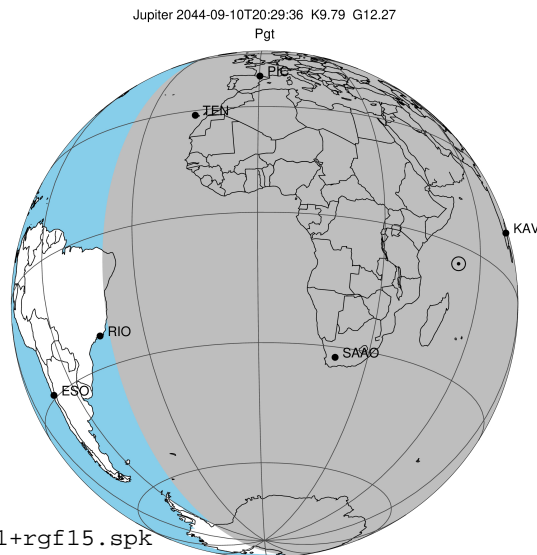


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2044-09-10T20:29:36.090
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 6864469860659757312
 2Mass ID (if available) : 19552940-2126107

Jupiter 2044-09-10T20:29:36 K9.79 G12.27 Pgt

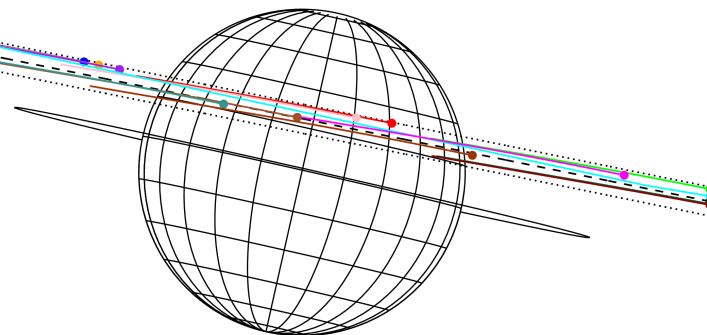
ICRS Star Coord at Epoch: 19h 55m 29.41829s -21:26:11.11877s

RUWE (>1.4 is poor) : 1.16
 K magnitude : 9.790
 G magnitude : 12.271
 RP magnitude : 11.515
 BP magnitude : 12.893
 DUPflag : 0
 Distance (au) : 4.419
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -5.04
 Sun-Target sep (deg) : 128.56
 Sun-Moon sep (deg) : 92.41
 B (ring opening deg) : -0.82
 PA of pole (deg) : -12.74
 Pole direction: RA (deg): 268.05691
 Dec (deg): 64.49727
 C/A sky separation (") : 7.216
 C/A sky separation (km) : 23124.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



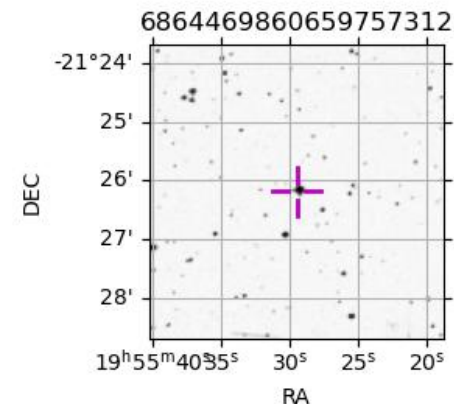
2044-09-10T20:29:36.0900 at: 19 55 29.4183 s -21 26 11.1119 C/A 7.211" PA 168.53 deg v_sky - 5.04 km/s D 04.42 AU
 Credit: Styled after SORA/Lucky Star

