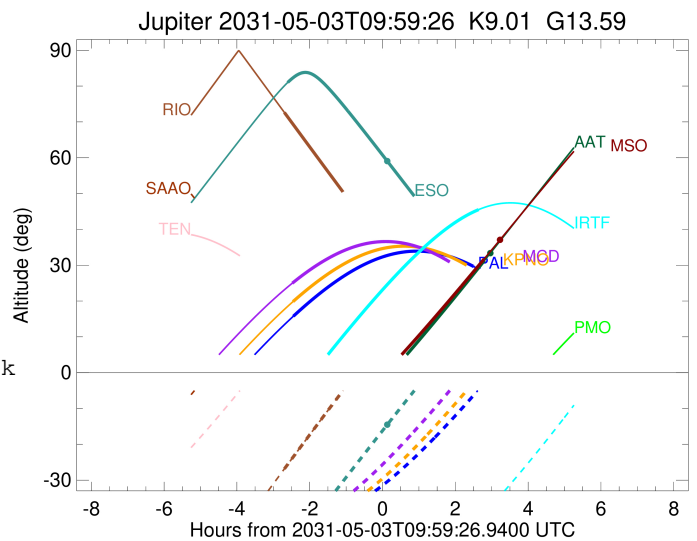
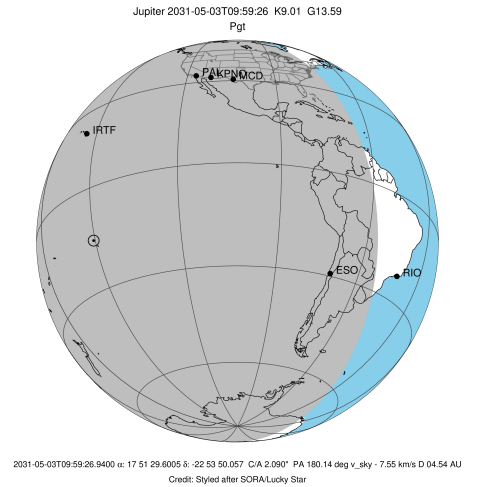




```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-03T10:02:05.020
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        : 4068713332297215616
2Mass ID (if available) : 17512960-2253500
ICRS Star Coord at Epoch: 17h 51m 29.60055s -22:53:50.05704s
RUWE (>1.4 is poor) : 0.87
K magnitude           : 9.014
G magnitude           : 13.589
RP magnitude          : 12.404
BP magnitude          : 15.117
DUPflag              : 0
Distance (au)         : 4.541
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -7.55
Sun-Target sep (deg)  : 134.32
Sun-Moon sep (deg)   : 94.45
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.08
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation (" ) : 3.690
C/A sky separation (km) : 12154.6
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
    
```

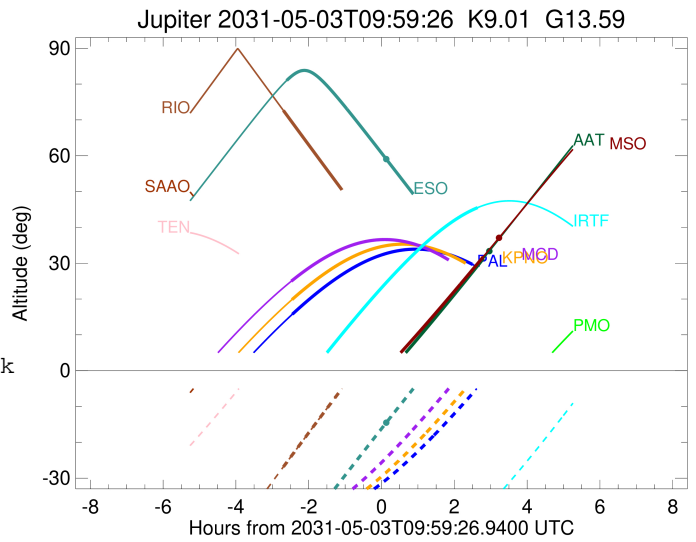
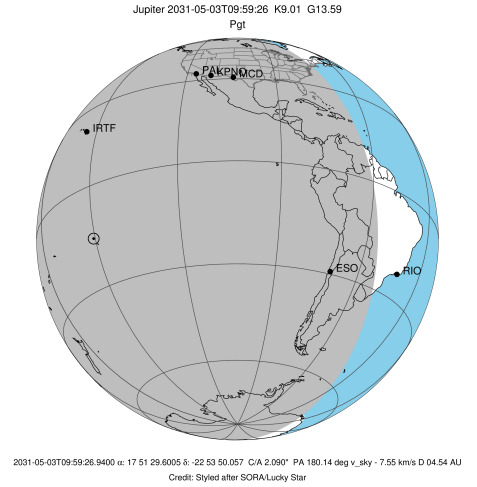


