

target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-05-15T04:35:06.740
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4066588255539512064
 2Mass ID (if available) : 18084755-2300461

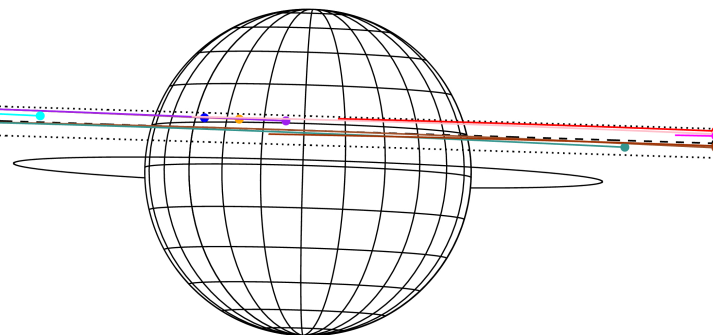
Jupiter 2043-05-15T04:35:06 K9.62 G13.96 Pgt

ICRS Star Coord at Epoch: 18h 08m 47.53878s -23:00:46.27861s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 9.623
 G magnitude : 13.958
 RP magnitude : 12.844
 BP magnitude : 15.251
 DUPflag : 0
 Distance (au) : 4.449
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -10.05
 Sun-Target sep (deg) : 141.65
 Sun-Moon sep (deg) : 136.46
 B (ring opening deg) : -2.43
 PA of pole (deg) : -1.78
 Pole direction: RA (deg): 268.05667
 Dec (deg): 64.49732
 C/A sky separation (") : 5.690
 C/A sky separation (km) : 18357.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



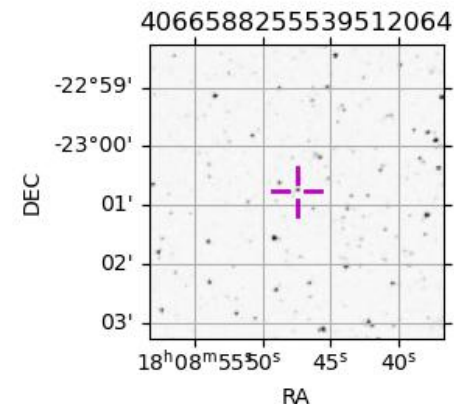
2043-05-15T04:35:06.7400 at: 18 08 47.5388 s: -23 00 46.279 C/A 5.678" PA 178.21 deg v_sky -10.05 km/s D 04.45 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 KAV
 RIO
 ESO
 SAAO



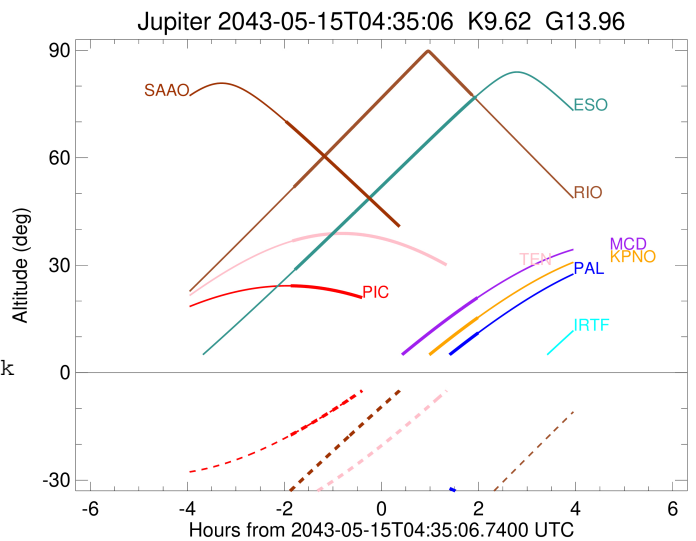
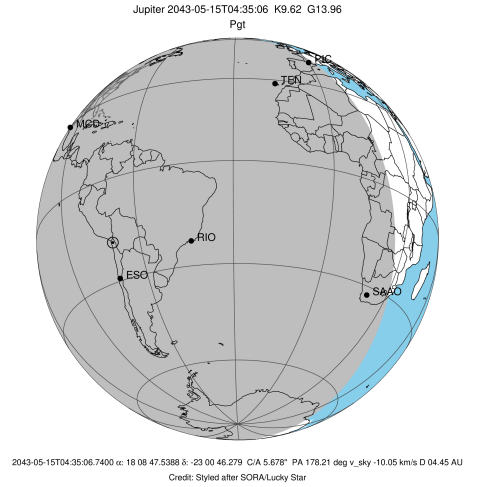
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	MAY 15 02:42 - MAY 15 02:42	Pin
PAL	Palomar Mt (200")	33.4	243.1	+	MAY 15 06:34 - MAY 15 06:34	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	MAY 15 06:34 - MAY 15 06:34	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	MAY 15 06:33 - MAY 15 06:33	Pne
TEN	Teide Obs./Tenerife	28.3	343.5	+	MAY 15 02:45 - MAY 15 02:45	Pin
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	MAY 15 02:46 - MAY 15 06:27	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	MAY 15 02:48 - MAY 15 06:31	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	MAY 15 02:36 - MAY 15 02:36	Pin
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-15T04:31:25.290
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      : 4066588255539512064
2Mass ID (if available) : 18084755-2300461
ICRS Star Coord at Epoch: 18h 08m 47.53878s -23:00:46.27861s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 9.623
G magnitude          : 13.958
RP magnitude         : 12.844
BP magnitude         : 15.251
DUPflag             : 0
Distance (au)       : 4.449
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -10.05
Sun-Target sep (deg) : 141.65
Sun-Moon sep (deg)  : 136.47
B (ring opening deg) : -2.43
PA of pole (deg)    : -1.78
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (") : 7.398
C/A sky separation (km) : 23871.4
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
    