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



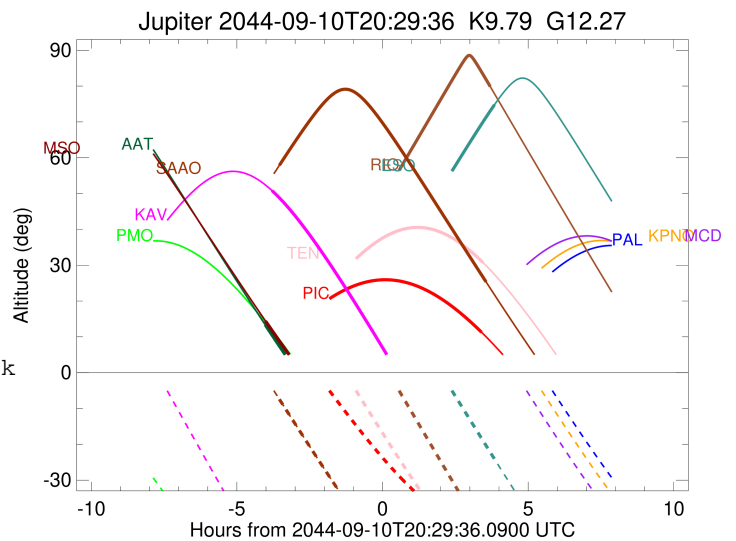
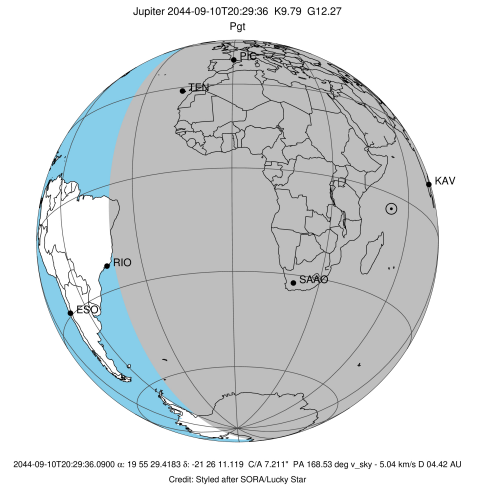
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	SEP 10 23:53 - SEP 10 23:53	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	SEP 10 16:33 - SEP 10 16:33	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 10 23:56 - SEP 10 23:56	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+	SEP 10 16:41 - SEP 10 16:41	Pin
RIO	Rio de Janeiro	-22.9	316.8	+	SEP 11 00:11 - SEP 11 00:11	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	SEP 11 00:20 - SEP 11 00:20	Pne
AAT	Siding Spring (AAT)	-31.3	149.1	+	SEP 10 16:27 - SEP 10 16:27	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	SEP 10 16:57 - SEP 11 00:03	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	SEP 10 16:28 - SEP 10 16:28	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2044-09-10T20:27:26.140
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    : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41829s -21:26:11.11877s
RUWE (>1.4 is poor) : 1.16
K magnitude        : 9.790
G magnitude        : 12.271
RP magnitude       : 11.515
BP magnitude       : 12.893
DUPflag           : 0
Distance (au)     : 4.419
f0 (km)           : 0.00
g0 (km)           : 0.00
skyplane vel. (km/s) : -5.04
Sun-Target sep (deg) : 128.56
Sun-Moon sep (deg) : 92.84
B (ring opening deg) : -0.82
PA of pole (deg)  : -12.74
Pole direction: RA (deg): 268.05691
Dec (deg): 64.49727
C/A sky separation (") : 8.977
C/A sky separation (km) : 28768.8
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
    
