

target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-06-03T06:28:58.290  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4069434203911076992  
 2Mass ID (if available) : 18004689-2303483

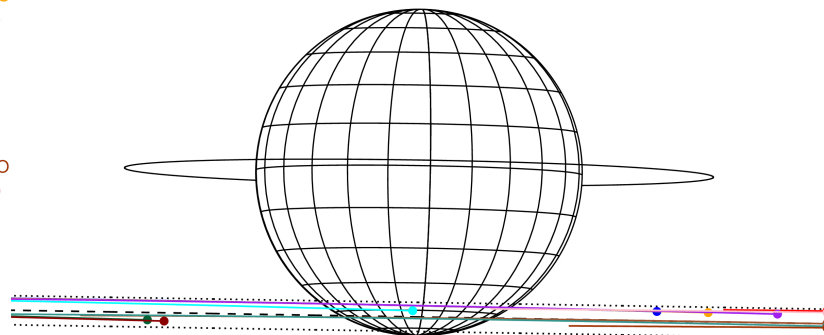
Jupiter 2043-06-03T06:28:58 K7.44 G9.37 Pgt

ICRS Star Coord at Epoch: 18h 00m 46.88792s -23:03:48.33749s

RUWE (>1.4 is poor) : 1.55  
 K magnitude : 7.436  
 G magnitude : 9.369  
 RP magnitude : 8.670  
 BP magnitude : 9.880  
 DUPflag : 0  
 Distance (au) : 4.299  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -14.94  
 Sun-Target sep (deg) : 161.83  
 Sun-Moon sep (deg) : 103.58  
 B (ring opening deg) : -2.42  
 PA of pole (deg) : -0.92  
 Pole direction: RA (deg): 268.05668  
 Dec (deg): 64.49732  
 C/A sky separation (") : 20.293  
 C/A sky separation (km) : 63275.8  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk



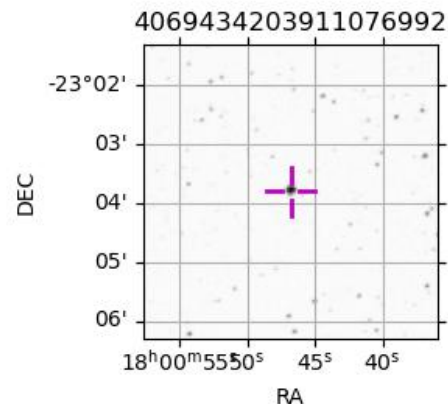
Earth  
 PIC  
 PAL  
 KPNO  
 MCD  
 TEN  
 IRTF  
 RIO  
 ESO  
 AAT  
 SAAO  
 MSO



2043-06-03T06:28:58.2900 a: 18 00 46.8879 2 -23 03 48.337 C/A \*\*\*\*\* PA 359.05 deg v\_sky -14.94 km/s D 04.30 AU  
 Credit: Styled after SORA/Lucky Star

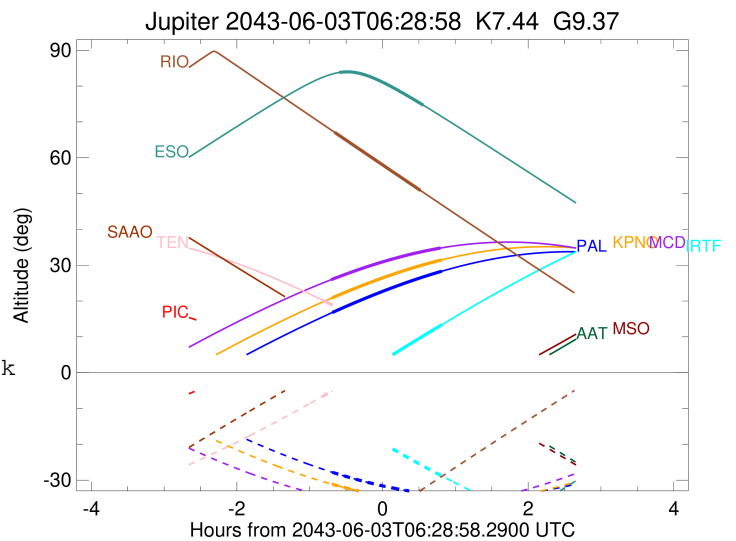
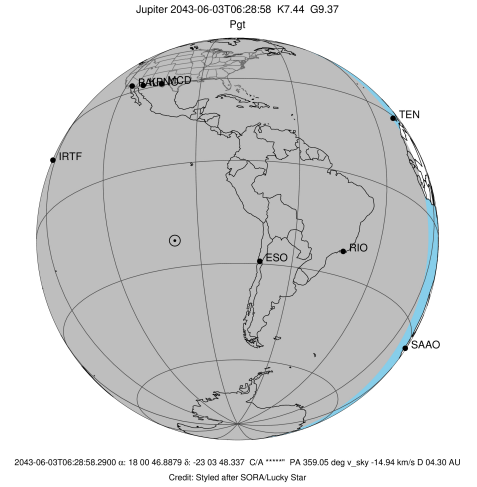
Observable events with sun below -5 deg and altitude above 5 deg

