

target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-06-19T02:26:40.580  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 406869529343302784  
 2Mass ID (if available) : 17521807-2304390

Jupiter 2043-06-19T02:26:40 K7.67 G14.71 Pgt

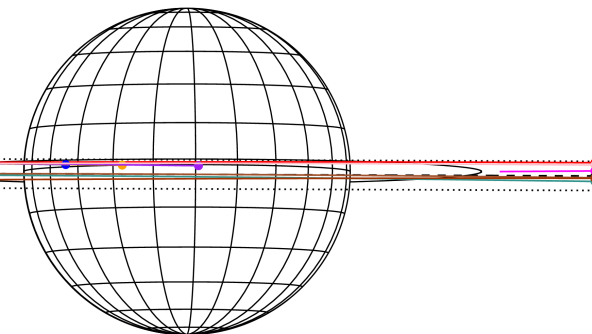
ICRS Star Coord at Epoch: 17h 52m 18.08317s -23°04'38.96869s

RUWE (>1.4 is poor) : 0.89  
 K magnitude : 7.671  
 G magnitude : 14.706  
 RP magnitude : 13.108  
 BP magnitude : 18.815  
 DUPflag : 0  
 Distance (au) : 4.251  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -16.41  
 Sun-Target sep (deg) : 178.87  
 Sun-Moon sep (deg) : 39.85  
 B (ring opening deg) : -2.43  
 PA of pole (deg) : -0.01  
 Pole direction: RA (deg): 268.05668  
 Dec (deg): 64.49732  
 C/A sky separation (") : 0.404  
 C/A sky separation (km) : 1245.2  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2043-06-19T02:26:40 K7.67 G14.71  
 Pgt



Earth  
 PIC  
 PAL  
 KPNO  
 MCD  
 TEN  
 IRTF  
 KAV  
 RIO  
 ESO  
 SAAO

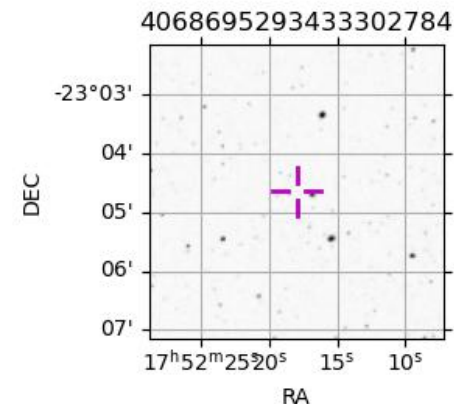


2043-06-19T02:26:40.5800 at: 17 52 18.0832 S: -23 04 38.969 C/A 0.415" PA 359.76 deg v\_sky -16.41 km/s D 04.25 AU

