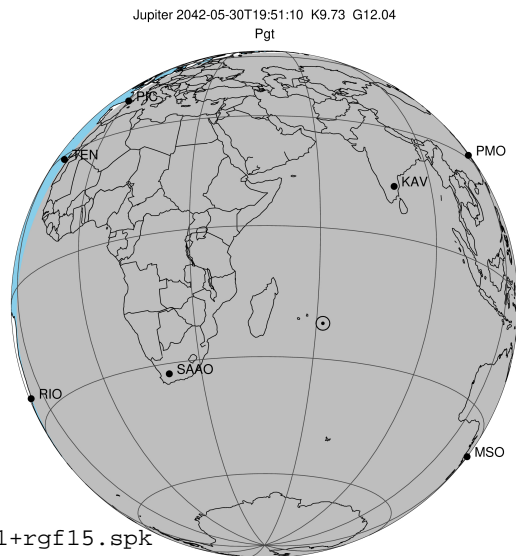


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2042-05-30T19:51:10.730
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 6255333688664805504
 2Mass ID (if available) : 15314333-1757335

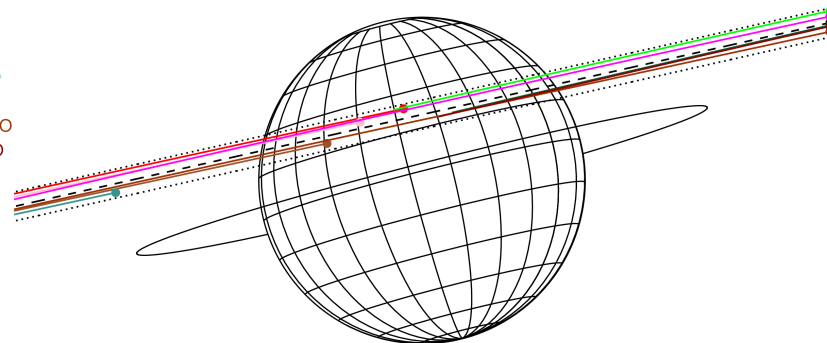
Jupiter 2042-05-30T19:51:10 K9.73 G12.04 Pgt

ICRS Star Coord at Epoch: 15h 31m 43.30404s -17:57:33.66851s
 RUWE (>1.4 is poor) : 1.34
 K magnitude : 9.727
 G magnitude : 12.037
 RP magnitude : 11.320
 BP magnitude : 12.609
 DUPflag : 0
 Distance (au) : 4.393
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.99
 Sun-Target sep (deg) : 166.01
 Sun-Moon sep (deg) : 31.76
 B (ring opening deg) : -3.25
 PA of pole (deg) : 14.37
 Pole direction: RA (deg): 268.05647
 Dec (deg): 64.49730
 C/A sky separation (") : 8.838
 C/A sky separation (km) : 28159.7
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



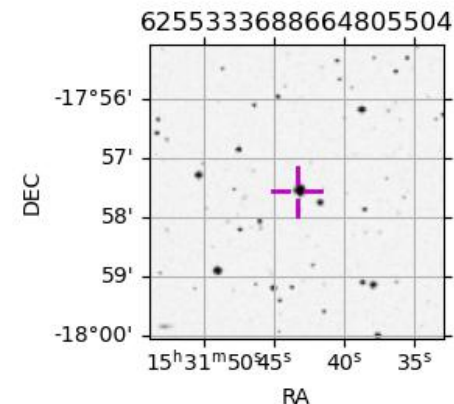
2042-05-30T19:51:10.7300 at: 15 31 43.3040 8: -17 57 33.6689 C/A 8.825" PA 192.70 deg v_sky -15.99 km/s D 04.39 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



