

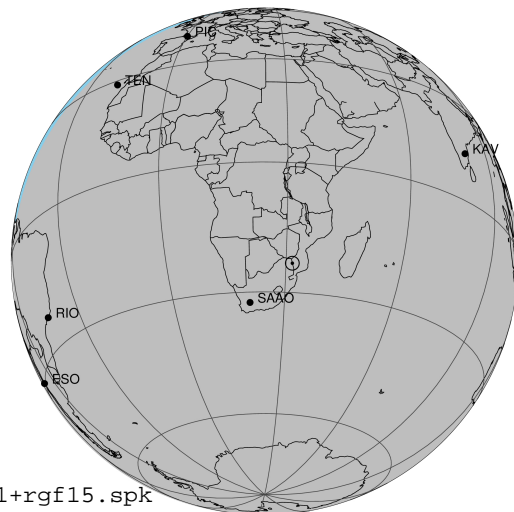
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-06-25T21:56:28.620
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068869531660391296
 2Mass ID (if available) : 17483170-2304228

Jupiter 2043-06-25T21:56:28 K9.71 G14.93 Pgt

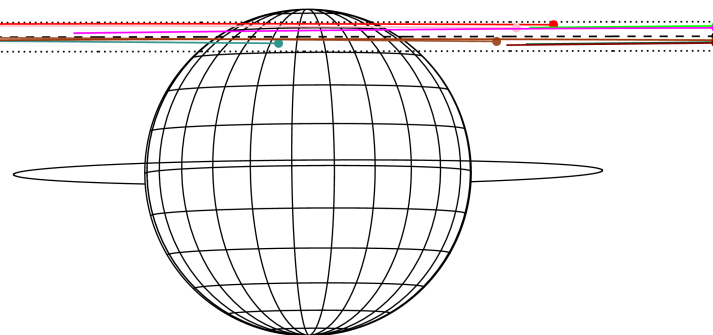
ICRS Star Coord at Epoch: 17h 48m 31.68001s -23:04:23.11460s

RUWE (>1.4 is poor) : 1.25
 K magnitude : 9.713
 G magnitude : 14.926
 RP magnitude : 13.572
 BP magnitude : 16.902
 DUPflag : 0
 Distance (au) : 4.253
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -16.25
 Sun-Target sep (deg) : 173.70
 Sun-Moon sep (deg) : 44.72
 B (ring opening deg) : -2.43
 PA of pole (deg) : 0.40
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 19.275
 C/A sky separation (km) : 59455.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-06-25T21:56:28 K9.71 G14.93
 Pgt



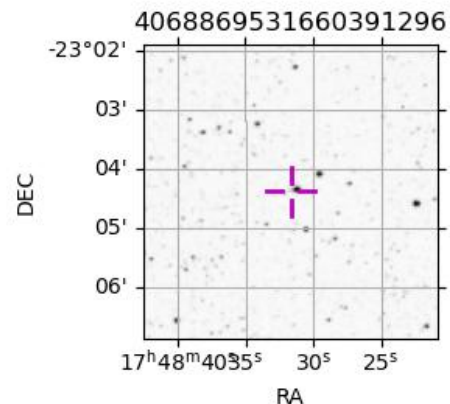
Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



2043-06-25T21:56:28.6200 a: 17 48 31.6800 s: -23 04 23.115 C/A ***** PA 180.08 deg v_sky -16.25 km/s D 04.25 AU
 Credit: Styled after SORA/Lucky Star

