

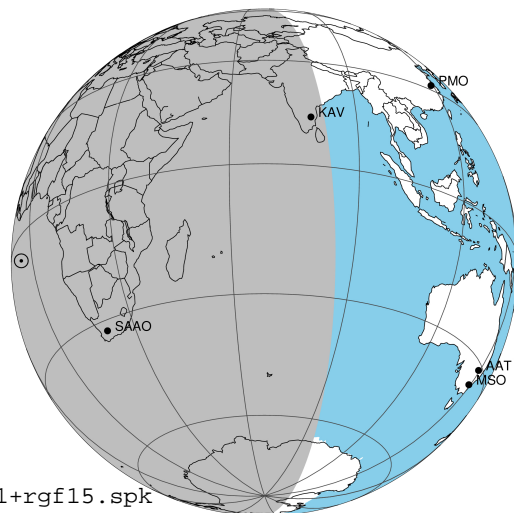
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-04-05T00:30:08.820
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4070200249968817792
 2Mass ID (if available) : 17525594-2253376

Jupiter 2031-04-05T00:30:08 K4.81 G11.48 Pgt

ICRS Star Coord at Epoch: 17h 52m 55.94041s -22:53:37.68089s

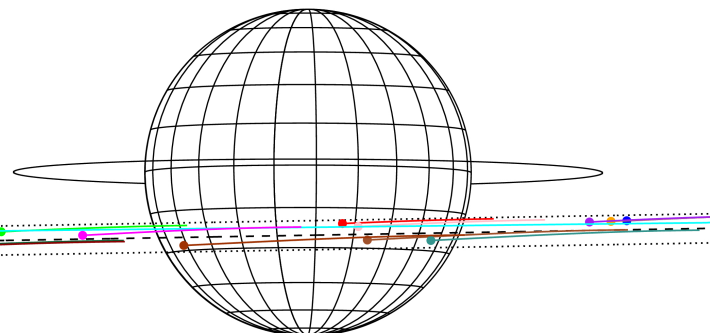
RUWE (>1.4 is poor) : 0.84
 K magnitude : 4.807
 G magnitude : 11.483
 RP magnitude : 9.945
 BP magnitude : 15.277
 DUPflag : 1
 Distance (au) : 4.937
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 4.84
 Sun-Target sep (deg) : 106.23
 Sun-Moon sep (deg) : 107.32
 B (ring opening deg) : -2.61
 PA of pole (deg) : -0.08
 Pole direction: RA (deg): 268.05698
 Dec (deg): 64.49651
 C/A sky separation (") : 7.678
 C/A sky separation (km) : 27493.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-04-05T00:30:08 K4.81 G11.48
 Pgt



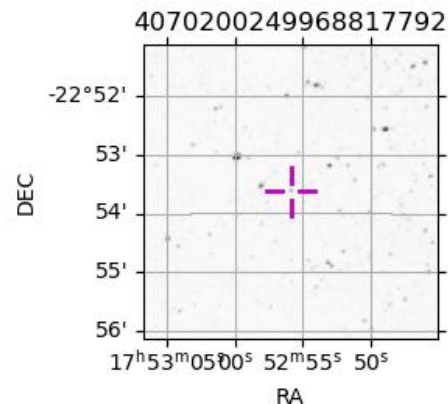
2031-04-05T00:30:08.8200 α: 17 52 55.9404 δ: -22 53 37.681 C/A 7.689° PA 0.98 deg v_sky + 4.84 km/s D 04.94 AU
 Credit: Styled after SORA/Lucky Star