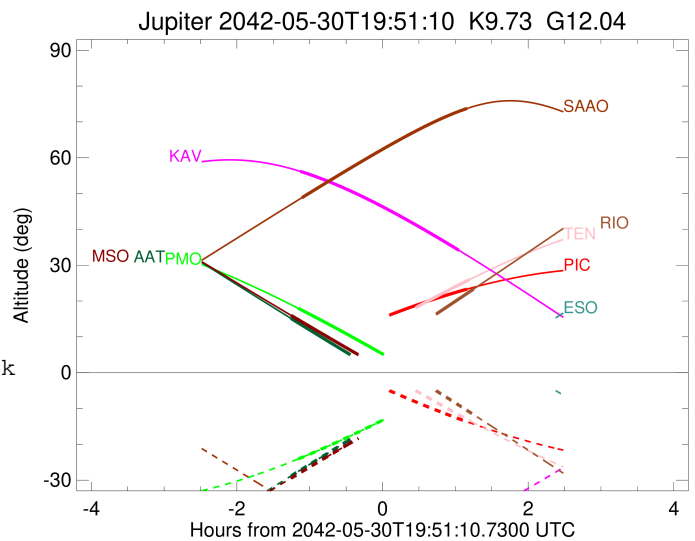
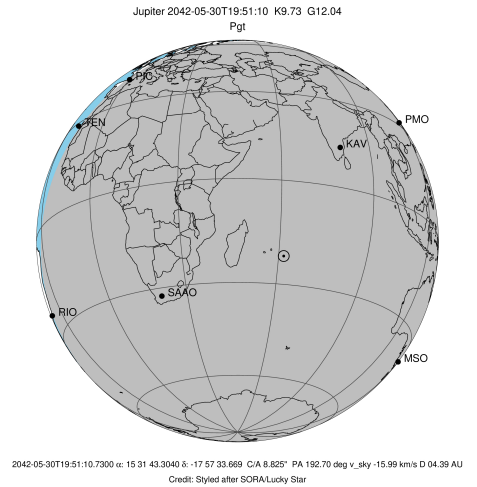
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	MAY 30 21:00 - MAY 30 21:00	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	MAY 30 18:41 - MAY 30 18:41	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	+	MAY 30 21:03 - MAY 30 21:03	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	MAY 30 18:43 - MAY 30 20:53	Pie
RIO	Rio de Janeiro	-22.9	316.8	+ +	MAY 30 21:06 - MAY 30 21:06	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1	+	MAY 30 18:35 - MAY 30 18:35	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	MAY 30 18:44 - MAY 30 21:00	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	MAY 30 18:35 - MAY 30 18:35	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2042-05-30T19:55:29.880
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      : 6255333688664805504
2Mass ID (if available) : 15314333-1757335
ICRS Star Coord at Epoch: 15h 31m 43.30404s -17:57:33.66851s
RUWE (>1.4 is poor) : 1.34
K magnitude          : 9.727
G magnitude          : 12.037
RP magnitude         : 11.320
BP magnitude         : 12.609
DUPflag             : 0
Distance (au)       : 4.393
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.99
Sun-Target sep (deg) : 166.01
Sun-Moon sep (deg)  : 31.35
B (ring opening deg) : -3.25
PA of pole (deg)    : 14.37
Pole direction: RA (deg): 268.05647
Dec (deg): 64.49730
C/A sky separation (") : 10.178
C/A sky separation (km) : 32430.1
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
    