Credit: Styled after SORA/Lucky Star

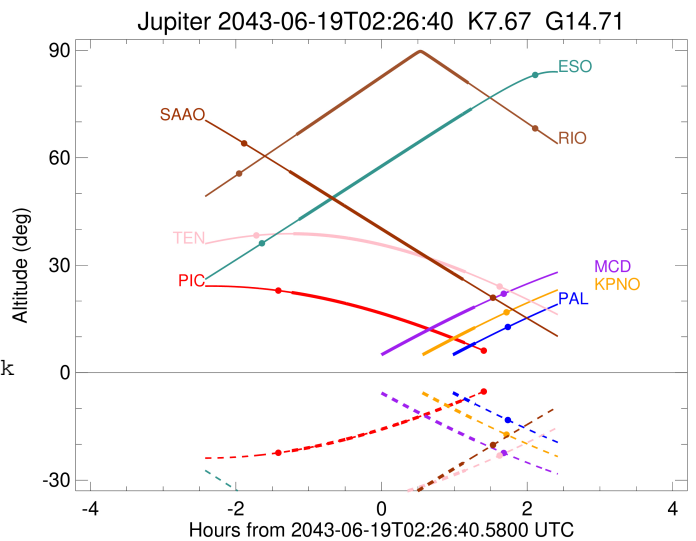
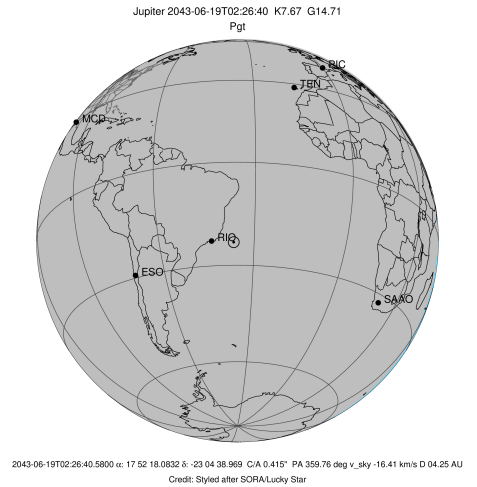
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	JUN 19 01:12 - JUN 19 03:35	Pie
PAL	Palomar Mt (200")	33.4	243.1	+ +	JUN 19 03:44 - JUN 19 03:44	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+ +	JUN 19 03:43 - JUN 19 03:43	Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JUN 19 03:43 - JUN 19 03:43	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JUN 19 03:43 - JUN 19 03:43	Pne
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	JUN 19 01:14 - JUN 19 03:35	Pie
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	JUN 19 01:14 - JUN 19 03:35	Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUN 19 01:14 - JUN 19 03:35	Pnn
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUN 19 01:16 - JUN 19 03:38	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUN 19 01:18 - JUN 19 03:40	Pie
AAT	Siding Spring (AAT)	-31.3	149.1	+ +	JUN 19 01:18 - JUN 19 03:40	Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUN 19 01:10 - JUN 19 03:33	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	JUN 19 01:10 - JUN 19 03:33	Pnn



```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch             : 2043-06-19T02:23:56.880
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        : 4068695293433302784
2Mass ID (if available) : 17521807-2304390
ICRS Star Coord at Epoch: 17h 52m 18.08317s -23:04:38.96869s
RUWE (>1.4 is poor)  : 0.89
K magnitude           : 7.671
G magnitude           : 14.706
RP magnitude          : 13.108
BP magnitude          : 18.815
DUPflag              : 0
Distance (au)         : 4.251
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.41
Sun-Target sep (deg)  : 178.87
Sun-Moon sep (deg)    : 40.37
B (ring opening deg) : -2.43
PA of pole (deg)      : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (") : 1.369
C/A sky separation (km) : 4219.9
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
    
```

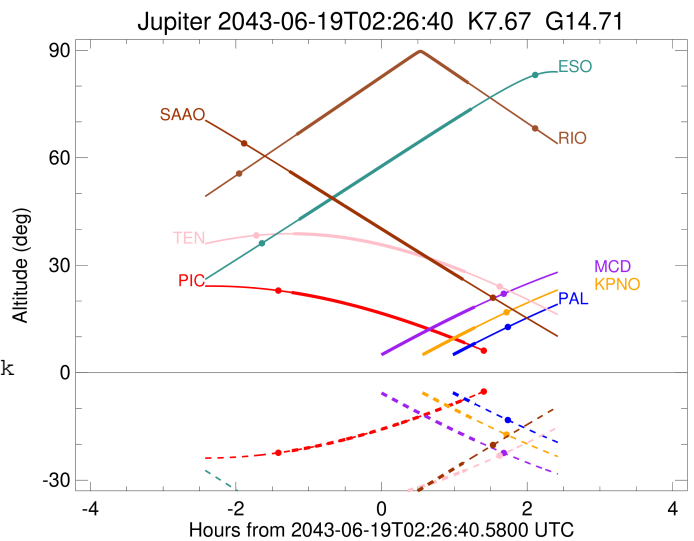
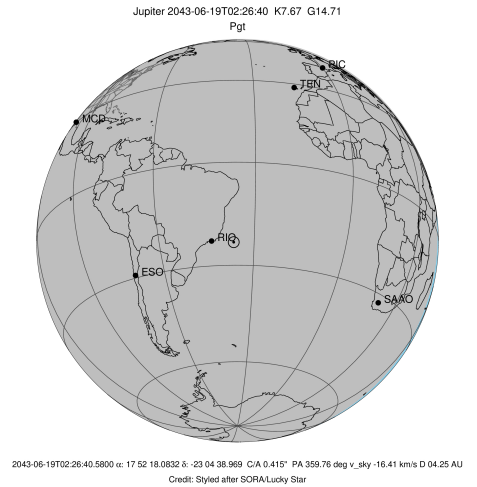


