

target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-06-19T03:16:07.550  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068694919887630336  
 2Mass ID (if available) : 17521693-2304432

Jupiter 2043-06-19T03:16:07 K6.49 G11.81 Pgt

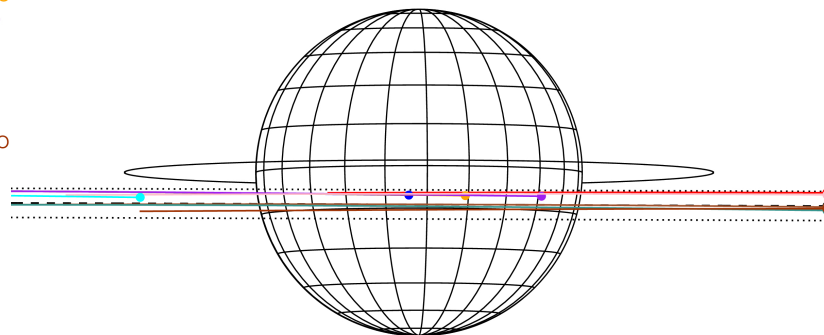
ICRS Star Coord at Epoch: 17h 52m 16.94028s -23:04:43.16352s

RUWE (>1.4 is poor) : 0.86  
 K magnitude : 6.485  
 G magnitude : 11.811  
 RP magnitude : 10.470  
 BP magnitude : 13.874  
 DUPflag : 0  
 Distance (au) : 4.251  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -16.41  
 Sun-Target sep (deg) : 178.90  
 Sun-Moon sep (deg) : 39.44  
 B (ring opening deg) : -2.42  
 PA of pole (deg) : -0.01  
 Pole direction: RA (deg): 268.05668  
 Dec (deg): 64.49732  
 C/A sky separation (") : 4.538  
 C/A sky separation (km) : 13992.0  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2043-06-19T03:16:07 K6.49 G11.81  
 Pgt



Earth  
 PIC  
 PAL  
 KPNO  
 MCD  
 TEN  
 IRTF  
 RIO  
 ESO  
 SAAO

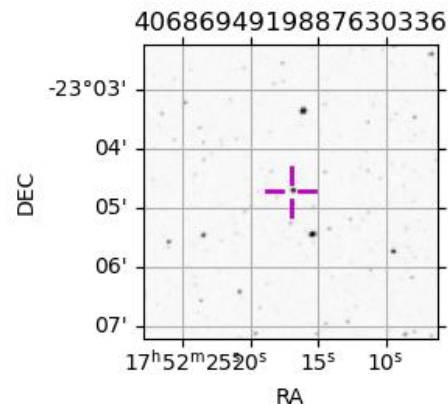


2043-06-19T03:16:07.5500 at: 17 52 16.9403 s: -23 04 43.164 C/A 4.550" PA 359.78 deg v\_sky -16.41 km/s D 04.25 AU