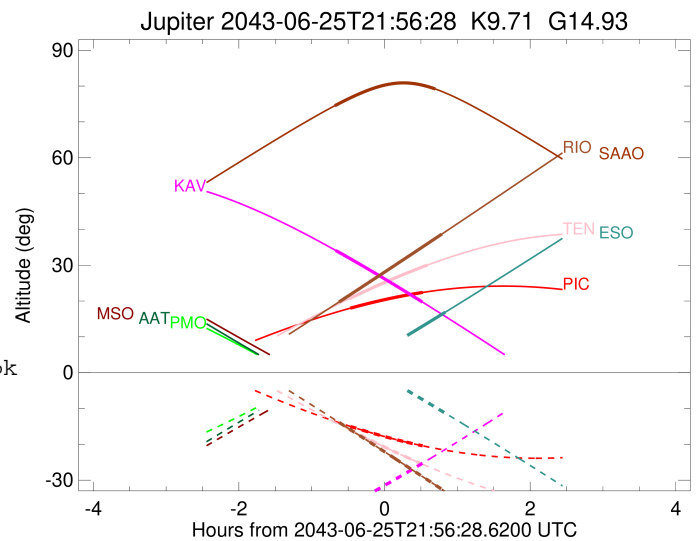
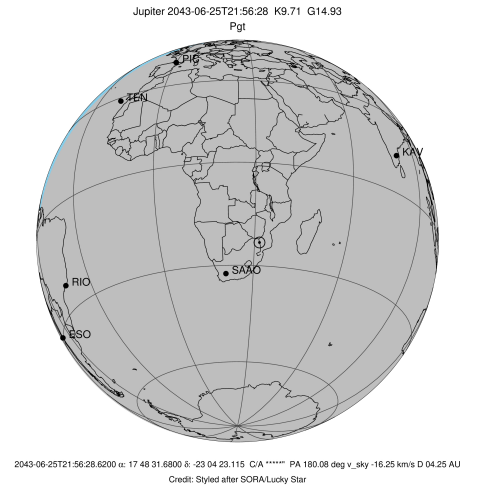
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	JUN 25 21:28 - JUN 25 22:27	Pie
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	+ +	JUN 25 21:27 - JUN 25 22:32	Pie
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUN 25 21:16 - JUN 25 22:27	Pie
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUN 25 21:19 - JUN 25 22:43	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3		JUN 25 22:46 - JUN 25 22:46	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUN 25 21:15 - JUN 25 22:38	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-25T21:58:12.260
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       : 4068869531660391296
2Mass ID (if available) : 17483170-2304228
ICRS Star Coord at Epoch: 17h 48m 31.68001s -23:04:23.11460s
RUWE (>1.4 is poor) : 1.25
K magnitude           : 9.713
G magnitude           : 14.926
RP magnitude          : 13.572
BP magnitude          : 16.902
DUPflag              : 0
Distance (au)        : 4.253
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.25
Sun-Target sep (deg) : 173.70
Sun-Moon sep (deg)   : 45.22
B (ring opening deg) : -2.43
PA of pole (deg)     : 0.40
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 21.109
C/A sky separation (km): 65114.4
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
    
```

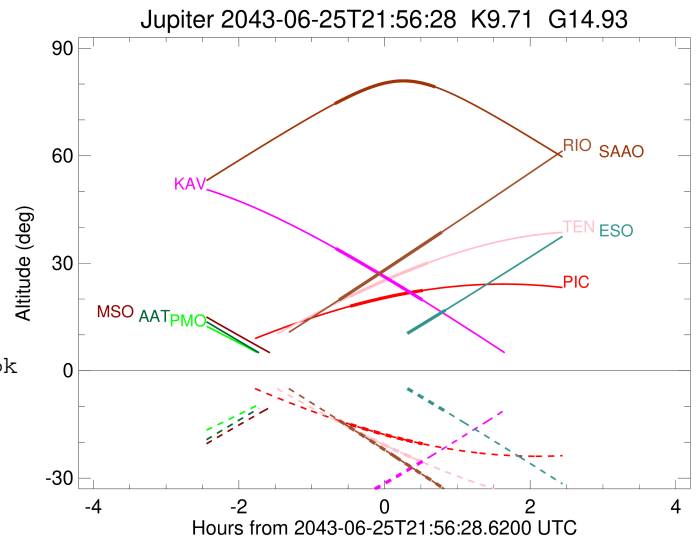
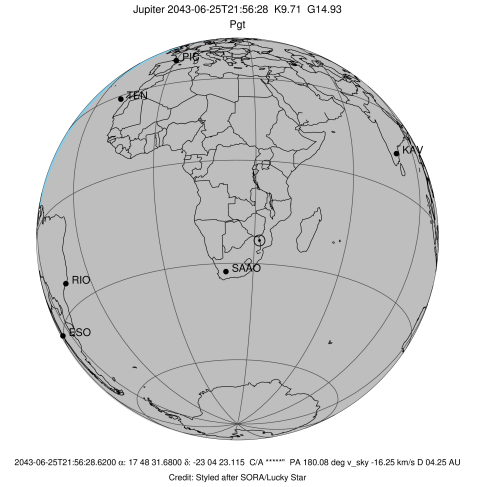


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-25T21:28:27.850	18.01	-15.01	71485.4	64.98	67.66
Jupiter	E	2043-06-25T22:27:54.902	22.39	-20.41	71485.3	65.99	68.58

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-25T21:59:47.430
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        : 4068869531660391296
2Mass ID (if available) : 17483170-2304228
ICRS Star Coord at Epoch: 17h 48m 31.68001s -23:04:23.11460s
RUWE (>1.4 is poor) : 1.25
K magnitude           : 9.713
G magnitude           : 14.926
RP magnitude          : 13.572
BP magnitude          : 16.902
DUPflag              : 0
Distance (au)         : 4.253
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.25
Sun-Target sep (deg) : 173.70
Sun-Moon sep (deg)   : 45.44
B (ring opening deg) : -2.43
PA of pole (deg)     : 0.40
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 20.720
C/A sky separation (km): 63913.6
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
    
```