```

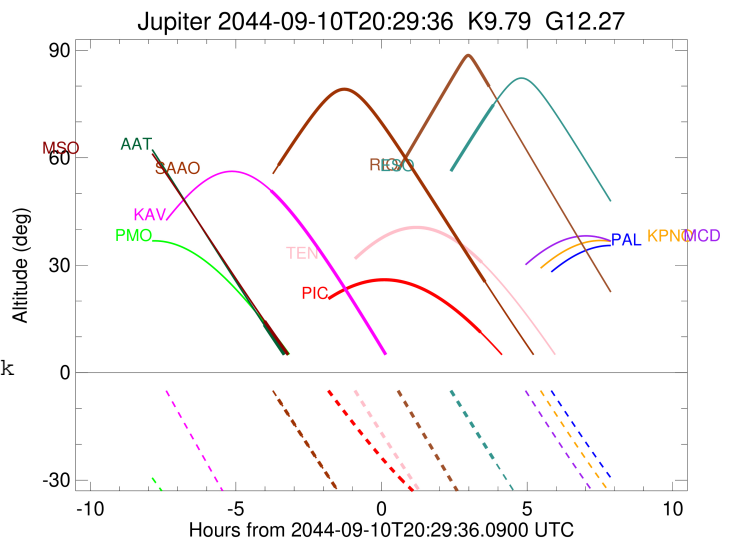
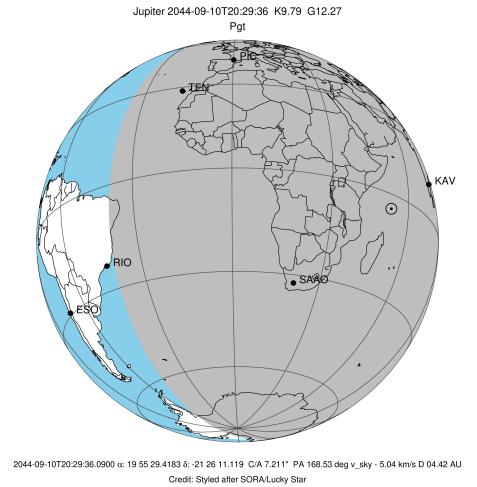


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-09-10T17:03:18.300	9.40	12.71x	71491.8	25.05	28.08
Jupiter	E	2044-09-10T23:53:53.100	11.25	-42.87	71491.9	21.27	23.97

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2044-09-10T20:13:33.200
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       : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41829s -21:26:11.11877s
RUWE (>1.4 is poor) : 1.16
K magnitude           : 9.790
G magnitude           : 12.271
RP magnitude          : 11.515
BP magnitude          : 12.893
DUPflag              : 0
Distance (au)        : 4.418
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -5.04
Sun-Target sep (deg) : 128.56
Sun-Moon sep (deg)   : 91.91
B (ring opening deg) : -0.82
PA of pole (deg)     : -12.74
Pole direction: RA (deg): 268.05691
Dec (deg): 64.49727
C/A sky separation ("): 7.624
C/A sky separation (km): 24433.1
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
    
```

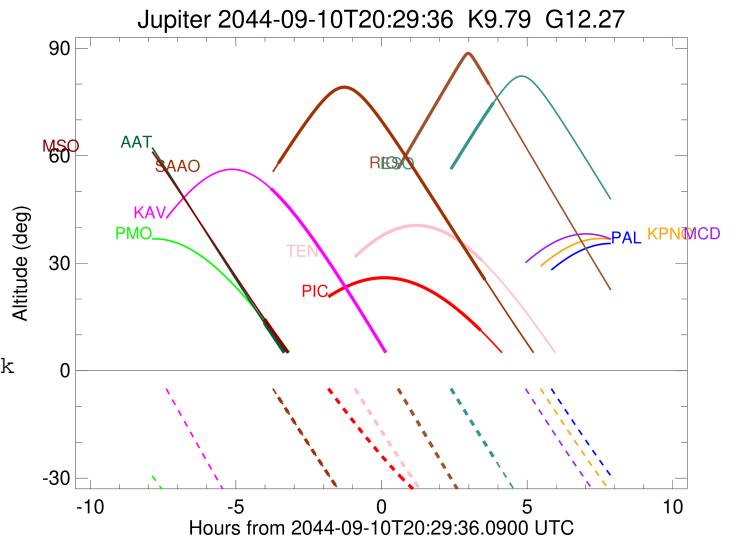
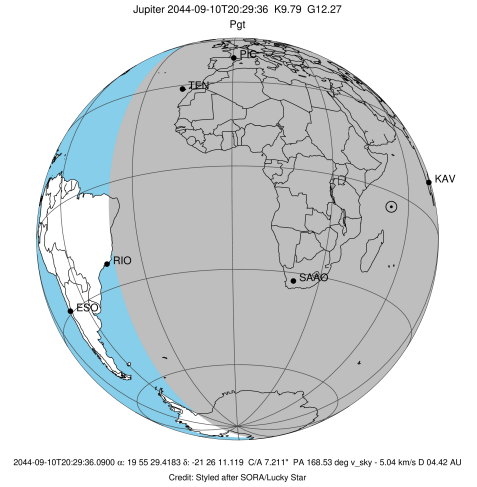