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-19T01:12:45.928	22.37	-21.79	71492.0	3.37	3.86
Jupiter	E	2043-06-19T03:35:23.148	8.32	-7.44	71492.0	3.27	3.74

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-19T02:31:57.990
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       : 4068695293433302784
2Mass ID (if available) : 17521807-2304390
ICRS Star Coord at Epoch: 17h 52m 18.08317s -23:04:38.96869s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 7.671
G magnitude           : 14.706
RP magnitude          : 13.108
BP magnitude          : 18.815
DUPflag              : 0
Distance (au)        : 4.251
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.41
Sun-Target sep (deg) : 178.87
Sun-Moon sep (deg)   : 39.26
B (ring opening deg) : -2.43
PA of pole (deg)     : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (") : 0.765
C/A sky separation (km) : 2358.0
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
    
```

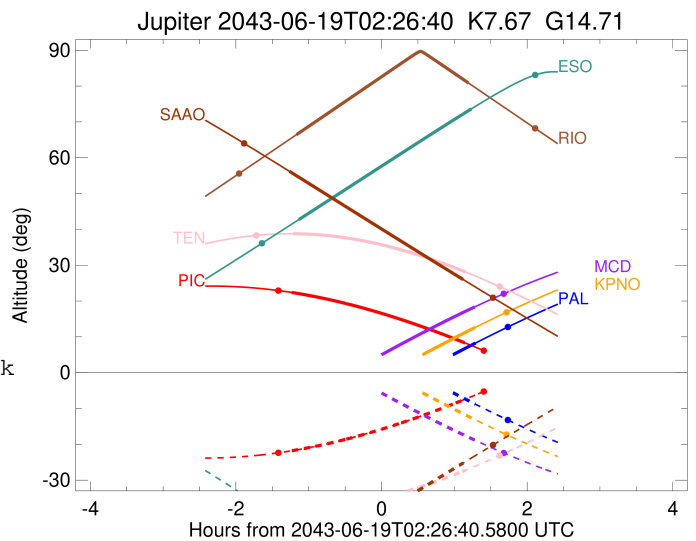
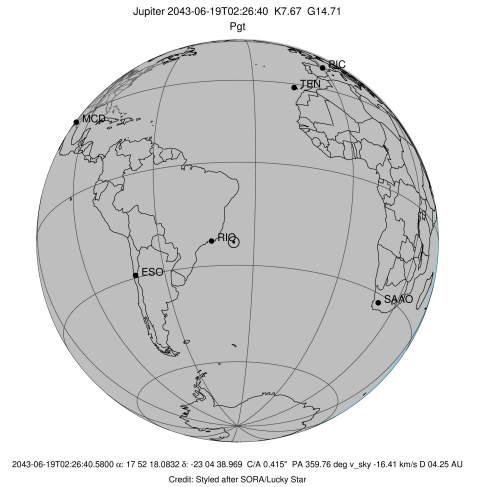


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-19T01:19:23.973	-19.22x	18.38x	71492.0	1.15	1.31
Jupiter	E	2043-06-19T03:44:00.322	8.24	-8.79	71492.0	2.59	2.97

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-19T02:31:56.520
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      : 4068695293433302784
2Mass ID (if available) : 17521807-2304390
ICRS Star Coord at Epoch: 17h 52m 18.08317s -23:04:38.96869s
RUWE (>1.4 is poor) : 0.89
K magnitude         : 7.671
G magnitude         : 14.706
RP magnitude        : 13.108
BP magnitude        : 18.815
DUPflag            : 0
Distance (au)       : 4.251
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -16.41
Sun-Target sep (deg) : 178.87
Sun-Moon sep (deg)  : 39.31
B (ring opening deg) : -2.43
PA of pole (deg)    : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (" ) : 0.790
C/A sky separation (km) : 2434.3
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
    
```