Credit: Styled after SORA/Lucky Star

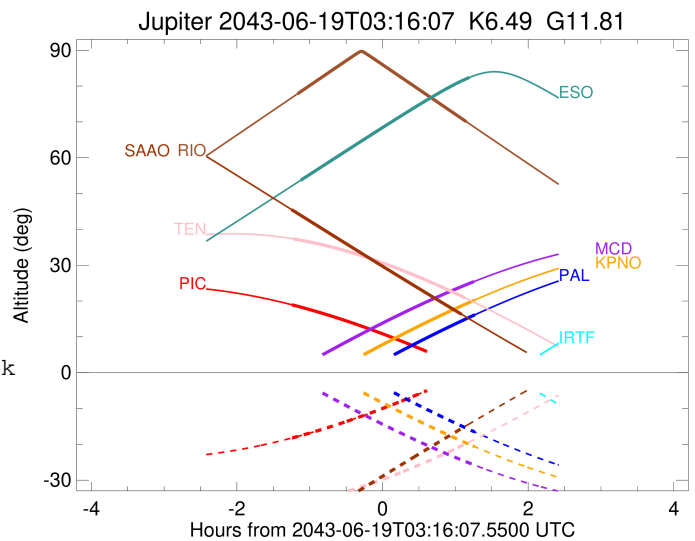
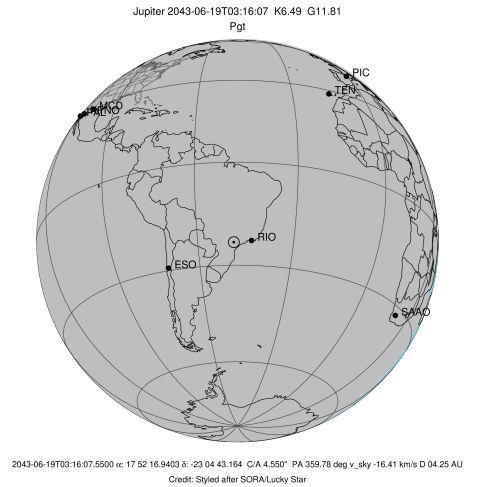
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	JUN 19 02:01 - JUN 19 02:01	Pin
PAL	Palomar Mt (200")	33.4	243.1	+	JUN 19 04:32 - JUN 19 04:32	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	JUN 19 04:31 - JUN 19 04:31	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	JUN 19 04:31 - JUN 19 04:31	Pne
TEN	Teide Obs./Tenerife	28.3	343.5	+	JUN 19 02:02 - JUN 19 04:23	Pie
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	+	JUN 19 02:06 - JUN 19 04:25	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	JUN 19 02:08 - JUN 19 04:27	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	JUN 19 02:01 - JUN 19 04:21	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-19T03:12:33.680
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        : 4068694919887630336
2Mass ID (if available) : 17521693-2304432
ICRS Star Coord at Epoch: 17h 52m 16.94028s -23:04:43.16352s
RUWE (>1.4 is poor) : 0.86
K magnitude           : 6.485
G magnitude           : 11.811
RP magnitude          : 10.470
BP magnitude          : 13.874
DUPflag              : 0
Distance (au)         : 4.251
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.41
Sun-Target sep (deg)  : 178.90
Sun-Moon sep (deg)   : 39.98
B (ring opening deg) : -2.42
PA of pole (deg)     : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (") : 2.850
C/A sky separation (km) : 8787.7
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
    
```

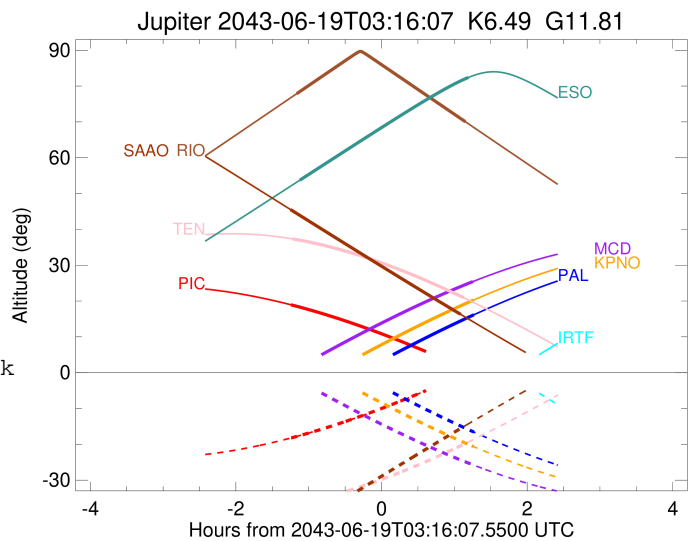
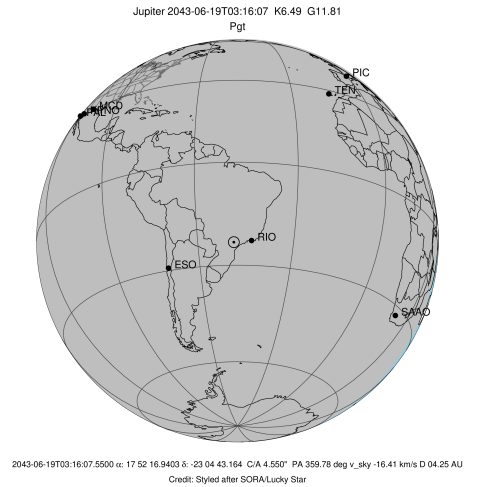


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-19T02:01:38.836	18.93	-18.21	71491.9	-6.98	-7.97
Jupiter	E	2043-06-19T04:23:48.247	1.30x	-0.39x	71491.9	-7.23	-8.25

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-19T03:21:12.130
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       : 4068694919887630336
2Mass ID (if available) : 17521693-2304432
ICRS Star Coord at Epoch: 17h 52m 16.94028s -23:04:43.16352s
RUWE (>1.4 is poor) : 0.86
K magnitude          : 6.485
G magnitude           : 11.811
RP magnitude         : 10.470
BP magnitude         : 13.874
DUPflag              : 0
Distance (au)        : 4.251
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.41
Sun-Target sep (deg) : 178.90
Sun-Moon sep (deg)   : 38.98
B (ring opening deg) : -2.42
PA of pole (deg)     : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation ("): 3.230
C/A sky separation (km): 9959.2
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
    
```

