

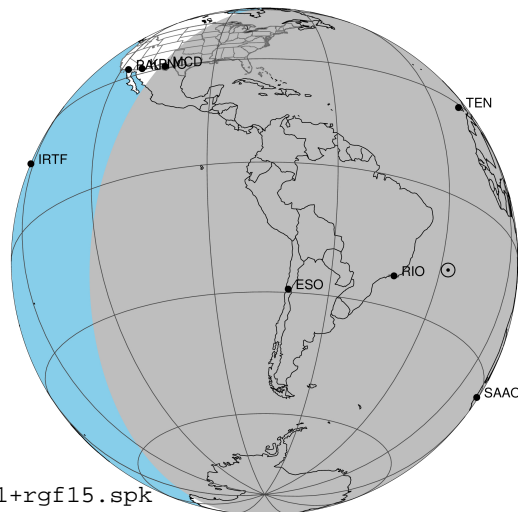
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-08-03T01:56:03.440
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4117429187823715328
 2Mass ID (if available) : 17321596-2303067

Jupiter 2043-08-03T01:56:03 K7.72 G13.93 Pgt

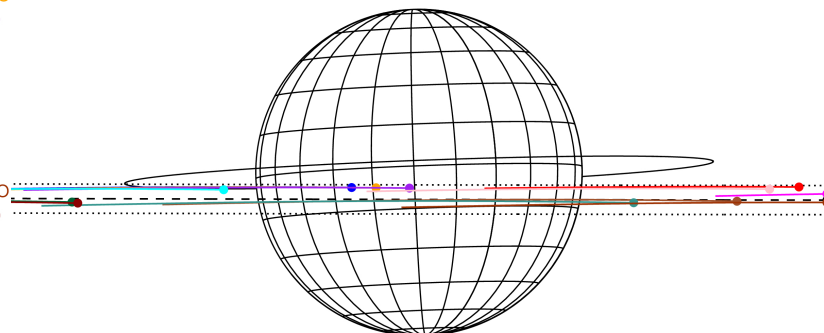
ICRS Star Coord at Epoch: 17h 32m 15.95167s -23:03:07.34281s

RUWE (>1.4 is poor) : 1.00
 K magnitude : 7.724
 G magnitude : 13.930
 RP magnitude : 12.431
 BP magnitude : 17.474
 DUPflag : 0
 Distance (au) : 4.500
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -7.37
 Sun-Target sep (deg) : 133.55
 Sun-Moon sep (deg) : 159.54
 B (ring opening deg) : -2.36
 PA of pole (deg) : 2.15
 Pole direction: RA (deg): 268.05671
 Dec (deg): 64.49731
 C/A sky separation (") : 3.617
 C/A sky separation (km) : 11804.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-08-03T01:56:03 K7.72 G13.93
 Pgt



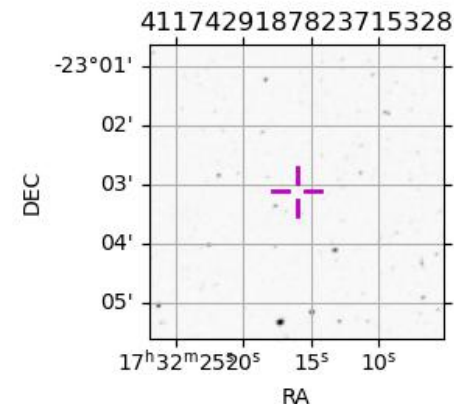
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



2043-08-03T01:56:03.4400 @: 17 32 15.9517 @: -23 03 07.343 C/A 3.627" PA 359.88 deg v_sky - 7.37 km/s D 04.50 AU
 Credit: Styled after SORA/Lucky Star