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-09-10T16:33:44.829	13.05	-52.80	71491.9	22.84	25.69
Jupiter	E	2044-09-11T00:10:10.721	-77.51x	29.47x	71491.9	18.46	20.87

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2044-09-10T20:32:27.630
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      : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41829s -21:26:11.11877s
RUWE (>1.4 is poor) : 1.16
K magnitude          : 9.790
G magnitude          : 12.271
RP magnitude         : 11.515
BP magnitude         : 12.893
DUPflag             : 0
Distance (au)       : 4.419
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -5.04
Sun-Target sep (deg) : 128.56
Sun-Moon sep (deg)  : 92.99
B (ring opening deg) : -0.82
PA of pole (deg)    : -12.74
Pole direction: RA (deg): 268.05691
Dec (deg): 64.49727
C/A sky separation (" ) : 8.774
C/A sky separation (km) : 28118.0
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
    
```

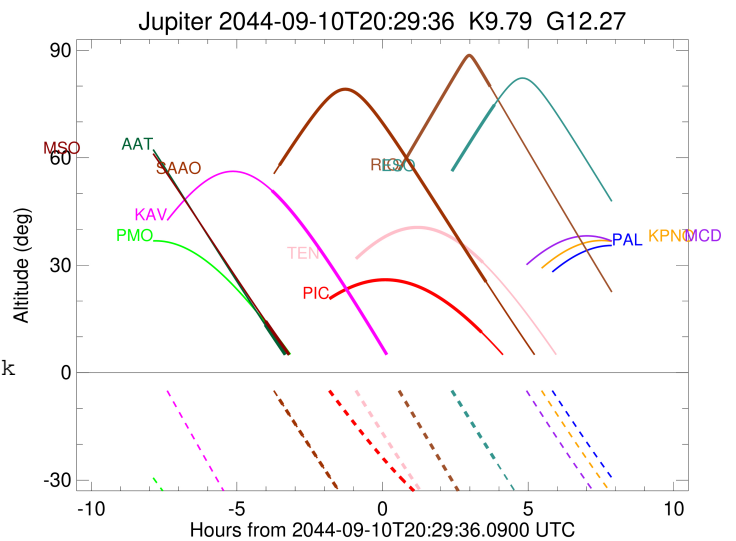
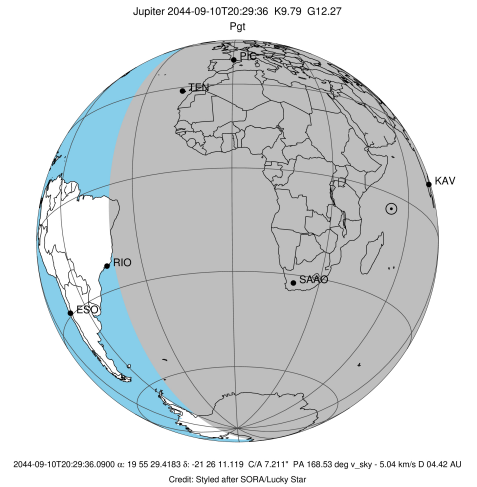


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-09-10T17:07:26.674	7.24	27.40x	71491.8	24.03	26.98
Jupiter	E	2044-09-10T23:56:29.297	30.75	-53.81	71491.9	20.82	23.47

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2044-09-10T20:11:49.990
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      : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41829s -21:26:11.11877s
RUWE (>1.4 is poor) : 1.16
K magnitude          : 9.790
G magnitude          : 12.271
RP magnitude         : 11.515
BP magnitude         : 12.893
DUPflag             : 0
Distance (au)       : 4.418
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -5.04
Sun-Target sep (deg) : 128.56
Sun-Moon sep (deg)  : 92.57
B (ring opening deg) : -0.82
PA of pole (deg)    : -12.74
Pole direction: RA (deg): 268.05691
Dec (deg): 64.49727
C/A sky separation (") : 7.442
C/A sky separation (km) : 23847.4
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
    
```

