

target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-05-11T23:42:57.470
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068888910555087616
 2Mass ID (if available) : 17490006-2253425

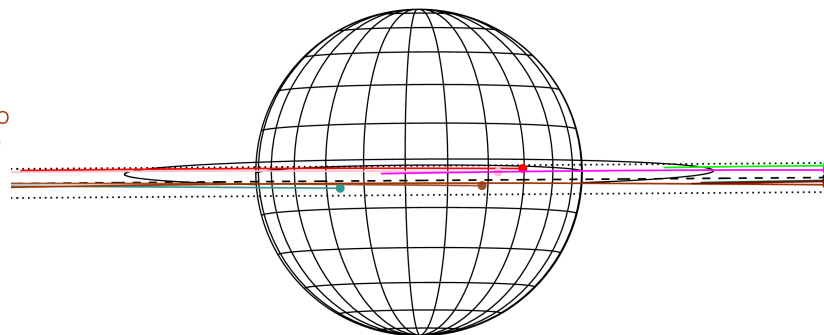
Jupiter 2031-05-11T23:42:57 K8.07 G14.98 Pgt

ICRS Star Coord at Epoch: 17h 49m 00.07049s -22:53:42.82086s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 8.074
 G magnitude : 14.977
 RP magnitude : 13.357
 BP magnitude : 19.008
 DUPflag : 0
 Distance (au) : 4.449
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -10.55
 Sun-Target sep (deg) : 143.18
 Sun-Moon sep (deg) : 29.53
 B (ring opening deg) : -2.61
 PA of pole (deg) : 0.35
 Pole direction: RA (deg): 268.05695
 Dec (deg): 64.49651
 C/A sky separation (") : 1.083
 C/A sky separation (km) : 3494.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp



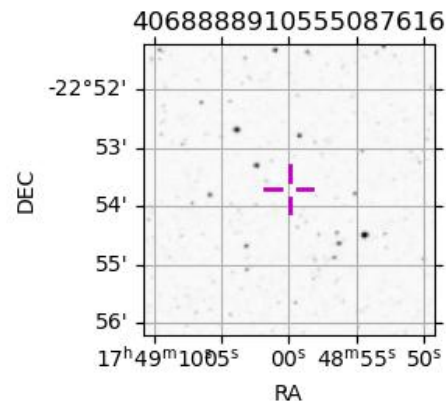
2031-05-11T23:42:57.4700 a: 17 49 00.0705 s: -22 53 42.821 C/A 1.095° PA 0.42 deg v_sky -10.55 km/s D 04.45 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



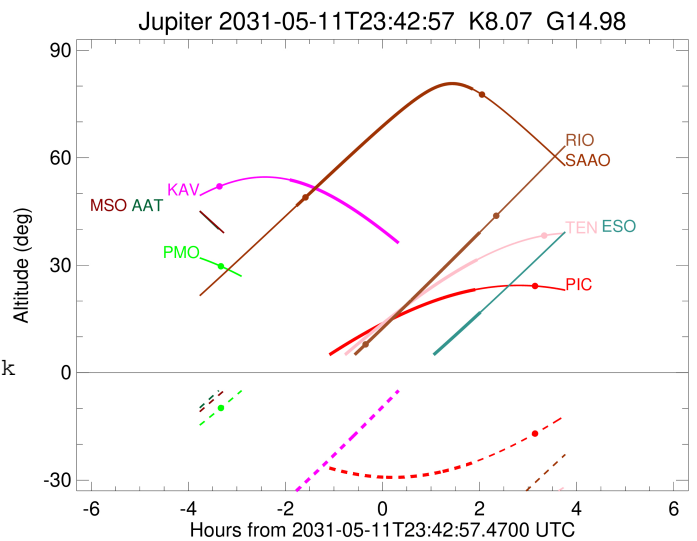
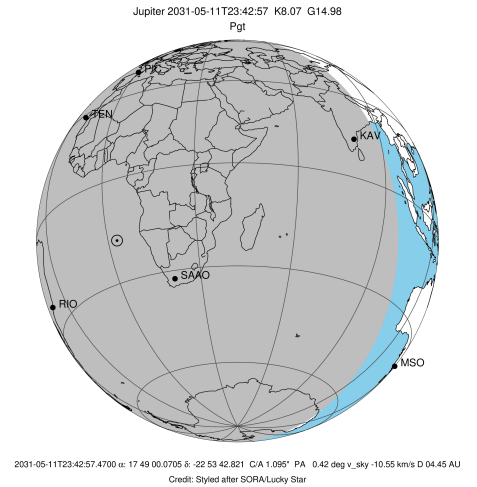
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	MAY 12 01:37 - MAY 12 01:37	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
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	+	MAY 12 01:40 - MAY 12 01:40	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+	MAY 11 21:48 - MAY 11 21:48	Pin
RIO	Rio de Janeiro	-22.9	316.8	+	MAY 12 01:43 - MAY 12 01:43	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	MAY 12 01:44 - MAY 12 01:44	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	MAY 11 21:56 - MAY 12 01:34	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-11T23:47:49.320
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       : 4068888910555087616
2Mass ID (if available) : 17490006-2253425
ICRS Star Coord at Epoch: 17h 49m 00.07049s -22:53:42.82086s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 8.074
G magnitude           : 14.977
RP magnitude         : 13.357
BP magnitude         : 19.008
DUPflag              : 0
Distance (au)        : 4.449
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.55
Sun-Target sep (deg) : 143.18
Sun-Moon sep (deg)   : 29.99
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.35
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 0.573
C/A sky separation (km) : 1849.8
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
    