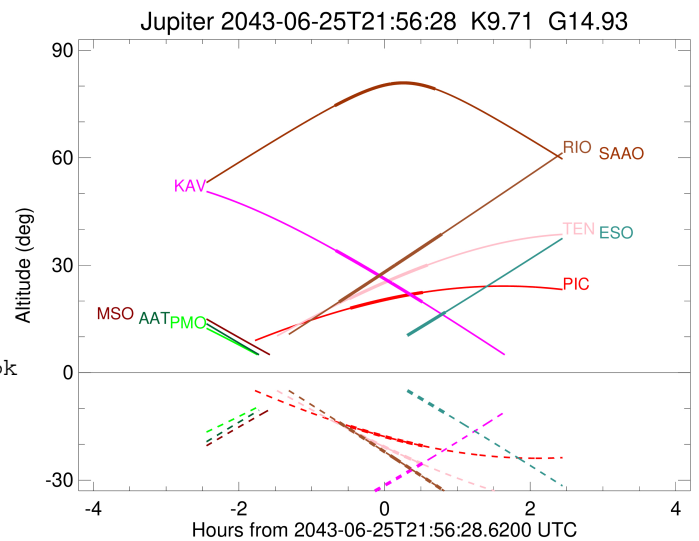
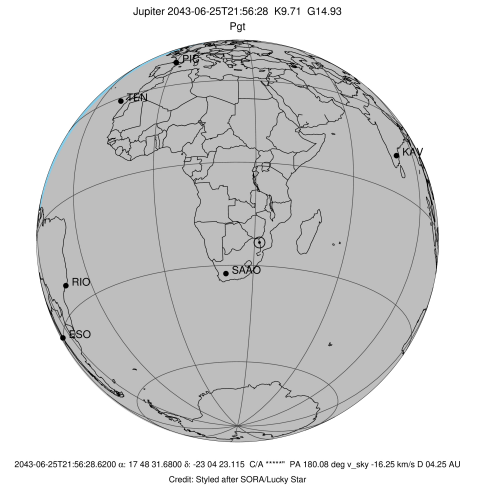


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-25T21:27:29.696	20.66	-15.89	71485.7	62.58	65.45
Jupiter	E	2043-06-25T22:32:01.073	30.05	-26.14	71485.5	63.93	66.70

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-25T21:51:55.250
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      : 4068869531660391296
2Mass ID (if available) : 17483170-2304228
ICRS Star Coord at Epoch: 17h 48m 31.68001s -23:04:23.11460s
RUWE (>1.4 is poor) : 1.25
K magnitude         : 9.713
G magnitude         : 14.926
RP magnitude        : 13.572
BP magnitude        : 16.902
DUPflag            : 0
Distance (au)       : 4.253
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -16.25
Sun-Target sep (deg) : 173.70
Sun-Moon sep (deg)  : 44.52
B (ring opening deg) : -2.43
PA of pole (deg)    : 0.40
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 20.159
C/A sky separation (km) : 62181.2
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
    