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



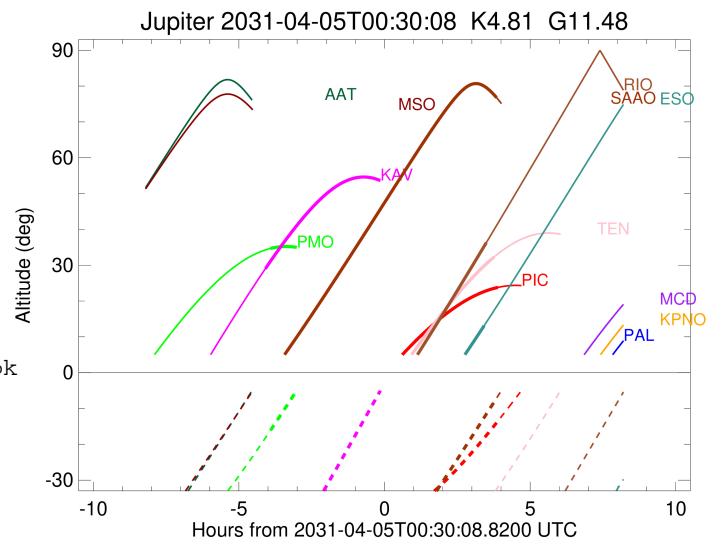
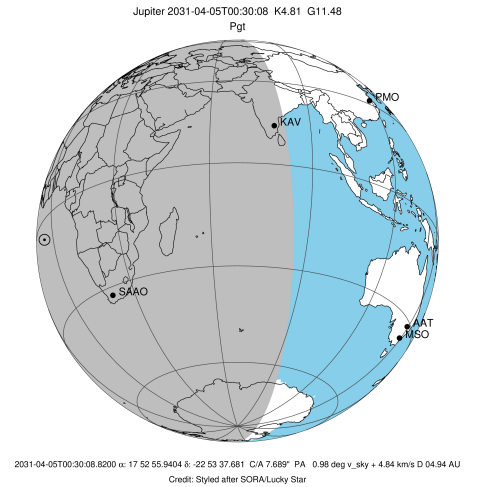
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+	APR 05 04:23 - APR 05 04:23	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	APR 04 20:35 - APR 04 20:35	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	+	APR 05 04:15 - APR 05 04:15	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+	APR 04 20:24 - APR 04 20:24	Pin
RIO	Rio de Janeiro	-22.9	316.8	+	APR 05 03:59 - APR 05 03:59	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	APR 05 03:55 - APR 05 03:55	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	APR 05 04:21 - APR 05 04:21	Pne
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-04-05T00:16:48.550
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       : 4070200249968817792
2Mass ID (if available) : 17525594-2253376
ICRS Star Coord at Epoch: 17h 52m 55.94041s -22:53:37.68089s
RUWE (>1.4 is poor) : 0.84
K magnitude           : 4.807
G magnitude           : 11.483
RP magnitude          : 9.945
BP magnitude          : 15.277
DUPflag              : 1
Distance (au)         : 4.937
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 4.84
Sun-Target sep (deg)  : 106.23
Sun-Moon sep (deg)    : 107.49
B (ring opening deg) : -2.61
PA of pole (deg)      : -0.08
Pole direction: RA (deg): 268.05698
Dec (deg): 64.49651
C/A sky separation (") : 6.421
C/A sky separation (km) : 22994.0
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
    
```

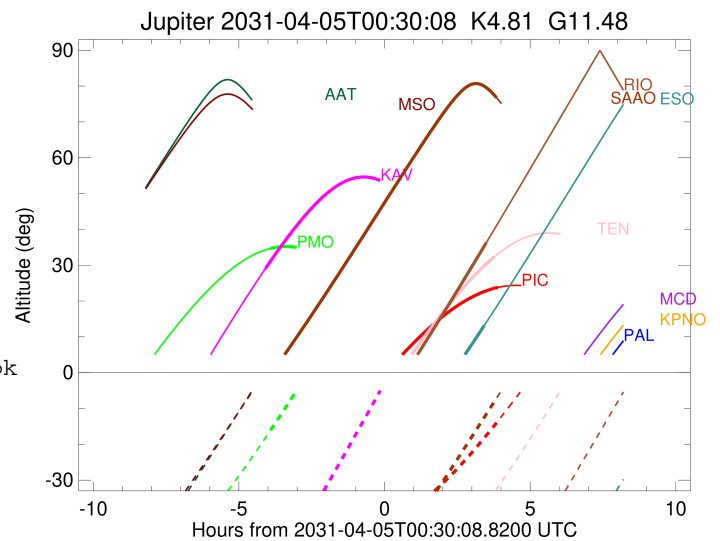
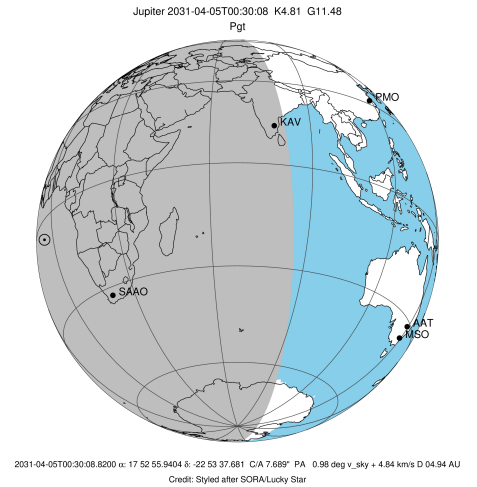


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-04-04T20:28:27.388	-43.24x	-21.44	71490.8	-21.24	-23.93
Jupiter	E	2031-04-05T04:23:38.665	23.79	-13.53	71491.2	-16.61	-18.82

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-04-05T00:42:55.350
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       : 4070200249968817792
2Mass ID (if available) : 17525594-2253376
ICRS Star Coord at Epoch: 17h 52m 55.94041s -22:53:37.68089s
RUWE (>1.4 is poor) : 0.84
K magnitude           : 4.807
G magnitude           : 11.483
RP magnitude          : 9.945
BP magnitude          : 15.277
DUPflag              : 1
Distance (au)        : 4.937
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 4.84
Sun-Target sep (deg) : 106.23
Sun-Moon sep (deg)   : 107.38
B (ring opening deg) : -2.61
PA of pole (deg)     : -0.08
Pole direction: RA (deg): 268.05698
Dec (deg): 64.49651
C/A sky separation (") : 6.452
C/A sky separation (km) : 23101.6
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
    
```