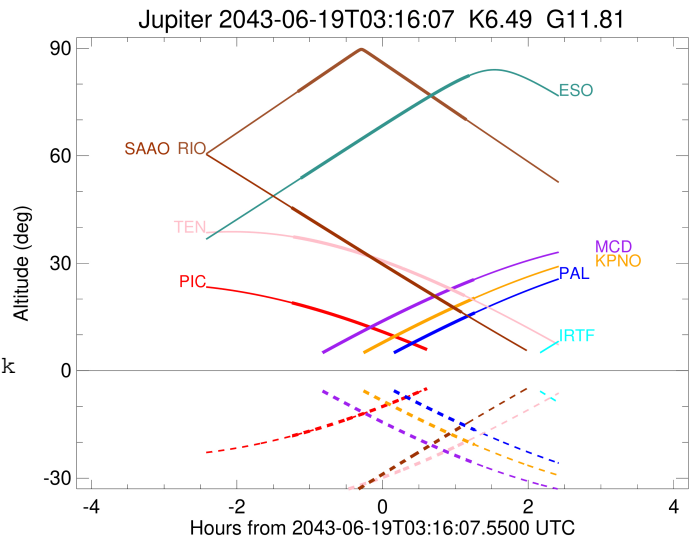
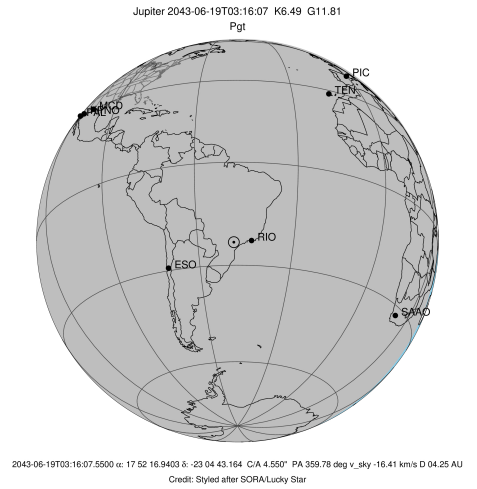


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-19T02:09:40.472	-9.22x	8.47x	71491.8	-8.73	-9.95
Jupiter	E	2043-06-19T04:32:14.801	16.16	-16.57	71491.9	-7.35	-8.38