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-03T07:32:28.902	15.74	-41.09	71491.8	9.26	10.56
Jupiter	E	2031-05-03T12:29:55.432	29.61	-6.26	71491.7	9.62	10.96

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-03T10:01:08.470
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      : 4068713332297215616
2Mass ID (if available) : 17512960-2253500
ICRS Star Coord at Epoch: 17h 51m 29.60055s -22:53:50.05704s
RUWE (>1.4 is poor) : 0.87
K magnitude         : 9.014
G magnitude         : 13.589
RP magnitude        : 12.404
BP magnitude        : 15.117
DUPflag            : 0
Distance (au)       : 4.541
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -7.55
Sun-Target sep (deg) : 134.32
Sun-Moon sep (deg)  : 94.48
B (ring opening deg) : -2.61
PA of pole (deg)    : 0.08
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation (" ) : 3.674
C/A sky separation (km) : 12101.7
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
    
```

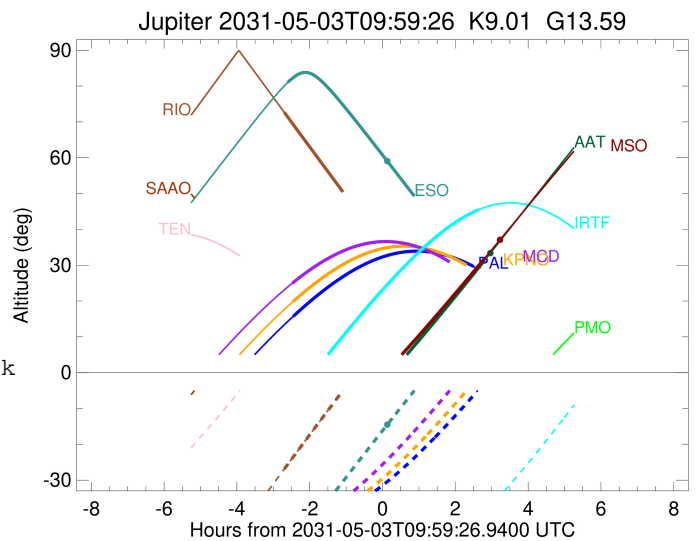
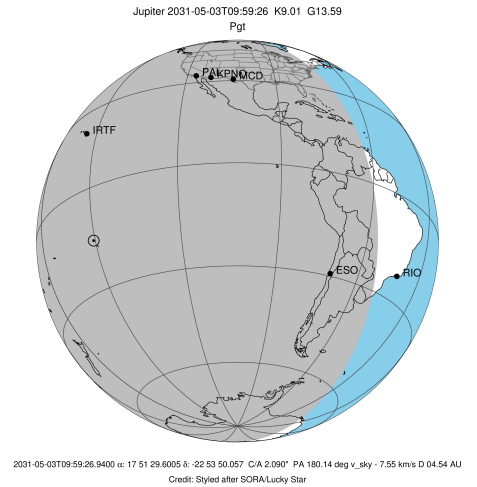


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-03T07:31:55.761	19.83	-42.52	71491.8	9.30	10.60
Jupiter	E	2031-05-03T12:28:58.595	28.88	-2.84x	71491.7	9.48	10.81

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-03T09:59:42.570
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        : 4068713332297215616
2Mass ID (if available) : 17512960-2253500
ICRS Star Coord at Epoch: 17h 51m 29.60055s -22:53:50.05704s
RUWE (>1.4 is poor) : 0.87
K magnitude           : 9.014
G magnitude           : 13.589
RP magnitude          : 12.404
BP magnitude          : 15.117
DUPflag              : 0
Distance (au)         : 4.541
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -7.55
Sun-Target sep (deg)  : 134.32
Sun-Moon sep (deg)   : 94.49
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.08
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation (") : 3.655
C/A sky separation (km) : 12040.1
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
    
```

