

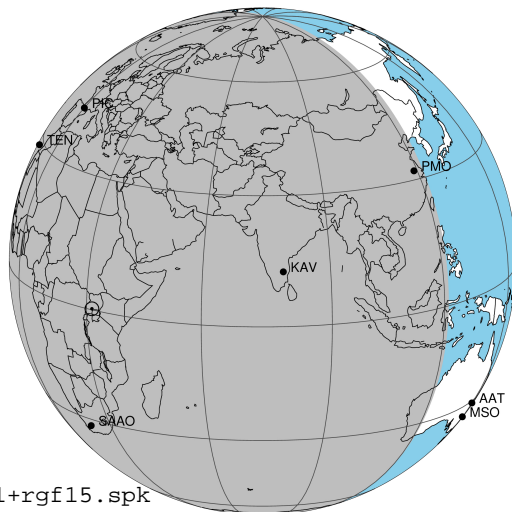
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2023-09-23T21:45:32.970  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 33251778540402688  
 2Mass ID (if available) : 02502098+1453585

Jupiter 2023-09-23T21:45:32 K8.76 G10.99 Pgt

ICRS Star Coord at Epoch: 02h 50m 20.99020s +14:53:58.52962s

RUWE (>1.4 is poor) : 0.88  
 K magnitude : 8.762  
 G magnitude : 10.987  
 RP magnitude : 10.295  
 BP magnitude : 11.524  
 DUPflag : 0  
 Distance (au) : 4.201  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -8.08  
 Sun-Target sep (deg) : 135.64  
 Sun-Moon sep (deg) : 119.97  
 B (ring opening deg) : 3.42  
 PA of pole (deg) : -17.91  
 Pole direction: RA (deg): 268.05804  
 Dec (deg): 64.49678  
 C/A sky separation (") : 8.236  
 C/A sky separation (km) : 25096.7  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

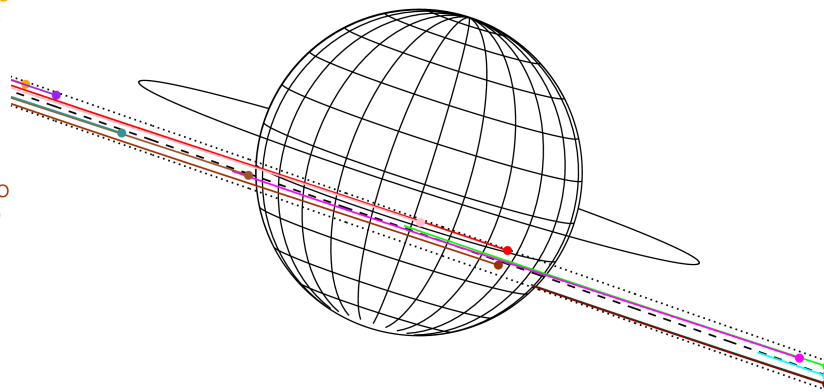
Jupiter 2023-09-23T21:45:32 K8.76 G10.99  
 Pgt



2023-09-23T21:45:32.9700 α: 02 50 20.9902 δ: +14 53 58.530 C/A 8.225° PA 340.78 deg v\_sky - 8.08 km/s D 04.20 AU

