

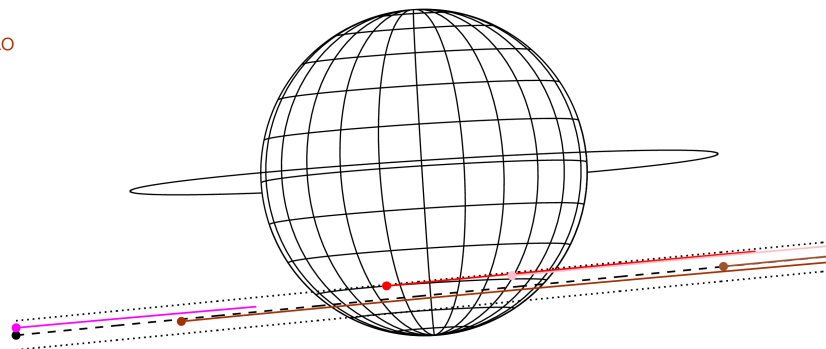
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-09-18T18:49:13.270
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4114301528282065280
 2Mass ID (if available) : 17181607-2253197

Jupiter 2031-09-18T18:49:13 K6.62 G12.14 Pgt

ICRS Star Coord at Epoch: 17h 18m 16.06885s -22:53:19.63982s
 RUWE (>1.4 is poor) : 0.94
 K magnitude : 6.622
 G magnitude : 12.141
 RP magnitude : 10.730
 BP magnitude : 14.707
 DUPflag : 0
 Distance (au) : 5.235
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 15.56
 Sun-Target sep (deg) : 85.17
 Sun-Moon sep (deg) : 61.46
 B (ring opening deg) : -2.37
 PA of pole (deg) : 3.65
 Pole direction: RA (deg): 268.05684
 Dec (deg): 64.49652
 C/A sky separation (") : 14.142
 C/A sky separation (km) : 53699.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp



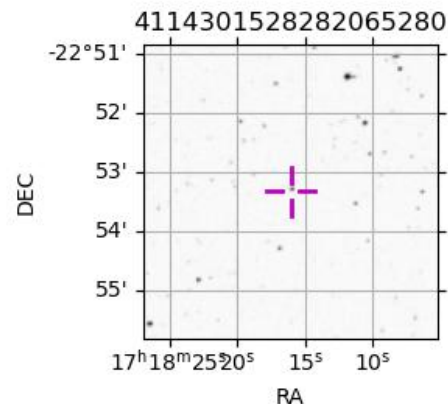
Earth
 PIC
 TEN
 KAV
 RIO
 SAAO



2031-09-18T18:49:13.2700 α: 17 18 16.0688 δ: -22 53 19.640 C/A ***** PA 5.54 deg v_sky +15.56 km/s D 05.24 AU
 Credit: Styled after SORA/Lucky Star