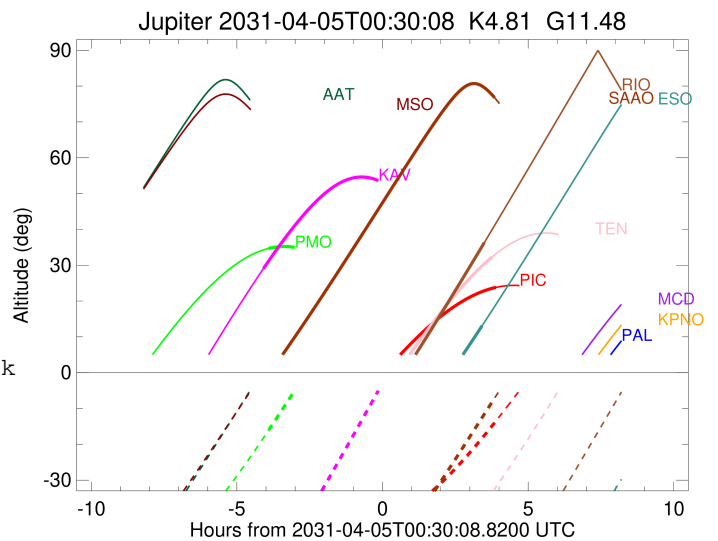
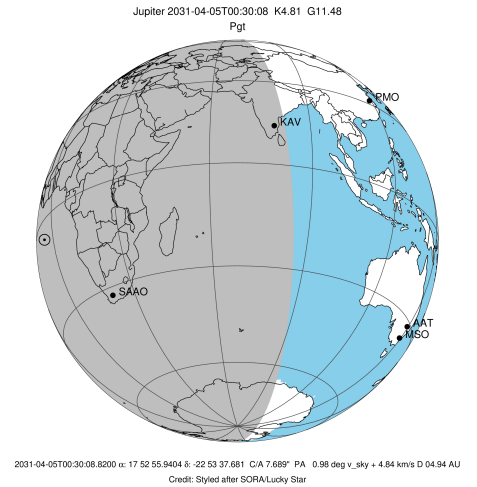


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-04-04T20:35:22.437	34.67	-16.08	71491.0	-19.23	-21.72
Jupiter	E	2031-04-05T04:39:42.101	-31.02x	63.03x	71491.0	-19.52	-22.05

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2031-04-05T00:13:28.910
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        : 4070200249968817792
2Mass ID (if available) : 17525594-2253376
ICRS Star Coord at Epoch: 17h 52m 55.94041s -22:53:37.68089s
RUWE (>1.4 is poor)  : 0.84
K magnitude            : 4.807
G magnitude            : 11.483
RP magnitude           : 9.945
BP magnitude           : 15.277
DUPflag               : 1
Distance (au)         : 4.937
f0 (km)                : 0.00
g0 (km)                : 0.00
skyplane vel. (km/s)  : 4.84
Sun-Target sep (deg)  : 106.23
Sun-Moon sep (deg)    : 107.47
B (ring opening deg)  : -2.61
PA of pole (deg)      : -0.08
Pole direction: RA (deg): 268.05698
Dec (deg): 64.49651
C/A sky separation (") : 6.916
C/A sky separation (km) : 24766.1
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
    
