

target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-09-01T21:59:30.330
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4114549777368376704
 2Mass ID (if available) : 17124767-2244445

Jupiter 2031-09-01T21:59:30 K9.82 G13.43 Pgt

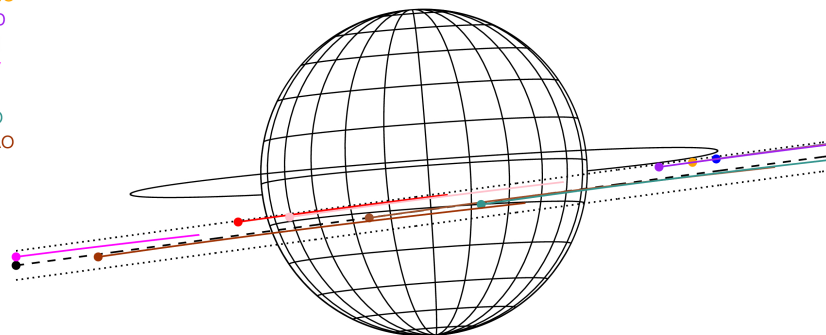
ICRS Star Coord at Epoch: 17h 12m 47.67131s -22:44:44.46673s

RUWE (>1.4 is poor) : 0.98
 K magnitude : 9.817
 G magnitude : 13.427
 RP magnitude : 12.251
 BP magnitude : 14.237
 DUPflag : 0
 Distance (au) : 4.978
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 7.72
 Sun-Target sep (deg) : 100.29
 Sun-Moon sep (deg) : 86.90
 B (ring opening deg) : -2.42
 PA of pole (deg) : 4.23
 Pole direction: RA (deg): 268.05685
 Dec (deg): 64.49652
 C/A sky separation (") : 4.549
 C/A sky separation (km) : 16424.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-09-01T21:59:30 K9.82 G13.43
 Pgt



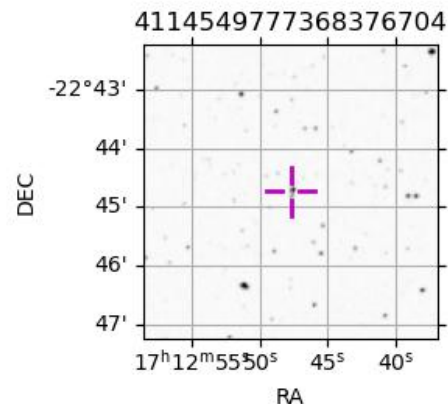
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 KAV
 RIO
 ESO
 SAAO



2031-09-01T21:59:30.3300 α: 17 12 47.6713 δ: -22 44 44.467 C/A 4.559° PA 7.66 deg v_sky + 7.72 km/s D 04.98 AU
 Credit: Styled after SORA/Lucky Star

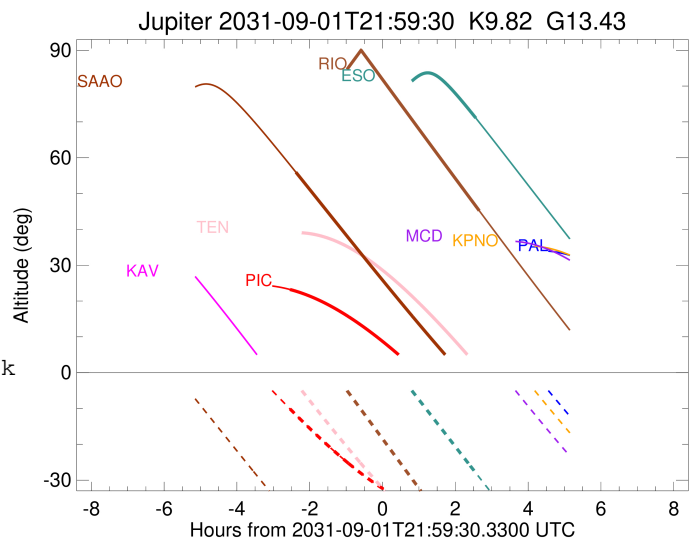
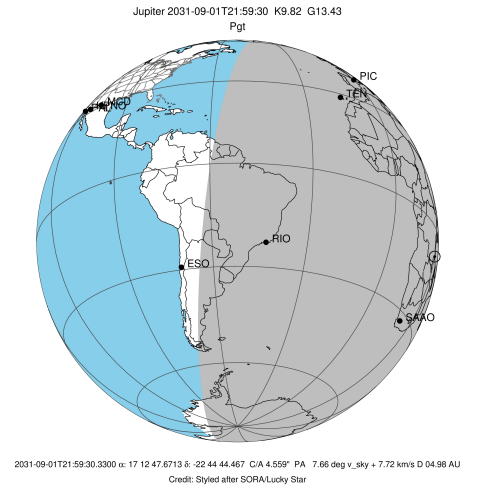
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	SEP 01 19:27 - SEP 01 19:27	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			Pnn
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 02 00:38 - SEP 02 00:38	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	SEP 02 00:33 - SEP 02 00:33	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	SEP 01 19:36 - SEP 01 19:36	Pin
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-09-01T22:05:55.300
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        : 4114549777368376704
2Mass ID (if available) : 17124767-2244445
ICRS Star Coord at Epoch: 17h 12m 47.67131s -22:44:44.46673s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 9.817
G magnitude           : 13.427
RP magnitude          : 12.251
BP magnitude          : 14.237
DUPflag              : 0
Distance (au)         : 4.978
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 7.72
Sun-Target sep (deg)  : 100.29
Sun-Moon sep (deg)    : 87.03
B (ring opening deg) : -2.42
PA of pole (deg)     : 4.23
Pole direction: RA (deg): 268.05685
Dec (deg): 64.49652
C/A sky separation (") : 3.025
C/A sky separation (km) : 10920.3
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
    