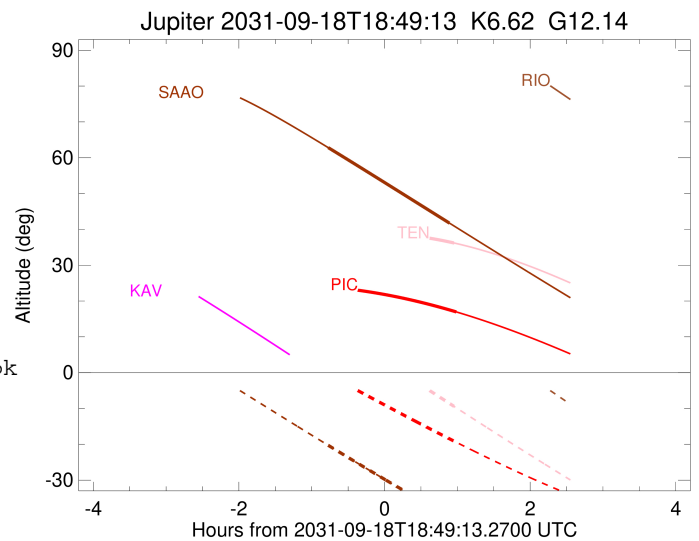
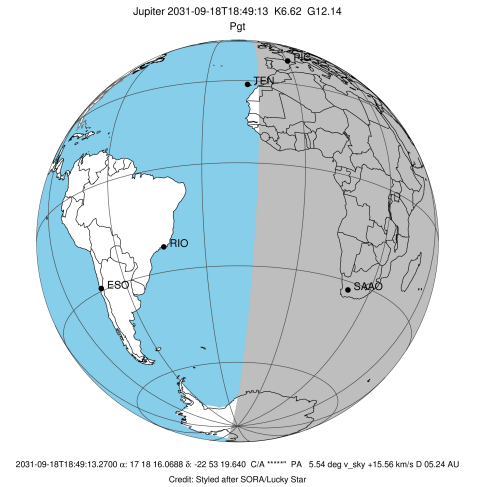
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+	SEP 18 19:48 - SEP 18 19:48	Pne
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 18 19:46 - SEP 18 19:46	Pne
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			Pnn
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 18 18:02 - SEP 18 19:42	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-09-18T18:50:19.220
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        : 4114301528282065280
2Mass ID (if available) : 17181607-2253197
ICRS Star Coord at Epoch: 17h 18m 16.06885s -22:53:19.63982s
RUWE (>1.4 is poor)  : 0.94
K magnitude           : 6.622
G magnitude           : 12.141
RP magnitude          : 10.730
BP magnitude          : 14.707
DUPflag              : 0
Distance (au)         : 5.235
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 15.56
Sun-Target sep (deg)  : 85.17
Sun-Moon sep (deg)    : 61.88
B (ring opening deg)  : -2.37
PA of pole (deg)      : 3.65
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation (" ) : 12.610
C/A sky separation (km) : 47881.0
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
    
```

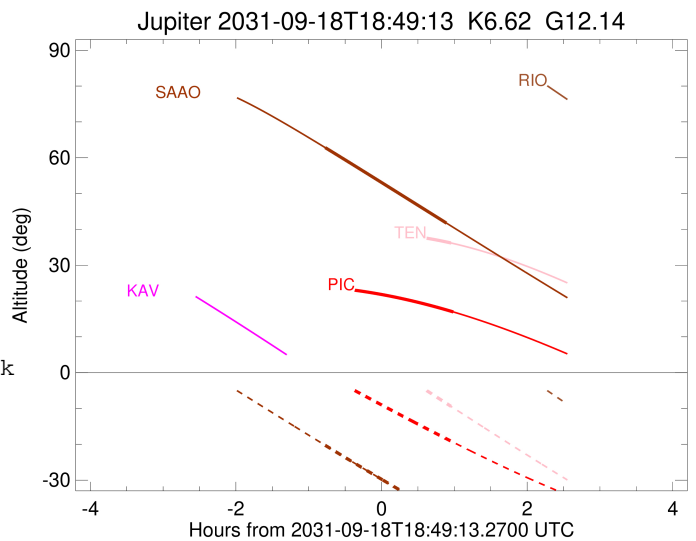
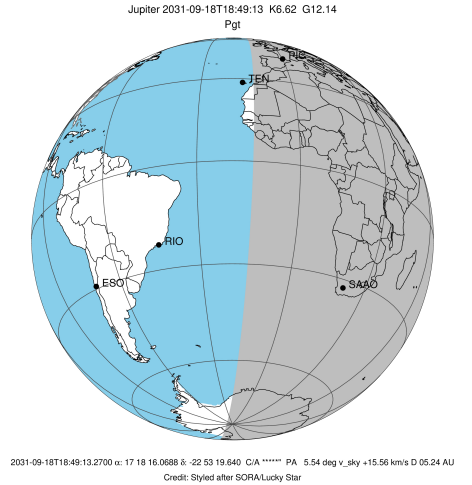


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-09-18T17:52:13.914	24.14	1.42x	71488.3	-43.91	-47.62
Jupiter	E	2031-09-18T19:48:13.980	16.97	-19.40	71488.8	-40.24	-43.95

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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-09-18T18:49:09.970
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      : 4114301528282065280
2Mass ID (if available) : 17181607-2253197
ICRS Star Coord at Epoch: 17h 18m 16.06885s -22:53:19.63982s
RUWE (>1.4 is poor) : 0.94
K magnitude          : 6.622
G magnitude          : 12.141
RP magnitude         : 10.730
BP magnitude         : 14.707
DUPflag             : 0
Distance (au)       : 5.235
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 15.56
Sun-Target sep (deg) : 85.17
Sun-Moon sep (deg)  : 62.00
B (ring opening deg) : -2.37
PA of pole (deg)    : 3.65
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation (" ) : 12.835
C/A sky separation (km) : 48737.0
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
    
```

