

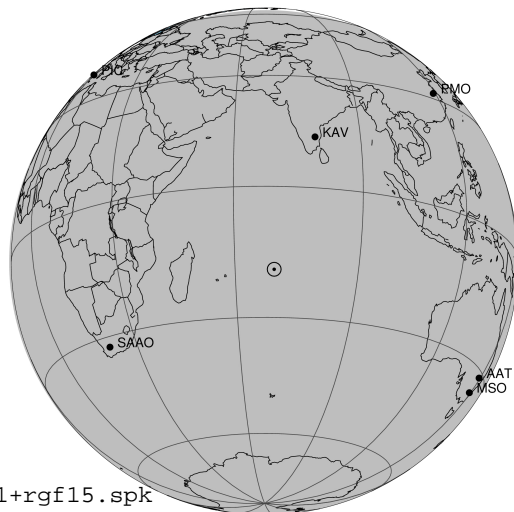
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2030-05-15T19:18:53.470
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 6259048285615039104
 2Mass ID (if available) : 15194683-1707251

Jupiter 2030-05-15T19:18:53 K8.98 G12.55 Pgt

ICRS Star Coord at Epoch: 15h 19m 46.78102s -17:07:25.75801s

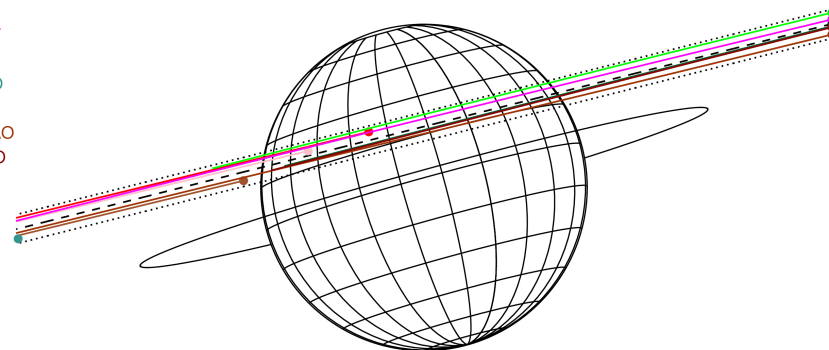
RUWE (>1.4 is poor) : 5.28
 K magnitude : 8.985
 G magnitude : 12.550
 RP magnitude : 11.432
 BP magnitude : 13.795
 DUPflag : 0
 Distance (au) : 4.385
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -16.86
 Sun-Target sep (deg) : 177.19
 Sun-Moon sep (deg) : 21.68
 B (ring opening deg) : -3.33
 PA of pole (deg) : 15.44
 Pole direction: RA (deg): 268.05725
 Dec (deg): 64.49652
 C/A sky separation (") : 8.141
 C/A sky separation (km) : 25891.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2030-05-15T19:18:53 K8.98 G12.55
 Pgt



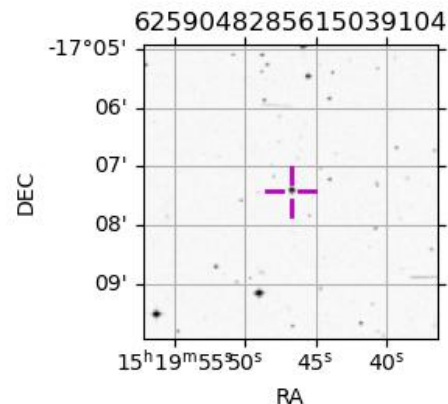
2030-05-15T19:18:53.4700 at: 15 19 46.7810 s: -17 07 25.758 C/A 8.128° PA 194.13 deg v_sky -16.86 km/s D 04.39 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



