

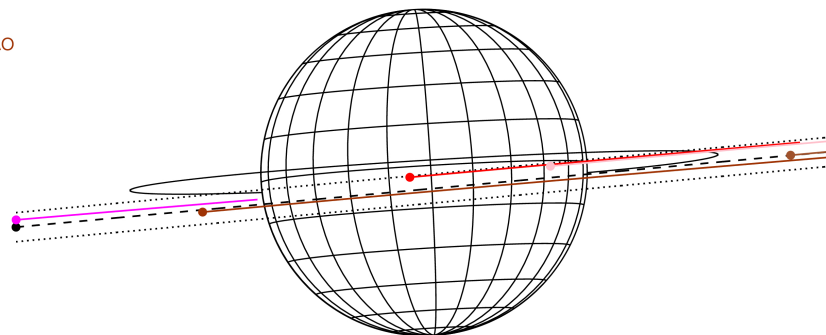
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-09-21T18:27:24.540  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4114626846278644608  
 2Mass ID (if available) : 17193528-2254511

Jupiter 2031-09-21T18:27:24 K9.31 G12.88 Pgt

ICRS Star Coord at Epoch: 17h 19m 35.27047s -22:54:51.17635s  
 RUWE (>1.4 is poor) : 0.88  
 K magnitude : 9.312  
 G magnitude : 12.884  
 RP magnitude : 11.877  
 BP magnitude : 13.930  
 DUPflag : 0  
 Distance (au) : 5.281  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 16.92  
 Sun-Target sep (deg) : 82.56  
 Sun-Moon sep (deg) : 21.97  
 B (ring opening deg) : -2.36  
 PA of pole (deg) : 3.51  
 Pole direction: RA (deg): 268.05684  
 Dec (deg): 64.49652  
 C/A sky separation (") : 1.918  
 C/A sky separation (km) : 7344.6  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk



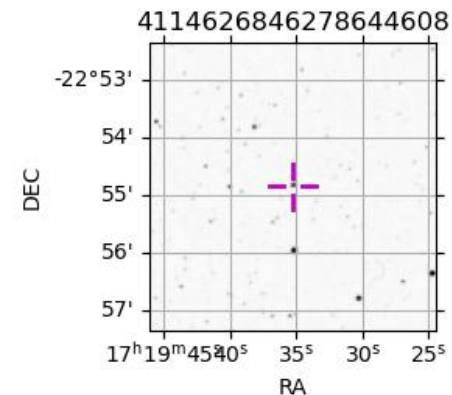
Earth  
 PIC  
 TEN  
 KAV  
 RIO  
 SAAO



2031-09-21T18:27:24.5400 a: 17 19 35.2705 l: -22 54 51.176 C/A 1.927" PA 5.29 deg v\_sky +16.92 km/s D 05.28 AU  
 Credit: Styled after SORA/Lucky Star

