

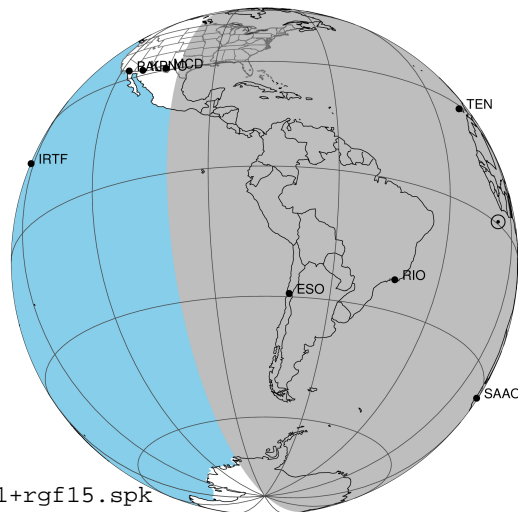
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2032-09-24T00:31:46.650
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 6771862737899181056
 2Mass ID (if available) : 19350313-2210437

Jupiter 2032-09-24T00:31:46 K8.42 G10.57 Pgt

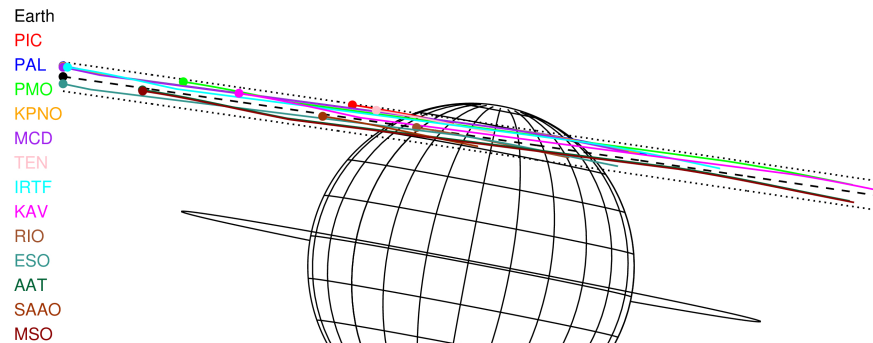
ICRS Star Coord at Epoch: 19h 35m 03.13570s -22:10:43.60076s

RUWE (>1.4 is poor) : 2.16
 K magnitude : 8.417
 G magnitude : 10.572
 RP magnitude : 9.886
 BP magnitude : 11.103
 DUPflag : 0
 Distance (au) : 4.671
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 2.82
 Sun-Target sep (deg) : 110.84
 Sun-Moon sep (deg) : 130.92
 B (ring opening deg) : -1.06
 PA of pole (deg) : -10.77
 Pole direction: RA (deg): 268.05658
 Dec (deg): 64.49657
 C/A sky separation (") : 16.738
 C/A sky separation (km) : 56700.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2032-09-24T00:31:46 K8.42 G10.57
 Pgt

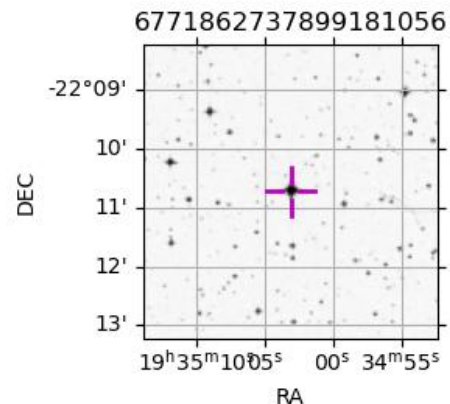


2032-09-24T00:31:46.6500 α: 19 35 03.1357 δ: -22 10 43.601 C/A ***** PA 171.67 deg v_sky + 2.82 km/s D 04.67 AU
 Credit: Styled after SORA/Lucky Star