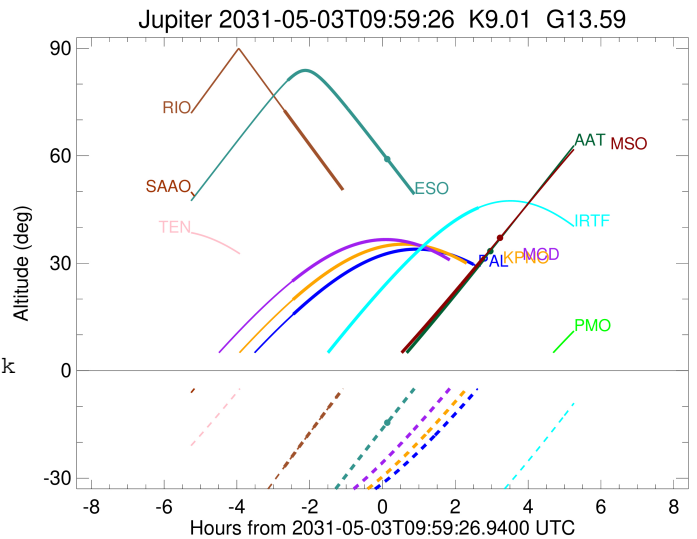
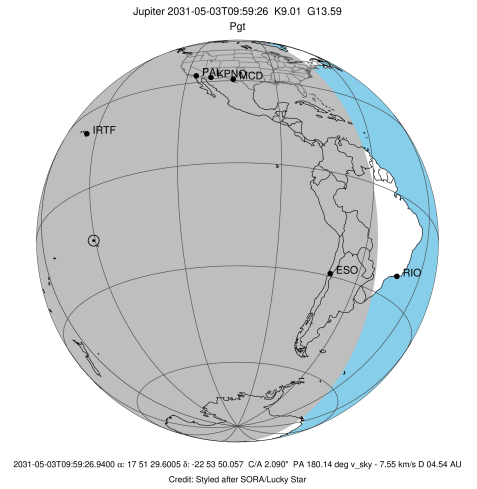


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-03T07:30:55.739	24.99	-42.96	71491.8	9.37	10.69
Jupiter	E	2031-05-03T12:27:41.457	26.51	2.63x	71491.8	9.29	10.59

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-03T10:09:16.160
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      : 4068713332297215616
2Mass ID (if available) : 17512960-2253500
ICRS Star Coord at Epoch: 17h 51m 29.60055s -22:53:50.05704s
RUWE (>1.4 is poor) : 0.87
K magnitude          : 9.014
G magnitude          : 13.589
RP magnitude         : 12.404
BP magnitude         : 15.117
DUPflag             : 0
Distance (au)       : 4.541
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -7.55
Sun-Target sep (deg) : 134.32
Sun-Moon sep (deg)  : 94.36
B (ring opening deg) : -2.61
PA of pole (deg)    : 0.08
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation ("): 3.157
C/A sky separation (km): 10399.8
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
    