```

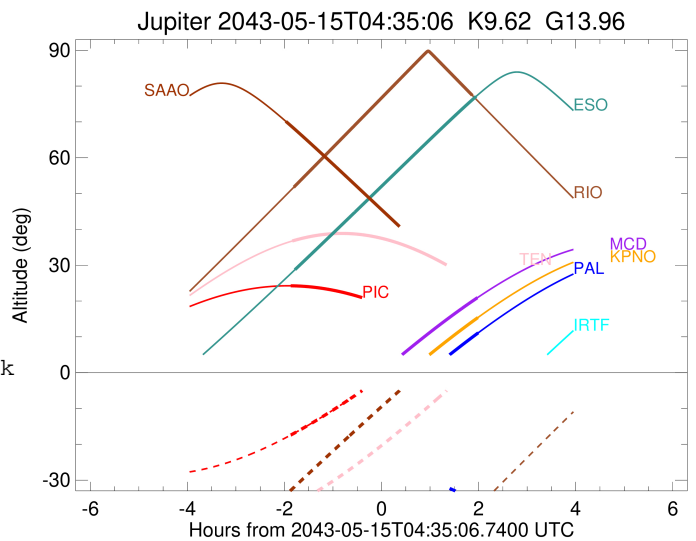
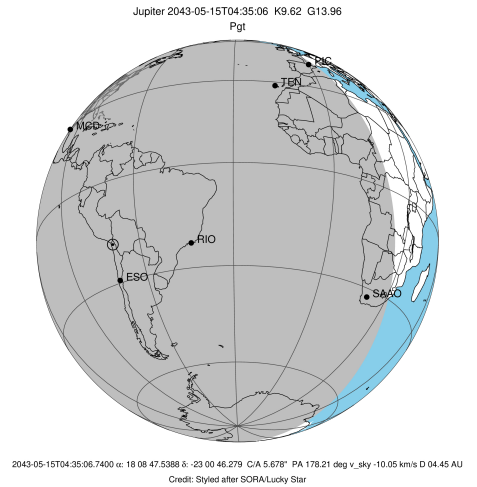


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-15T02:42:54.172	24.24	-17.42	71491.1	19.72	22.27
Jupiter	E	2043-05-15T06:20:28.795	6.85	17.11x	71491.1	18.96	21.43

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch             : 2043-05-15T04:43:11.540
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : PAL
Location              : Palomar Mt (200")
Latitude (deg)        : 33.35622
E. Longitude (deg)    : 243.13601
Altitude (km)         : 1.706
Gaia source ID        : 4066588255539512064
2Mass ID (if available) : 18084755-2300461
ICRS Star Coord at Epoch: 18h 08m 47.53878s -23:00:46.27861s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.623
G magnitude           : 13.958
RP magnitude          : 12.844
BP magnitude          : 15.251
DUPflag              : 0
Distance (au)         : 4.449
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -10.05
Sun-Target sep (deg)  : 141.65
Sun-Moon sep (deg)    : 136.94
B (ring opening deg) : -2.43
PA of pole (deg)      : -1.78
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (") : 6.788
C/A sky separation (km) : 21902.1
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
    
```