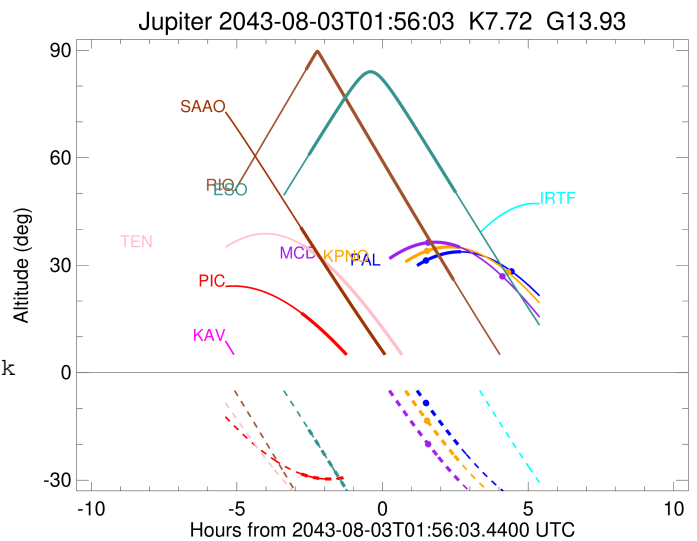
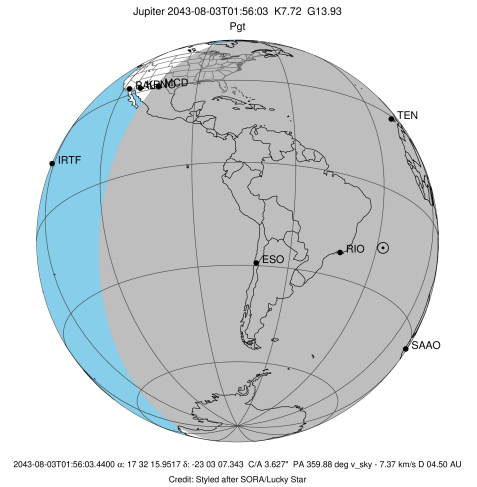
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events	Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	AUG 02 23:09	- AUG 02 23:09	Pin
PAL	Palomar Mt (200")	33.4	243.1	+	AUG 03 04:37	- AUG 03 04:37	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8				Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	AUG 03 04:36	- AUG 03 04:36	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	AUG 03 04:34	- AUG 03 04:34	Pne
TEN	Teide Obs./Tenerife	28.3	343.5	+	AUG 02 23:11	- AUG 02 23:11	Pin
IRTF	Mauna Kea/IRTF	19.8	204.5				Pnn
KAV	Kavalur Observatory	12.6	78.8				Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	AUG 02 23:18	- AUG 03 04:22	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	AUG 02 23:23	- AUG 03 04:26	Pie
AAT	Siding Spring (AAT)	-31.3	149.1				Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	AUG 02 23:07	- AUG 02 23:07	Pin
MSO	Mt. Stromlo Observatory	-35.3	149.0				Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-08-03T01:45:30.470
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        : 4117429187823715328
2Mass ID (if available) : 17321596-2303067
ICRS Star Coord at Epoch: 17h 32m 15.95167s -23:03:07.34281s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 7.724
G magnitude           : 13.930
RP magnitude          : 12.431
BP magnitude          : 17.474
DUPflag              : 0
Distance (au)         : 4.500
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -7.37
Sun-Target sep (deg)  : 133.55
Sun-Moon sep (deg)   : 159.04
B (ring opening deg) : -2.36
PA of pole (deg)     : 2.15
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (") : 2.256
C/A sky separation (km) : 7363.1
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
    
