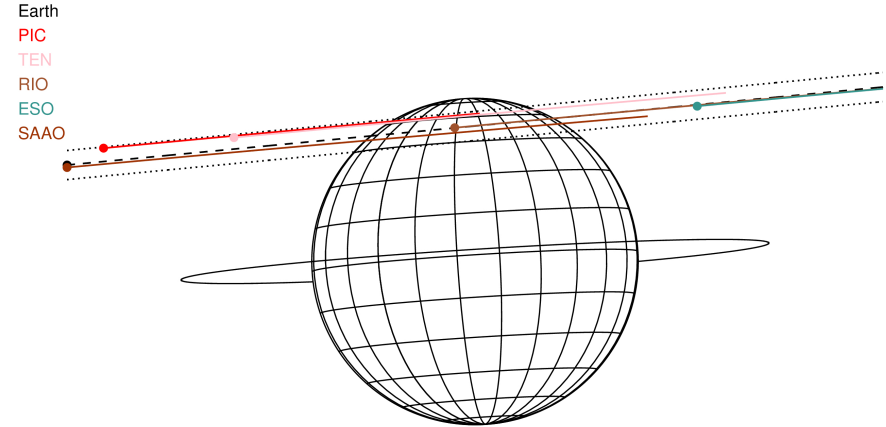
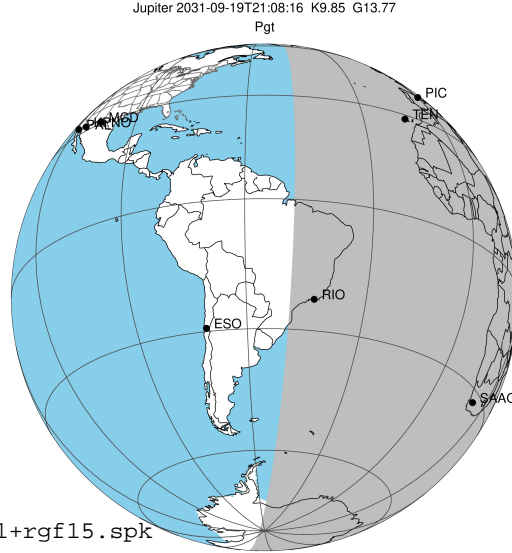


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-09-19T21:08:16.010
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4114300944165681408
 2Mass ID (if available) : 17184464-2253277

Jupiter 2031-09-19T21:08:16 K9.85 G13.77 Pgt

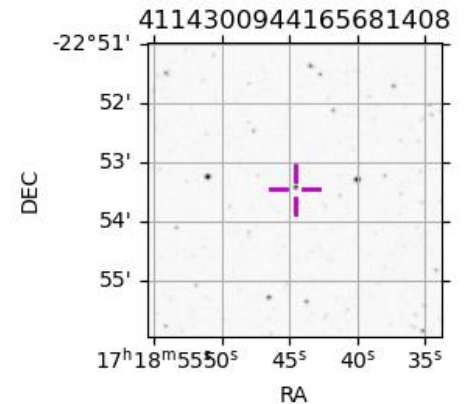
ICRS Star Coord at Epoch: 17h 18m 44.64065s -22:53:27.87533s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 9.850
 G magnitude : 13.770
 RP magnitude : 12.695
 BP magnitude : 14.972
 DUPflag : 0
 Distance (au) : 5.252
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 16.06
 Sun-Target sep (deg) : 84.21
 Sun-Moon sep (deg) : 47.14
 B (ring opening deg) : -2.37
 PA of pole (deg) : 3.60
 Pole direction: RA (deg): 268.05684
 Dec (deg): 64.49652
 C/A sky separation (") : 15.513
 C/A sky separation (km) : 59092.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp



2031-09-19T21:08:16.0100 @: 17 18 44.6407 @: -22 53 27.875 C/A ***** PA 185.46 deg v_sky +16.06 km/s D 05.25 AU
 Credit: Styled after SORA/Lucky Star