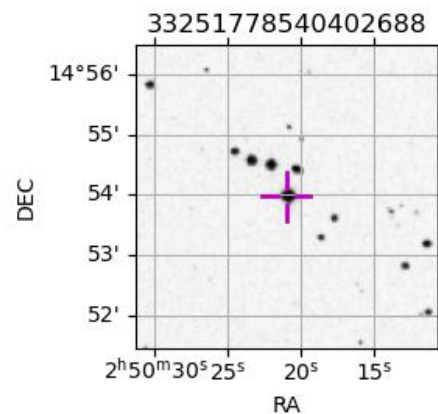
Credit: Styled after SORA/Lucky Star

Earth  
 PIC  
 PMO  
 KPNO  
 MCD  
 TEN  
 IRTF  
 KAV  
 RIO  
 ESO  
 AAT  
 SAAO  
 MSO



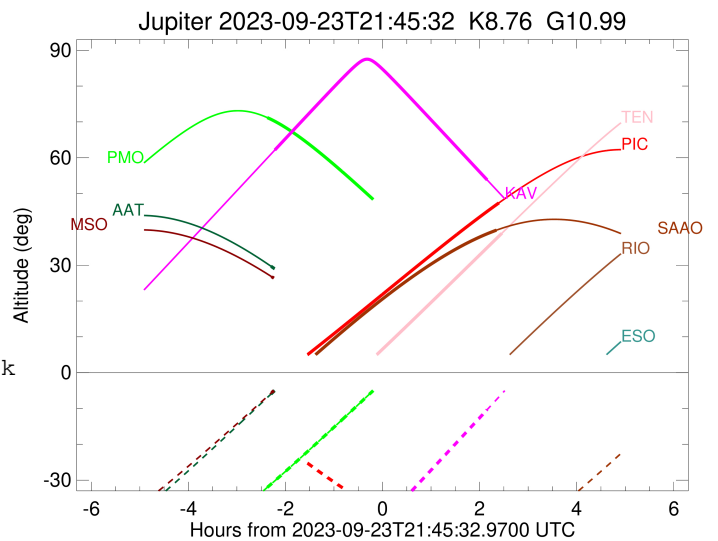
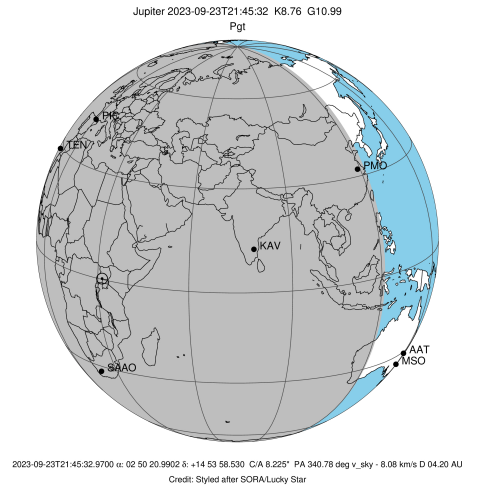
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+	SEP 24 00:09 - SEP 24 00:09	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	SEP 23 19:23 - SEP 23 19:23	Pin
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 24 00:13 - SEP 24 00:13	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	SEP 23 19:32 - SEP 23 23:54	Pie
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	+	SEP 23 19:27 - SEP 23 19:27	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	SEP 24 00:06 - SEP 24 00:06	Pne
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	SEP 23 19:28 - SEP 23 19:28	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2023-09-23T21:51:05.510
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        : 33251778540402688
2Mass ID (if available) : 02502098+1453585
ICRS Star Coord at Epoch: 02h 50m 20.99020s +14:53:58.52962s
RUWE (>1.4 is poor) : 0.88
K magnitude           : 8.762
G magnitude           : 10.987
RP magnitude          : 10.295
BP magnitude          : 11.524
DUPflag              : 0
Distance (au)         : 4.201
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.08
Sun-Target sep (deg) : 135.64
Sun-Moon sep (deg)   : 120.49
B (ring opening deg) : 3.42
PA of pole (deg)     : -17.91
Pole direction: RA (deg): 268.05804
Dec (deg): 64.49678
C/A sky separation (") : 6.575
C/A sky separation (km) : 20033.5
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
    