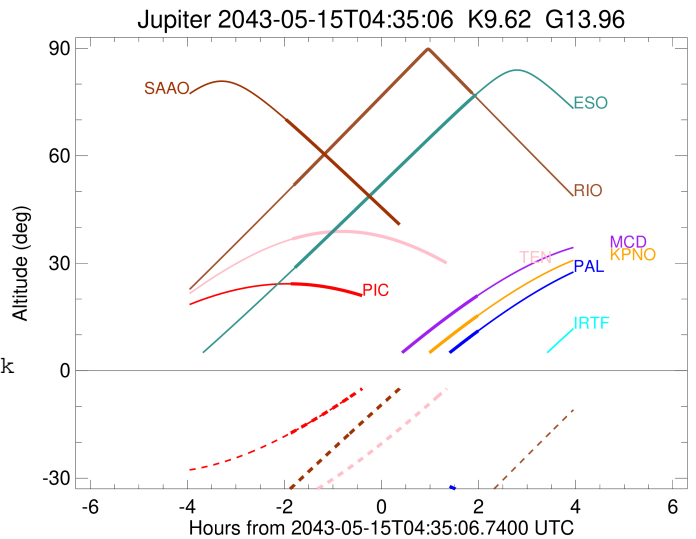
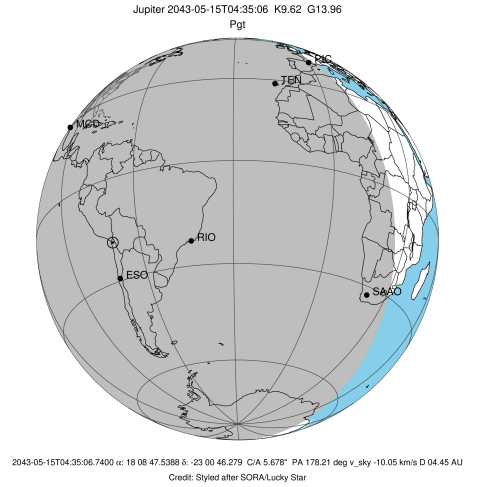


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-15T02:49:27.544	-32.32x	-2.72x	71491.3	16.95	19.20
Jupiter	E	2043-05-15T06:34:36.618	11.11	-35.40	71491.2	18.61	21.04

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-15T04:43:14.040
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : KPNO
Location            : Kitt Peak Natl Obs
Latitude (deg)      : 31.96333
E. Longitude (deg)  : 248.40000
Altitude (km)       : 2.120
Gaia source ID      : 4066588255539512064
2Mass ID (if available) : 18084755-2300461
ICRS Star Coord at Epoch: 18h 08m 47.53878s -23:00:46.27861s
RUWE (>1.4 is poor) : 0.97
K magnitude         : 9.623
G magnitude         : 13.958
RP magnitude        : 12.844
BP magnitude        : 15.251
DUPflag            : 0
Distance (au)       : 4.449
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -10.05
Sun-Target sep (deg) : 141.65
Sun-Moon sep (deg)  : 137.00
B (ring opening deg) : -2.43
PA of pole (deg)    : -1.78
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (") : 6.812
C/A sky separation (km) : 21979.3
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
    