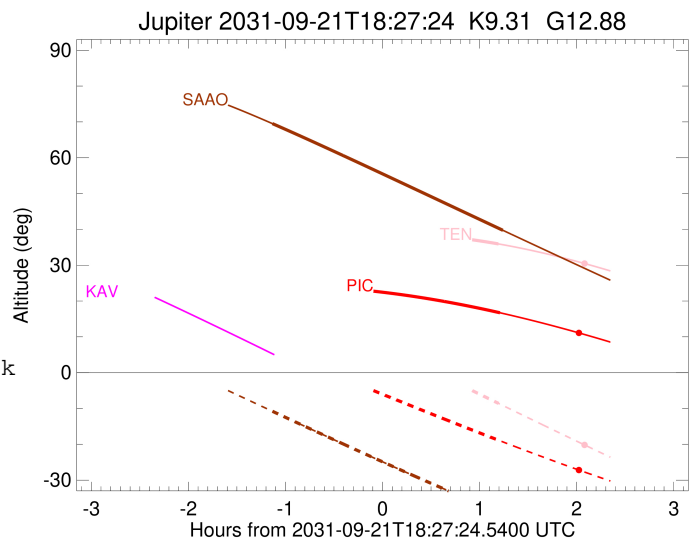
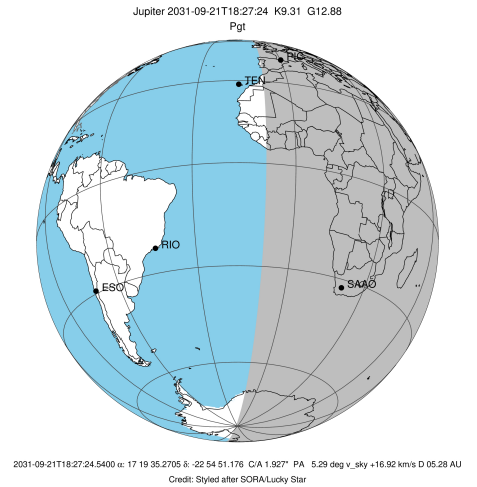
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	SEP 21 19:39 - SEP 21 19:39	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 21 19:39 - SEP 21 19:39	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 21 17:19 - SEP 21 19:41	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-09-21T18:28:16.190
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       : 4114626846278644608
2Mass ID (if available) : 17193528-2254511
ICRS Star Coord at Epoch: 17h 19m 35.27047s -22:54:51.17635s
RUWE (>1.4 is poor) : 0.88
K magnitude           : 9.312
G magnitude           : 12.884
RP magnitude         : 11.877
BP magnitude         : 13.930
DUPflag              : 0
Distance (au)        : 5.281
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 16.92
Sun-Target sep (deg) : 82.56
Sun-Moon sep (deg)  : 22.24
B (ring opening deg) : -2.36
PA of pole (deg)    : 3.51
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation (" ) : 0.397
C/A sky separation (km) : 1519.9
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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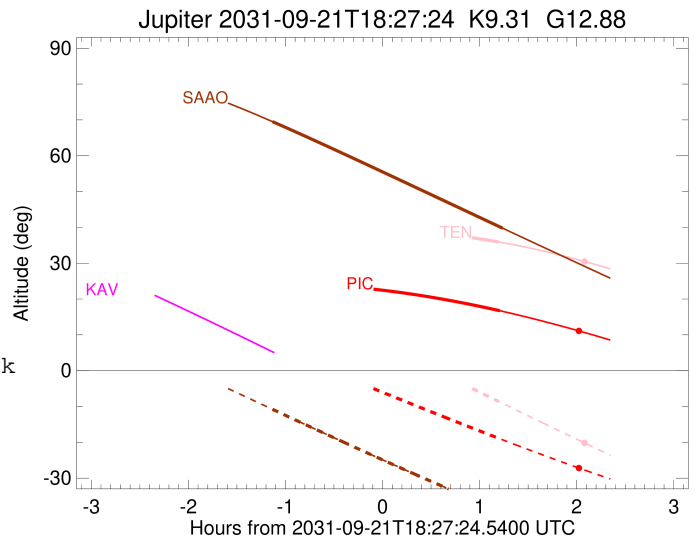
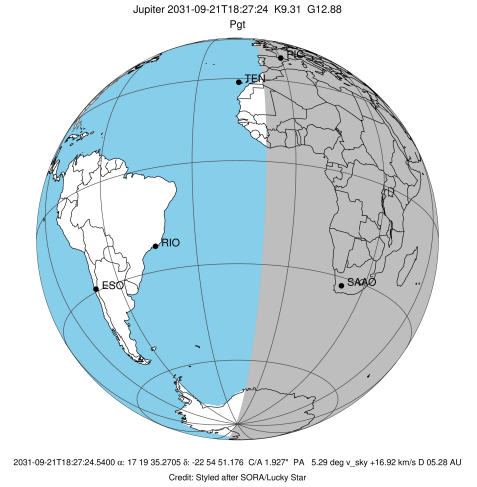


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-09-21T17:16:23.109	24.31	7.01x	71492.0	-3.04	-3.48
Jupiter	E	2031-09-21T19:39:55.540	16.73	-19.00	71492.0	0.46	0.52