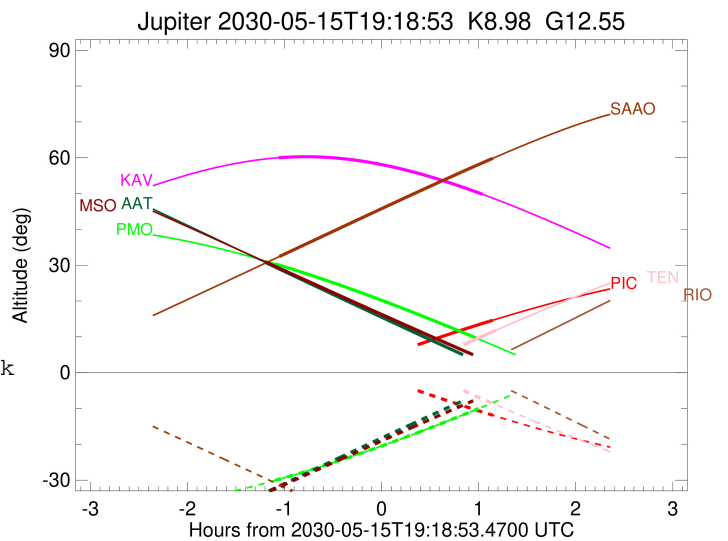
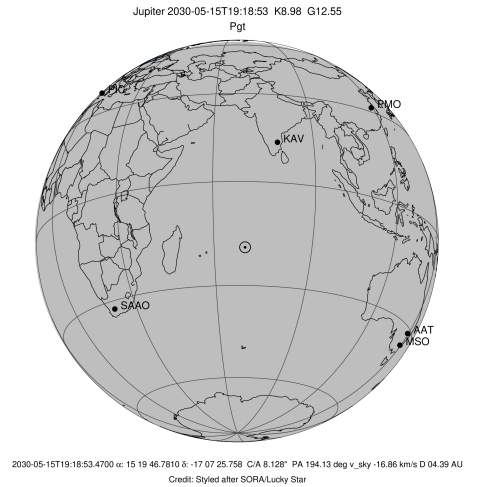
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+	MAY 15 20:27 - MAY 15 20:27	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+ +	MAY 15 18:13 - MAY 15 20:18	Pie
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 15 20:29 - MAY 15 20:29	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	MAY 15 18:15 - MAY 15 20:21	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	+	MAY 15 18:07 - MAY 15 18:07	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	MAY 15 18:15 - MAY 15 20:27	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	MAY 15 18:07 - MAY 15 18:07	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2030-05-15T19:23:53.680
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     : 6259048285615039104
2Mass ID (if available) : 15194683-1707251
ICRS Star Coord at Epoch: 15h 19m 46.78102s -17:07:25.75801s
RUWE (>1.4 is poor) : 5.28
K magnitude        : 8.985
G magnitude        : 12.550
RP magnitude       : 11.432
BP magnitude       : 13.795
DUPflag           : 0
Distance (au)     : 4.385
f0 (km)           : 0.00
g0 (km)           : 0.00
skyplane vel. (km/s) : -16.86
Sun-Target sep (deg) : 177.19
Sun-Moon sep (deg) : 21.06
B (ring opening deg) : -3.33
PA of pole (deg)  : 15.44
Pole direction: RA (deg): 268.05725
Dec (deg): 64.49652
C/A sky separation (") : 9.251
C/A sky separation (km) : 29423.2
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
    
```

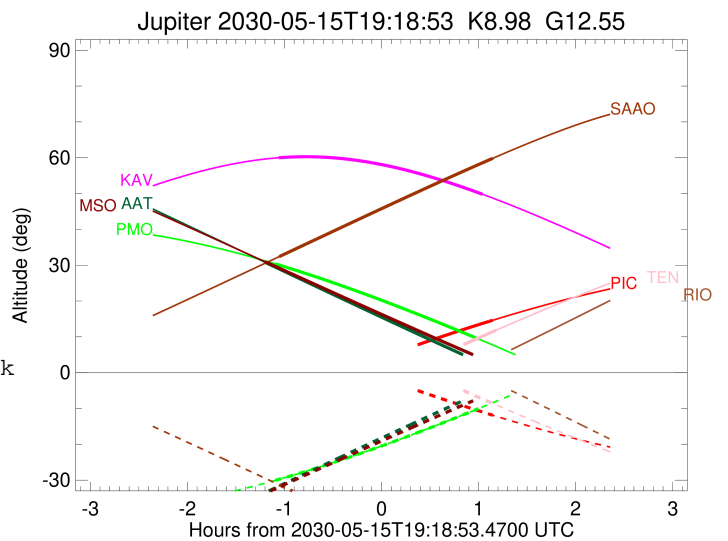
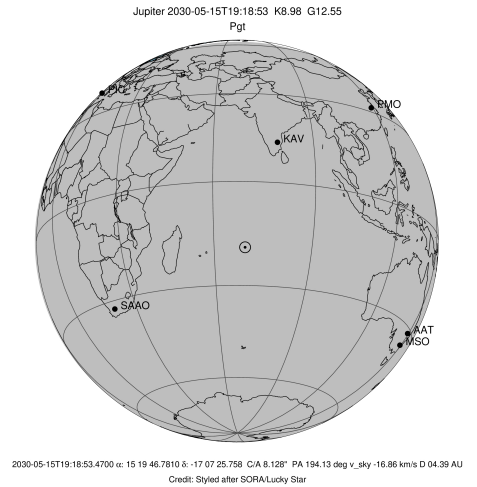


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2030-05-15T18:19:44.774	-5.78x	8.55x	71489.8	22.56	25.38
Jupiter	E	2030-05-15T20:27:43.469	14.64	-11.89	71489.1	25.99	29.10

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2030-05-15T19:15:55.070
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      : 6259048285615039104
2Mass ID (if available) : 15194683-1707251
ICRS Star Coord at Epoch: 15h 19m 46.78102s -17:07:25.75801s
RUWE (>1.4 is poor) : 5.28
K magnitude          : 8.985
G magnitude          : 12.550
RP magnitude         : 11.432
BP magnitude         : 13.795
DUPflag             : 0
Distance (au)       : 4.385
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.86
Sun-Target sep (deg) : 177.19
Sun-Moon sep (deg)  : 22.43
B (ring opening deg) : -3.33
PA of pole (deg)    : 15.44
Pole direction: RA (deg): 268.05725
Dec (deg): 64.49652
C/A sky separation ("): 9.750
C/A sky separation (km): 31007.7
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
    
```