```

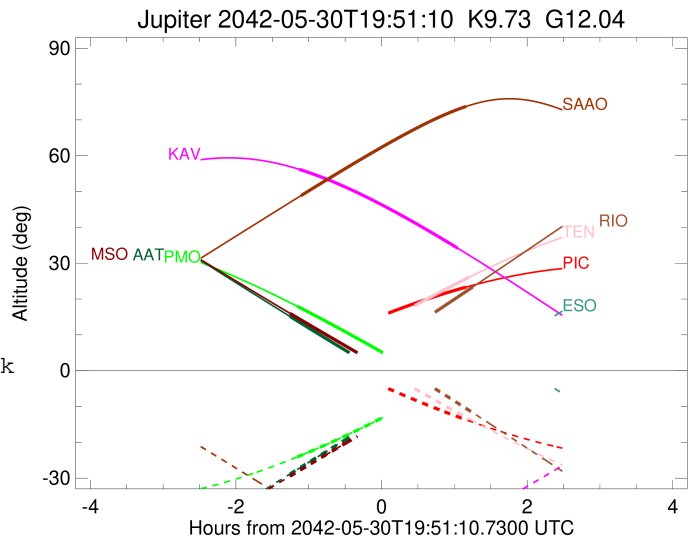
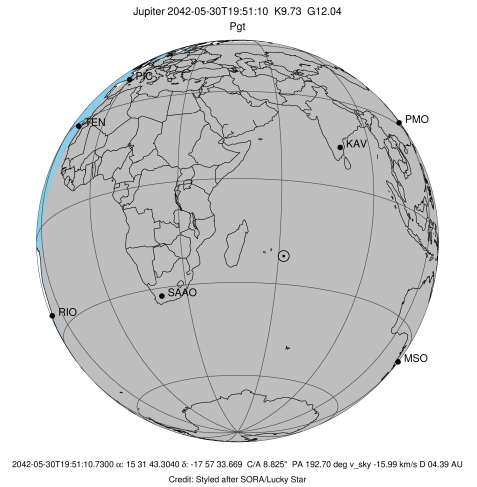


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2042-05-30T18:49:49.596	6.39	5.58x	71489.5	24.81	27.83
Jupiter	E	2042-05-30T21:00:54.189	23.32	-13.71	71488.6	29.03	32.34

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2042-05-30T19:47:01.000
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       : 6255333688664805504
2Mass ID (if available) : 15314333-1757335
ICRS Star Coord at Epoch: 15h 31m 43.30404s -17:57:33.66851s
RUWE (>1.4 is poor) : 1.34
K magnitude           : 9.727
G magnitude           : 12.037
RP magnitude          : 11.320
BP magnitude          : 12.609
DUPflag              : 0
Distance (au)        : 4.393
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.99
Sun-Target sep (deg) : 166.01
Sun-Moon sep (deg)   : 32.31
B (ring opening deg) : -3.25
PA of pole (deg)     : 14.37
Pole direction: RA (deg): 268.05647
Dec (deg): 64.49730
C/A sky separation (") : 10.337
C/A sky separation (km) : 32935.8
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
    
```

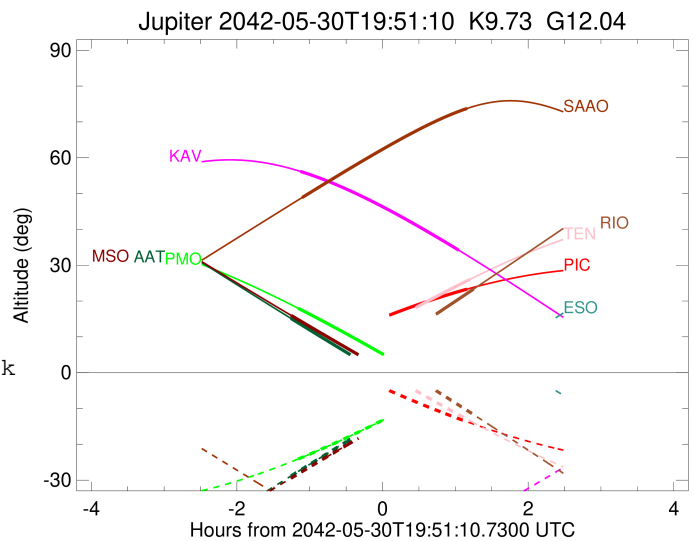
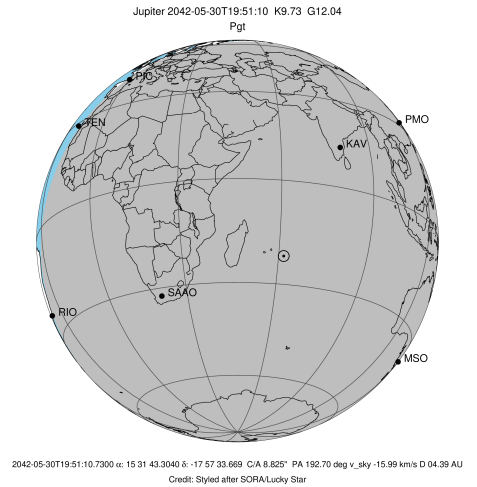


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2042-05-30T18:41:41.107	17.97	-24.09	71489.2	25.95	29.05
Jupiter	E	2042-05-30T20:52:46.467	-7.01x	-2.21x	71488.7	28.70	31.99