```

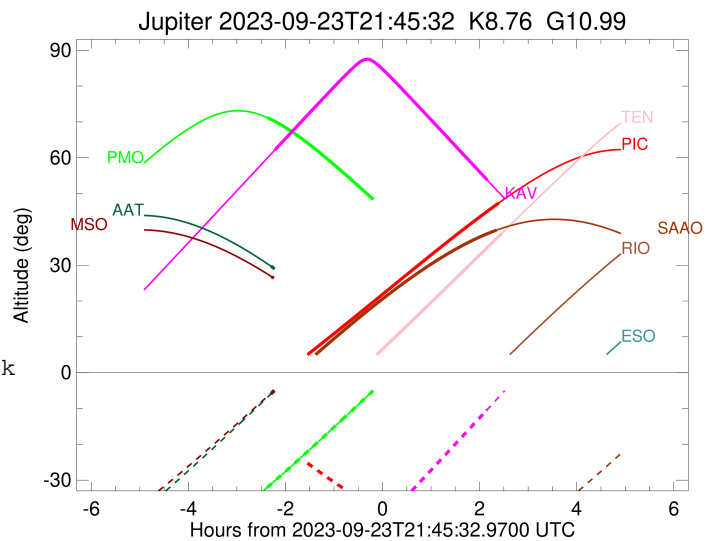
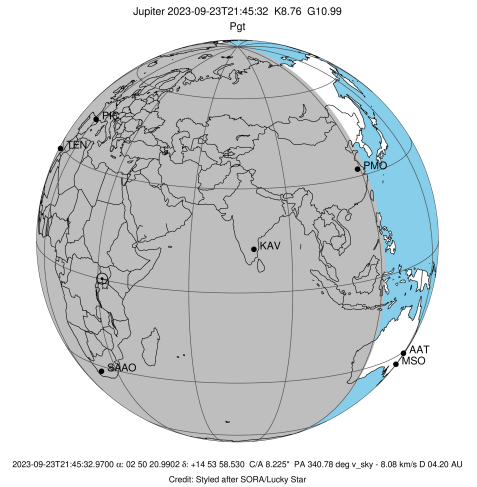


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-09-23T19:28:57.006	-2.60x	-17.73	71490.6	-16.98	-19.24
Jupiter	E	2023-09-24T00:09:28.088	47.39	-47.35	71490.8	-15.84	-17.97

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2023-09-23T21:36:44.460
Event type             : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code          : PMO
Location               : Purple Mtn Obs. Nanking
Latitude (deg)         : 32.06667
E. Longitude (deg)    : 118.82089
Altitude (km)         : 0.364
Gaia source ID        : 33251778540402688
2Mass ID (if available) : 02502098+1453585
ICRS Star Coord at Epoch: 02h 50m 20.99020s +14:53:58.52962s
RUWE (>1.4 is poor)  : 0.88
K magnitude            : 8.762
G magnitude            : 10.987
RP magnitude           : 10.295
BP magnitude           : 11.524
DUPflag               : 0
Distance (au)         : 4.201
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -8.08
Sun-Target sep (deg)  : 135.64
Sun-Moon sep (deg)    : 120.24
B (ring opening deg)  : 3.42
PA of pole (deg)      : -17.91
Pole direction: RA (deg): 268.05804
Dec (deg): 64.49678
C/A sky separation (") : 7.941
C/A sky separation (km) : 24198.1
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
    
```