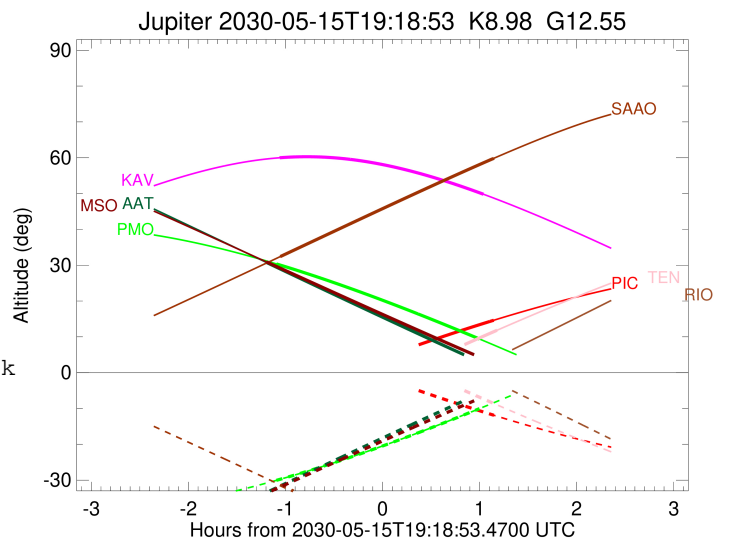
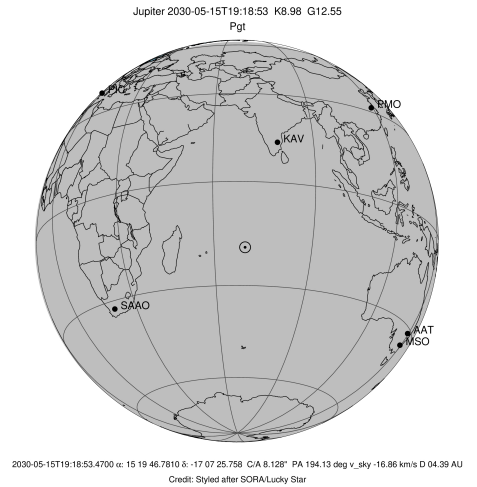


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2030-05-15T18:13:17.771	30.35	-30.06	71489.4	24.38	27.35
Jupiter	E	2030-05-15T20:18:49.296	9.40	-10.03	71488.9	26.81	29.97

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2030-05-15T19:24:45.930
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      : 6259048285615039104
2Mass ID (if available) : 15194683-1707251
ICRS Star Coord at Epoch: 15h 19m 46.78102s -17:07:25.75801s
RUWE (>1.4 is poor) : 5.28
K magnitude          : 8.985
G magnitude          : 12.550
RP magnitude         : 11.432
BP magnitude         : 13.795
DUPflag             : 0
Distance (au)       : 4.385
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.86
Sun-Target sep (deg) : 177.19
Sun-Moon sep (deg)  : 20.83
B (ring opening deg) : -3.33
PA of pole (deg)    : 15.44
Pole direction: RA (deg): 268.05725
Dec (deg): 64.49652
C/A sky separation (") : 8.664
C/A sky separation (km) : 27554.2
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
    