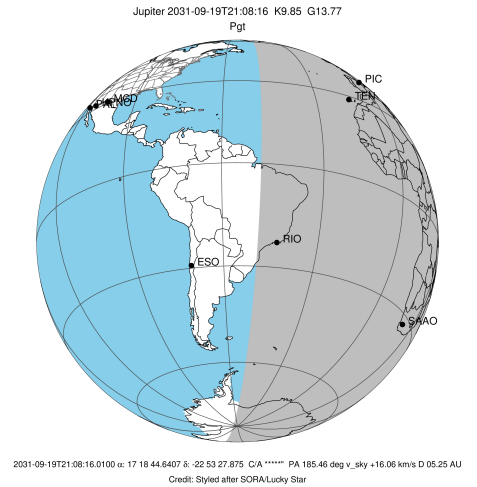
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	SEP 19 20:39 - SEP 19 20:39	Pin
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	+ +	SEP 19 20:37 - SEP 19 21:45	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	+	SEP 19 21:52 - SEP 19 21:52	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	SEP 19 20:29 - SEP 19 21:59	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn

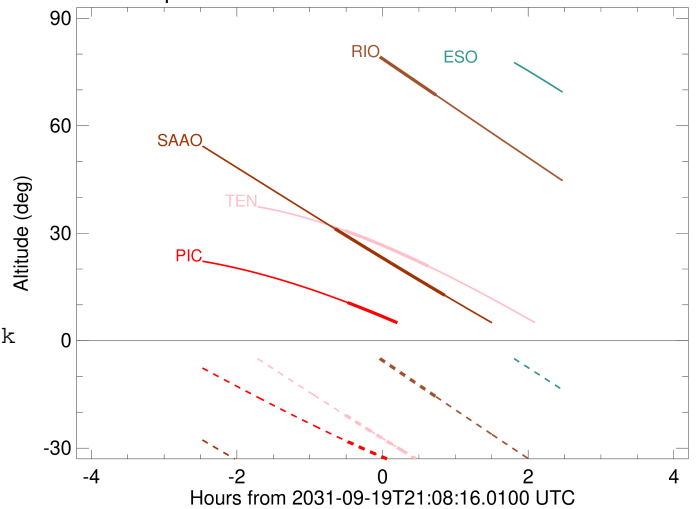


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-09-19T21:12:13.300
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      : 4114300944165681408
2Mass ID (if available) : 17184464-2253277
ICRS Star Coord at Epoch: 17h 18m 44.64065s -22:53:27.87533s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 9.850
G magnitude          : 13.770
RP magnitude         : 12.695
BP magnitude         : 14.972
DUPflag             : 0
Distance (au)        : 5.252
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 16.06
Sun-Target sep (deg) : 84.21
Sun-Moon sep (deg)   : 47.60
B (ring opening deg) : -2.37
PA of pole (deg)     : 3.60
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation (") : 16.911
C/A sky separation (km) : 64417.3
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
    