```

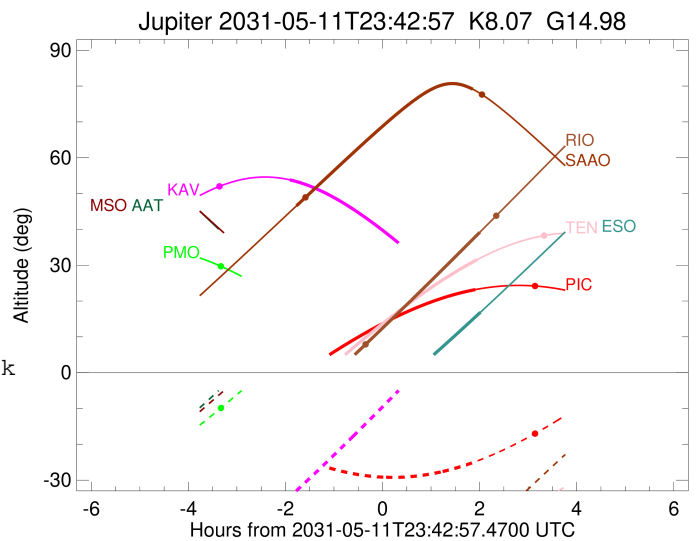
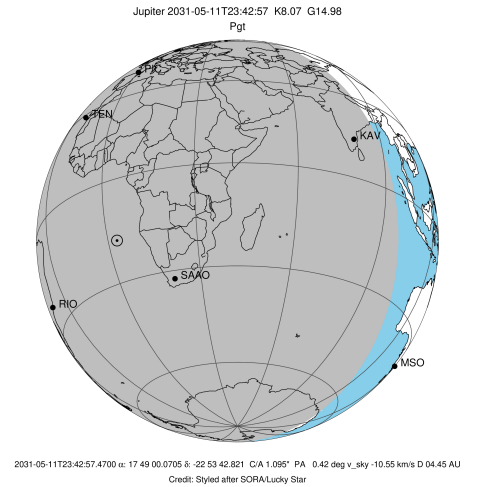


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-11T21:56:50.792	-1.17x	-23.36	71492.0	0.97	1.11
Jupiter	E	2031-05-12T01:37:28.858	23.17	-24.86	71492.0	1.74	1.98

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-11T23:50:25.570
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       : 4068888910555087616
2Mass ID (if available) : 17490006-2253425
ICRS Star Coord at Epoch: 17h 49m 00.07049s -22:53:42.82086s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 8.074
G magnitude           : 14.977
RP magnitude          : 13.357
BP magnitude          : 19.008
DUPflag              : 0
Distance (au)        : 4.449
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.55
Sun-Target sep (deg) : 143.18
Sun-Moon sep (deg)   : 30.23
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.35
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 0.138
C/A sky separation (km) : 446.3
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
    
```