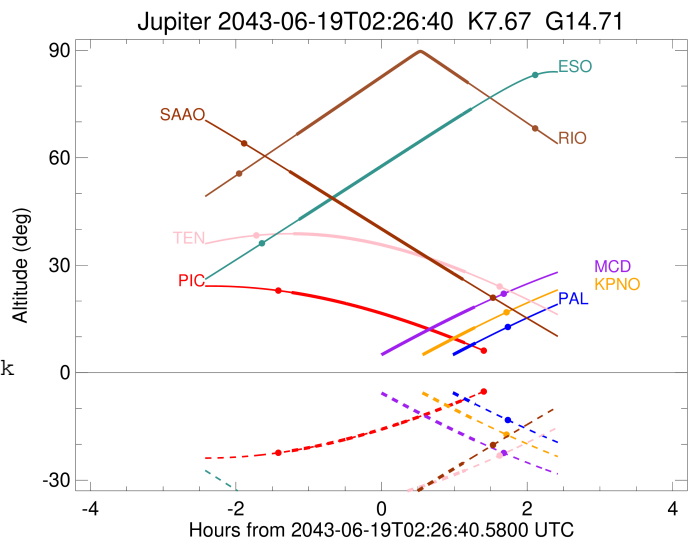
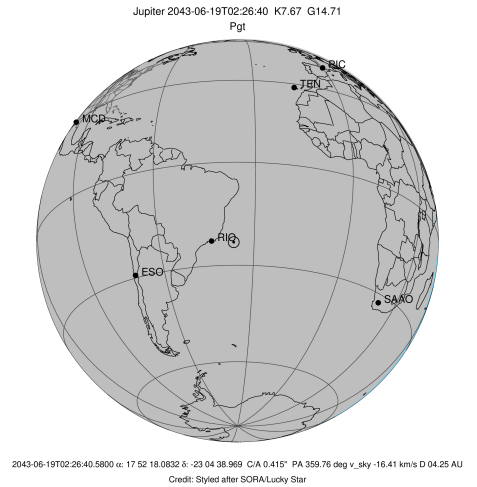


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-19T01:19:32.231	-14.54x	13.70x	71492.0	1.20	1.38
Jupiter	E	2043-06-19T03:43:49.478	12.62	-13.14	71492.0	2.64	3.02

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2043-06-19T02:31:46.700
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        : 4068695293433302784
2Mass ID (if available) : 17521807-2304390
ICRS Star Coord at Epoch: 17h 52m 18.08317s -23:04:38.96869s
RUWE (>1.4 is poor)  : 0.89
K magnitude           : 7.671
G magnitude           : 14.706
RP magnitude          : 13.108
BP magnitude          : 18.815
DUPflag              : 0
Distance (au)         : 4.251
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -16.41
Sun-Target sep (deg)  : 178.87
Sun-Moon sep (deg)    : 39.39
B (ring opening deg)  : -2.43
PA of pole (deg)      : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (" ) : 0.842
C/A sky separation (km) : 2596.1
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
    