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-19T03:21:04.100
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       : 4068694919887630336
2Mass ID (if available) : 17521693-2304432
ICRS Star Coord at Epoch: 17h 52m 16.94028s -23:04:43.16352s
RUWE (>1.4 is poor) : 0.86
K magnitude           : 6.485
G magnitude           : 11.811
RP magnitude         : 10.470
BP magnitude         : 13.874
DUPflag              : 0
Distance (au)        : 4.251
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.41
Sun-Target sep (deg) : 178.90
Sun-Moon sep (deg)  : 39.04
B (ring opening deg) : -2.42
PA of pole (deg)    : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (" ) : 3.208
C/A sky separation (km) : 9891.1
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
    
```

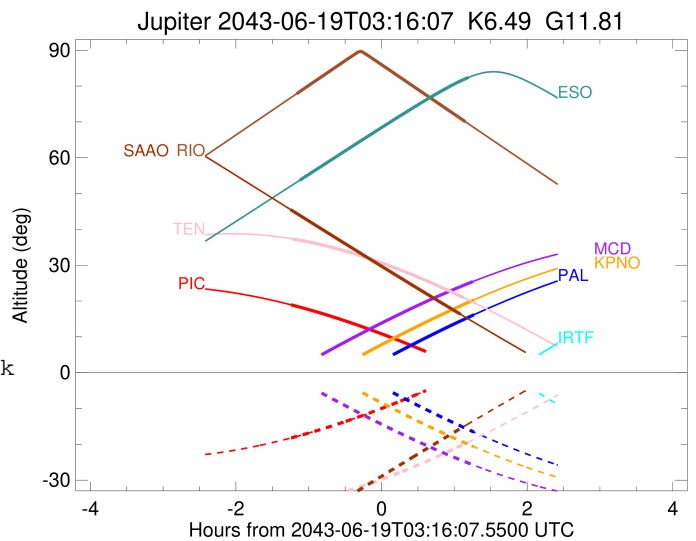
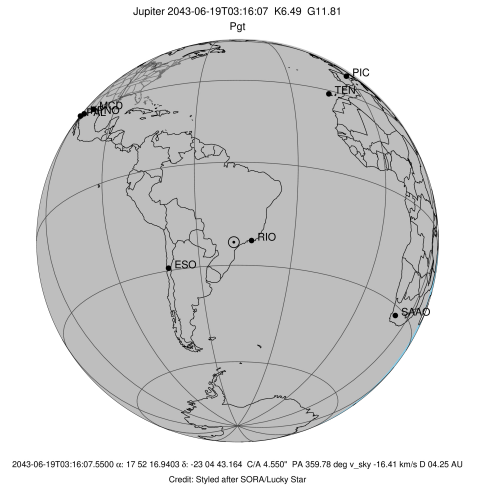


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-19T02:09:41.289	-4.59x	3.85x	71491.8	-8.66	-9.88
Jupiter	E	2043-06-19T04:31:58.846	20.26	-20.64	71491.9	-7.31	-8.35

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-19T03:20:45.120
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      : 4068694919887630336
2Mass ID (if available) : 17521693-2304432
ICRS Star Coord at Epoch: 17h 52m 16.94028s -23:04:43.16352s
RUWE (>1.4 is poor) : 0.86
K magnitude          : 6.485
G magnitude          : 11.811
RP magnitude         : 10.470
BP magnitude         : 13.874
DUPflag             : 0
Distance (au)       : 4.251
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -16.41
Sun-Target sep (deg) : 178.90
Sun-Moon sep (deg)  : 39.13
B (ring opening deg) : -2.42
PA of pole (deg)    : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (") : 3.163
C/A sky separation (km) : 9751.3
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
    
```