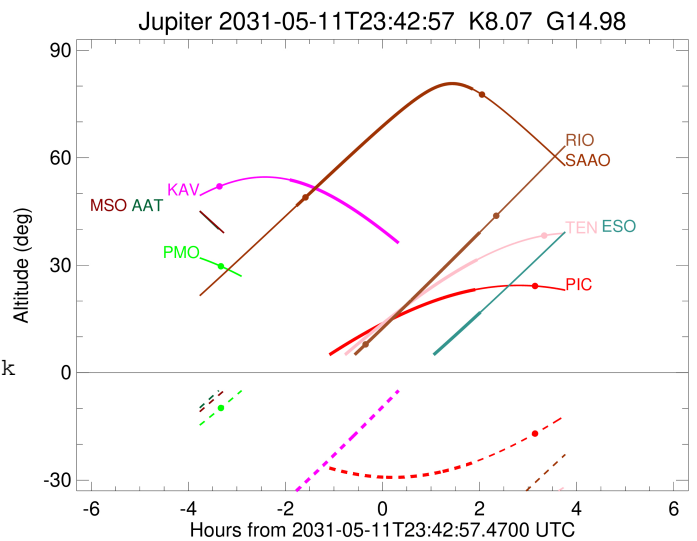
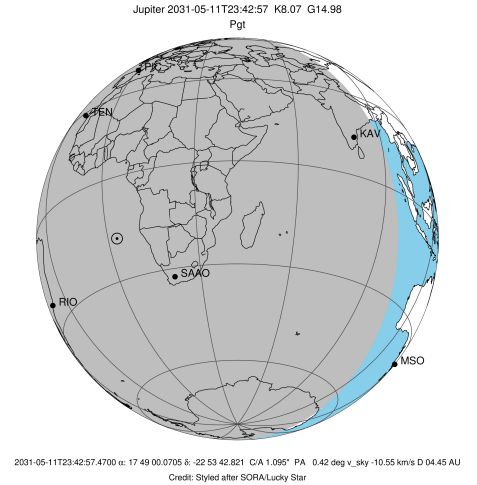


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-11T21:58:47.011	-6.50x	-25.97	71492.0	-0.38	-0.43
Jupiter	E	2031-05-12T01:40:09.244	31.56	-42.93	71492.0	0.86	0.99

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-11T23:37:19.950
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       : 4068888910555087616
2Mass ID (if available) : 17490006-2253425
ICRS Star Coord at Epoch: 17h 49m 00.07049s -22:53:42.82086s
RUWE (>1.4 is poor) : 1.02
K magnitude          : 8.074
G magnitude          : 14.977
RP magnitude         : 13.357
BP magnitude         : 19.008
DUPflag             : 0
Distance (au)       : 4.449
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.55
Sun-Target sep (deg) : 143.18
Sun-Moon sep (deg)   : 29.29
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.35
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 0.070
C/A sky separation (km) : 225.3
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
    