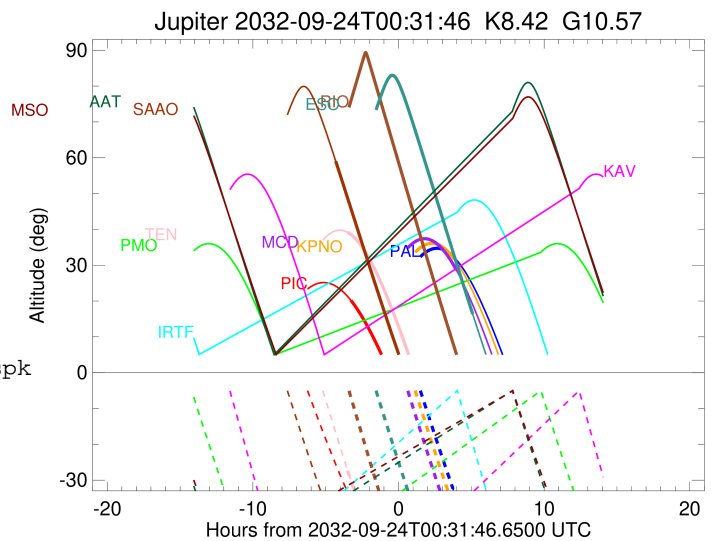
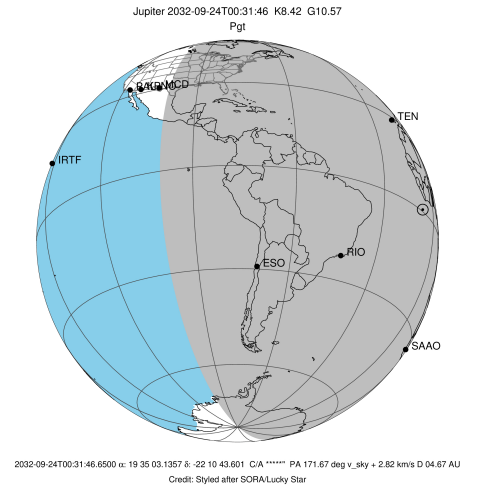
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+	SEP 23 21:15 - SEP 23 21:15	Pin
PAL	Palomar Mt (200")	33.4	243.1	+	SEP 24 04:16 - SEP 24 04:16	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	SEP 24 04:22 - SEP 24 04:22	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	SEP 24 04:30 - SEP 24 04:30	Pne
TEN	Teide Obs./Tenerife	28.3	343.5	+	SEP 23 21:02 - SEP 23 21:02	Pin
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	+	SEP 24 05:37 - SEP 24 05:37	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	SEP 23 20:13 - SEP 23 20:13	Pin
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2032-09-24T01:18:23.250
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      : 6771862737899181056
2Mass ID (if available) : 19350313-2210437
ICRS Star Coord at Epoch: 19h 35m 03.13570s -22:10:43.60076s
RUWE (>1.4 is poor) : 2.16
K magnitude          : 8.417
G magnitude          : 10.572
RP magnitude         : 9.886
BP magnitude         : 11.103
DUPflag             : 0
Distance (au)       : 4.671
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 2.82
Sun-Target sep (deg) : 110.84
Sun-Moon sep (deg)  : 131.34
B (ring opening deg) : -1.06
PA of pole (deg)    : -10.77
Pole direction: RA (deg): 268.05658
Dec (deg): 64.49657
C/A sky separation (") : 17.729
C/A sky separation (km) : 60063.2
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
    