```

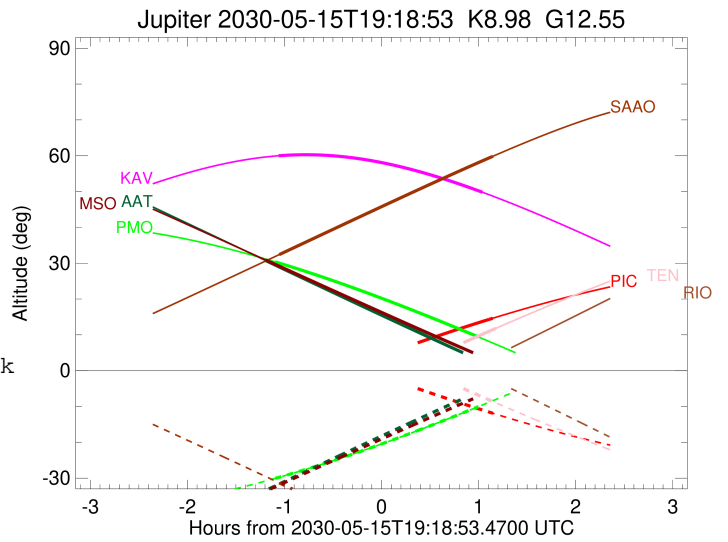
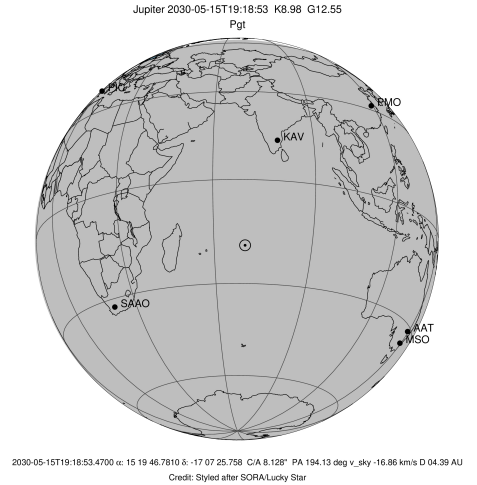


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2030-05-15T18:19:26.389	-15.31x	17.99x	71490.1	20.93	23.59
Jupiter	E	2030-05-15T20:29:39.911	11.84	-8.99	71489.4	24.41	27.39

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2030-05-15T19:18:18.080
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        : 6259048285615039104
2Mass ID (if available) : 15194683-1707251
ICRS Star Coord at Epoch: 15h 19m 46.78102s -17:07:25.75801s
RUWE (>1.4 is poor) : 5.28
K magnitude           : 8.985
G magnitude           : 12.550
RP magnitude          : 11.432
BP magnitude          : 13.795
DUPflag              : 0
Distance (au)         : 4.385
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.86
Sun-Target sep (deg)  : 177.19
Sun-Moon sep (deg)   : 22.19
B (ring opening deg) : -3.33
PA of pole (deg)     : 15.44
Pole direction: RA (deg): 268.05725
Dec (deg): 64.49652
C/A sky separation (") : 9.190
C/A sky separation (km) : 29227.1
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
    
```