| 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 | + +    | JUN 03 05:47 - JUN 03 07:17 | Pie   |
| PMO  | Purple Mtn Obs. Nanking           | 32.1  | 118.8 |        |                             | Pnn   |
| KPNO | Kitt Peak Natl Obs                | 32.0  | 248.4 | + +    | JUN 03 05:47 - JUN 03 07:17 | Pie   |
| MCD  | McDonald Obs. 2.7m                | 30.7  | 256.0 | + +    | JUN 03 05:46 - JUN 03 07:16 | Pie   |
| TEN  | Teide Obs./Tenerife               | 28.3  | 343.5 | +      | JUN 03 05:39 - JUN 03 05:39 | Pin   |
| IRTF | Mauna Kea/IRTF                    | 19.8  | 204.5 | +      | JUN 03 07:18 - JUN 03 07:18 | Pne   |
| KAV  | Kavalur Observatory               | 12.6  | 78.8  |        |                             | Pnn   |
| RIO  | Rio de Janeiro                    | -22.9 | 316.8 | + +    | JUN 03 05:49 - JUN 03 07:00 | Pie   |
| ESO  | European Southern Obs. (3.6m)     | -29.3 | 289.3 | + +    | JUN 03 05:53 - JUN 03 07:02 | Pie   |
| AAT  | Siding Spring (AAT)               | -31.3 | 149.1 |        |                             | Pnn   |
| SAAO | So. Afr. Astro. Obs. (Sutherland) | -32.4 | 20.8  |        |                             | Pnn   |
| MSO  | Mt. Stromlo Observatory           | -35.3 | 149.0 |        |                             | Pnn   |



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-03T06:32:52.860
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      : 4069434203911076992
2Mass ID (if available) : 18004689-2303483
ICRS Star Coord at Epoch: 18h 00m 46.88792s -23:03:48.33749s
RUWE (>1.4 is poor) : 1.55
K magnitude          : 7.436
G magnitude          : 9.369
RP magnitude         : 8.670
BP magnitude         : 9.880
DUPflag             : 0
Distance (au)       : 4.299
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.94
Sun-Target sep (deg) : 161.83
Sun-Moon sep (deg)  : 103.83
B (ring opening deg) : -2.42
PA of pole (deg)    : -0.92
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation ("): 18.713
C/A sky separation (km): 58349.6
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
    
```

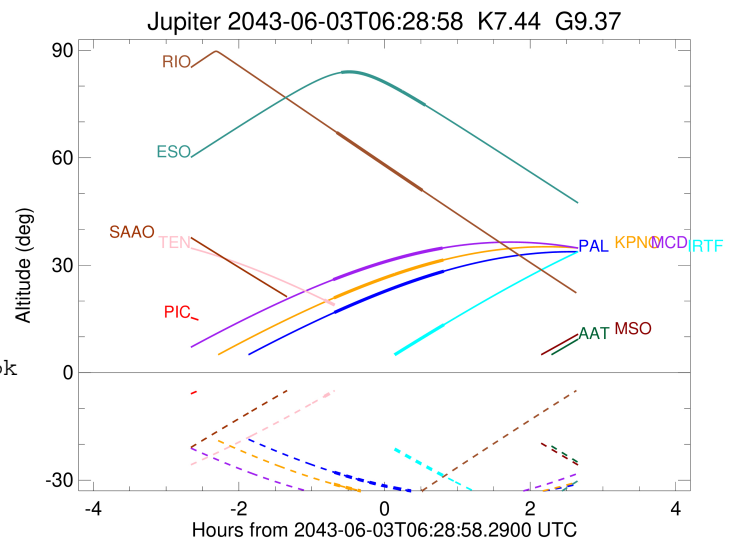


x: target alt < 5.0 deg or sun > -5.0 deg

| Target  | I/E | UTC                     | alt   | alt-sun | radius  | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I   | 2043-06-03T05:47:41.973 | 16.80 | -27.81  | 71486.6 | -55.03  | -58.40       |
| Jupiter | E   | 2043-06-03T07:17:54.401 | 28.32 | -34.12  | 71486.7 | -54.33  | -57.74       |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-03T06:32:26.930
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      : 4069434203911076992
2Mass ID (if available) : 18004689-2303483
ICRS Star Coord at Epoch: 18h 00m 46.88792s -23:03:48.33749s
RUWE (>1.4 is poor) : 1.55
K magnitude          : 7.436
G magnitude          : 9.369
RP magnitude         : 8.670
BP magnitude         : 9.880
DUPflag             : 0
Distance (au)       : 4.299
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -14.94
Sun-Target sep (deg) : 161.83
Sun-Moon sep (deg)  : 103.90
B (ring opening deg) : -2.42
PA of pole (deg)    : -0.92
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (") : 18.710
C/A sky separation (km) : 58340.0
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
    
```