```

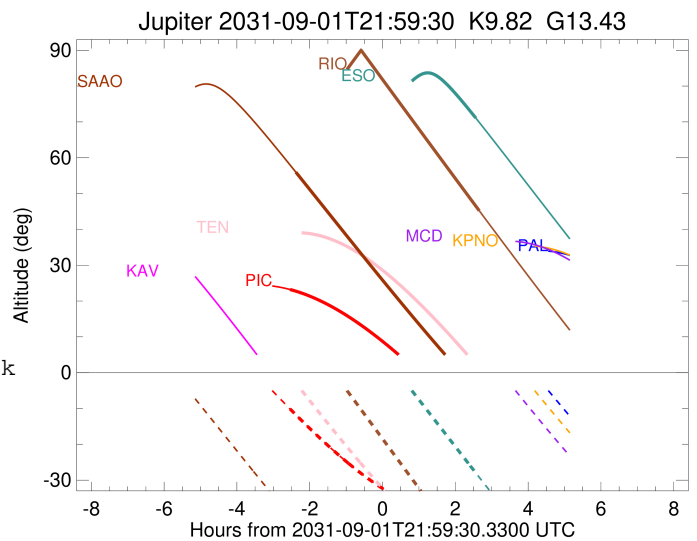
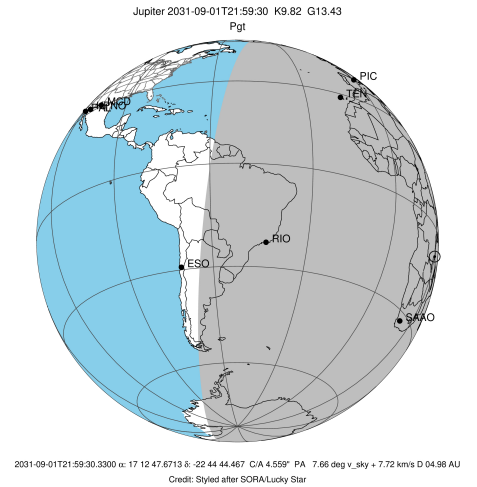


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-09-01T19:27:06.224	23.21	-10.11	71491.7	-11.94	-13.59
Jupiter	E	2031-09-02T00:40:04.979	-16.97x	-38.37	71491.9	-6.19	-7.07

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-09-01T22:01:42.290
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        : 4114549777368376704
2Mass ID (if available) : 17124767-2244445
ICRS Star Coord at Epoch: 17h 12m 47.67131s -22:44:44.46673s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 9.817
G magnitude           : 13.427
RP magnitude          : 12.251
BP magnitude          : 14.237
DUPflag              : 0
Distance (au)         : 4.978
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 7.72
Sun-Target sep (deg) : 100.29
Sun-Moon sep (deg)   : 87.89
B (ring opening deg) : -2.42
PA of pole (deg)     : 4.23
Pole direction: RA (deg): 268.05685
Dec (deg): 64.49652
C/A sky separation (" ) : 4.522
C/A sky separation (km) : 16327.4
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
    
```

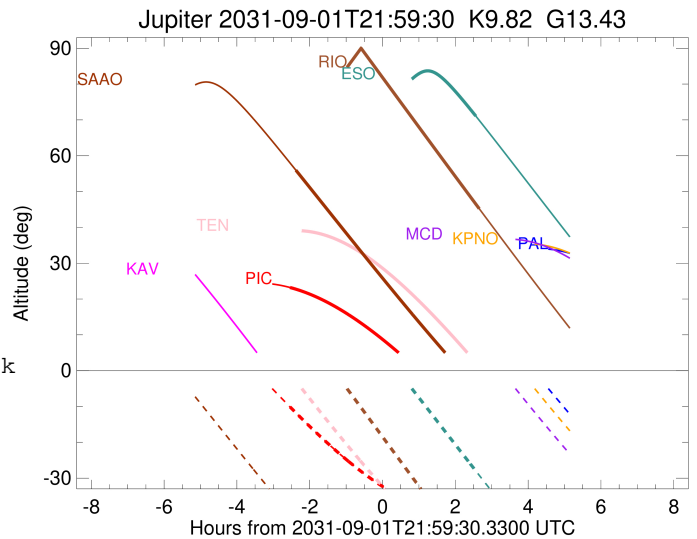
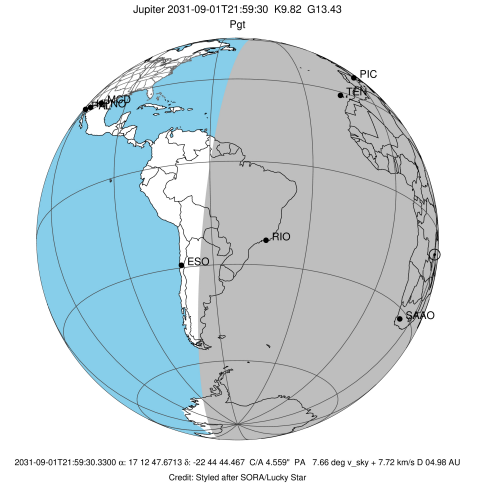