```

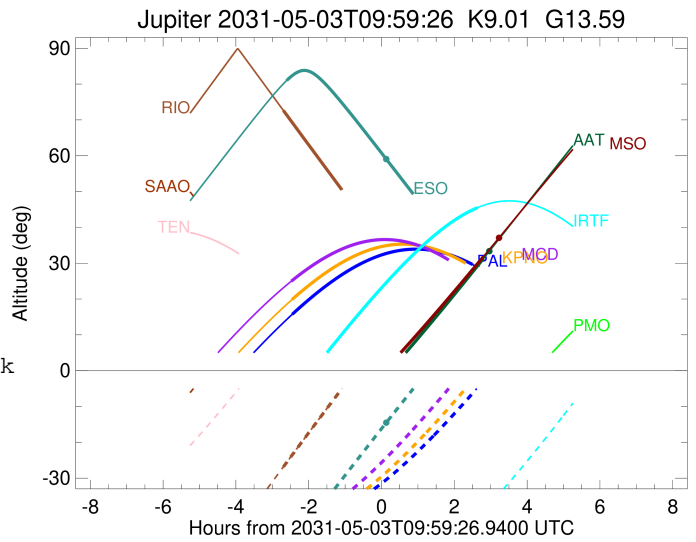
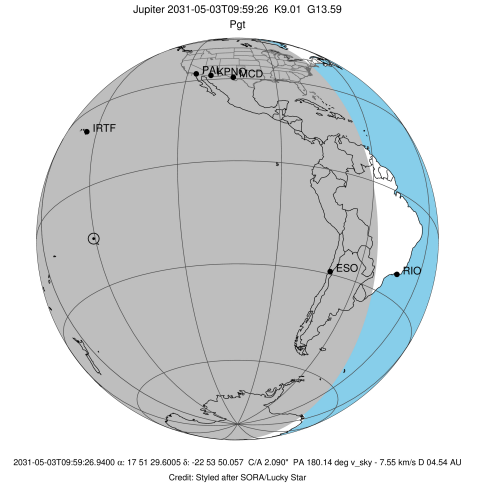


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-03T07:35:48.303	-6.54x	-36.57	71491.8	7.25	8.28
Jupiter	E	2031-05-03T12:37:53.902	45.51	-40.78	71491.8	8.92	10.18

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-03T09:48:49.930
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : RIO
Location            : Rio de Janeiro
Latitude (deg)      : -22.89506
E. Longitude (deg)  : 316.77708
Altitude (km)       : 0.033
Gaia source ID      : 4068713332297215616
2Mass ID (if available) : 17512960-2253500
ICRS Star Coord at Epoch: 17h 51m 29.60055s -22:53:50.05704s
RUWE (>1.4 is poor) : 0.87
K magnitude          : 9.014
G magnitude          : 13.589
RP magnitude         : 12.404
BP magnitude         : 15.117
DUPflag             : 0
Distance (au)       : 4.542
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -7.55
Sun-Target sep (deg) : 134.32
Sun-Moon sep (deg)  : 94.43
B (ring opening deg) : -2.61
PA of pole (deg)    : 0.08
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation ("): 1.792
C/A sky separation (km): 5902.3
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
    
```

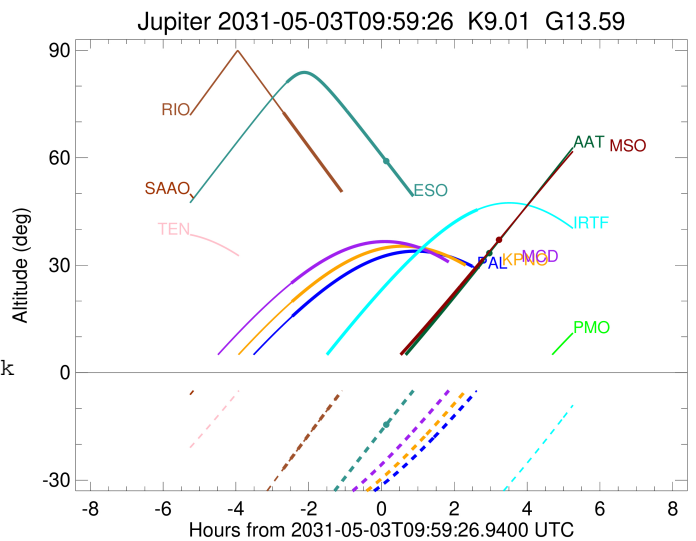
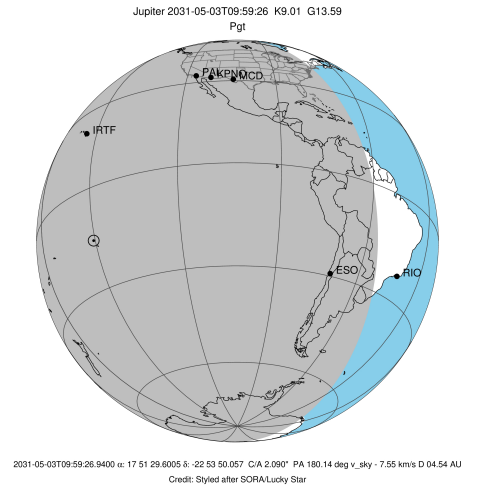