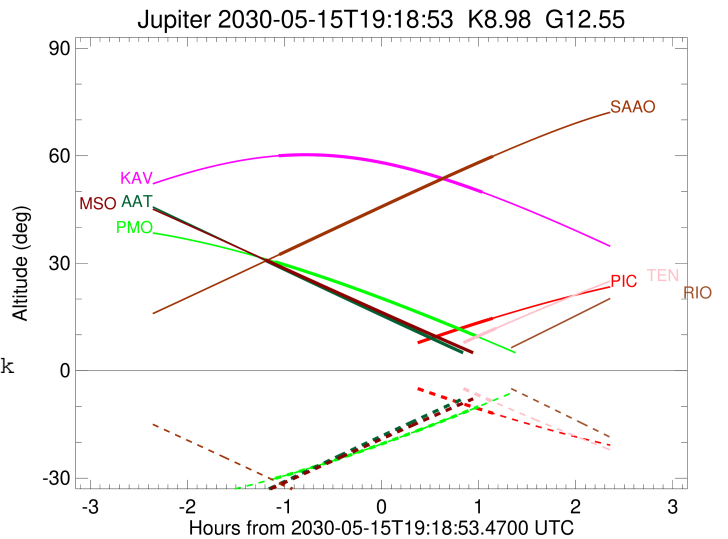
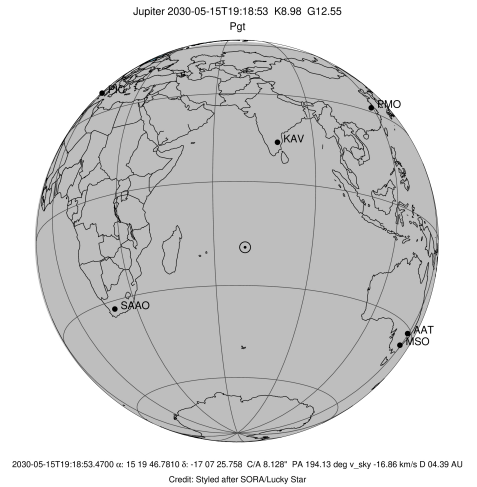


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2030-05-15T18:15:24.186	59.98	-57.87	71489.8	22.45	25.26
Jupiter	E	2030-05-15T20:21:15.804	49.81	-49.96	71489.2	25.59	28.67

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2030-05-15T19:13:10.570
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     : 6259048285615039104
2Mass ID (if available) : 15194683-1707251
ICRS Star Coord at Epoch: 15h 19m 46.78102s -17:07:25.75801s
RUWE (>1.4 is poor) : 5.28
K magnitude         : 8.985
G magnitude         : 12.550
RP magnitude        : 11.432
BP magnitude        : 13.795
DUPflag            : 0
Distance (au)      : 4.385
f0 (km)            : 0.00
g0 (km)            : 0.00
skyplane vel. (km/s) : -16.86
Sun-Target sep (deg) : 177.19
Sun-Moon sep (deg)  : 22.59
B (ring opening deg) : -3.33
PA of pole (deg)   : 15.44
Pole direction: RA (deg): 268.05725
Dec (deg): 64.49652
C/A sky separation (" ) : 7.672
C/A sky separation (km) : 24399.7
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
    
```

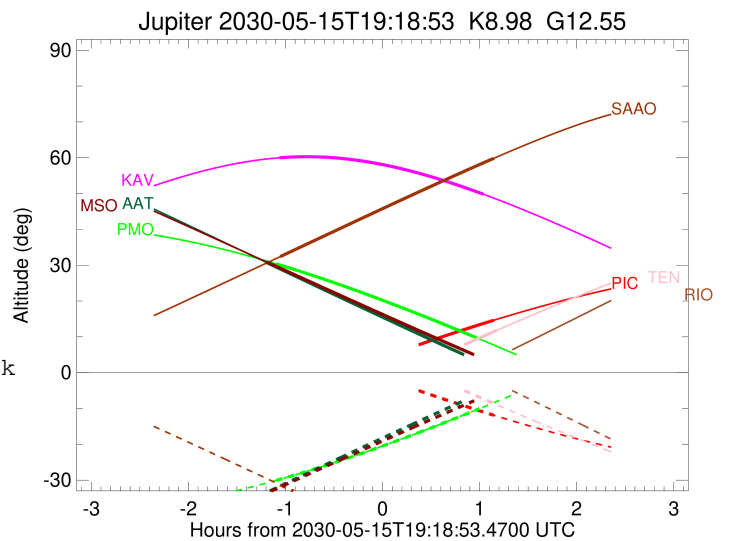
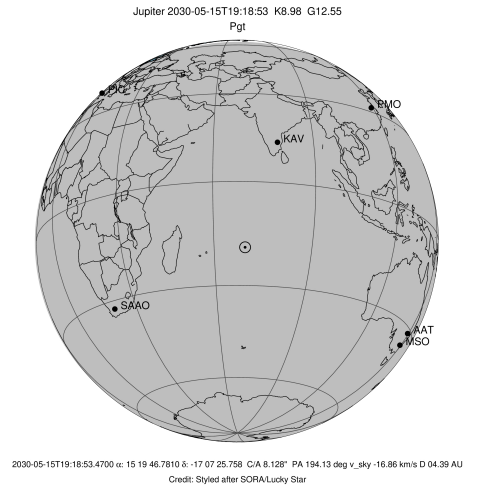


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2030-05-15T18:07:16.317	30.75	-33.43	71490.4	18.88	21.34
Jupiter	E	2030-05-15T20:19:30.109	2.91x	-5.74	71490.1	20.85	23.51

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2030-05-15T19:21:52.840
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       : 6259048285615039104
2Mass ID (if available) : 15194683-1707251
ICRS Star Coord at Epoch: 15h 19m 46.78102s -17:07:25.75801s
RUWE (>1.4 is poor) : 5.28
K magnitude           : 8.985
G magnitude           : 12.550
RP magnitude         : 11.432
BP magnitude         : 13.795
DUPflag              : 0
Distance (au)        : 4.385
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.86
Sun-Target sep (deg) : 177.19
Sun-Moon sep (deg)   : 21.38
B (ring opening deg) : -3.33
PA of pole (deg)     : 15.44
Pole direction: RA (deg): 268.05725
Dec (deg): 64.49652
C/A sky separation (") : 7.200
C/A sky separation (km) : 22900.3
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
    
```