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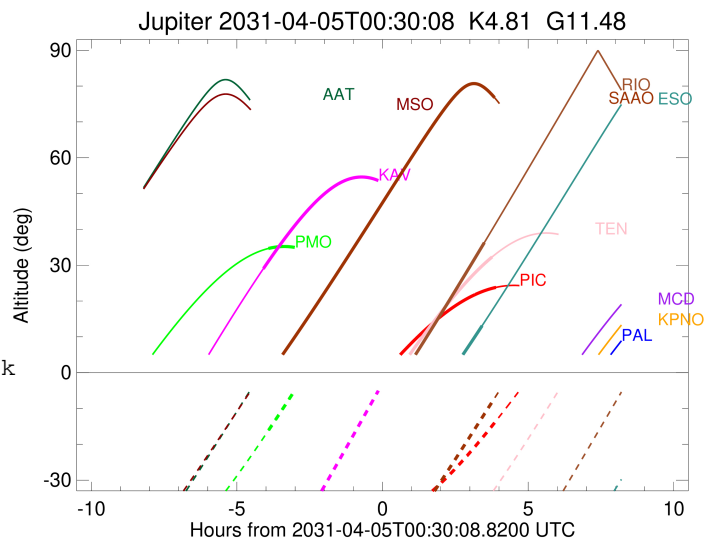
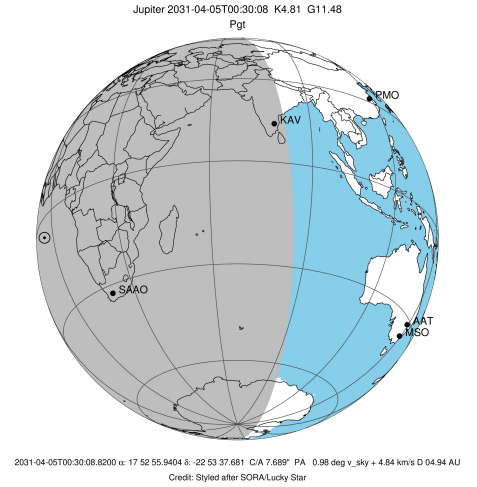


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-04-04T20:32:12.543	-57.37x	-15.29	71490.6	-22.83	-25.67
Jupiter	E	2031-04-05T04:15:52.366	32.29	-33.48	71491.2	-17.54	-19.86

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-04-05T00:33:45.950
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      : 4070200249968817792
2Mass ID (if available) : 17525594-2253376
ICRS Star Coord at Epoch: 17h 52m 55.94041s -22:53:37.68089s
RUWE (>1.4 is poor) : 0.84
K magnitude          : 4.807
G magnitude          : 11.483
RP magnitude        : 9.945
BP magnitude        : 15.277
DUPflag             : 1
Distance (au)       : 4.937
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 4.84
Sun-Target sep (deg) : 106.23
Sun-Moon sep (deg)  : 107.97
B (ring opening deg) : -2.61
PA of pole (deg)    : -0.08
Pole direction: RA (deg): 268.05698
Dec (deg): 64.49651
C/A sky separation ("): 6.656
C/A sky separation (km): 23833.1
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
    