```

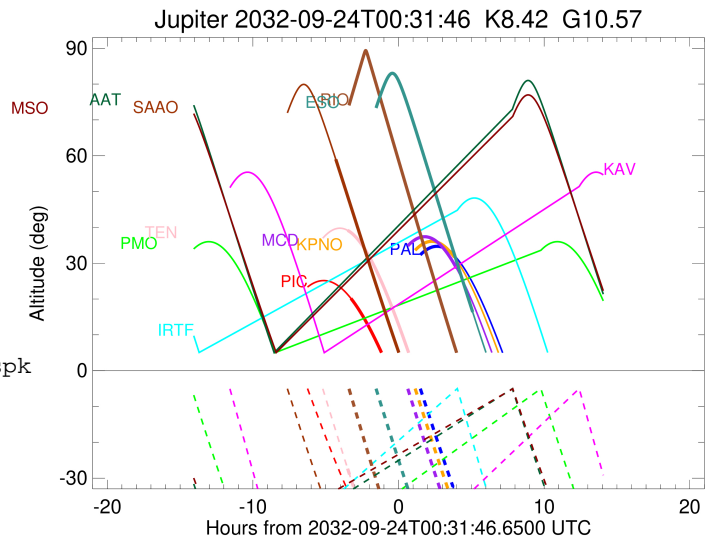
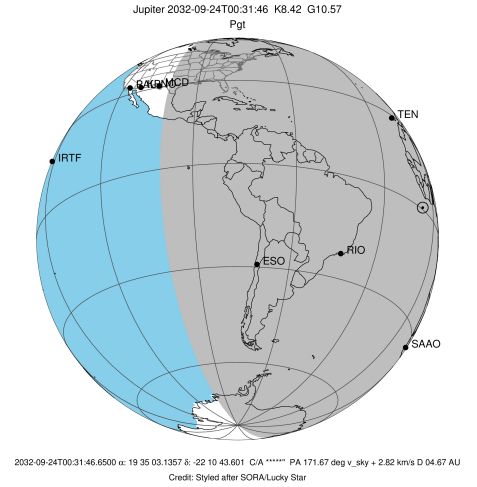


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-09-23T21:15:52.355	20.15	-35.32	71490.9	57.47	60.70
Jupiter	E	2032-09-24T04:46:51.801	-51.78x	-12.23	71490.9	57.84	61.04

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2032-09-24T00:03:29.120
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       : 6771862737899181056
2Mass ID (if available) : 19350313-2210437
ICRS Star Coord at Epoch: 19h 35m 03.13570s -22:10:43.60076s
RUWE (>1.4 is poor) : 2.16
K magnitude           : 8.417
G magnitude           : 10.572
RP magnitude         : 9.886
BP magnitude         : 11.103
DUPflag              : 0
Distance (au)        : 4.670
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 2.82
Sun-Target sep (deg) : 110.84
Sun-Moon sep (deg)   : 130.91
B (ring opening deg) : -1.06
PA of pole (deg)     : -10.77
Pole direction: RA (deg): 268.05658
Dec (deg): 64.49657
C/A sky separation ("): 18.260
C/A sky separation (km): 61850.8
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
    
```

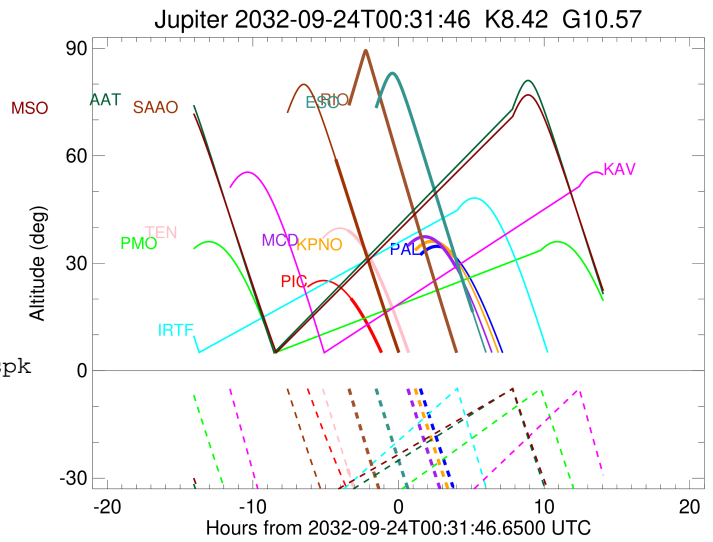
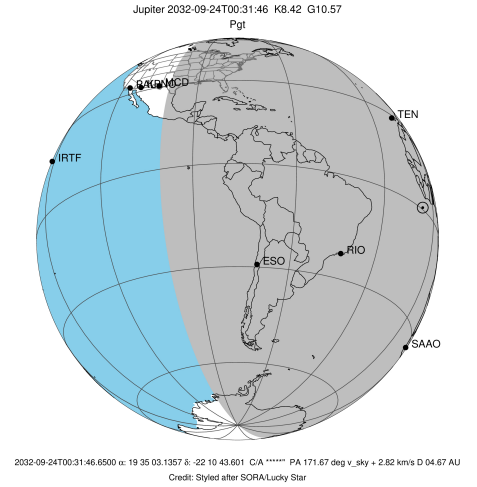


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-09-23T20:12:03.314	-23.88x	55.42x	71491.0	54.81	58.19
Jupiter	E	2032-09-24T04:16:43.456	32.48	-32.48	71490.8	61.86	64.79