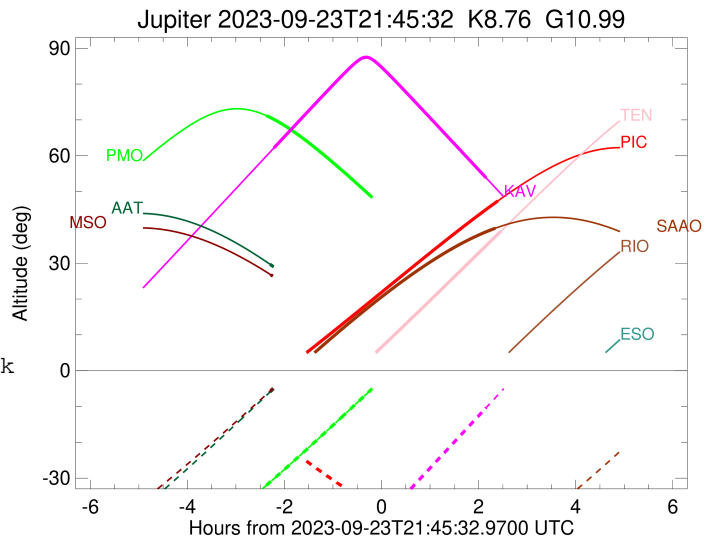
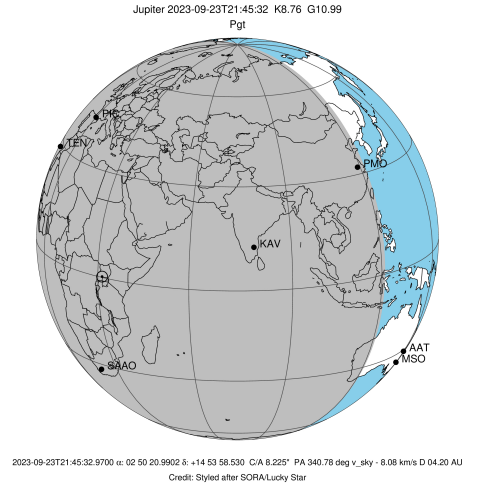


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-09-23T19:23:11.657	71.19	-32.02	71490.0	-20.57	-23.20
Jupiter	E	2023-09-23T23:51:52.992	19.20	23.91x	71490.4	-18.32	-20.72

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2023-09-23T21:54:00.890
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       : 33251778540402688
2Mass ID (if available) : 02502098+1453585
ICRS Star Coord at Epoch: 02h 50m 20.99020s +14:53:58.52962s
RUWE (>1.4 is poor) : 0.88
K magnitude           : 8.762
G magnitude           : 10.987
RP magnitude         : 10.295
BP magnitude         : 11.524
DUPflag              : 0
Distance (au)        : 4.201
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -8.08
Sun-Target sep (deg) : 135.64
Sun-Moon sep (deg)   : 120.38
B (ring opening deg) : 3.42
PA of pole (deg)     : -17.91
Pole direction: RA (deg): 268.05804
Dec (deg): 64.49678
C/A sky separation ("): 6.745
C/A sky separation (km): 20551.0
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
    
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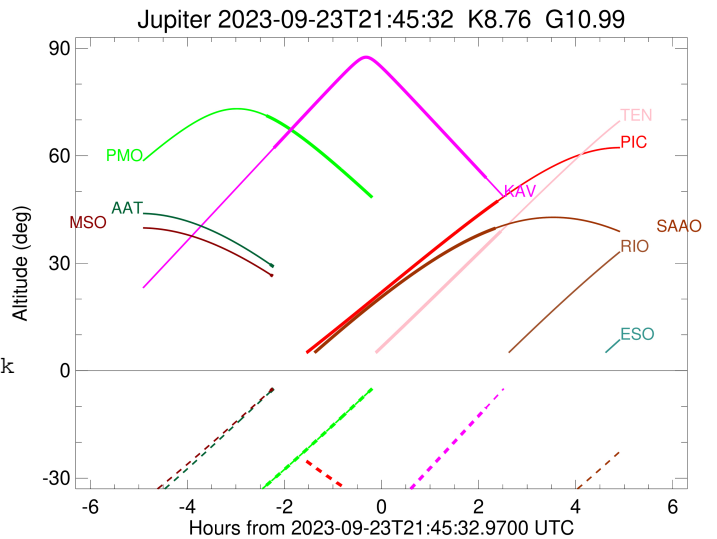
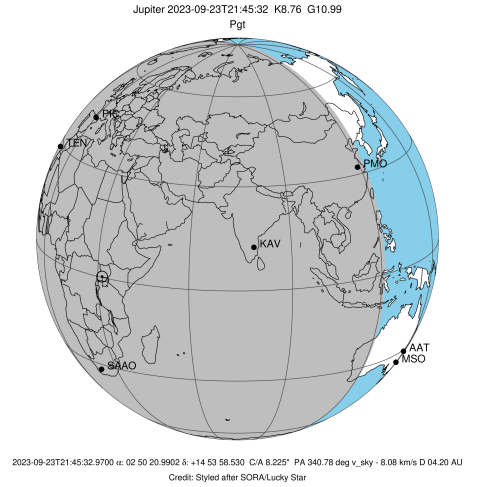