```

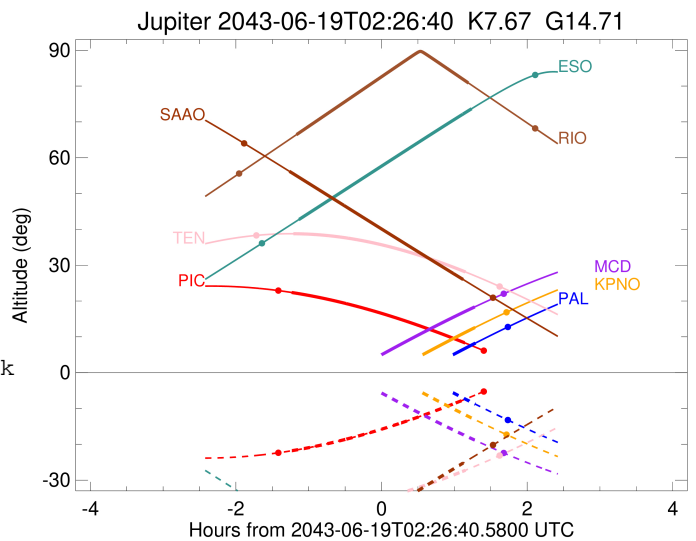
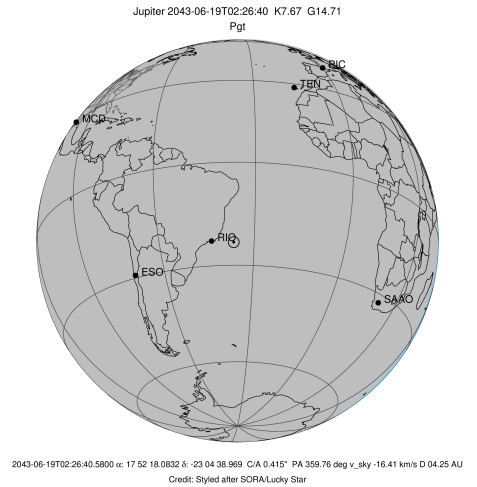


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-19T01:19:36.523	-8.00x	7.18x	71492.0	1.34	1.53
Jupiter	E	2043-06-19T03:43:26.800	18.35	-18.81	71492.0	2.74	3.14

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-19T02:24:51.600
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      : 4068695293433302784
2Mass ID (if available) : 17521807-2304390
ICRS Star Coord at Epoch: 17h 52m 18.08317s -23:04:38.96869s
RUWE (>1.4 is poor) : 0.89
K magnitude         : 7.671
G magnitude         : 14.706
RP magnitude        : 13.108
BP magnitude        : 18.815
DUPflag            : 0
Distance (au)       : 4.251
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -16.41
Sun-Target sep (deg) : 178.87
Sun-Moon sep (deg)  : 40.44
B (ring opening deg) : -2.43
PA of pole (deg)    : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (" ) : 1.167
C/A sky separation (km) : 3599.4
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
    
```

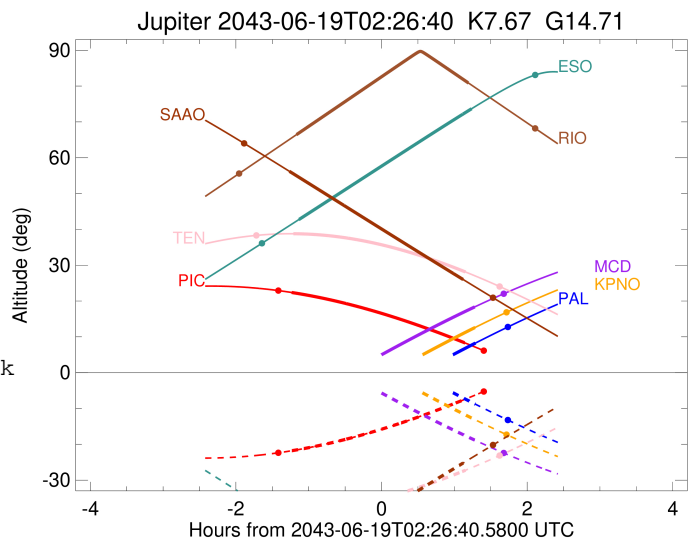
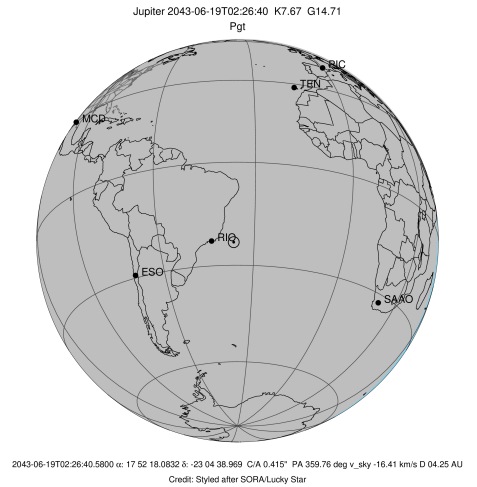