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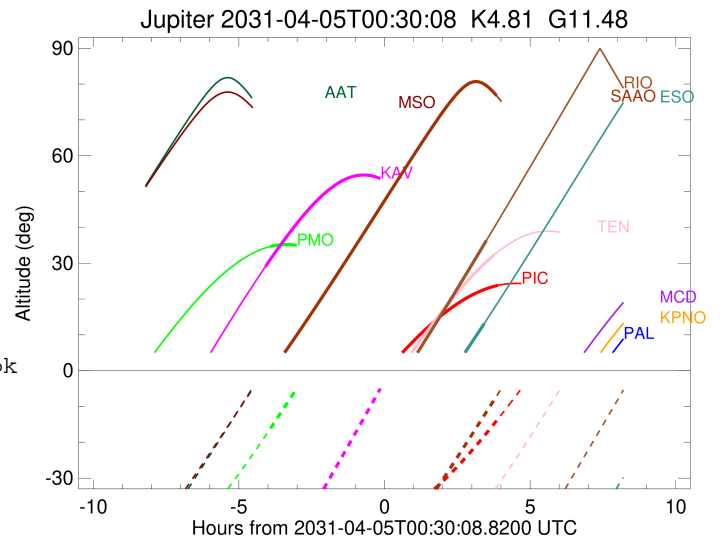
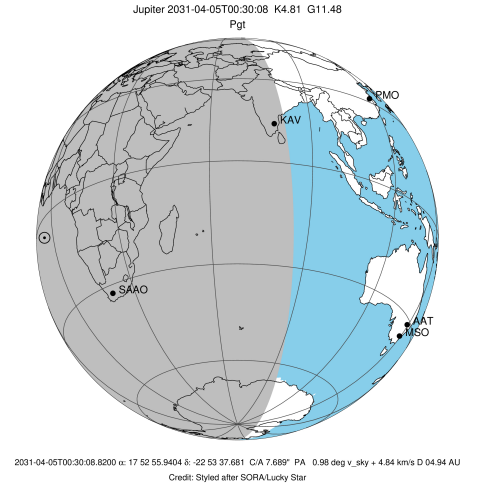


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-04-04T20:24:36.485	29.00	-59.71	71490.8	-21.29	-23.99
Jupiter	E	2031-04-05T04:42:52.419	9.30	58.59x	71490.9	-19.80	-22.35

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-04-05T00:15:06.370
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       : 4070200249968817792
2Mass ID (if available) : 17525594-2253376
ICRS Star Coord at Epoch: 17h 52m 55.94041s -22:53:37.68089s
RUWE (>1.4 is poor) : 0.84
K magnitude          : 4.807
G magnitude          : 11.483
RP magnitude         : 9.945
BP magnitude         : 15.277
DUPflag             : 1
Distance (au)        : 4.937
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 4.84
Sun-Target sep (deg) : 106.23
Sun-Moon sep (deg)   : 107.43
B (ring opening deg) : -2.61
PA of pole (deg)     : -0.08
Pole direction: RA (deg): 268.05698
Dec (deg): 64.49651
C/A sky separation ("): 8.607
C/A sky separation (km): 30819.4
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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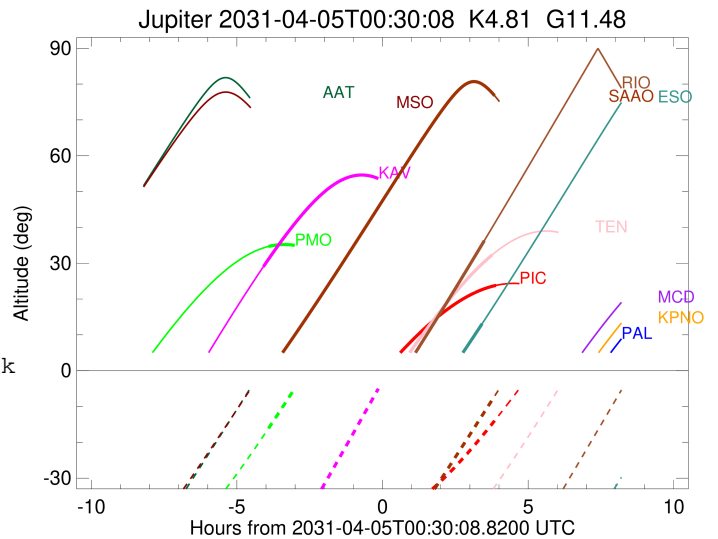
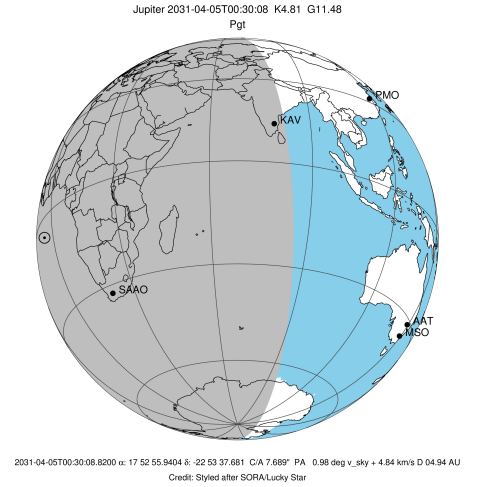