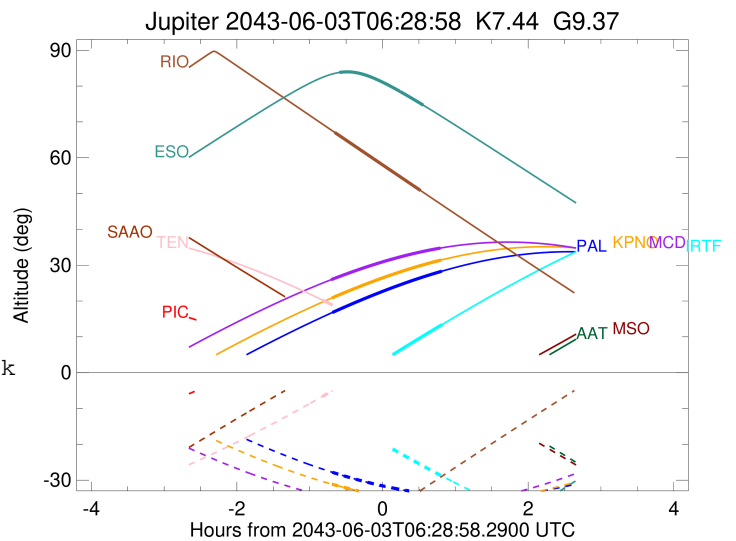
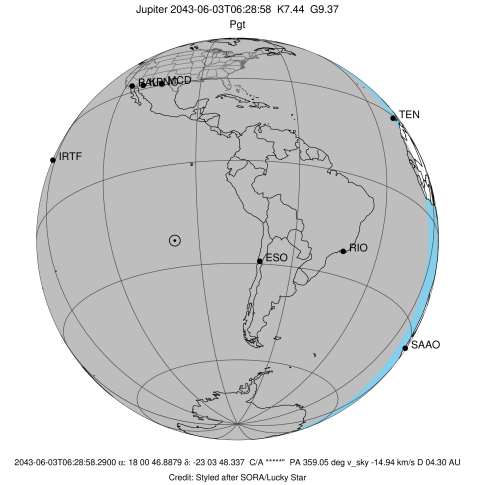


x: target alt < 5.0 deg or sun > -5.0 deg

| Target  | I/E | UTC                     | alt   | alt-sun | radius  | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I   | 2043-06-03T05:47:20.265 | 20.86 | -31.12  | 71486.6 | -54.98  | -58.36       |
| Jupiter | E   | 2043-06-03T07:17:25.218 | 31.45 | -35.87  | 71486.7 | -54.36  | -57.77       |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-03T06:31:43.640
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        : 4069434203911076992
2Mass ID (if available) : 18004689-2303483
ICRS Star Coord at Epoch: 18h 00m 46.88792s -23:03:48.33749s
RUWE (>1.4 is poor) : 1.55
K magnitude           : 7.436
G magnitude           : 9.369
RP magnitude          : 8.670
BP magnitude          : 9.880
DUPflag              : 0
Distance (au)         : 4.299
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.94
Sun-Target sep (deg)  : 161.83
Sun-Moon sep (deg)   : 103.99
B (ring opening deg) : -2.42
PA of pole (deg)     : -0.92
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (") : 18.699
C/A sky separation (km) : 58305.5
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
    