```

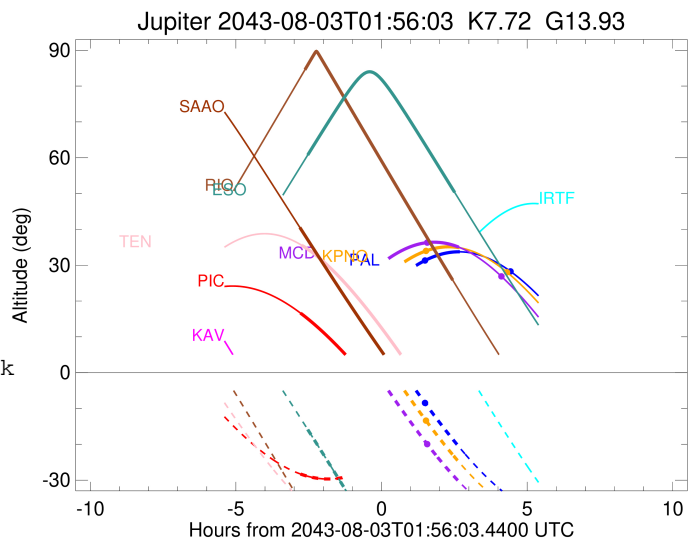
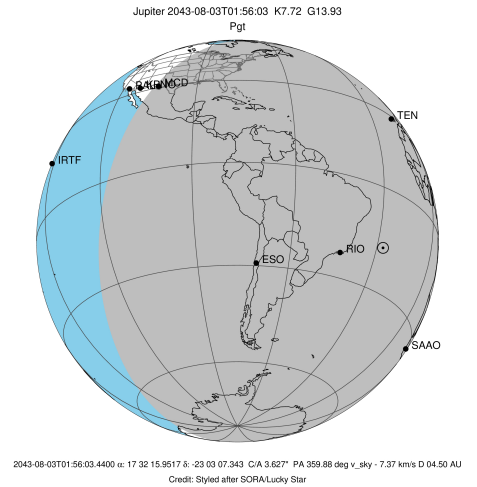


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-08-02T23:09:12.154	16.63	-28.29	71491.9	-7.34	-8.38
Jupiter	E	2043-08-03T04:27:23.334	-33.44x	-4.97x	71491.9	-4.66	-5.32

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-08-03T02:03:37.400
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      : 4117429187823715328
2Mass ID (if available) : 17321596-2303067
ICRS Star Coord at Epoch: 17h 32m 15.95167s -23:03:07.34281s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 7.724
G magnitude          : 13.930
RP magnitude         : 12.431
BP magnitude         : 17.474
DUPflag             : 0
Distance (au)       : 4.500
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -7.37
Sun-Target sep (deg) : 133.55
Sun-Moon sep (deg)  : 160.34
B (ring opening deg) : -2.36
PA of pole (deg)    : 2.15
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (") : 2.123
C/A sky separation (km) : 6929.5
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
    
```

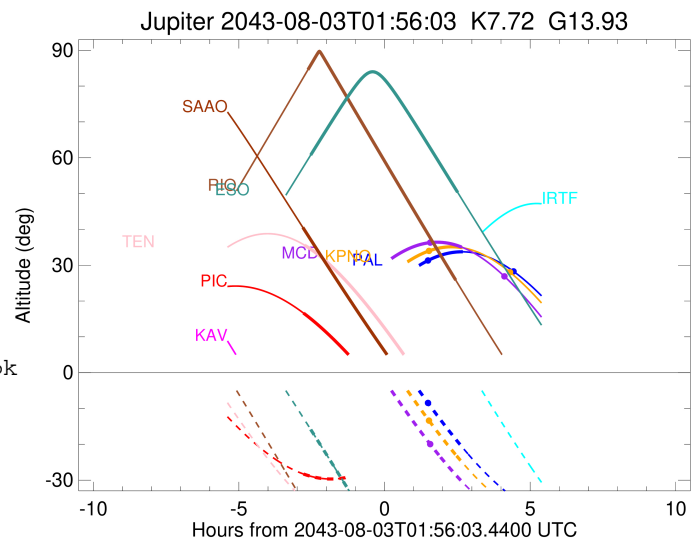
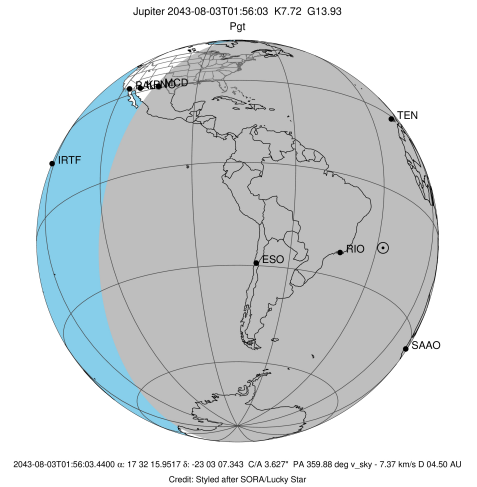