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-19T01:14:03.233	38.78	-38.43	71492.0	2.77	3.17
Jupiter	E	2043-06-19T03:35:49.939	28.11	-27.24	71492.0	2.83	3.24

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-19T02:27:29.550
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      : 4068695293433302784
2Mass ID (if available) : 17521807-2304390
ICRS Star Coord at Epoch: 17h 52m 18.08317s -23:04:38.96869s
RUWE (>1.4 is poor) : 0.89
K magnitude         : 7.671
G magnitude         : 14.706
RP magnitude        : 13.108
BP magnitude        : 18.815
DUPflag            : 0
Distance (au)       : 4.251
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -16.41
Sun-Target sep (deg) : 178.87
Sun-Moon sep (deg)  : 40.34
B (ring opening deg) : -2.43
PA of pole (deg)    : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation (") : 0.397
C/A sky separation (km) : 1223.6
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
    
```

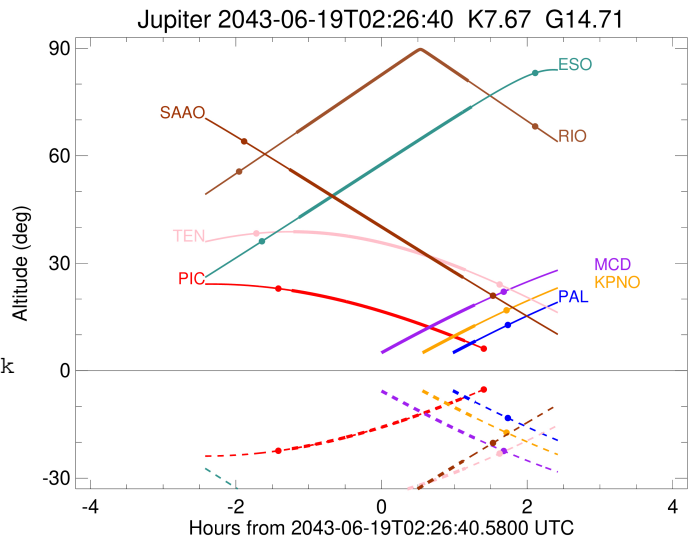
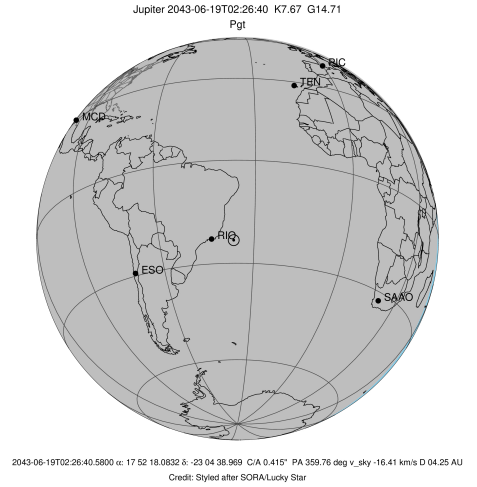


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-19T01:16:38.515	66.44	-67.60	71492.0	-1.35	-1.54
Jupiter	E	2043-06-19T03:38:16.094	80.87	-79.84	71492.0	-0.79	-0.90

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-19T02:29:55.360
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       : 4068695293433302784
2Mass ID (if available) : 17521807-2304390
ICRS Star Coord at Epoch: 17h 52m 18.08317s -23:04:38.96869s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 7.671
G magnitude           : 14.706
RP magnitude          : 13.108
BP magnitude          : 18.815
DUPflag              : 0
Distance (au)        : 4.251
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.41
Sun-Target sep (deg) : 178.87
Sun-Moon sep (deg)   : 39.98
B (ring opening deg) : -2.43
PA of pole (deg)     : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation ("): 0.738
C/A sky separation (km): 2275.4
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
    
```