```

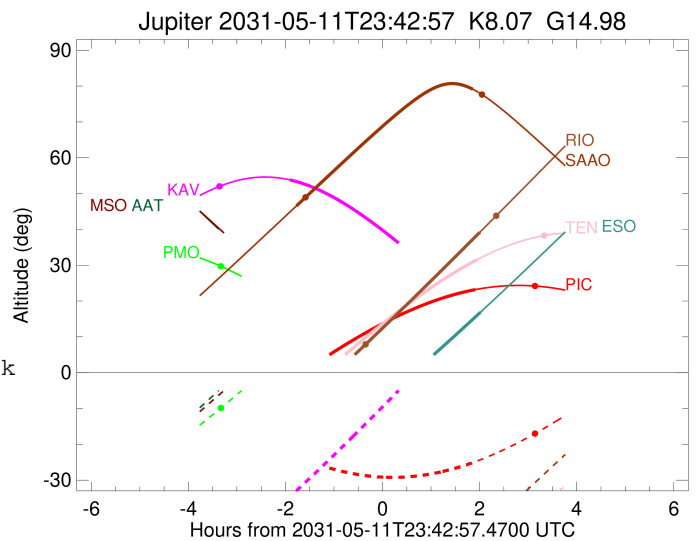
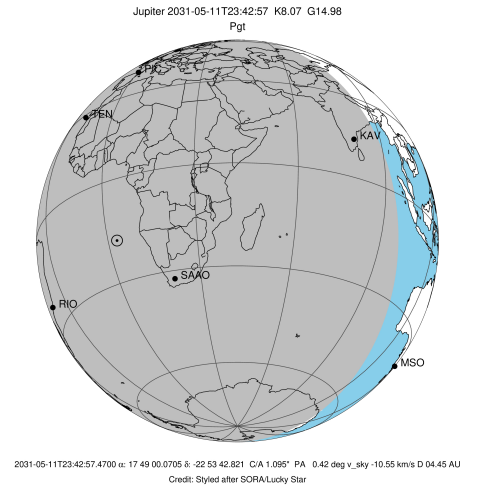


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-11T21:48:35.378	53.80	-34.59	71492.0	0.21	0.24
Jupiter	E	2031-05-12T01:27:03.931	19.32	14.60x	71492.0	-0.94	-1.07

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-11T23:52:18.270
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       : 4068888910555087616
2Mass ID (if available) : 17490006-2253425
ICRS Star Coord at Epoch: 17h 49m 00.07049s -22:53:42.82086s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 8.074
G magnitude           : 14.977
RP magnitude          : 13.357
BP magnitude          : 19.008
DUPflag              : 0
Distance (au)        : 4.449
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.55
Sun-Target sep (deg) : 143.18
Sun-Moon sep (deg)   : 30.46
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.35
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 1.712
C/A sky separation (km) : 5522.9
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
    
```

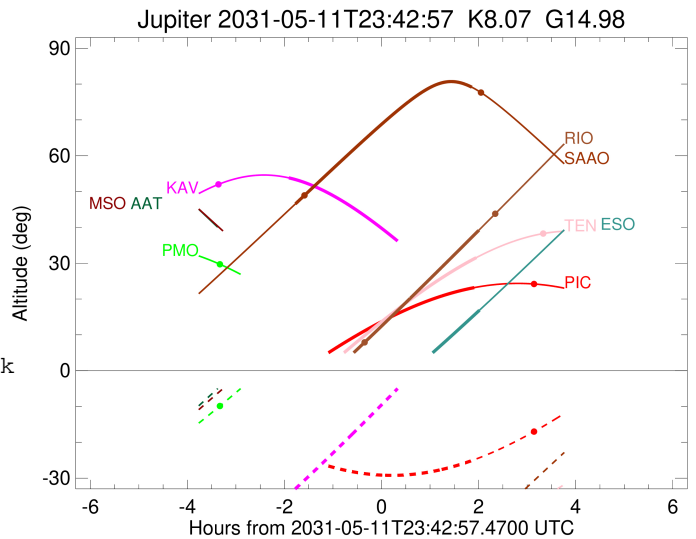
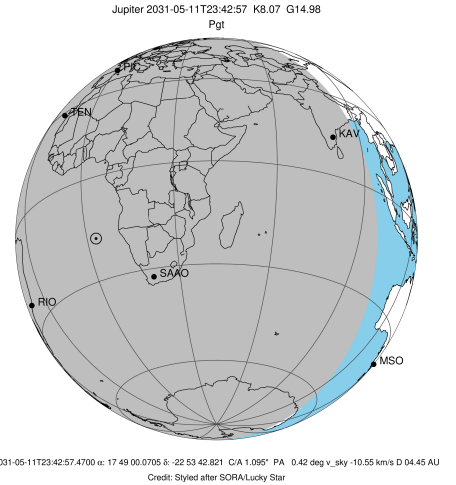