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2042-05-30T19:56:46.480
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      : 6255333688664805504
2Mass ID (if available) : 15314333-1757335
ICRS Star Coord at Epoch: 15h 31m 43.30404s -17:57:33.66851s
RUWE (>1.4 is poor) : 1.34
K magnitude          : 9.727
G magnitude          : 12.037
RP magnitude         : 11.320
BP magnitude         : 12.609
DUPflag             : 0
Distance (au)       : 4.393
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.99
Sun-Target sep (deg) : 166.01
Sun-Moon sep (deg)  : 31.17
B (ring opening deg) : -3.25
PA of pole (deg)    : 14.37
Pole direction: RA (deg): 268.05647
Dec (deg): 64.49730
C/A sky separation (") : 9.624
C/A sky separation (km) : 30664.2
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
    
```

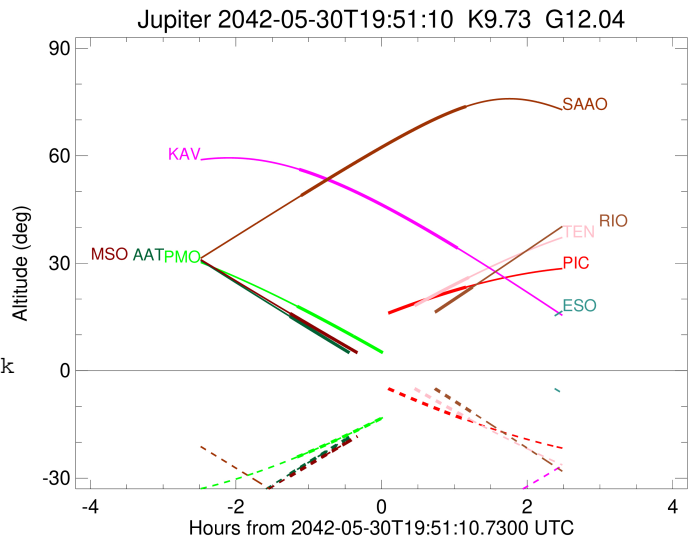
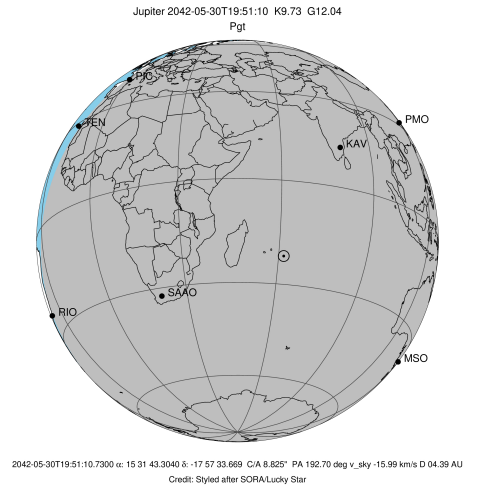


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2042-05-30T18:49:55.928	0.68x	12.96x	71489.8	23.17	26.04
Jupiter	E	2042-05-30T21:03:12.510	26.04	-13.43	71488.9	27.56	30.78

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2042-05-30T19:48:33.990
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       : 6255333688664805504
2Mass ID (if available) : 15314333-1757335
ICRS Star Coord at Epoch: 15h 31m 43.30404s -17:57:33.66851s
RUWE (>1.4 is poor) : 1.34
K magnitude           : 9.727
G magnitude           : 12.037
RP magnitude          : 11.320
BP magnitude          : 12.609
DUPflag              : 0
Distance (au)         : 4.393
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.99
Sun-Target sep (deg) : 166.01
Sun-Moon sep (deg)   : 32.42
B (ring opening deg) : -3.25
PA of pole (deg)     : 14.37
Pole direction: RA (deg): 268.05647
Dec (deg): 64.49730
C/A sky separation (") : 9.966
C/A sky separation (km) : 31753.0
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
    
```