```

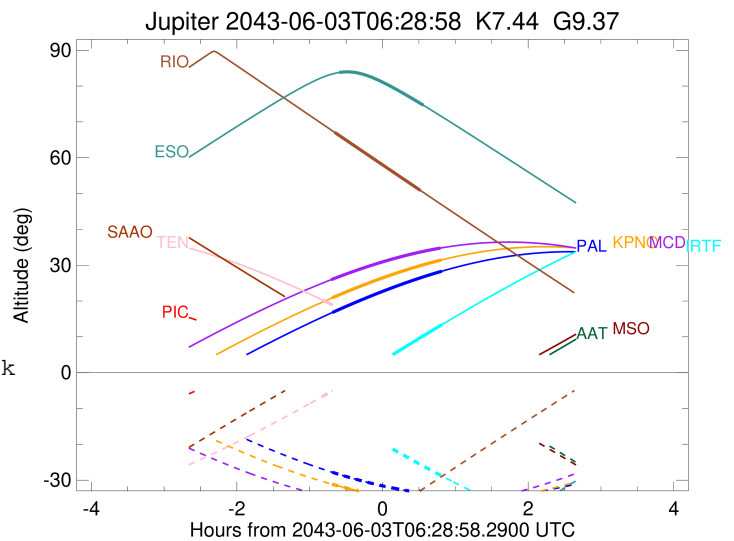


x: target alt < 5.0 deg or sun > -5.0 deg

| Target  | I/E | UTC                     | alt   | alt-sun | radius  | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I   | 2043-06-03T05:46:39.915 | 25.95 | -34.77  | 71486.6 | -54.88  | -58.25       |
| Jupiter | E   | 2043-06-03T07:16:40.532 | 34.77 | -36.91  | 71486.7 | -54.38  | -57.79       |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-03T06:22:49.160
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : TEN
Location            : Teide Obs./Tenerife
Latitude (deg)      : 28.30050
E. Longitude (deg)  : 343.48909
Altitude (km)       : 2.395
Gaia source ID      : 4069434203911076992
2Mass ID (if available) : 18004689-2303483
ICRS Star Coord at Epoch: 18h 00m 46.88792s -23:03:48.33749s
RUWE (>1.4 is poor) : 1.55
K magnitude          : 7.436
G magnitude          : 9.369
RP magnitude         : 8.670
BP magnitude         : 9.880
DUPflag             : 0
Distance (au)       : 4.299
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.94
Sun-Target sep (deg) : 161.83
Sun-Moon sep (deg)  : 103.97
B (ring opening deg) : -2.42
PA of pole (deg)    : -0.92
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation ("): 19.087
C/A sky separation (km): 59514.6
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
    
```

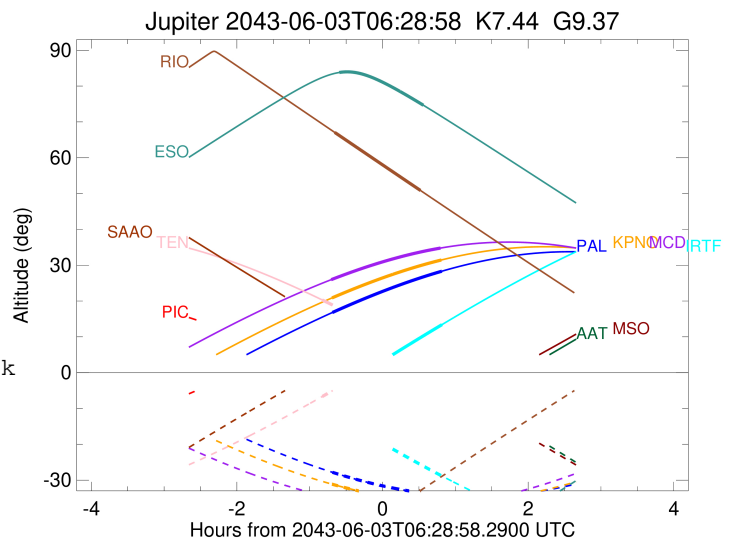
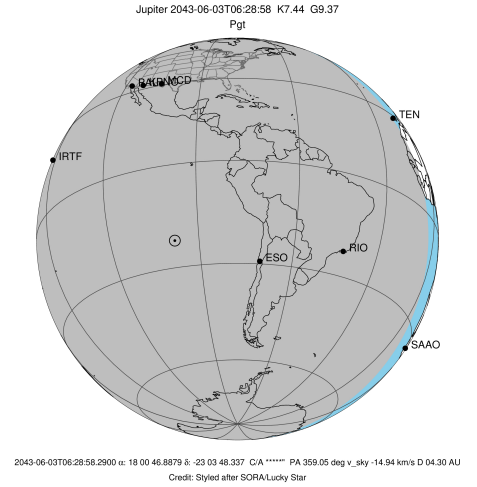