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-04-04T20:47:29.365	-42.65x	-0.36x	71490.0	-27.63	-30.85
Jupiter	E	2031-04-05T03:59:57.311	36.31	-67.17	71490.6	-22.54	-25.35


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-04-05T00:20:22.780
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        : 4070200249968817792
2Mass ID (if available) : 17525594-2253376
ICRS Star Coord at Epoch: 17h 52m 55.94041s -22:53:37.68089s
RUWE (>1.4 is poor) : 0.84
K magnitude           : 4.807
G magnitude           : 11.483
RP magnitude          : 9.945
BP magnitude          : 15.277
DUPflag              : 1
Distance (au)         : 4.937
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 4.84
Sun-Target sep (deg)  : 106.23
Sun-Moon sep (deg)    : 107.12
B (ring opening deg)  : -2.61
PA of pole (deg)      : -0.08
Pole direction: RA (deg): 268.05698
Dec (deg): 64.49651
C/A sky separation (") : 8.962
C/A sky separation (km) : 32092.0
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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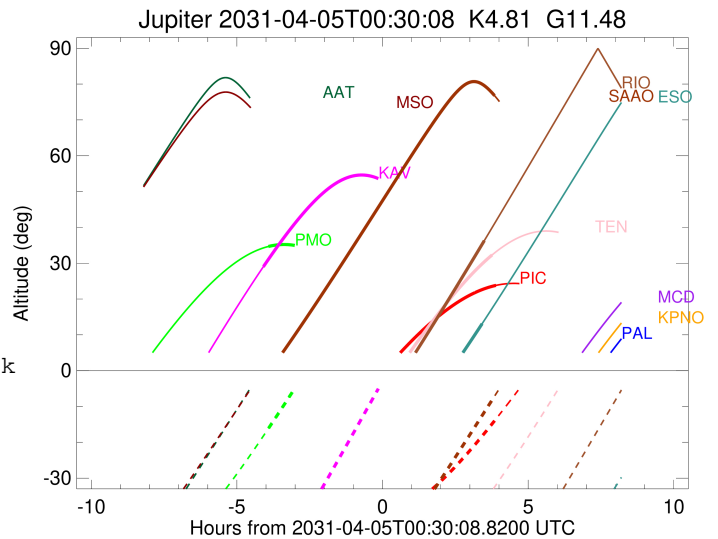
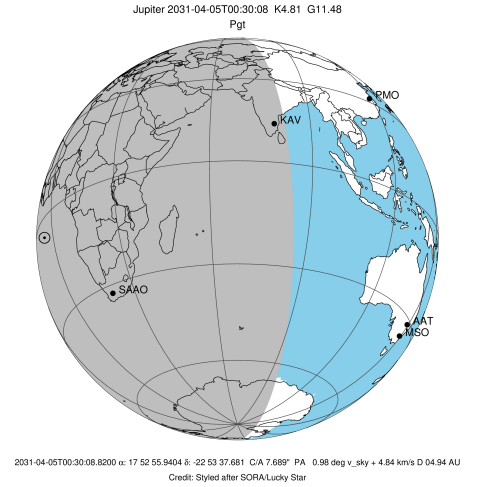


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-04-04T20:56:44.108	-36.68x	20.40x	71489.9	-28.02	-31.27
Jupiter	E	2031-04-05T03:55:28.946	13.12	-64.01	71490.5	-24.01	-26.96

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-04-05T00:18:38.790
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        : 4070200249968817792
2Mass ID (if available) : 17525594-2253376
ICRS Star Coord at Epoch: 17h 52m 55.94041s -22:53:37.68089s
RUWE (>1.4 is poor) : 0.84
K magnitude           : 4.807
G magnitude           : 11.483
RP magnitude          : 9.945
BP magnitude          : 15.277
DUPflag              : 1
Distance (au)         : 4.937
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 4.84
Sun-Target sep (deg) : 106.23
Sun-Moon sep (deg)   : 108.17
B (ring opening deg) : -2.61
PA of pole (deg)     : -0.08
Pole direction: RA (deg): 268.05698
Dec (deg): 64.49651
C/A sky separation (") : 8.195
C/A sky separation (km) : 29343.9
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	2031-04-04T20:33:11.690	-0.90x	-50.46	71490.1	-26.98	-30.16
Jupiter	E	2031-04-05T04:21:09.299	76.74	-7.08	71490.6	-22.45	-25.26