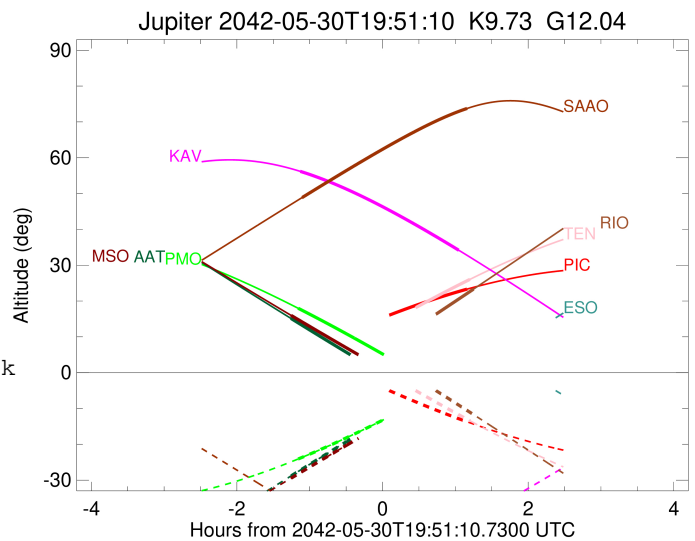
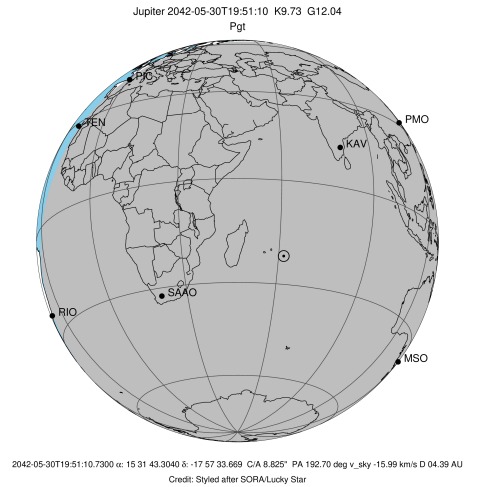


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2042-05-30T18:43:28.907	56.18	-55.63	71489.5	24.53	27.52
Jupiter	E	2042-05-30T20:53:54.047	34.20	-42.84	71488.8	27.95	31.20

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2042-05-30T19:56:25.560
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      : 6255333688664805504
2Mass ID (if available) : 15314333-1757335
ICRS Star Coord at Epoch: 15h 31m 43.30404s -17:57:33.66851s
RUWE (>1.4 is poor) : 1.34
K magnitude          : 9.727
G magnitude          : 12.037
RP magnitude         : 11.320
BP magnitude         : 12.609
DUPflag             : 0
Distance (au)       : 4.393
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.99
Sun-Target sep (deg) : 166.01
Sun-Moon sep (deg)  : 31.18
B (ring opening deg) : -3.25
PA of pole (deg)    : 14.37
Pole direction: RA (deg): 268.05647
Dec (deg): 64.49730
C/A sky separation (") : 7.729
C/A sky separation (km) : 24625.9
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
    