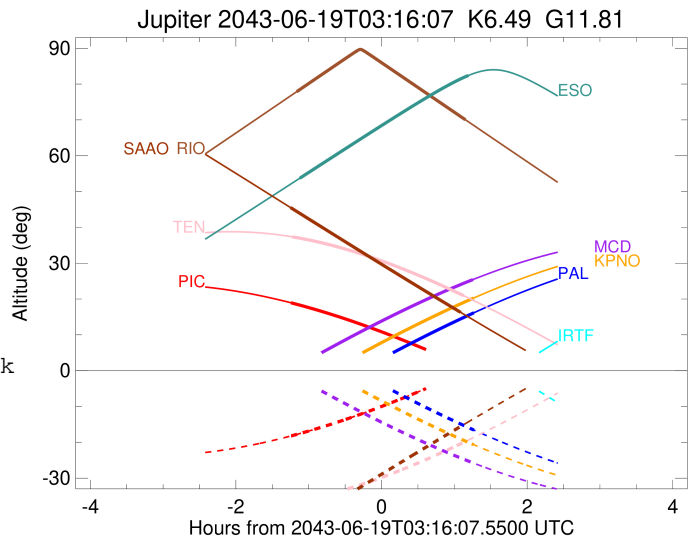
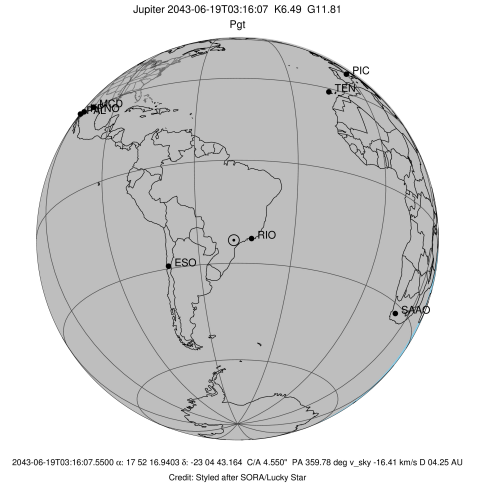


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-19T02:09:34.186	1.77x	-2.49x	71491.8	-8.53	-9.73
Jupiter	E	2043-06-19T04:31:29.995	25.43	-25.73	71491.9	-7.24	-8.26

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-19T03:13:09.210
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      : 4068694919887630336
2Mass ID (if available) : 17521693-2304432
ICRS Star Coord at Epoch: 17h 52m 16.94028s -23:04:43.16352s
RUWE (>1.4 is poor) : 0.86
K magnitude          : 6.485
G magnitude          : 11.811
RP magnitude         : 10.470
BP magnitude         : 13.874
DUPflag             : 0
Distance (au)       : 4.251
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.41
Sun-Target sep (deg) : 178.90
Sun-Moon sep (deg)  : 40.10
B (ring opening deg) : -2.42
PA of pole (deg)    : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (" ) : 3.032
C/A sky separation (km) : 9347.8
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
    