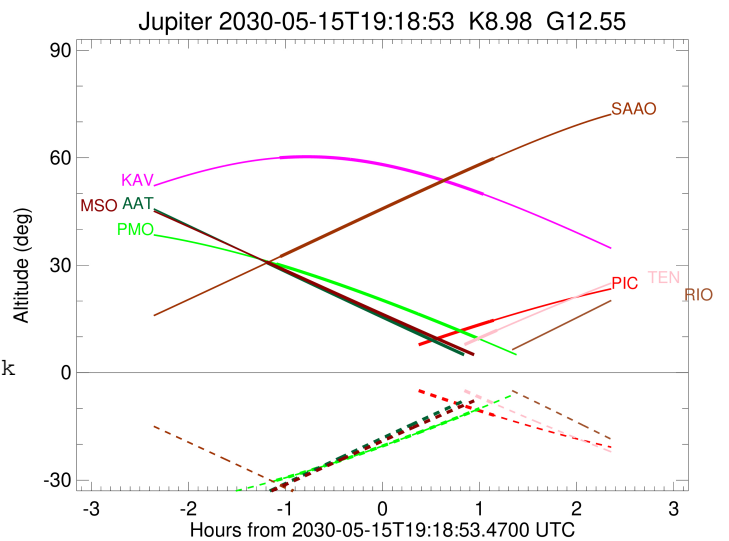
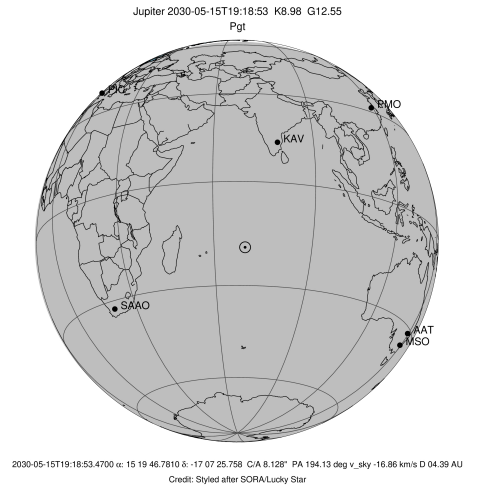


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2030-05-15T18:15:42.693	32.40	-31.32	71490.7	16.85	19.09
Jupiter	E	2030-05-15T20:27:44.111	59.84	-58.97	71490.2	20.44	23.05

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2030-05-15T19:13:18.780
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      : 6259048285615039104
2Mass ID (if available) : 15194683-1707251
ICRS Star Coord at Epoch: 15h 19m 46.78102s -17:07:25.75801s
RUWE (>1.4 is poor) : 5.28
K magnitude          : 8.985
G magnitude          : 12.550
RP magnitude         : 11.432
BP magnitude         : 13.795
DUPflag             : 0
Distance (au)       : 4.385
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.86
Sun-Target sep (deg) : 177.19
Sun-Moon sep (deg)  : 22.57
B (ring opening deg) : -3.33
PA of pole (deg)    : 15.44
Pole direction: RA (deg): 268.05725
Dec (deg): 64.49652
C/A sky separation ("): 7.541
C/A sky separation (km): 23982.7
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	2030-05-15T18:07:14.332	30.90	-33.63	71490.5	18.51	20.94
Jupiter	E	2030-05-15T20:19:47.512	4.17x	-7.02	71490.1	20.51	23.14