x: target alt < 5.0 deg or sun > -5.0 deg

| Target  | I/E | UTC                     | alt   | alt-sun | radius  | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I   | 2043-06-03T05:39:20.362 | 20.29 | -6.66   | 71486.5 | -55.80  | -59.12       |
| Jupiter | E   | 2043-06-03T07:06:29.251 | 4.61x | 10.81x  | 71486.3 | -56.82  | -60.09       |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-03T06:36:08.350
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       : 4069434203911076992
2Mass ID (if available) : 18004689-2303483
ICRS Star Coord at Epoch: 18h 00m 46.88792s -23:03:48.33749s
RUWE (>1.4 is poor) : 1.55
K magnitude           : 7.436
G magnitude           : 9.369
RP magnitude         : 8.670
BP magnitude         : 9.880
DUPflag              : 0
Distance (au)        : 4.299
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.94
Sun-Target sep (deg) : 161.83
Sun-Moon sep (deg)   : 103.43
B (ring opening deg) : -2.42
PA of pole (deg)     : -0.92
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation ("): 19.434
C/A sky separation (km): 60594.8
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
    
```

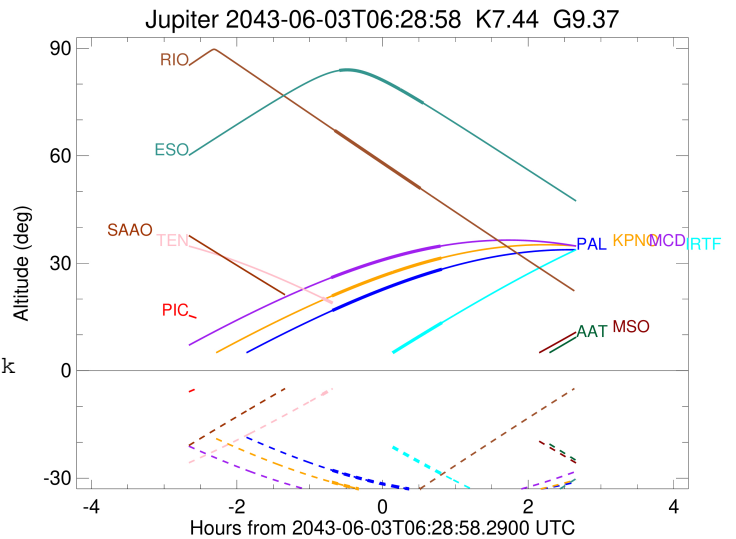
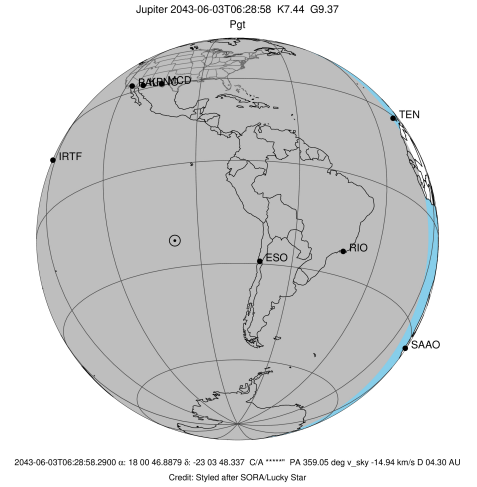


x: target alt < 5.0 deg or sun > -5.0 deg

| Target  | I/E | UTC                     | alt    | alt-sun | radius  | lat-geo | lat-geodetic |
|---------|-----|-------------------------|--------|---------|---------|---------|--------------|
| Jupiter | I   | 2043-06-03T05:54:02.273 | -4.29x | -12.69  | 71486.1 | -58.54  | -61.70       |
| Jupiter | E   | 2043-06-03T07:18:00.262 | 13.41  | -28.85  | 71486.3 | -57.25  | -60.49       |

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch             : 2043-06-03T06:24:51.900
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        : 4069434203911076992
2Mass ID (if available) : 18004689-2303483
ICRS Star Coord at Epoch: 18h 00m 46.88792s -23:03:48.33749s
RUWE (>1.4 is poor)  : 1.55
K magnitude           : 7.436
G magnitude           : 9.369
RP magnitude          : 8.670
BP magnitude          : 9.880
DUPflag              : 0
Distance (au)         : 4.299
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -14.94
Sun-Target sep (deg)  : 161.83
Sun-Moon sep (deg)    : 104.53
B (ring opening deg)  : -2.42
PA of pole (deg)      : -0.92
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (") : 20.429
C/A sky separation (km) : 63700.7
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
    
```