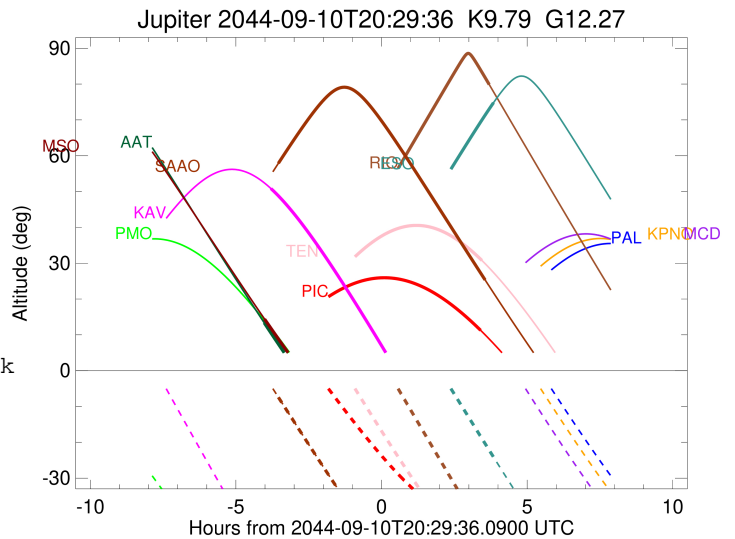
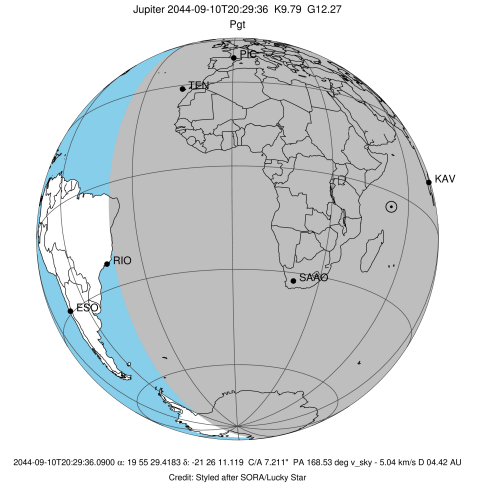


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-09-10T16:41:45.807	50.84	-55.79	71491.9	22.62	25.45
Jupiter	E	2044-09-11T00:00:15.270	-41.60x	-9.00	71491.9	16.63	18.85

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2044-09-10T20:42:11.820
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      : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41829s -21:26:11.11877s
RUWE (>1.4 is poor) : 1.16
K magnitude         : 9.790
G magnitude         : 12.271
RP magnitude        : 11.515
BP magnitude        : 12.893
DUPflag            : 0
Distance (au)       : 4.419
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -5.04
Sun-Target sep (deg) : 128.56
Sun-Moon sep (deg)  : 93.10
B (ring opening deg) : -0.82
PA of pole (deg)    : -12.74
Pole direction: RA (deg): 268.05691
Dec (deg): 64.49727
C/A sky separation (" ) : 7.249
C/A sky separation (km) : 23231.5
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
    