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2032-09-24T00:07:49.650
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      : 6771862737899181056
2Mass ID (if available) : 19350313-2210437
ICRS Star Coord at Epoch: 19h 35m 03.13570s -22:10:43.60076s
RUWE (>1.4 is poor) : 2.16
K magnitude         : 8.417
G magnitude         : 10.572
RP magnitude        : 9.886
BP magnitude        : 11.103
DUPflag            : 0
Distance (au)       : 4.670
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 2.82
Sun-Target sep (deg) : 110.84
Sun-Moon sep (deg)  : 130.99
B (ring opening deg) : -1.06
PA of pole (deg)    : -10.77
Pole direction: RA (deg): 268.05658
Dec (deg): 64.49657
C/A sky separation (") : 18.258
C/A sky separation (km) : 61843.9
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
    
```

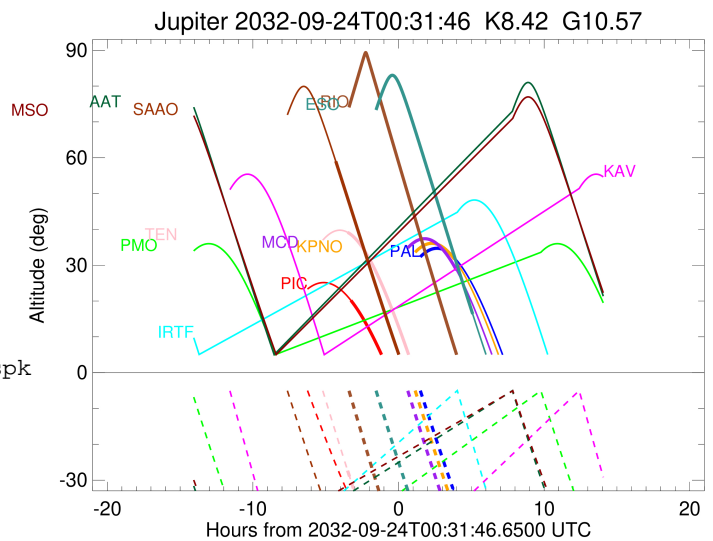
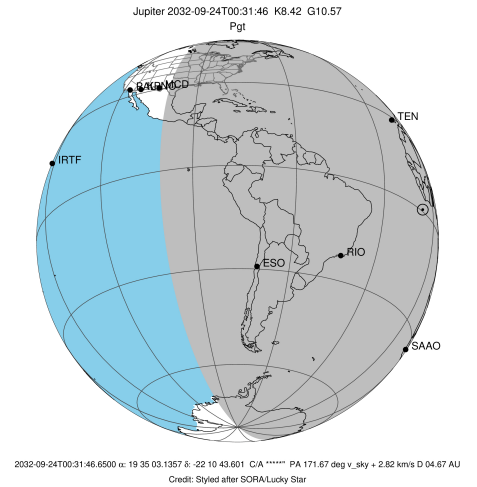


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-09-23T20:11:43.974	-19.31x	55.29x	71491.0	54.93	58.30
Jupiter	E	2032-09-24T04:22:39.992	31.64	-38.21	71490.8	61.45	64.41

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-09-24T00:15:35.180
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        : 6771862737899181056
2Mass ID (if available) : 19350313-2210437
ICRS Star Coord at Epoch: 19h 35m 03.13570s -22:10:43.60076s
RUWE (>1.4 is poor) : 2.16
K magnitude           : 8.417
G magnitude           : 10.572
RP magnitude          : 9.886
BP magnitude          : 11.103
DUPflag              : 0
Distance (au)         : 4.670
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 2.82
Sun-Target sep (deg) : 110.84
Sun-Moon sep (deg)   : 131.09
B (ring opening deg) : -1.06
PA of pole (deg)     : -10.77
Pole direction: RA (deg): 268.05658
Dec (deg): 64.49657
C/A sky separation (") : 18.256
C/A sky separation (km) : 61839.2
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
    
```