```

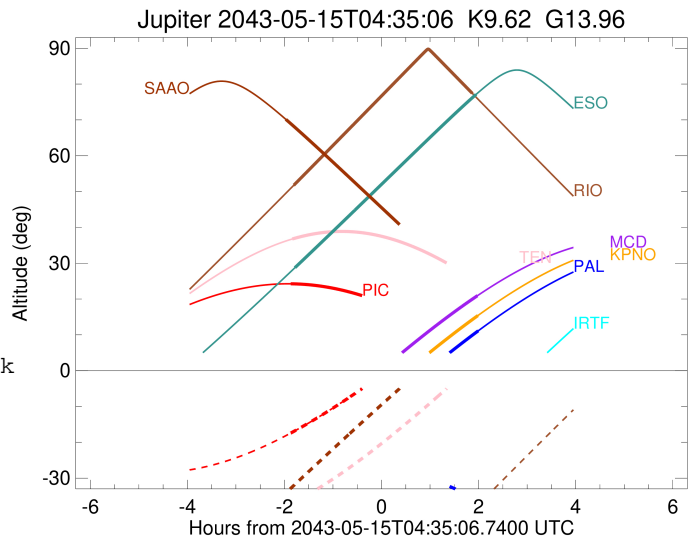
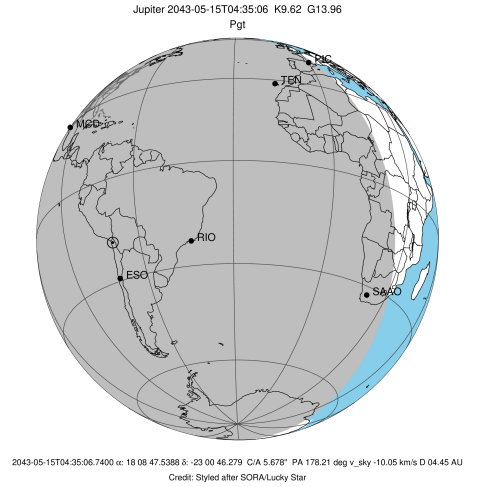


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-15T02:49:55.729	-27.61x	-7.40	71491.3	17.00	19.25
Jupiter	E	2043-05-15T06:34:14.448	15.38	-38.04	71491.2	18.65	21.09

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-15T04:43:05.510
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : MCD
Location             : McDonald Obs. 2.7m
Latitude (deg)       : 30.67158
E. Longitude (deg)   : 255.97844
Altitude (km)        : 2.075
Gaia source ID       : 4066588255539512064
2Mass ID (if available) : 18084755-2300461
ICRS Star Coord at Epoch: 18h 08m 47.53878s -23:00:46.27861s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.623
G magnitude           : 13.958
RP magnitude          : 12.844
BP magnitude          : 15.251
DUPflag              : 0
Distance (au)         : 4.449
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -10.05
Sun-Target sep (deg)  : 141.65
Sun-Moon sep (deg)   : 137.07
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.78
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (" ) : 6.863
C/A sky separation (km) : 22143.0
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
    
```

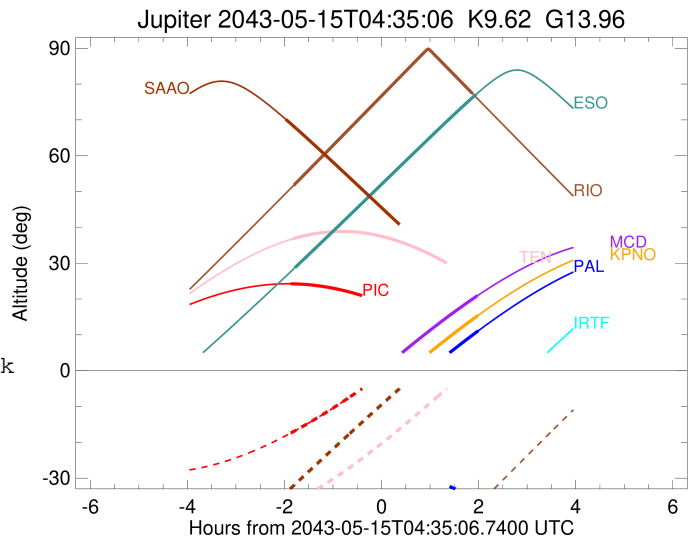
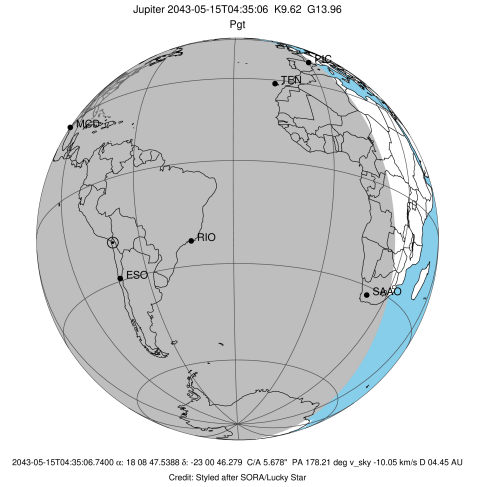


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-15T02:50:26.753	-20.89x	-13.77	71491.3	17.14	19.41
Jupiter	E	2043-05-15T06:33:30.713	20.90	-40.43	71491.2	18.74	21.18

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-15T04:33:05.670
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       : 4066588255539512064
2Mass ID (if available) : 18084755-2300461
ICRS Star Coord at Epoch: 18h 08m 47.53878s -23:00:46.27861s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.623
G magnitude           : 13.958
RP magnitude         : 12.844
BP magnitude         : 15.251
DUPflag              : 0
Distance (au)        : 4.449
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.05
Sun-Target sep (deg) : 141.65
Sun-Moon sep (deg)  : 136.77
B (ring opening deg) : -2.43
PA of pole (deg)    : -1.78
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation ("): 7.200
C/A sky separation (km): 23232.2
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
    