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-09-23T19:30:18.676	-21.09x	-7.14	71490.5	-17.58	-19.90
Jupiter	E	2023-09-24T00:13:05.957	38.91	-60.13	71490.7	-16.32	-18.50

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2023-09-23T21:43:56.640
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : KAV
Location              : Kavalur Observatory
Latitude (deg)        : 12.57556
E. Longitude (deg)   : 78.83167
Altitude (km)         : 0.722
Gaia source ID        : 33251778540402688
2Mass ID (if available) : 02502098+1453585
ICRS Star Coord at Epoch: 02h 50m 20.99020s +14:53:58.52962s
RUWE (>1.4 is poor) : 0.88
K magnitude           : 8.762
G magnitude           : 10.987
RP magnitude          : 10.295
BP magnitude          : 11.524
DUPflag              : 0
Distance (au)         : 4.201
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.08
Sun-Target sep (deg) : 135.64
Sun-Moon sep (deg)   : 120.78
B (ring opening deg) : 3.42
PA of pole (deg)     : -17.91
Pole direction: RA (deg): 268.05804
Dec (deg): 64.49678
C/A sky separation (") : 8.374
C/A sky separation (km) : 25514.9
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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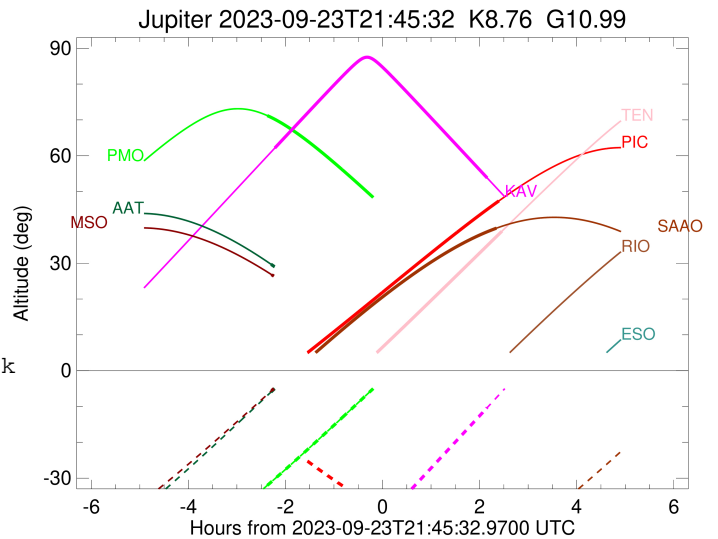
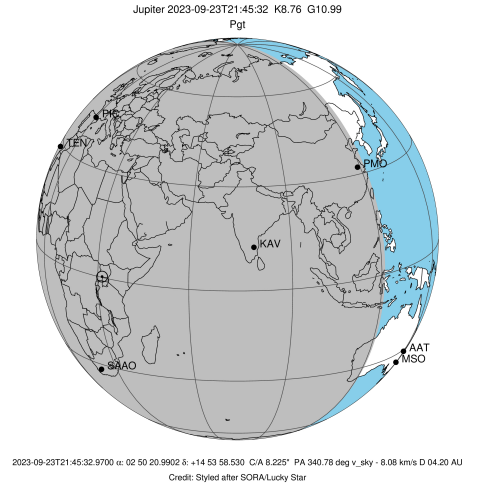


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-09-23T19:32:26.914	62.14	-71.57	71489.9	-21.07	-23.74
Jupiter	E	2023-09-23T23:54:59.480	53.78	-10.31	71490.1	-20.23	-22.82