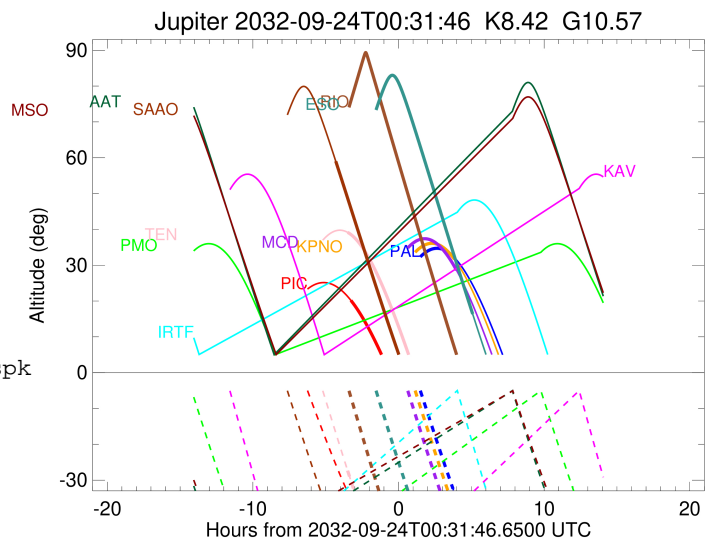
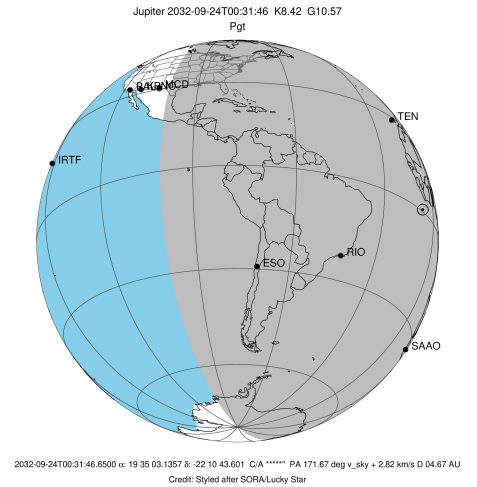


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-09-23T20:12:43.926	-12.52x	53.01x	71491.0	55.20	58.56
Jupiter	E	2032-09-24T04:30:45.794	28.59	-45.86	71490.8	60.87	63.87

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-09-24T01:26:52.820
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        : 6771862737899181056
2Mass ID (if available) : 19350313-2210437
ICRS Star Coord at Epoch: 19h 35m 03.13570s -22:10:43.60076s
RUWE (>1.4 is poor) : 2.16
K magnitude           : 8.417
G magnitude           : 10.572
RP magnitude          : 9.886
BP magnitude          : 11.103
DUPflag              : 0
Distance (au)         : 4.671
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 2.82
Sun-Target sep (deg)  : 110.84
Sun-Moon sep (deg)    : 131.60
B (ring opening deg) : -1.06
PA of pole (deg)      : -10.77
Pole direction: RA (deg): 268.05658
Dec (deg): 64.49657
C/A sky separation (") : 17.510
C/A sky separation (km) : 59319.1
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
    
```

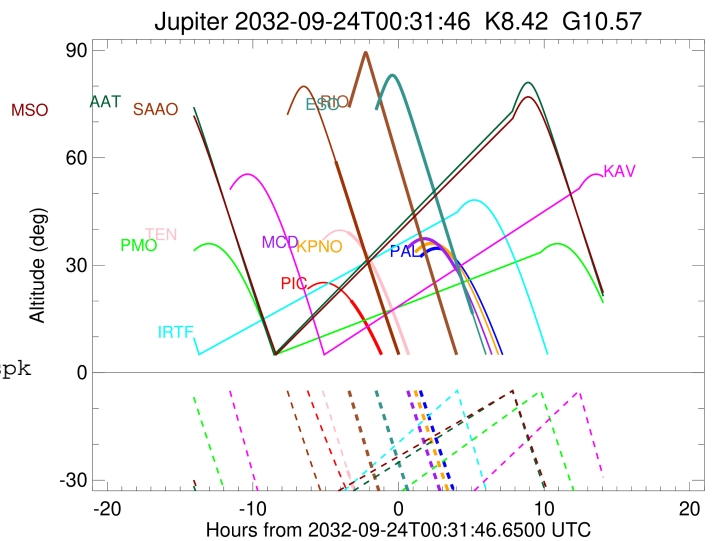
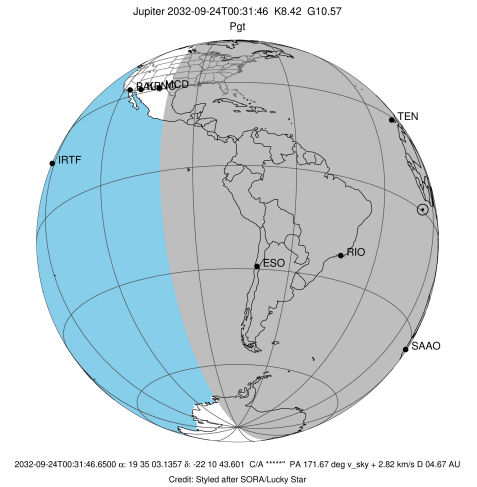


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-09-23T21:02:01.137	39.17	-27.31	71490.9	56.74	60.01
Jupiter	E	2032-09-24T05:05:03.533	-43.86x	-24.99	71491.0	55.93	59.25

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-09-24T00:48:47.700
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        : 6771862737899181056
2Mass ID (if available) : 19350313-2210437
ICRS Star Coord at Epoch: 19h 35m 03.13570s -22:10:43.60076s
RUWE (>1.4 is poor) : 2.16
K magnitude           : 8.417
G magnitude           : 10.572
RP magnitude          : 9.886
BP magnitude          : 11.103
DUPflag              : 0
Distance (au)         : 4.671
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 2.82
Sun-Target sep (deg) : 110.84
Sun-Moon sep (deg)   : 131.68
B (ring opening deg) : -1.06
PA of pole (deg)     : -10.77
Pole direction: RA (deg): 268.05658
Dec (deg): 64.49657
C/A sky separation (") : 16.466
C/A sky separation (km) : 55780.1
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
    
```