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-08-02T23:27:24.601	-2.57x	39.84x	71491.8	-8.76	-9.99
Jupiter	E	2043-08-03T04:37:25.604	33.74	-20.99	71492.0	-2.95	-3.37

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-08-03T02:02:50.230
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       : 4117429187823715328
2Mass ID (if available) : 17321596-2303067
ICRS Star Coord at Epoch: 17h 32m 15.95167s -23:03:07.34281s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 7.724
G magnitude           : 13.930
RP magnitude          : 12.431
BP magnitude          : 17.474
DUPflag              : 0
Distance (au)         : 4.500
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -7.37
Sun-Target sep (deg) : 133.55
Sun-Moon sep (deg)   : 160.32
B (ring opening deg) : -2.36
PA of pole (deg)     : 2.15
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation ("): 2.119
C/A sky separation (km): 6916.0
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
    
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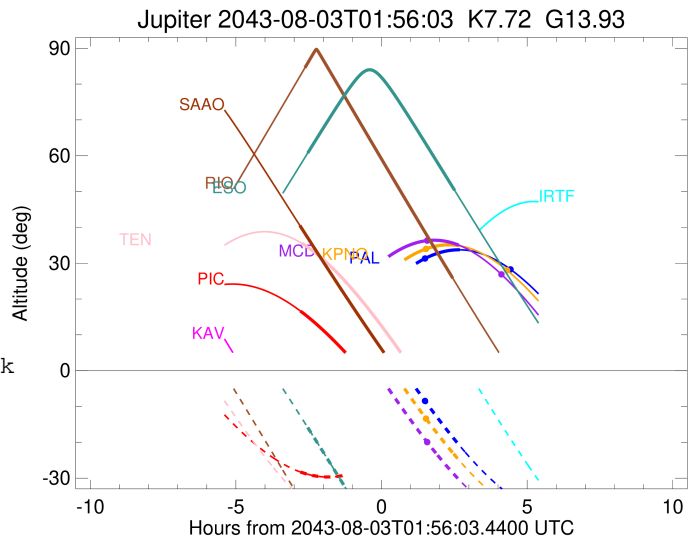
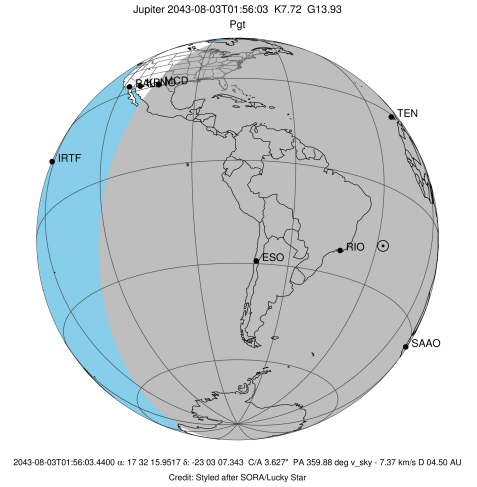


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-08-02T23:27:16.745	1.98x	35.48x	71491.8	-8.70	-9.92
Jupiter	E	2043-08-03T04:36:20.044	34.88	-25.07	71492.0	-3.03	-3.46

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-08-03T02:01:31.480
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      : 4117429187823715328
2Mass ID (if available) : 17321596-2303067
ICRS Star Coord at Epoch: 17h 32m 15.95167s -23:03:07.34281s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 7.724
G magnitude          : 13.930
RP magnitude         : 12.431
BP magnitude         : 17.474
DUPflag             : 0
Distance (au)       : 4.500
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -7.37
Sun-Target sep (deg) : 133.55
Sun-Moon sep (deg)  : 160.26
B (ring opening deg) : -2.36
PA of pole (deg)    : 2.15
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (" ) : 2.106
C/A sky separation (km) : 6874.1
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
    