```

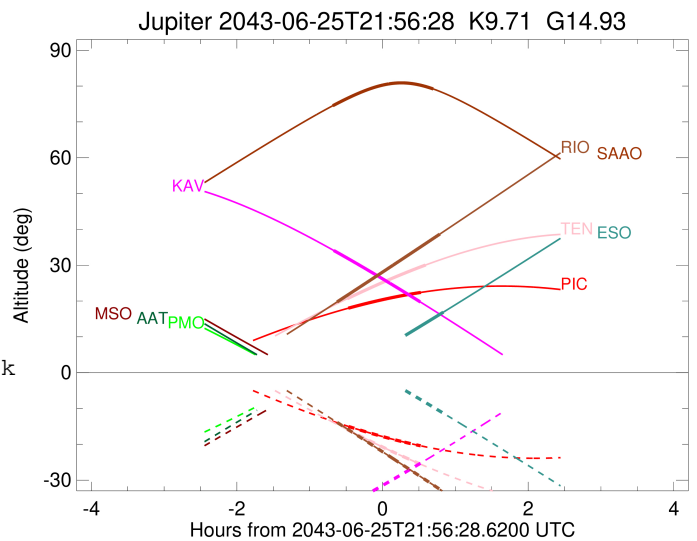
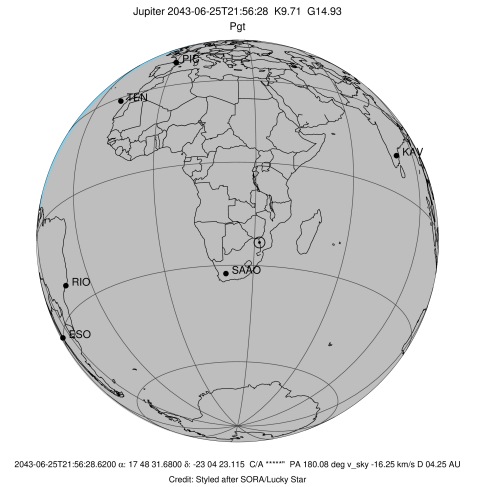


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-25T21:16:22.129	34.09	-38.88	71485.9	60.49	63.52
Jupiter	E	2043-06-25T22:27:35.580	19.75	-25.32	71486.0	60.15	63.20

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-25T22:01:27.670
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      : 4068869531660391296
2Mass ID (if available) : 17483170-2304228
ICRS Star Coord at Epoch: 17h 48m 31.68001s -23:04:23.11461s
RUWE (>1.4 is poor) : 1.25
K magnitude          : 9.713
G magnitude          : 14.926
RP magnitude         : 13.572
BP magnitude         : 16.902
DUPflag             : 0
Distance (au)       : 4.253
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.25
Sun-Target sep (deg) : 173.70
Sun-Moon sep (deg)  : 45.57
B (ring opening deg) : -2.43
PA of pole (deg)    : 0.40
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 18.842
C/A sky separation (km): 58119.5
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
    
```

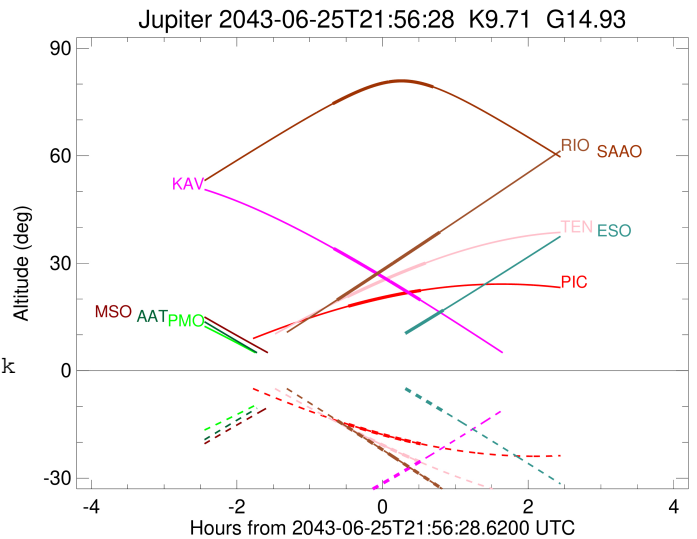
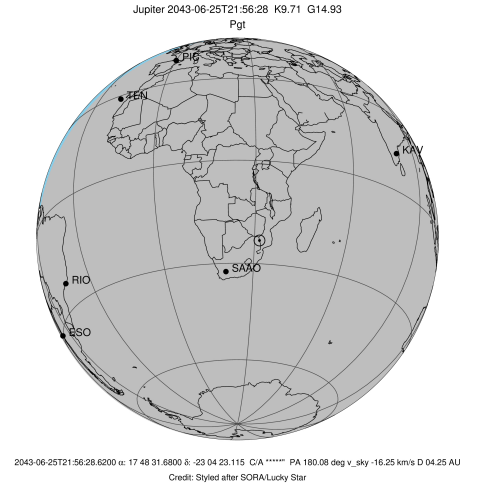