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-09-21T18:27:00.620
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        : 4114626846278644608
2Mass ID (if available) : 17193528-2254511
ICRS Star Coord at Epoch: 17h 19m 35.27047s -22:54:51.17635s
RUWE (>1.4 is poor) : 0.88
K magnitude           : 9.312
G magnitude           : 12.884
RP magnitude          : 11.877
BP magnitude          : 13.930
DUPflag              : 0
Distance (au)         : 5.281
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 16.92
Sun-Target sep (deg)  : 82.56
Sun-Moon sep (deg)   : 22.15
B (ring opening deg) : -2.36
PA of pole (deg)     : 3.51
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation (" ) : 0.627
C/A sky separation (km) : 2401.4
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
    
```

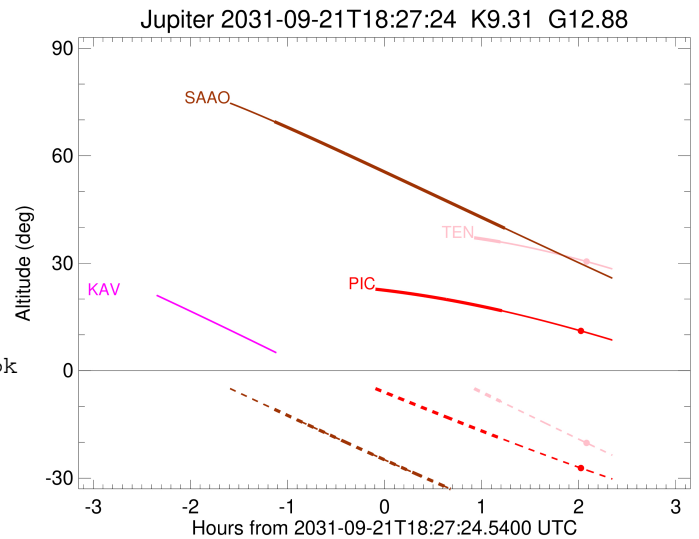
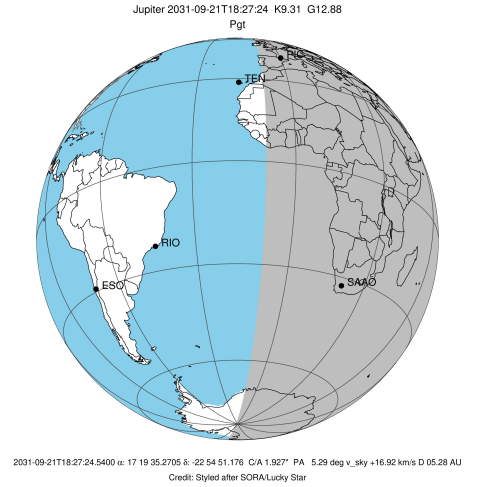


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-09-21T17:14:52.489	36.13	23.07x	71492.0	-3.92	-4.48
Jupiter	E	2031-09-21T19:39:03.172	35.94	-8.56	71492.0	-0.11	-0.12

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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-09-21T18:30:48.240
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        : 4114626846278644608
2Mass ID (if available) : 17193528-2254511
ICRS Star Coord at Epoch: 17h 19m 35.27047s -22:54:51.17635s
RUWE (>1.4 is poor) : 0.88
K magnitude           : 9.312
G magnitude           : 12.884
RP magnitude          : 11.877
BP magnitude          : 13.930
DUPflag              : 0
Distance (au)         : 5.281
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 16.92
Sun-Target sep (deg)  : 82.56
Sun-Moon sep (deg)    : 22.76
B (ring opening deg) : -2.36
PA of pole (deg)      : 3.51
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation (") : 2.226
C/A sky separation (km) : 8524.5
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	2031-09-21T17:19:23.458	69.51	-10.78	71491.8	-8.47	-9.67
Jupiter	E	2031-09-21T19:41:48.121	39.74	-39.34	71491.9	-5.36	-6.13