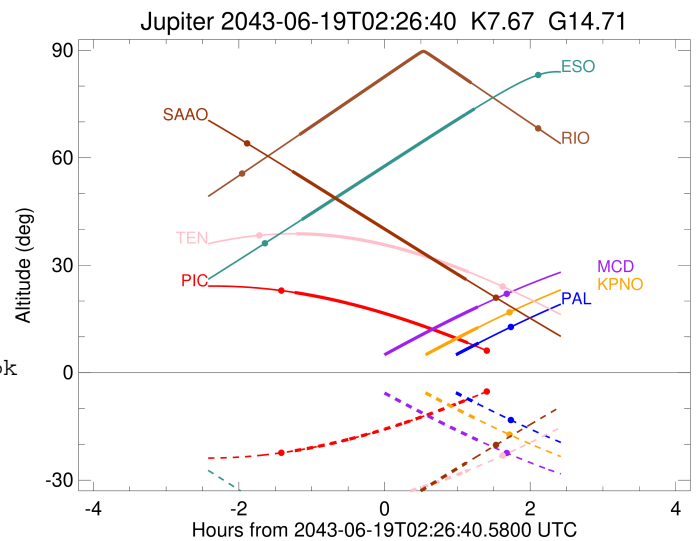
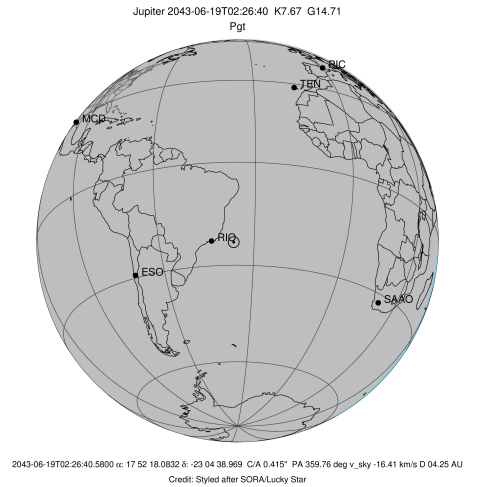
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-19T01:18:36.516	42.74	-43.92	71492.0	-2.40	-2.75
Jupiter	E	2043-06-19T03:40:56.005	73.67	-74.74	71492.0	-1.39	-1.58



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-19T02:22:11.240
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        : 4068695293433302784
2Mass ID (if available) : 17521807-2304390
ICRS Star Coord at Epoch: 17h 52m 18.08317s -23:04:38.96869s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 7.671
G magnitude           : 14.706
RP magnitude          : 13.108
BP magnitude          : 18.815
DUPflag              : 0
Distance (au)         : 4.251
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.41
Sun-Target sep (deg) : 178.87
Sun-Moon sep (deg)   : 40.69
B (ring opening deg) : -2.43
PA of pole (deg)     : -0.01
Pole direction: RA (deg): 268.05668
Dec (deg): 64.49732
C/A sky separation ("): 1.035
C/A sky separation (km): 3190.2
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	2043-06-19T01:10:48.886	56.19	-55.28	71492.0	-2.38	-2.72
Jupiter	E	2043-06-19T03:33:59.394	25.99	-25.21	71492.0	-2.83	-3.23