```

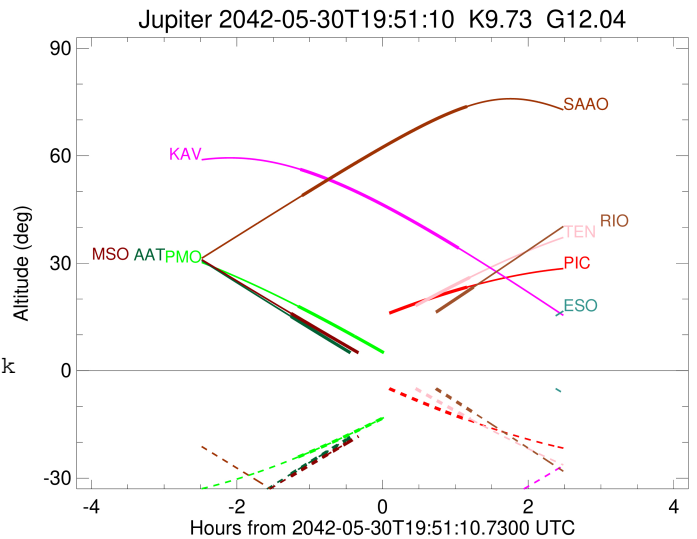
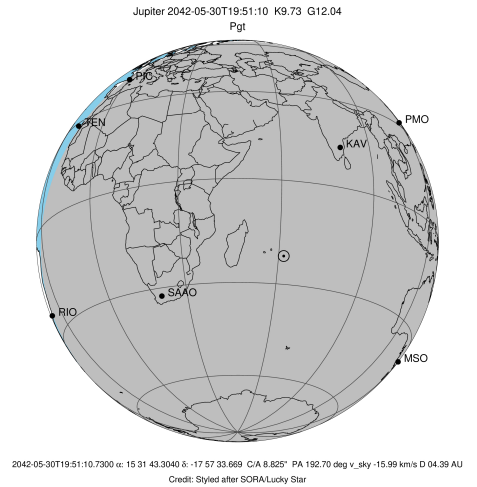


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2042-05-30T18:46:08.117	-7.64x	17.32x	71490.6	18.03	20.40
Jupiter	E	2042-05-30T21:06:11.364	23.32	-11.70	71489.9	22.29	25.09

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2042-05-30T19:45:10.150
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     : 6255333688664805504
2Mass ID (if available) : 15314333-1757335
ICRS Star Coord at Epoch: 15h 31m 43.30404s -17:57:33.66851s
RUWE (>1.4 is poor) : 1.34
K magnitude         : 9.727
G magnitude         : 12.037
RP magnitude        : 11.320
BP magnitude        : 12.609
DUPflag            : 0
Distance (au)      : 4.393
f0 (km)            : 0.00
g0 (km)            : 0.00
skyplane vel. (km/s) : -15.99
Sun-Target sep (deg) : 166.01
Sun-Moon sep (deg)  : 32.47
B (ring opening deg) : -3.25
PA of pole (deg)    : 14.37
Pole direction: RA (deg): 268.05647
Dec (deg): 64.49730
C/A sky separation (") : 8.151
C/A sky separation (km) : 25971.0
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
    
```

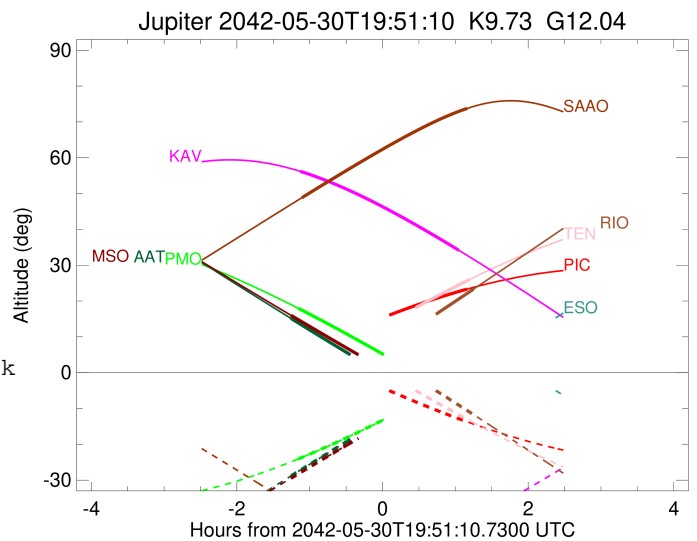
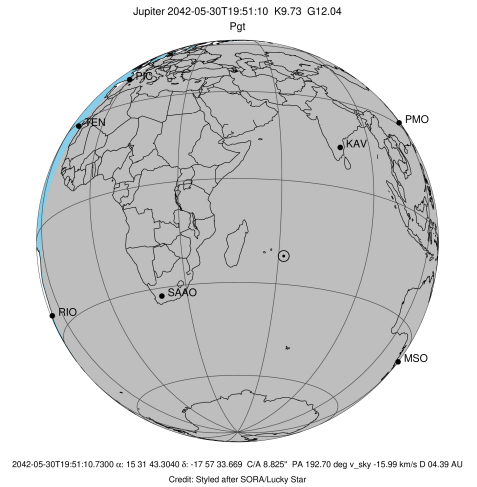


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2042-05-30T18:35:48.940	15.13	-28.82	71490.3	20.04	22.61
Jupiter	E	2042-05-30T20:55:03.043	-12.67x	-0.46x	71489.9	22.42	25.23