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-03T07:17:44.589	72.62	-26.85	71491.9	5.53	6.31
Jupiter	E	2031-05-03T12:23:41.776	3.90x	37.49x	71492.0	3.48	3.98

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-03T09:53:21.970
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      : 4068713332297215616
2Mass ID (if available) : 17512960-2253500
ICRS Star Coord at Epoch: 17h 51m 29.60055s -22:53:50.05704s
RUWE (>1.4 is poor) : 0.87
K magnitude          : 9.014
G magnitude          : 13.589
RP magnitude         : 12.404
BP magnitude         : 15.117
DUPflag             : 0
Distance (au)       : 4.541
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -7.55
Sun-Target sep (deg) : 134.32
Sun-Moon sep (deg)  : 94.72
B (ring opening deg) : -2.61
PA of pole (deg)    : 0.08
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation (" ) : 1.802
C/A sky separation (km) : 5935.0
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
    
```

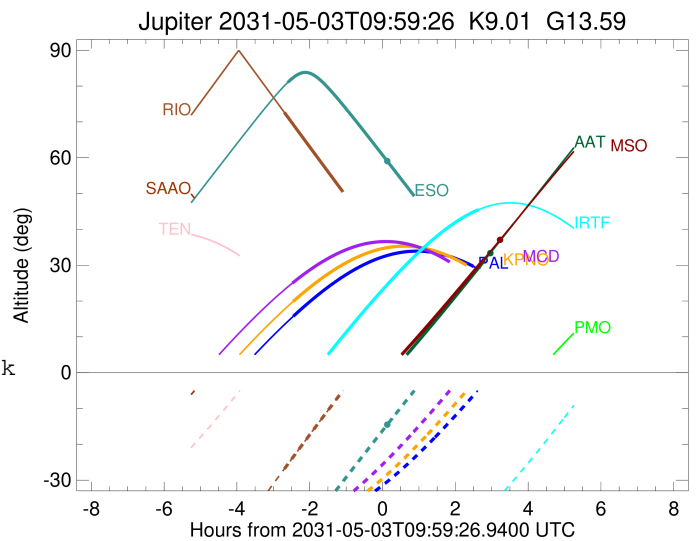
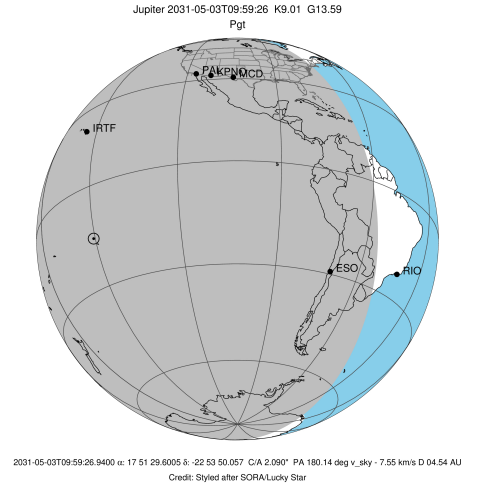


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-03T07:23:23.736	81.03	-50.11	71491.9	5.05	5.77
Jupiter	E	2031-05-03T12:25:06.423	29.03	13.96x	71492.0	3.83	4.37

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-03T10:10:55.030
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      : 4068713332297215616
2Mass ID (if available) : 17512960-2253500
ICRS Star Coord at Epoch: 17h 51m 29.60055s -22:53:50.05704s
RUWE (>1.4 is poor) : 0.87
K magnitude          : 9.014
G magnitude          : 13.589
RP magnitude         : 12.404
BP magnitude         : 15.117
DUPflag             : 0
Distance (au)       : 4.541
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -7.55
Sun-Target sep (deg) : 134.32
Sun-Moon sep (deg)  : 93.95
B (ring opening deg) : -2.61
PA of pole (deg)    : 0.08
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation (" ) : 1.011
C/A sky separation (km) : 3329.3
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
    
```