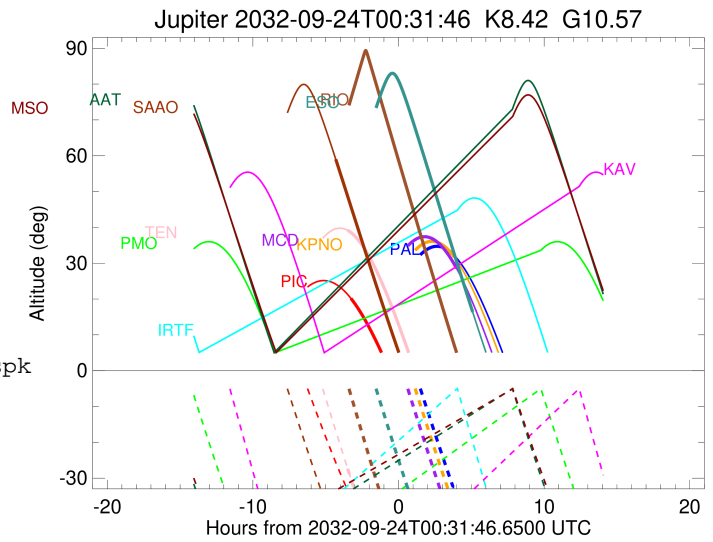
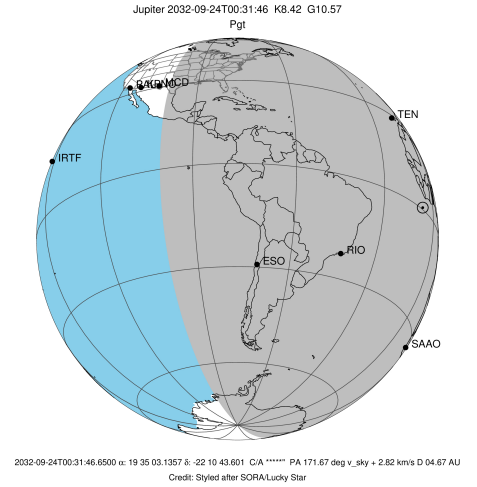


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-09-23T19:26:45.761	27.31	40.09x	71491.2	48.25	51.89
Jupiter	E	2032-09-24T05:37:40.178	16.32	-56.64	71491.1	50.60	54.16

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-09-24T01:10:59.460
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        : 6771862737899181056
2Mass ID (if available) : 19350313-2210437
ICRS Star Coord at Epoch: 19h 35m 03.13570s -22:10:43.60076s
RUWE (>1.4 is poor) : 2.16
K magnitude           : 8.417
G magnitude           : 10.572
RP magnitude          : 9.886
BP magnitude          : 11.103
DUPflag              : 0
Distance (au)         : 4.671
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 2.82
Sun-Target sep (deg)  : 110.84
Sun-Moon sep (deg)    : 131.49
B (ring opening deg) : -1.06
PA of pole (deg)      : -10.77
Pole direction: RA (deg): 268.05658
Dec (deg): 64.49657
C/A sky separation (") : 15.426
C/A sky separation (km) : 52259.4
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	2032-09-23T20:13:03.201	59.05	-44.19	71491.2	47.62	51.28
Jupiter	E	2032-09-24T05:20:35.851	-34.90x	11.33x	71491.2	48.46	52.10