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2042-05-30T19:52:58.930
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      : 6255333688664805504
2Mass ID (if available) : 15314333-1757335
ICRS Star Coord at Epoch: 15h 31m 43.30404s -17:57:33.66851s
RUWE (>1.4 is poor) : 1.34
K magnitude          : 9.727
G magnitude          : 12.037
RP magnitude         : 11.320
BP magnitude         : 12.609
DUPflag             : 0
Distance (au)       : 4.393
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.99
Sun-Target sep (deg) : 166.01
Sun-Moon sep (deg)  : 31.94
B (ring opening deg) : -3.25
PA of pole (deg)    : 14.37
Pole direction: RA (deg): 268.05647
Dec (deg): 64.49730
C/A sky separation ("): 8.150
C/A sky separation (km): 25967.1
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
    
```

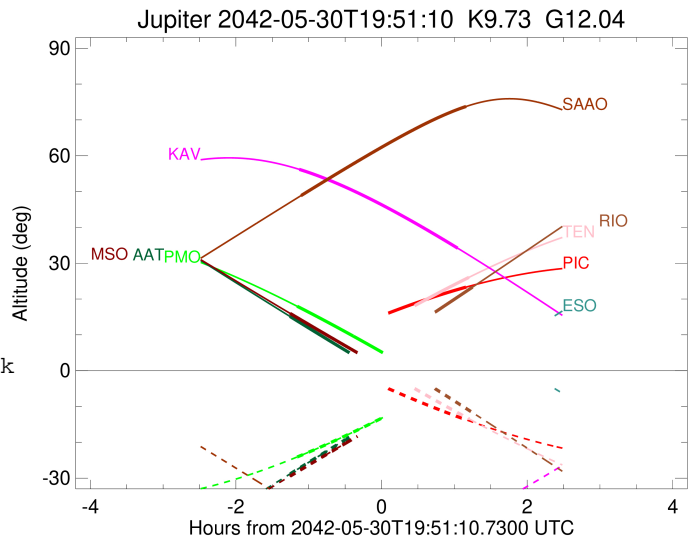
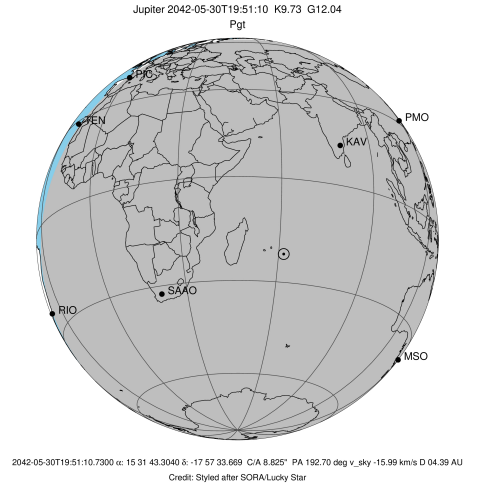


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2042-05-30T18:44:50.433	48.85	-38.46	71490.5	19.11	21.60
Jupiter	E	2042-05-30T21:00:54.996	73.75	-66.85	71489.7	23.34	26.23


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2042-05-30T19:45:19.490
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        : 6255333688664805504
2Mass ID (if available) : 15314333-1757335
ICRS Star Coord at Epoch: 15h 31m 43.30404s -17:57:33.66851s
RUWE (>1.4 is poor)  : 1.34
K magnitude           : 9.727
G magnitude           : 12.037
RP magnitude          : 11.320
BP magnitude          : 12.609
DUPflag               : 0
Distance (au)         : 4.393
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -15.99
Sun-Target sep (deg)  : 166.01
Sun-Moon sep (deg)    : 32.46
B (ring opening deg)  : -3.25
PA of pole (deg)      : 14.37
Pole direction: RA (deg): 268.05647
Dec (deg): 64.49730
C/A sky separation (") : 8.030
C/A sky separation (km) : 25584.8
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	2042-05-30T18:35:48.895	16.00	-29.46	71490.4	19.69	22.23
Jupiter	E	2042-05-30T20:55:20.549	-10.61x	-2.19x	71490.0	22.12	24.89