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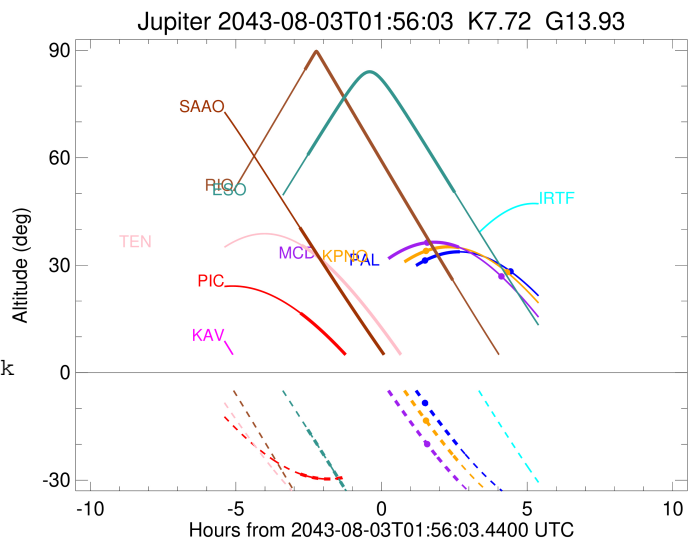
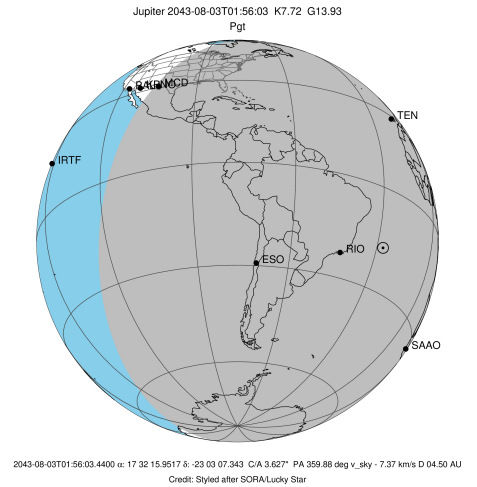


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-08-02T23:26:48.139	8.12	29.06x	71491.8	-8.57	-9.78
Jupiter	E	2043-08-03T04:34:44.795	35.06	-30.29	71492.0	-3.13	-3.58

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-08-03T01:44:56.280
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        : 4117429187823715328
2Mass ID (if available) : 17321596-2303067
ICRS Star Coord at Epoch: 17h 32m 15.95167s -23:03:07.34281s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 7.724
G magnitude           : 13.930
RP magnitude          : 12.431
BP magnitude          : 17.474
DUPflag              : 0
Distance (au)         : 4.500
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -7.37
Sun-Target sep (deg) : 133.55
Sun-Moon sep (deg)   : 159.09
B (ring opening deg) : -2.36
PA of pole (deg)     : 2.15
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation ("): 2.417
C/A sky separation (km): 7890.2
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
    
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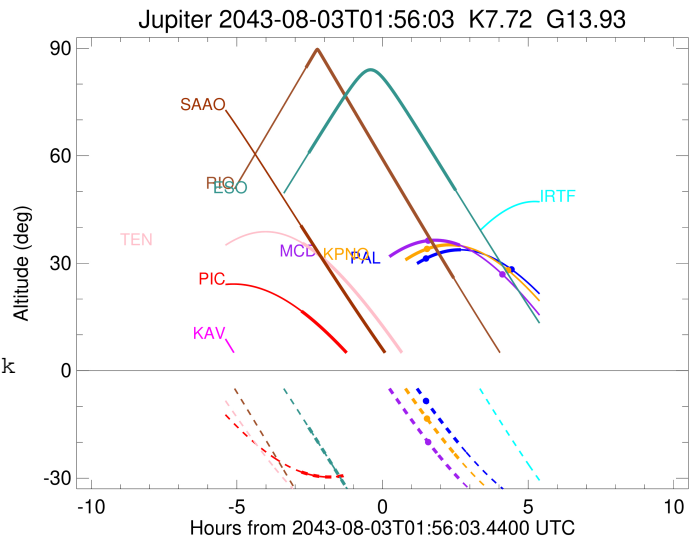
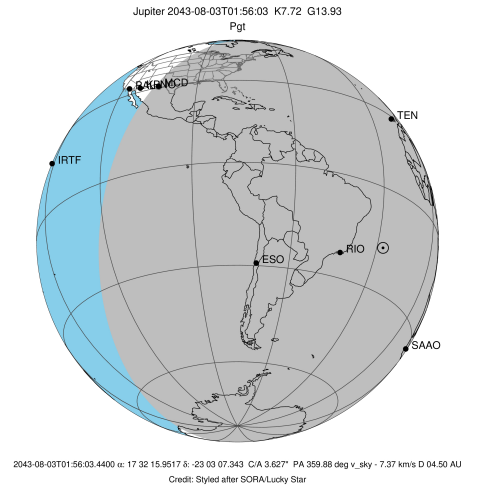