```

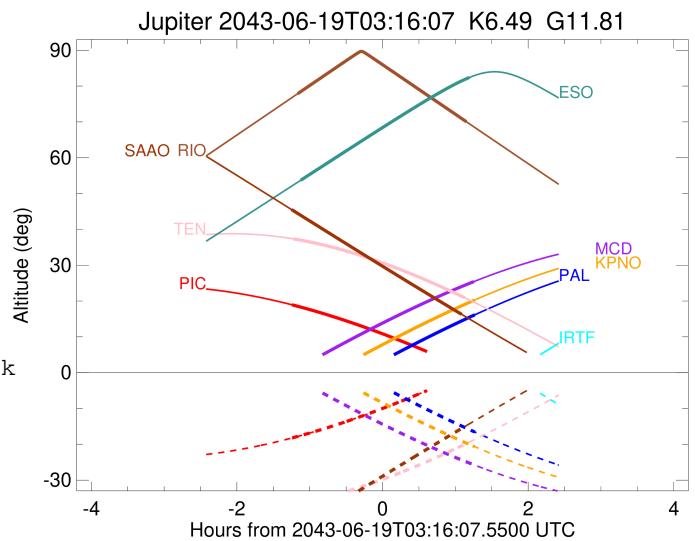
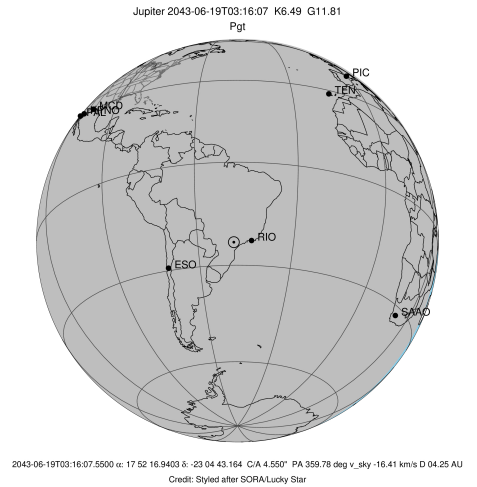


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-19T02:02:47.280	37.34	-36.74	71491.9	-7.51	-8.57
Jupiter	E	2043-06-19T04:23:47.185	20.94	-20.01	71491.9	-7.65	-8.73

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-19T03:15:40.240
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        : 4068694919887630336
2Mass ID (if available) : 17521693-2304432
ICRS Star Coord at Epoch: 17h 52m 16.94028s -23:04:43.16352s
RUWE (>1.4 is poor)  : 0.86
K magnitude           : 6.485
G magnitude           : 11.811
RP magnitude          : 10.470
BP magnitude          : 13.874
DUPflag              : 0
Distance (au)         : 4.251
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -16.41
Sun-Target sep (deg)  : 178.90
Sun-Moon sep (deg)    : 40.07
B (ring opening deg)  : -2.42
PA of pole (deg)      : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (") : 4.530
C/A sky separation (km) : 13965.2
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
    
```

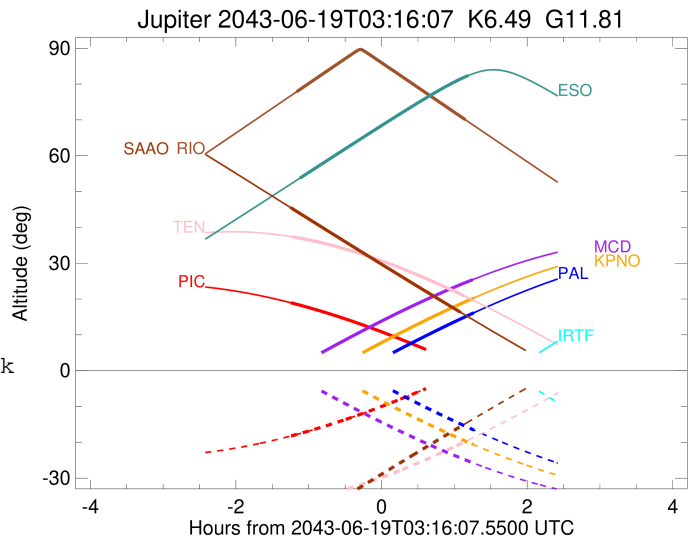
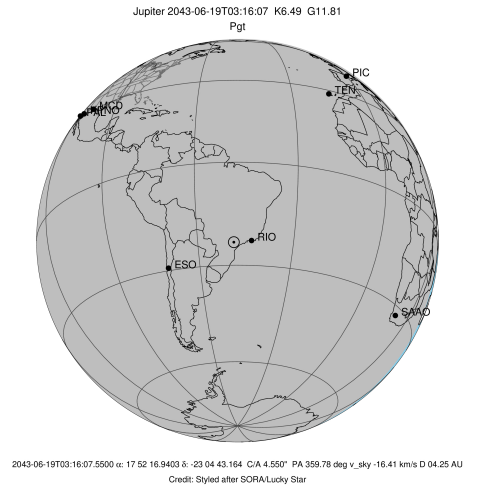


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-19T02:06:15.819	77.87	-78.97	71491.7	-11.50	-13.09
Jupiter	E	2043-06-19T04:25:07.066	70.07	-69.09	71491.7	-11.18	-12.73