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-09-01T19:22:46.034	61.99	17.15x	71491.3	-17.28	-19.57
Jupiter	E	2031-09-02T00:38:48.256	45.24	-54.65	71491.8	-10.01	-11.41

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-09-01T21:56:17.080
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        : 4114549777368376704
2Mass ID (if available) : 17124767-2244445
ICRS Star Coord at Epoch: 17h 12m 47.67131s -22:44:44.46673s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 9.817
G magnitude           : 13.427
RP magnitude          : 12.251
BP magnitude          : 14.237
DUPflag              : 0
Distance (au)         : 4.978
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 7.72
Sun-Target sep (deg)  : 100.29
Sun-Moon sep (deg)   : 87.86
B (ring opening deg) : -2.42
PA of pole (deg)     : 4.23
Pole direction: RA (deg): 268.05685
Dec (deg): 64.49652
C/A sky separation ("): 4.843
C/A sky separation (km): 17485.2
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
    
```

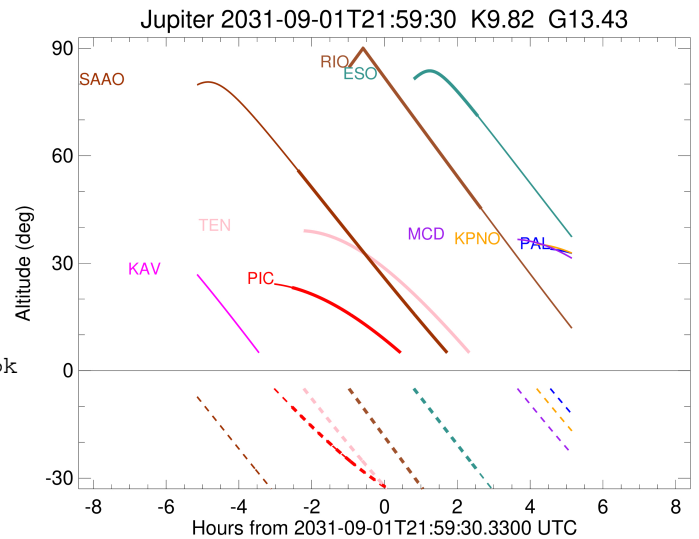
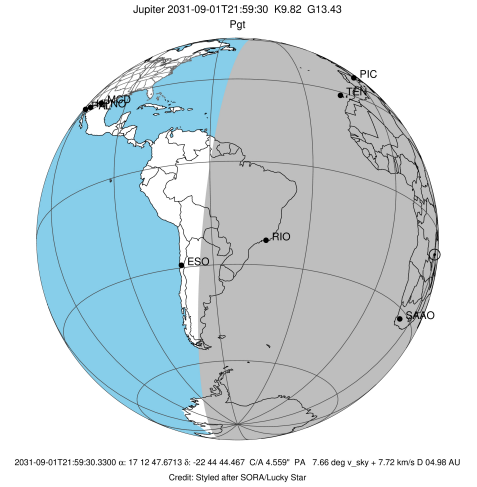


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-09-01T19:20:16.096	37.47	36.88x	71491.2	-18.64	-21.07
Jupiter	E	2031-09-02T00:33:14.699	71.07	-27.97	71491.7	-10.33	-11.77

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-09-01T22:10:43.880
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       : 4114549777368376704
2Mass ID (if available) : 17124767-2244445
ICRS Star Coord at Epoch: 17h 12m 47.67131s -22:44:44.46673s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 9.817
G magnitude          : 13.427
RP magnitude         : 12.251
BP magnitude         : 14.237
DUPflag             : 0
Distance (au)        : 4.978
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 7.72
Sun-Target sep (deg) : 100.29
Sun-Moon sep (deg)   : 87.30
B (ring opening deg) : -2.42
PA of pole (deg)     : 4.23
Pole direction: RA (deg): 268.05685
Dec (deg): 64.49652
C/A sky separation ("): 5.080
C/A sky separation (km): 18341.5
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	2031-09-01T19:36:42.325	55.96	-41.88	71491.3	-17.56	-19.87
Jupiter	E	2031-09-02T00:39:07.091	-5.57x	-52.72	71491.6	-12.56	-14.28