```



Jupiter 2031-09-19T21:08:16 K9.85 G13.77

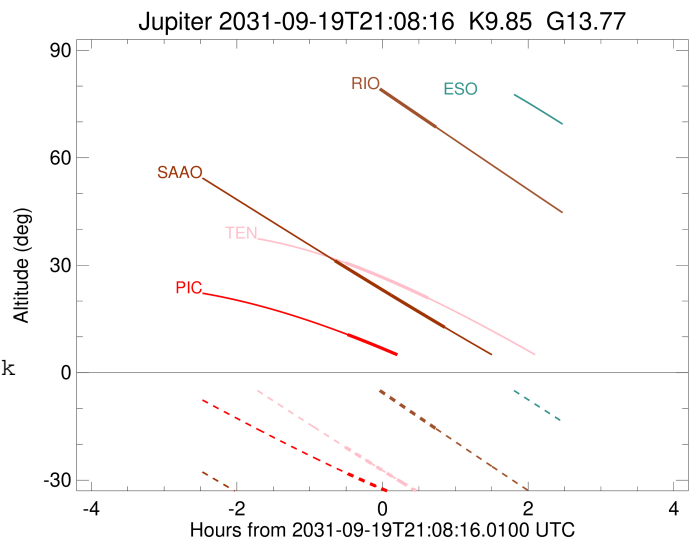
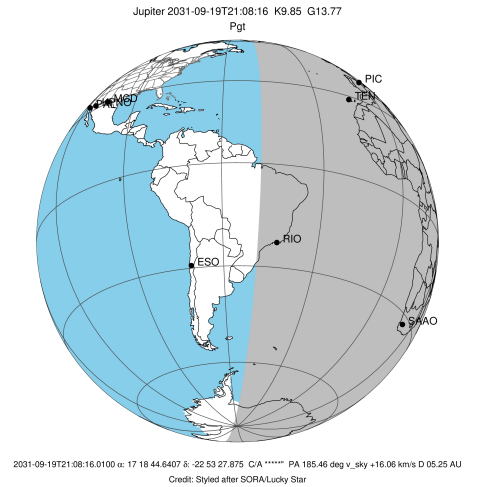


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-09-19T20:39:34.571	10.62	-28.17	71486.0	62.66	65.52
Jupiter	E	2031-09-19T21:44:45.543	1.37x	-37.36	71485.6	65.70	68.32

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-09-19T21:11:52.590
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       : 4114300944165681408
2Mass ID (if available) : 17184464-2253277
ICRS Star Coord at Epoch: 17h 18m 44.64065s -22:53:27.87533s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 9.850
G magnitude           : 13.770
RP magnitude          : 12.695
BP magnitude          : 14.972
DUPflag              : 0
Distance (au)         : 5.252
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 16.06
Sun-Target sep (deg) : 84.21
Sun-Moon sep (deg)   : 47.80
B (ring opening deg) : -2.37
PA of pole (deg)     : 3.60
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation (") : 16.763
C/A sky separation (km) : 63854.9
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
    
```

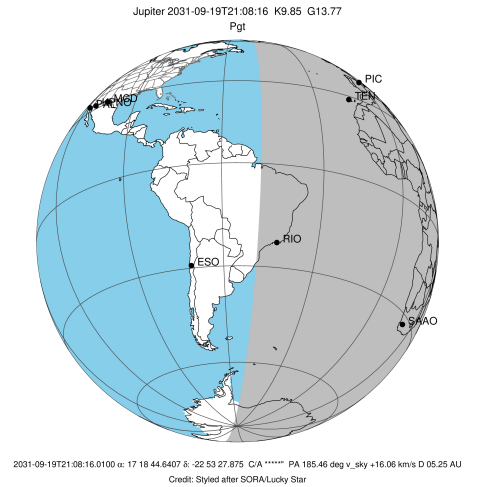


x: target alt < 5.0 deg or sun > -5.0 deg

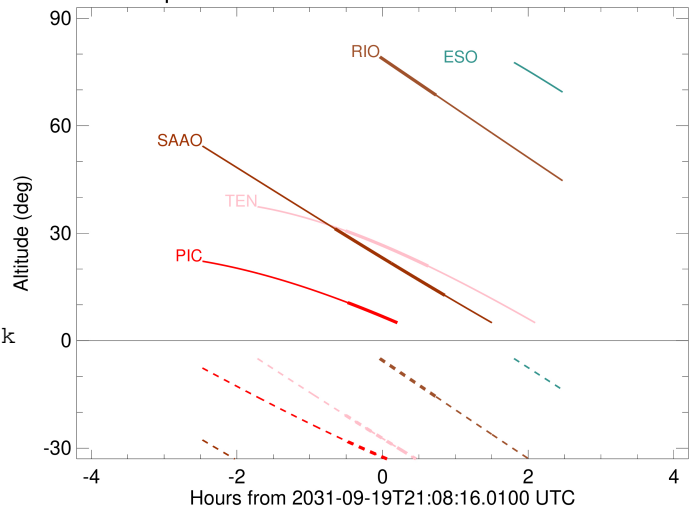
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-09-19T20:37:44.622	30.67	-20.80	71486.1	61.55	64.51
Jupiter	E	2031-09-19T21:45:53.949	20.82	-35.05	71485.7	64.74	67.44