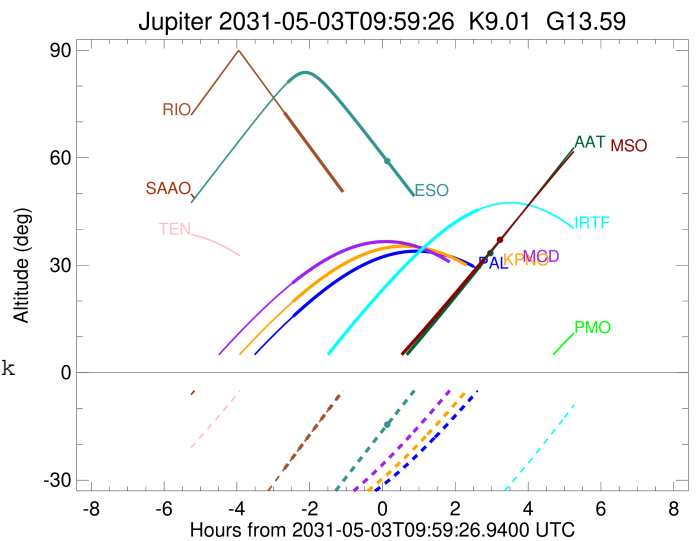
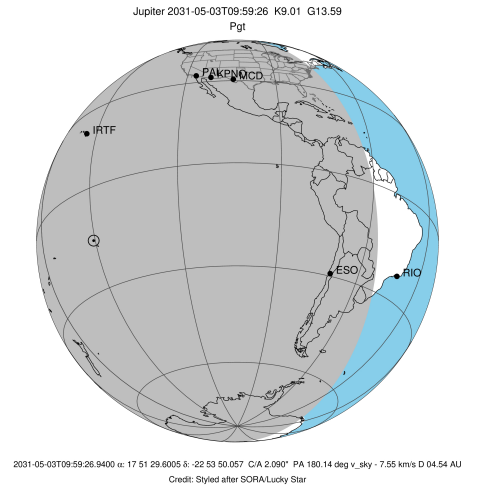
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-03T07:28:02.544	-27.06x	-1.28x	71492.0	1.77	2.02
Jupiter	E	2031-05-03T12:47:27.718	31.31	-67.29	71492.0	3.74	4.27



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-03T10:10:24.240
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       : 4068713332297215616
2Mass ID (if available) : 17512960-2253500
ICRS Star Coord at Epoch: 17h 51m 29.60055s -22:53:50.05704s
RUWE (>1.4 is poor) : 0.87
K magnitude          : 9.014
G magnitude          : 13.589
RP magnitude         : 12.404
BP magnitude         : 15.117
DUPflag             : 0
Distance (au)        : 4.541
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -7.55
Sun-Target sep (deg) : 134.32
Sun-Moon sep (deg)   : 93.98
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.08
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation ("): 0.912
C/A sky separation (km): 3003.2
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	2031-05-03T07:27:41.908	-23.80x	-2.38x	71492.0	1.55	1.77
Jupiter	E	2031-05-03T12:47:02.126	31.75	-64.50	71492.0	3.43	3.92