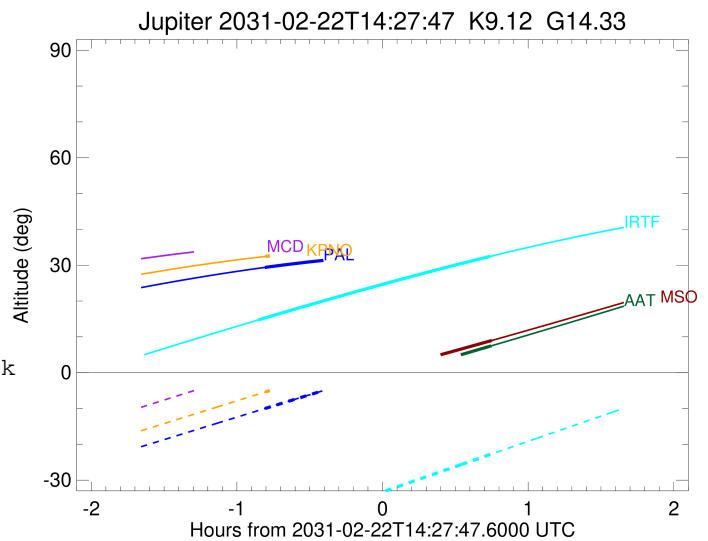
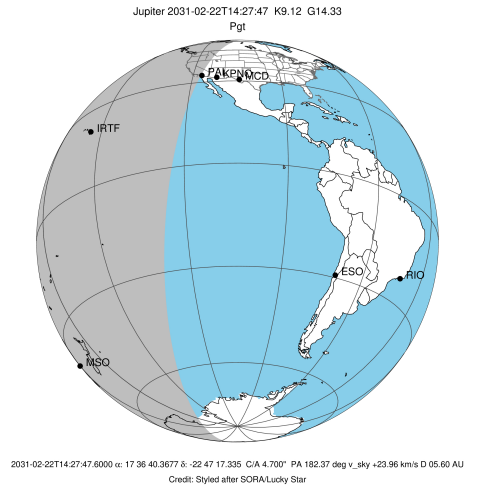


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-22T13:39:37.770	32.44	-5.37	71491.0	19.01	21.48
Jupiter	E	2031-02-22T15:14:45.222	35.21	14.13x	71490.8	20.55	23.18

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-02-22T14:24:19.850
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        : 4116791784660661376
2Mass ID (if available) : 17364038-2247169
ICRS Star Coord at Epoch: 17h 36m 40.36773s -22:47:17.33521s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 9.120
G magnitude           : 14.326
RP magnitude          : 13.013
BP magnitude          : 16.298
DUPflag              : 0
Distance (au)         : 5.596
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 23.96
Sun-Target sep (deg)  : 68.71
Sun-Moon sep (deg)    : 81.67
B (ring opening deg)  : -2.66
PA of pole (deg)      : 1.68
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 5.509
C/A sky separation (km) : 22359.0
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
    
```

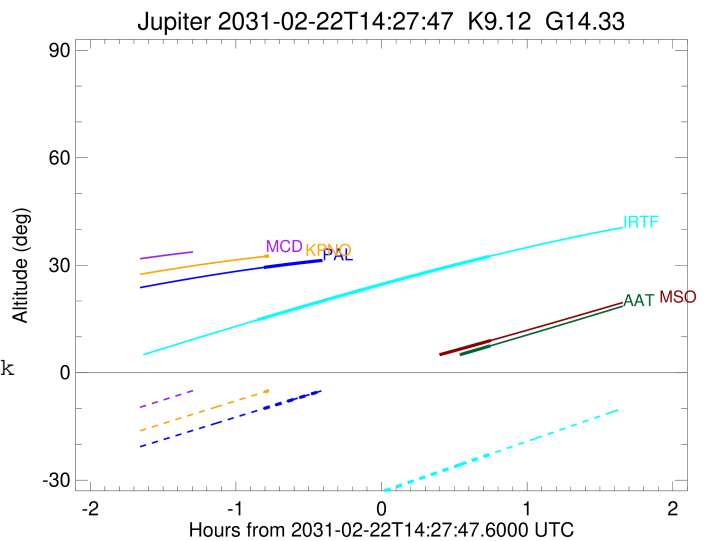
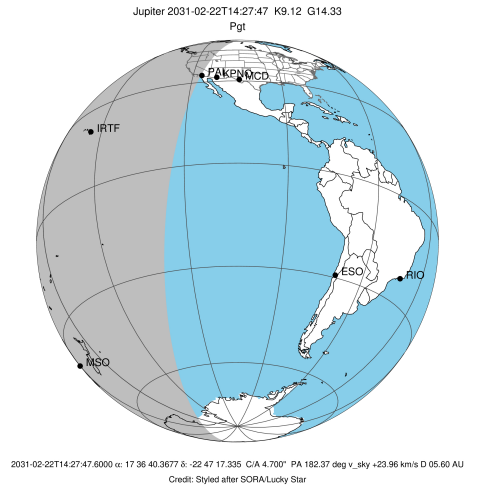


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-22T13:36:39.160	14.73	-45.31	71491.2	17.15	19.42
Jupiter	E	2031-02-22T15:12:11.339	32.46	-22.84	71490.9	19.21	21.71

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-02-22T14:24:12.220
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        : 4116791784660661376
2Mass ID (if available) : 17364038-2247169
ICRS Star Coord at Epoch: 17h 36m 40.36773s -22:47:17.33521s
RUWE (>1.4 is poor) : 0.89
K magnitude            : 9.120
G magnitude           : 14.326
RP magnitude          : 13.013
BP magnitude          : 16.298
DUPflag               : 0
Distance (au)         : 5.596
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 23.96
Sun-Target sep (deg) : 68.71
Sun-Moon sep (deg)   : 81.27
B (ring opening deg) : -2.66
PA of pole (deg)     : 1.68
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 3.759
C/A sky separation (km) : 15258.7
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
    
```