```

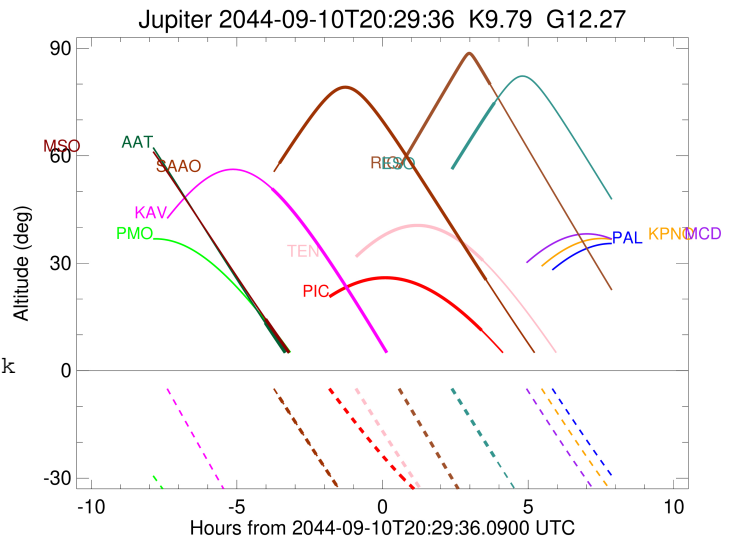
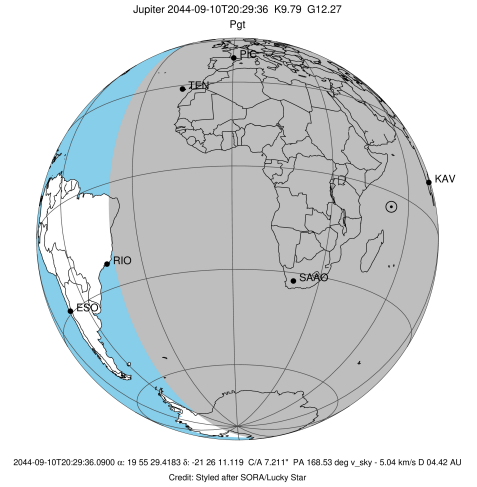


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-09-10T17:06:23.795	3.12x	46.87x	71491.9	19.07	21.55
Jupiter	E	2044-09-11T00:11:28.733	79.87	-47.67	71491.9	17.24	19.52

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2044-09-10T20:46:19.110
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      : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41829s -21:26:11.11877s
RUWE (>1.4 is poor) : 1.16
K magnitude          : 9.790
G magnitude          : 12.271
RP magnitude         : 11.515
BP magnitude         : 12.893
DUPflag             : 0
Distance (au)       : 4.419
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -5.04
Sun-Target sep (deg) : 128.56
Sun-Moon sep (deg)  : 92.78
B (ring opening deg) : -0.82
PA of pole (deg)    : -12.74
Pole direction: RA (deg): 268.05691
Dec (deg): 64.49727
C/A sky separation (") : 6.892
C/A sky separation (km) : 22087.9
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
    
```

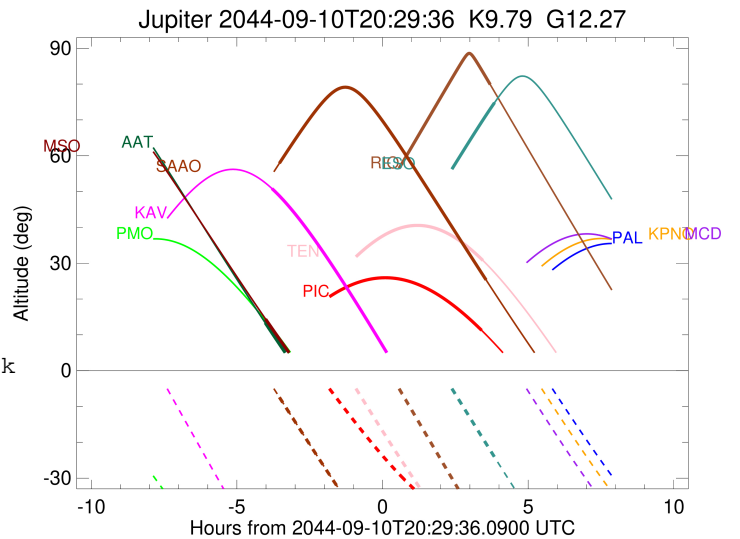
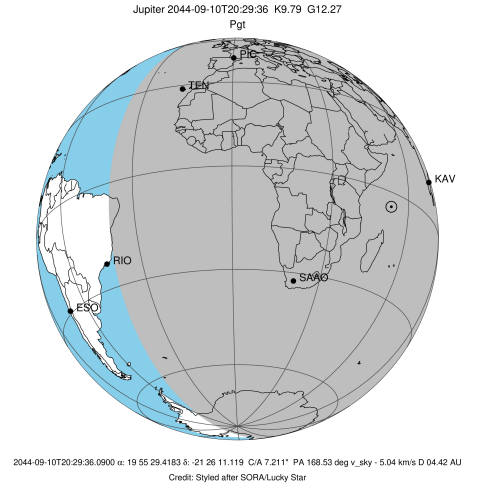