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2023-09-23T21:38:13.150
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : AAT
Location            : Siding Spring (AAT)
Latitude (deg)      : -31.27703
E. Longitude (deg)  : 149.06608
Altitude (km)       : 1.164
Gaia source ID      : 33251778540402688
2Mass ID (if available) : 02502098+1453585
ICRS Star Coord at Epoch: 02h 50m 20.99020s +14:53:58.52962s
RUWE (>1.4 is poor) : 0.88
K magnitude          : 8.762
G magnitude          : 10.987
RP magnitude         : 10.295
BP magnitude         : 11.524
DUPflag             : 0
Distance (au)       : 4.201
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -8.08
Sun-Target sep (deg) : 135.64
Sun-Moon sep (deg)  : 119.78
B (ring opening deg) : 3.42
PA of pole (deg)    : -17.91
Pole direction: RA (deg): 268.05804
Dec (deg): 64.49678
C/A sky separation (") : 9.911
C/A sky separation (km) : 30200.4
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
    
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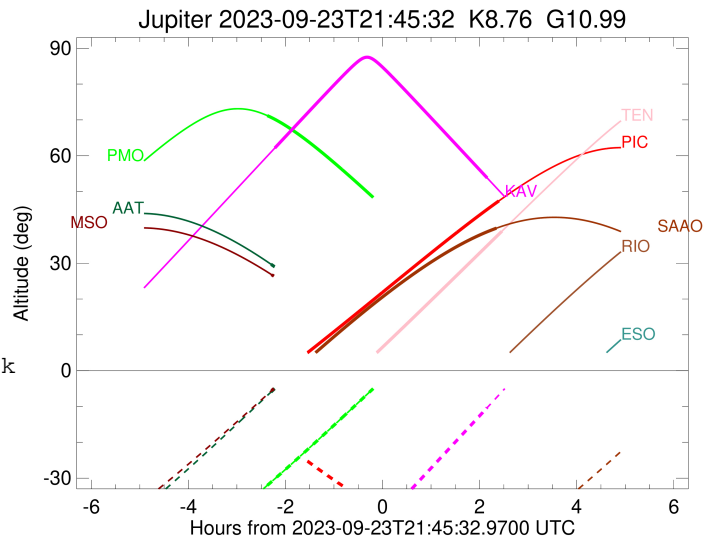
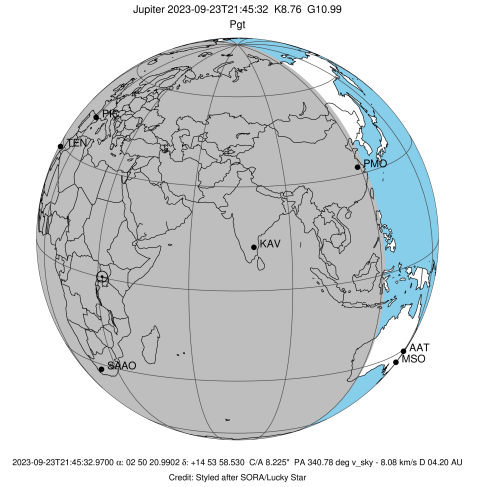


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-09-23T19:27:43.395	29.70	-5.97	71488.8	-26.33	-29.46
Jupiter	E	2023-09-23T23:51:18.787	-21.67x	47.31x	71489.6	-22.96	-25.82

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2023-09-23T21:55:25.500
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        : 33251778540402688
2Mass ID (if available) : 02502098+1453585
ICRS Star Coord at Epoch: 02h 50m 20.99020s +14:53:58.52962s
RUWE (>1.4 is poor) : 0.88
K magnitude           : 8.762
G magnitude           : 10.987
RP magnitude          : 10.295
BP magnitude          : 11.524
DUPflag              : 0
Distance (au)         : 4.201
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.08
Sun-Target sep (deg) : 135.64
Sun-Moon sep (deg)   : 120.71
B (ring opening deg) : 3.42
PA of pole (deg)     : -17.91
Pole direction: RA (deg): 268.05804
Dec (deg): 64.49678
C/A sky separation (") : 9.080
C/A sky separation (km) : 27666.8
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
    