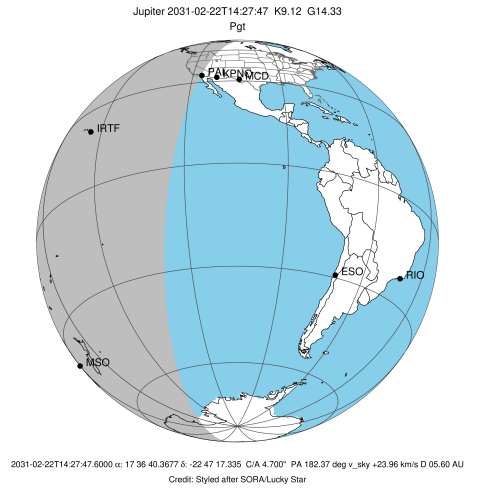


x: target alt < 5.0 deg or sun > -5.0 deg

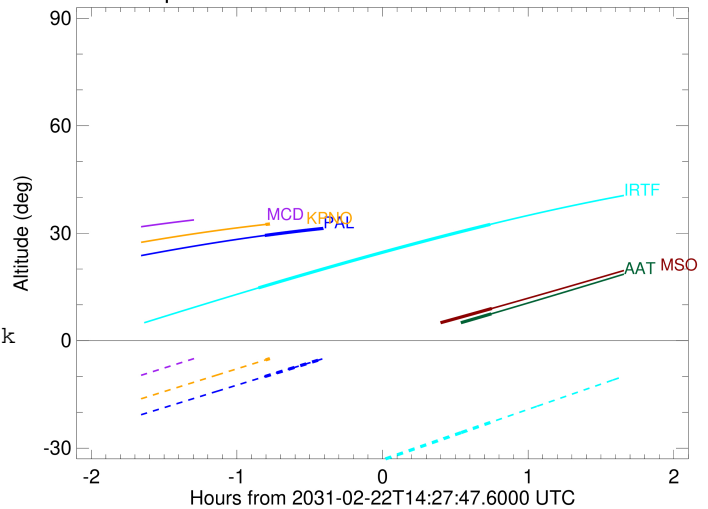
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-22T13:35:57.943	-10.73x	-47.59	71491.6	11.30	12.86
Jupiter	E	2031-02-22T15:12:38.111	7.49	-46.69	71491.5	13.35	15.18

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-02-22T14:24:22.800
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       : 4116791784660661376
2Mass ID (if available) : 17364038-2247169
ICRS Star Coord at Epoch: 17h 36m 40.36773s -22:47:17.33521s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 9.120
G magnitude           : 14.326
RP magnitude          : 13.013
BP magnitude          : 16.298
DUPflag              : 0
Distance (au)        : 5.596
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 23.96
Sun-Target sep (deg) : 68.71
Sun-Moon sep (deg)   : 81.30
B (ring opening deg) : -2.66
PA of pole (deg)     : 1.68
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 3.683
C/A sky separation (km) : 14950.4
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
    
```



Jupiter 2031-02-22T14:27:47 K9.12 G14.33



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	2031-02-22T13:36:04.875	-8.41x	-43.68	71491.6	11.06	12.60
Jupiter	E	2031-02-22T15:12:51.934	8.99	-42.89	71491.5	13.08	14.88