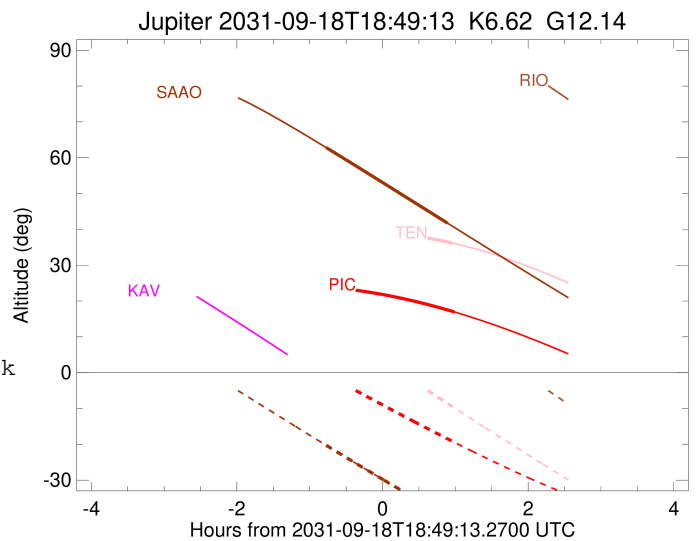
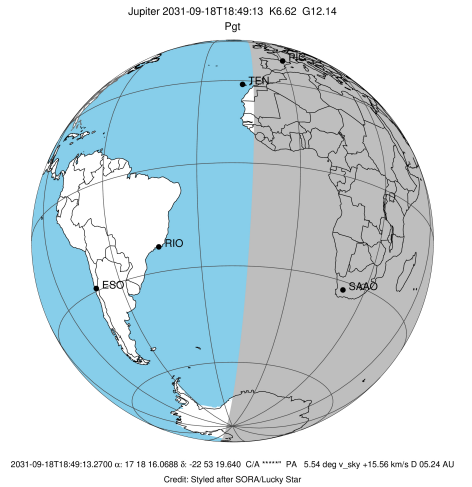


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-09-18T17:51:40.484	37.83	15.87x	71488.2	-45.01	-48.72
Jupiter	E	2031-09-18T19:46:34.402	36.19	-9.42	71488.7	-41.01	-44.73

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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-09-18T18:52:54.210
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      : 4114301528282065280
2Mass ID (if available) : 17181607-2253197
ICRS Star Coord at Epoch: 17h 18m 16.06885s -22:53:19.63982s
RUWE (>1.4 is poor) : 0.94
K magnitude          : 6.622
G magnitude          : 12.141
RP magnitude         : 10.730
BP magnitude         : 14.707
DUPflag             : 0
Distance (au)       : 5.235
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 15.56
Sun-Target sep (deg) : 85.17
Sun-Moon sep (deg)  : 62.37
B (ring opening deg) : -2.37
PA of pole (deg)    : 3.65
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation (" ) : 14.462
C/A sky separation (km) : 54916.1
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	2031-09-18T18:02:51.520	62.81	-20.28	71487.3	-51.81	-55.33
Jupiter	E	2031-09-18T19:42:43.211	41.75	-40.10	71487.7	-48.57	-52.20