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-19T03:18:21.570
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      : 4068694919887630336
2Mass ID (if available) : 17521693-2304432
ICRS Star Coord at Epoch: 17h 52m 16.94028s -23:04:43.16352s
RUWE (>1.4 is poor) : 0.86
K magnitude          : 6.485
G magnitude          : 11.811
RP magnitude         : 10.470
BP magnitude         : 13.874
DUPflag             : 0
Distance (au)       : 4.251
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.41
Sun-Target sep (deg) : 178.90
Sun-Moon sep (deg)  : 39.73
B (ring opening deg) : -2.42
PA of pole (deg)    : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation ("): 4.803
C/A sky separation (km): 14809.1
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
    
```



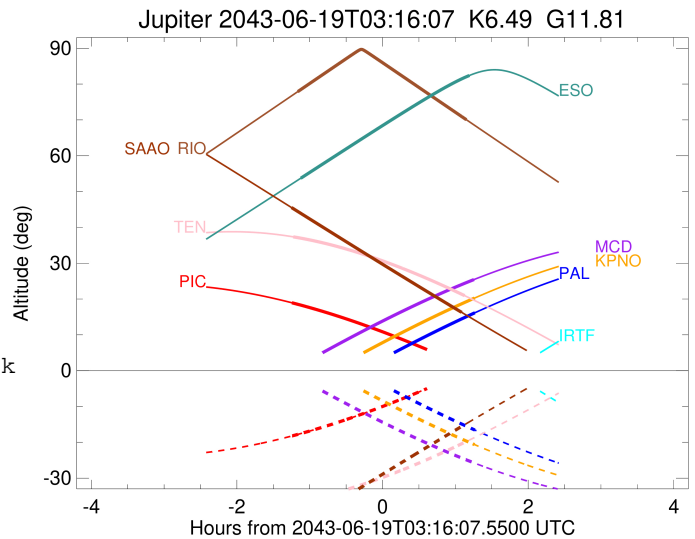
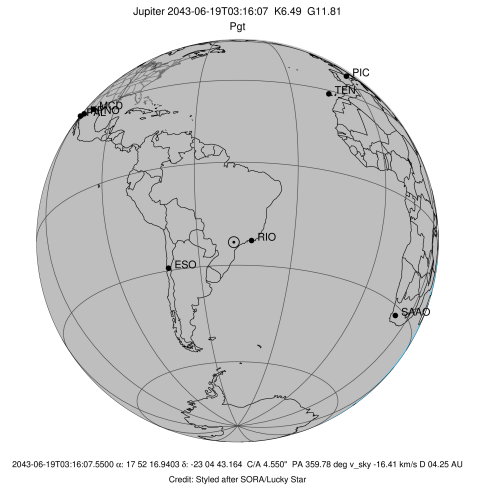
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-19T02:08:47.685	53.72	-54.86	71491.6	-12.43	-14.14
Jupiter	E	2043-06-19T04:27:43.721	82.39	-83.23	71491.7	-11.61	-13.22



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-19T03:10:57.320
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       : 4068694919887630336
2Mass ID (if available) : 17521693-2304432
ICRS Star Coord at Epoch: 17h 52m 16.94028s -23:04:43.16352s
RUWE (>1.4 is poor) : 0.86
K magnitude          : 6.485
G magnitude          : 11.811
RP magnitude         : 10.470
BP magnitude         : 13.874
DUPflag             : 0
Distance (au)        : 4.251
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.41
Sun-Target sep (deg) : 178.90
Sun-Moon sep (deg)   : 40.25
B (ring opening deg) : -2.42
PA of pole (deg)     : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (") : 5.298
C/A sky separation (km) : 16336.0
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	2043-06-19T02:01:07.898	45.53	-44.65	71491.6	-12.95	-14.73
Jupiter	E	2043-06-19T04:21:14.893	16.30	-15.58	71491.6	-13.50	-15.35