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-08-02T23:11:16.638	35.59	-35.73	71491.9	-7.84	-8.95
Jupiter	E	2043-08-03T04:24:09.502	-16.90x	-24.89	71491.9	-5.25	-6.00

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-08-03T01:48:43.760
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      : 4117429187823715328
2Mass ID (if available) : 17321596-2303067
ICRS Star Coord at Epoch: 17h 32m 15.95167s -23:03:07.34281s
RUWE (>1.4 is poor) : 1.00
K magnitude         : 7.724
G magnitude         : 13.930
RP magnitude        : 12.431
BP magnitude        : 17.474
DUPflag            : 0
Distance (au)       : 4.500
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -7.37
Sun-Target sep (deg) : 133.55
Sun-Moon sep (deg)  : 159.37
B (ring opening deg) : -2.36
PA of pole (deg)    : 2.15
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (" ) : 3.718
C/A sky separation (km) : 12136.0
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
    
```

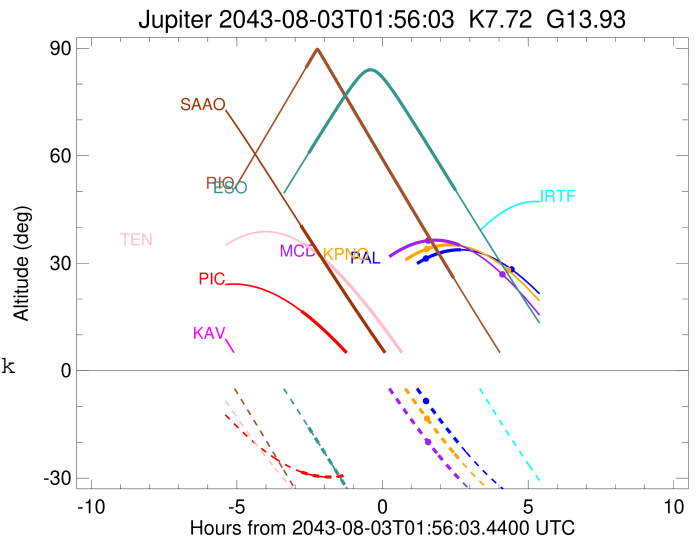
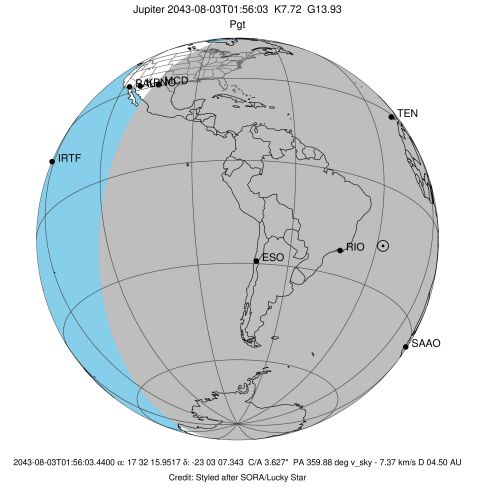


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-08-02T23:18:16.535	84.54	-38.20	71491.7	-11.73	-13.35
Jupiter	E	2043-08-03T04:22:50.685	25.82	-69.68	71491.8	-8.48	-9.67


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-08-03T01:54:43.570
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        : 4117429187823715328
2Mass ID (if available) : 17321596-2303067
ICRS Star Coord at Epoch: 17h 32m 15.95167s -23:03:07.34281s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 7.724
G magnitude           : 13.930
RP magnitude          : 12.431
BP magnitude          : 17.474