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-09-10T17:01:38.209	-16.49x	55.99x	71491.9	17.61	19.93
Jupiter	E	2044-09-11T00:20:22.505	74.80	-24.12	71491.9	17.06	19.33

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2044-09-10T20:23:00.010
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      : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41829s -21:26:11.11877s
RUWE (>1.4 is poor) : 1.16
K magnitude          : 9.790
G magnitude          : 12.271
RP magnitude         : 11.515
BP magnitude         : 12.893
DUPflag             : 0
Distance (au)        : 4.419
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -5.04
Sun-Target sep (deg) : 128.56
Sun-Moon sep (deg)   : 91.95
B (ring opening deg) : -0.82
PA of pole (deg)     : -12.74
Pole direction: RA (deg): 268.05691
Dec (deg): 64.49727
C/A sky separation ("): 5.583
C/A sky separation (km): 17891.9
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
    
```

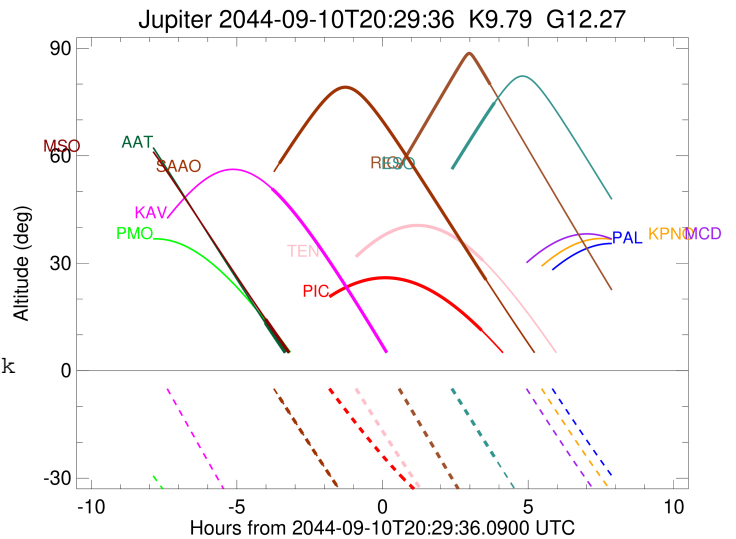
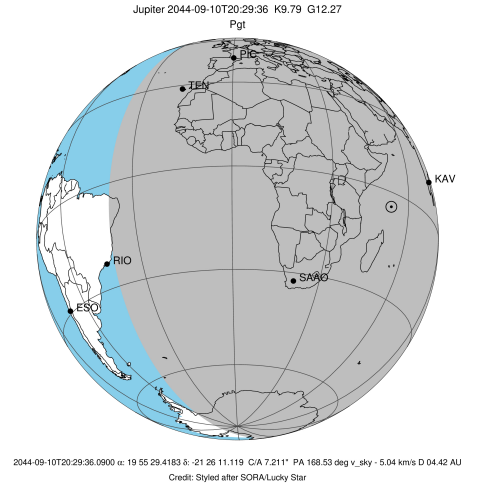


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-09-10T16:27:54.110	13.37	-46.32	71491.9	16.79	19.02
Jupiter	E	2044-09-11T00:30:26.153	-31.15x	48.55x	71491.9	14.07	15.98


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2044-09-10T20:26:31.910
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        : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41829s -21:26:11.11877s
RUWE (>1.4 is poor) : 1.16
K magnitude           : 9.790
G magnitude           : 12.271
RP magnitude          : 11.515
BP magnitude          : 12.893
DUPflag              : 0
Distance (au)         : 4.419
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -5.04
Sun-Target sep (deg)  : 128.56
Sun-Moon sep (deg)   : 93.32
B (ring opening deg) : -0.82
PA of pole (deg)     : -12.74
Pole direction: RA (deg): 268.05691
Dec (deg): 64.49727
C/A sky separation (") : 6.711
C/A sky separation (km) : 21505.8
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
    
```