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-25T21:19:05.578	19.76	-13.89	71486.8	53.44	56.89
Jupiter	E	2043-06-25T22:43:39.141	38.66	-32.54	71486.6	55.15	58.51

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-25T22:01:37.140
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       : 4068869531660391296
2Mass ID (if available) : 17483170-2304228
ICRS Star Coord at Epoch: 17h 48m 31.68001s -23:04:23.11461s
RUWE (>1.4 is poor) : 1.25
K magnitude           : 9.713
G magnitude           : 14.926
RP magnitude          : 13.572
BP magnitude          : 16.902
DUPflag              : 0
Distance (au)        : 4.253
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.25
Sun-Target sep (deg) : 173.70
Sun-Moon sep (deg)   : 45.33
B (ring opening deg) : -2.43
PA of pole (deg)     : 0.40
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 18.306
C/A sky separation (km): 56466.1
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
    
```

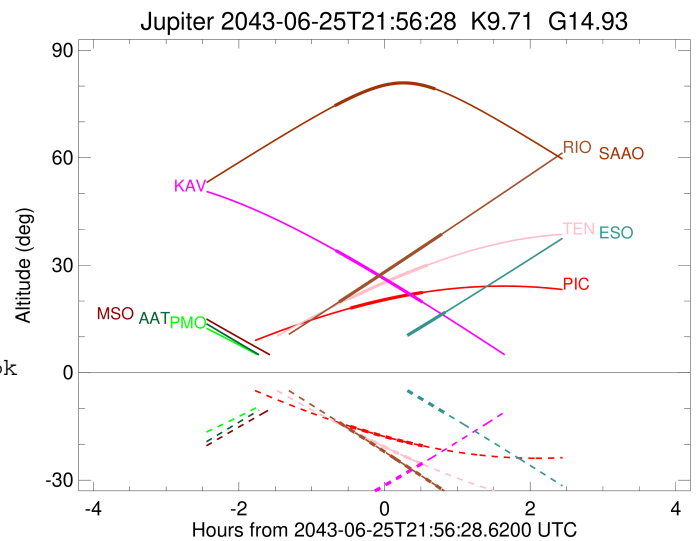
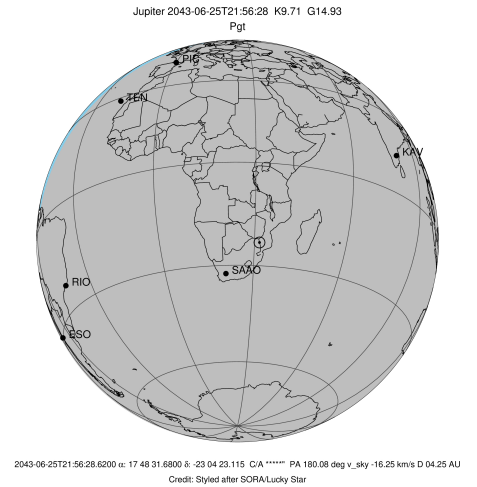


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-25T21:16:27.977	-1.36x	6.39x	71487.1	51.23	54.77
Jupiter	E	2043-06-25T22:46:33.723	16.87	-11.31	71486.9	52.99	56.46

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-25T21:56:49.000
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      : 4068869531660391296
2Mass ID (if available) : 17483170-2304228
ICRS Star Coord at Epoch: 17h 48m 31.68001s -23:04:23.11460s
RUWE (>1.4 is poor) : 1.25
K magnitude          : 9.713
G magnitude          : 14.926
RP magnitude         : 13.572
BP magnitude         : 16.902
DUPflag             : 0
Distance (au)       : 4.253
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.25
Sun-Target sep (deg) : 173.70
Sun-Moon sep (deg)  : 45.40
B (ring opening deg) : -2.43
PA of pole (deg)    : 0.40
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 18.946
C/A sky separation (km): 58441.9
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	2043-06-25T21:15:31.414	74.51	-69.49	71486.7	54.36	57.77
Jupiter	E	2043-06-25T22:38:06.150	79.21	-81.16	71486.6	55.07	58.44