DUPflag              : 0
Distance (au)         : 4.500
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -7.37
Sun-Target sep (deg) : 133.55
Sun-Moon sep (deg)   : 159.76
B (ring opening deg) : -2.36
PA of pole (deg)     : 2.15
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (") : 3.826
C/A sky separation (km) : 12487.9
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
    
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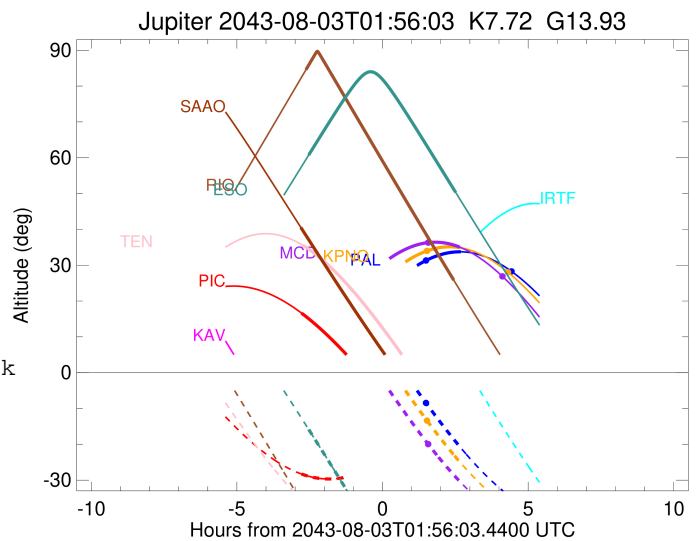
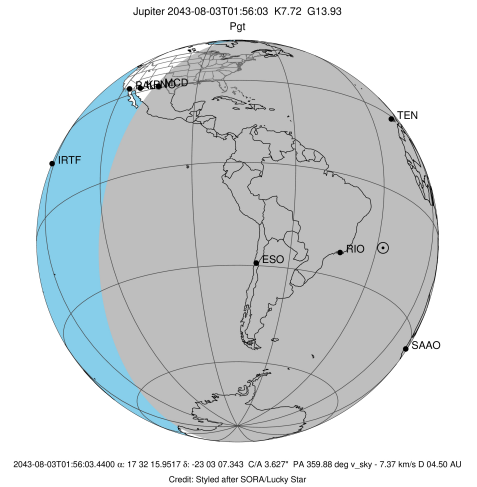


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-08-02T23:23:58.076	60.73	-15.84	71491.6	-12.55	-14.27
Jupiter	E	2043-08-03T04:26:45.075	50.33	-77.35	71491.8	-8.29	-9.46


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-08-03T01:43:13.520
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        : 4117429187823715328
2Mass ID (if available) : 17321596-2303067
ICRS Star Coord at Epoch: 17h 32m 15.95167s -23:03:07.34281s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 7.724
G magnitude           : 13.930
RP magnitude          : 12.431
BP magnitude          : 17.474
DUPflag              : 0
Distance (au)         : 4.500
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -7.37
Sun-Target sep (deg)  : 133.55
Sun-Moon sep (deg)   : 158.69
B (ring opening deg) : -2.36
PA of pole (deg)     : 2.15
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (") : 4.637
C/A sky separation (km) : 15132.8
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	2043-08-02T23:07:45.020	40.55	-74.35	71491.6	-13.34	-15.17
Jupiter	E	2043-08-03T04:25:19.285	-20.03x	-12.86	71491.7	-11.03	-12.56