```

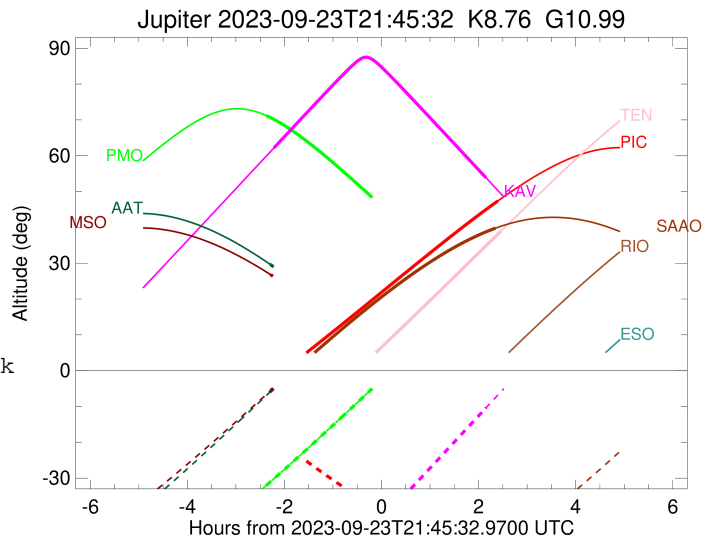
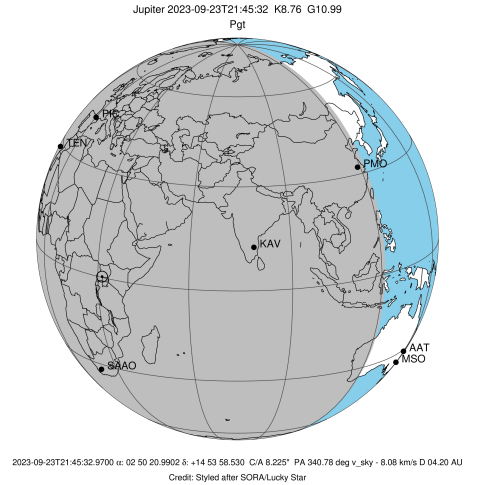


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-09-23T19:41:14.641	-3.34x	-38.84	71489.5	-23.09	-25.96
Jupiter	E	2023-09-24T00:06:23.963	39.77	-50.21	71489.7	-22.50	-25.32

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2023-09-23T21:38:53.420
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : MSO
Location            : Mt. Stromlo Observatory
Latitude (deg)      : -35.32000
E. Longitude (deg)  : 149.00833
Altitude (km)       : 0.770
Gaia source ID      : 33251778540402688
2Mass ID (if available) : 02502098+1453585
ICRS Star Coord at Epoch: 02h 50m 20.99020s +14:53:58.52962s
RUWE (>1.4 is poor) : 0.88
K magnitude          : 8.762
G magnitude          : 10.987
RP magnitude         : 10.295
BP magnitude         : 11.524
DUPflag             : 0
Distance (au)       : 4.201
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -8.08
Sun-Target sep (deg) : 135.64
Sun-Moon sep (deg)  : 119.78
B (ring opening deg) : 3.42
PA of pole (deg)    : -17.91
Pole direction: RA (deg): 268.05804
Dec (deg): 64.49678
C/A sky separation ("): 9.992
C/A sky separation (km): 30446.0
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	2023-09-23T19:28:28.078	26.80	-5.58	71488.8	-26.54	-29.69
Jupiter	E	2023-09-23T23:51:46.076	-22.01x	44.65x	71489.5	-23.21	-26.09