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-11T21:59:00.608	-9.42x	-22.48	71491.9	-5.25	-6.00
Jupiter	E	2031-05-12T01:43:10.739	39.17	-73.83	71492.0	-3.67	-4.19

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-11T23:51:18.400
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       : 4068888910555087616
2Mass ID (if available) : 17490006-2253425
ICRS Star Coord at Epoch: 17h 49m 00.07049s -22:53:42.82086s
RUWE (>1.4 is poor) : 1.02
K magnitude          : 8.074
G magnitude          : 14.977
RP magnitude         : 13.357
BP magnitude         : 19.008
DUPflag             : 0
Distance (au)        : 4.449
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.55
Sun-Target sep (deg) : 143.18
Sun-Moon sep (deg)  : 30.22
B (ring opening deg) : -2.61
PA of pole (deg)    : 0.35
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (" ) : 2.216
C/A sky separation (km) : 7150.7
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
    
```

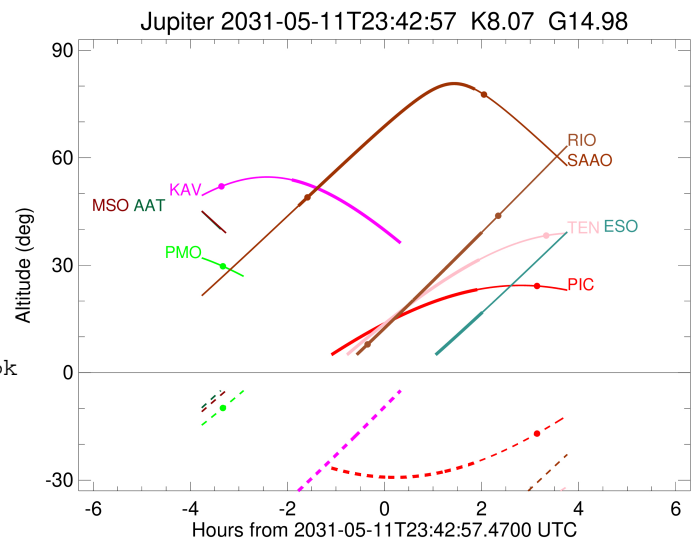
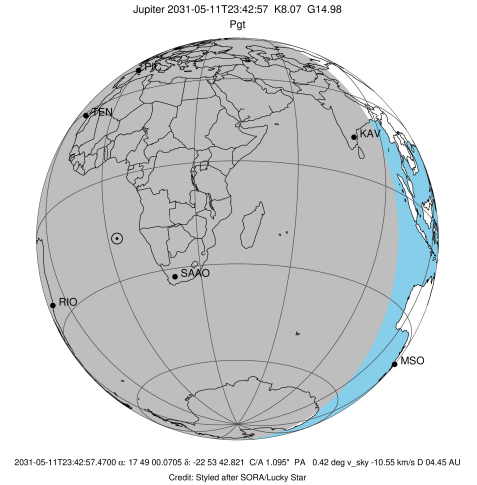


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-11T21:56:15.729	-25.25x	0.27x	71491.9	-6.37	-7.27
Jupiter	E	2031-05-12T01:44:03.283	16.87	-48.61	71491.9	-4.96	-5.67

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-11T23:46:01.200
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : SAAO
Location             : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)       : -32.37953
E. Longitude (deg)   : 20.81070
Altitude (km)        : 1.768
Gaia source ID       : 4068888910555087616
2Mass ID (if available) : 17490006-2253425
ICRS Star Coord at Epoch: 17h 49m 00.07049s -22:53:42.82086s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 8.074
G magnitude           : 14.977
RP magnitude          : 13.357
BP magnitude          : 19.008
DUPflag              : 0
Distance (au)        : 4.449
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.55
Sun-Target sep (deg) : 143.18
Sun-Moon sep (deg)   : 30.29
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.35
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 1.447
C/A sky separation (km) : 4670.0
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	2031-05-11T21:56:33.698	46.55	-73.58	71492.0	-4.13	-4.73
Jupiter	E	2031-05-12T01:34:35.621	79.12	-46.92	71492.0	-3.70	-4.23