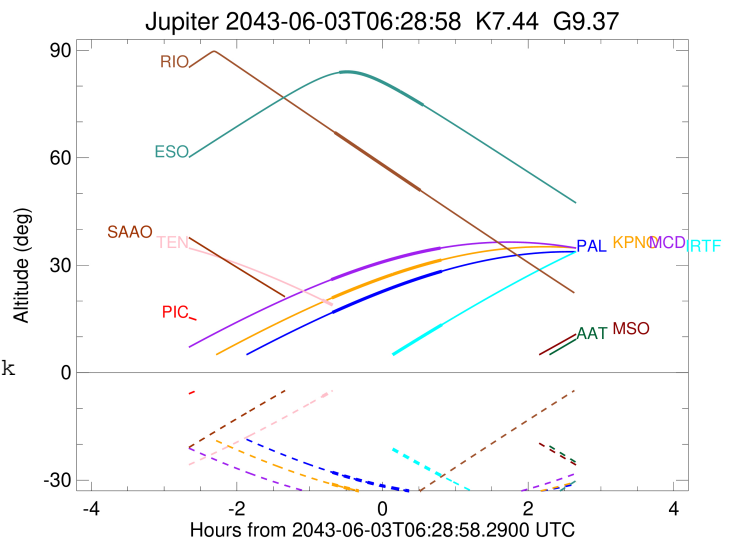
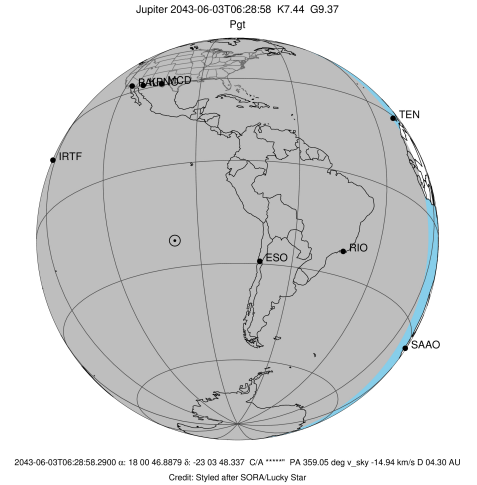
x: target alt < 5.0 deg or sun > -5.0 deg

| Target  | I/E | UTC                     | alt   | alt-sun | radius  | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I   | 2043-06-03T05:49:35.250 | 67.06 | -48.92  | 71485.6 | -62.60  | -65.47       |
| Jupiter | E   | 2043-06-03T07:00:13.343 | 50.86 | -32.91  | 71485.6 | -63.30  | -66.11       |



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-03T06:28:05.500
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      : 4069434203911076992
2Mass ID (if available) : 18004689-2303483
ICRS Star Coord at Epoch: 18h 00m 46.88792s -23:03:48.33749s
RUWE (>1.4 is poor) : 1.55
K magnitude          : 7.436
G magnitude          : 9.369
RP magnitude         : 8.670
BP magnitude         : 9.880
DUPflag             : 0
Distance (au)       : 4.299
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.94
Sun-Target sep (deg) : 161.83
Sun-Moon sep (deg)  : 104.56
B (ring opening deg) : -2.42
PA of pole (deg)    : -0.92
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (" ) : 20.518
C/A sky separation (km) : 63977.0
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   | 2043-06-03T05:53:29.573 | 83.79 | -72.34  | 71485.5 | -63.37  | -66.18       |
| Jupiter | E   | 2043-06-03T07:02:42.049 | 74.63 | -57.50  | 71485.5 | -63.52  | -66.32       |