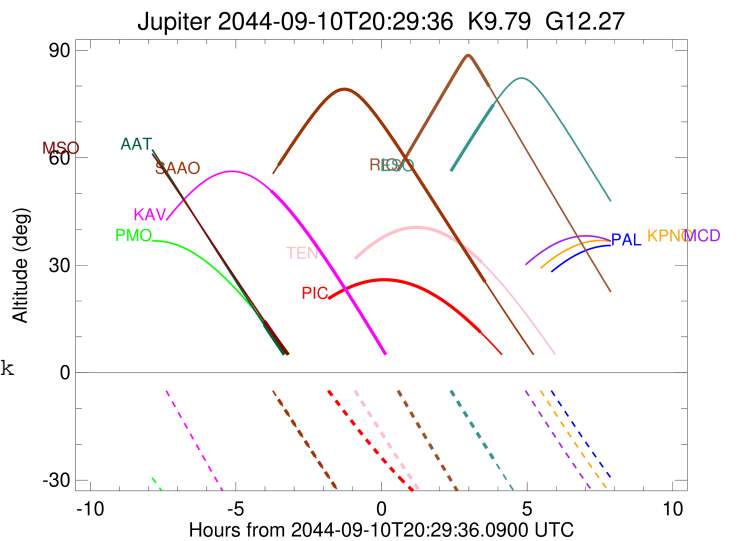
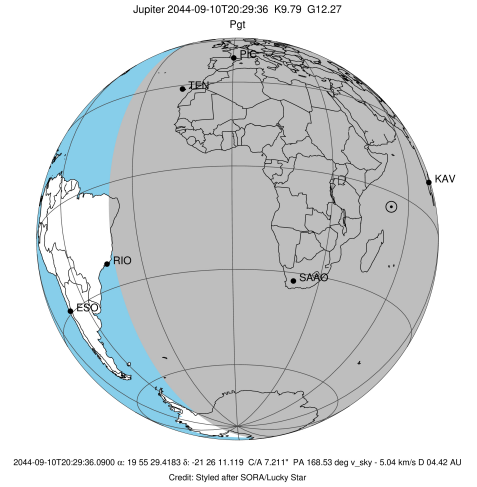


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2044-09-10T16:57:05.929	57.87	-7.41	71491.9	19.39	21.90
Jupiter	E	2044-09-11T00:03:06.574	25.31	-55.12	71491.9	14.59	16.57

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2044-09-10T20:23:38.740
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        : 6864469860659757312
2Mass ID (if available) : 19552940-2126107
ICRS Star Coord at Epoch: 19h 55m 29.41829s -21:26:11.11877s
RUWE (>1.4 is poor) : 1.16
K magnitude           : 9.790
G magnitude           : 12.271
RP magnitude          : 11.515
BP magnitude          : 12.893
DUPflag              : 0
Distance (au)         : 4.419
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -5.04
Sun-Target sep (deg)  : 128.56
Sun-Moon sep (deg)   : 92.00
B (ring opening deg) : -0.82
PA of pole (deg)     : -12.74
Pole direction: RA (deg): 268.05691
Dec (deg): 64.49727
C/A sky separation (") : 5.508
C/A sky separation (km) : 17650.6
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	2044-09-10T16:28:39.172	14.42	-44.12	71491.9	16.54	18.74
Jupiter	E	2044-09-11T00:30:29.625	-27.68x	45.19x	71491.9	13.83	15.71