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-09-19T21:09:35.130
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       : 4114300944165681408
2Mass ID (if available) : 17184464-2253277
ICRS Star Coord at Epoch: 17h 18m 44.64065s -22:53:27.87533s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 9.850
G magnitude          : 13.770
RP magnitude         : 12.695
BP magnitude         : 14.972
DUPflag             : 0
Distance (au)        : 5.252
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 16.06
Sun-Target sep (deg) : 84.21
Sun-Moon sep (deg)   : 47.96
B (ring opening deg) : -2.37
PA of pole (deg)     : 3.60
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation (") : 15.534
C/A sky separation (km) : 59173.9
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
    
```



Jupiter 2031-09-19T21:08:16 K9.85 G13.77

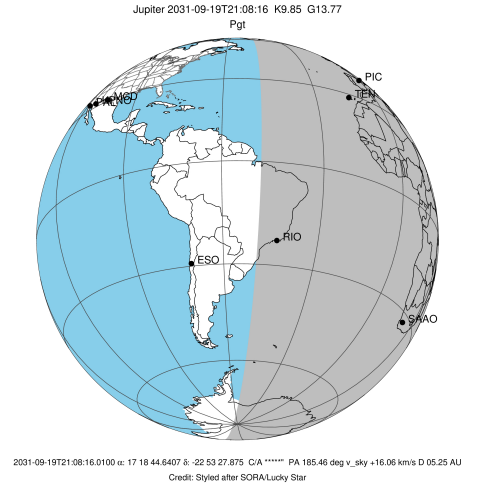


x: target alt < 5.0 deg or sun > -5.0 deg

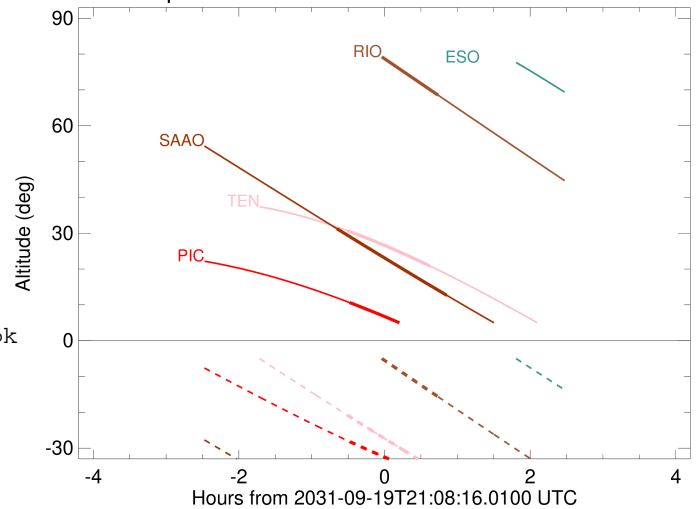
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-09-19T20:26:44.559	88.28	4.07x	71487.0	53.87	57.30
Jupiter	E	2031-09-19T21:52:20.794	68.54	-15.64	71486.5	57.60	60.83

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-09-19T21:14:29.680
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       : 4114300944165681408
2Mass ID (if available) : 17184464-2253277
ICRS Star Coord at Epoch: 17h 18m 44.64065s -22:53:27.87533s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 9.850
G magnitude          : 13.770
RP magnitude         : 12.695
BP magnitude         : 14.972
DUPflag             : 0
Distance (au)        : 5.252
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 16.06
Sun-Target sep (deg) : 84.21
Sun-Moon sep (deg)   : 47.95
B (ring opening deg) : -2.37
PA of pole (deg)     : 3.60
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation ("): 14.938
C/A sky separation (km): 56903.9
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
    
```



Jupiter 2031-09-19T21:08:16 K9.85 G13.77



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	2031-09-19T20:29:10.163	31.23	-47.93	71487.3	51.31	54.84
Jupiter	E	2031-09-19T21:59:33.301	12.66	-58.23	71487.0	54.02	57.44