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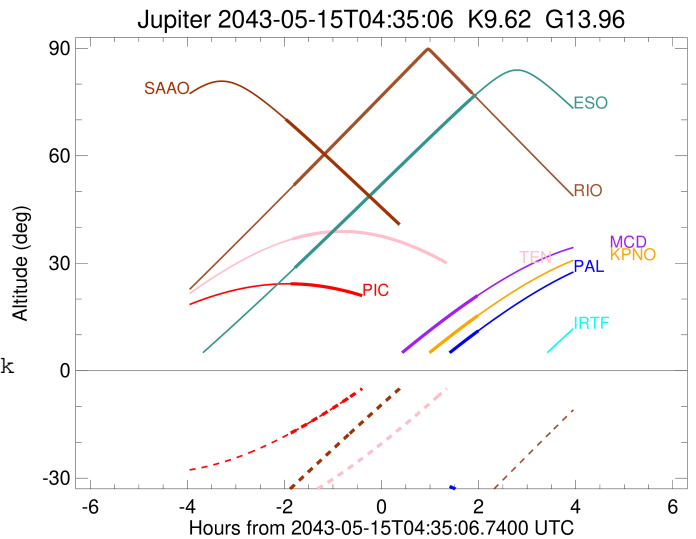
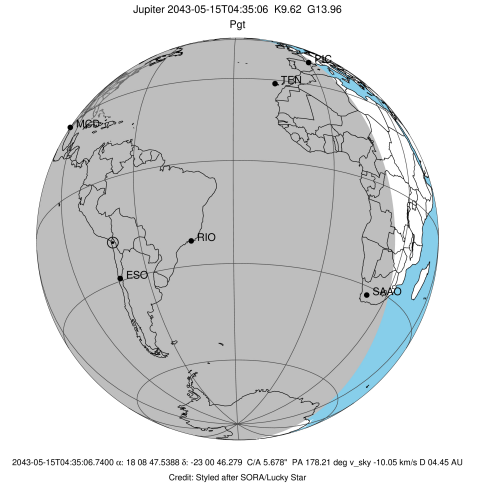


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-15T02:45:01.614	36.76	-36.88	71491.1	18.99	21.46
Jupiter	E	2043-05-15T06:21:20.172	26.58	0.23x	71491.2	18.51	20.93

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-15T04:37:22.950
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      : 4066588255539512064
2Mass ID (if available) : 18084755-2300461
ICRS Star Coord at Epoch: 18h 08m 47.53878s -23:00:46.27861s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 9.623
G magnitude          : 13.958
RP magnitude         : 12.844
BP magnitude         : 15.251
DUPflag             : 0
Distance (au)       : 4.449
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.05
Sun-Target sep (deg) : 141.65
Sun-Moon sep (deg)  : 137.24
B (ring opening deg) : -2.43
PA of pole (deg)    : -1.78
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation ("): 5.693
C/A sky separation (km): 18368.9
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
    
```

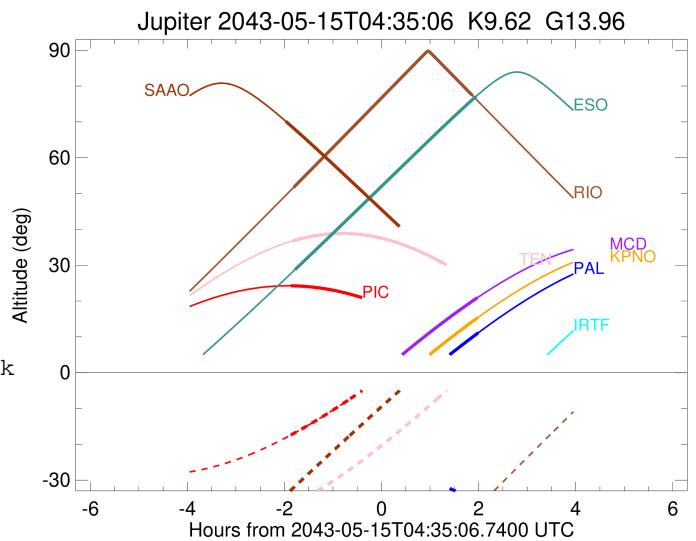
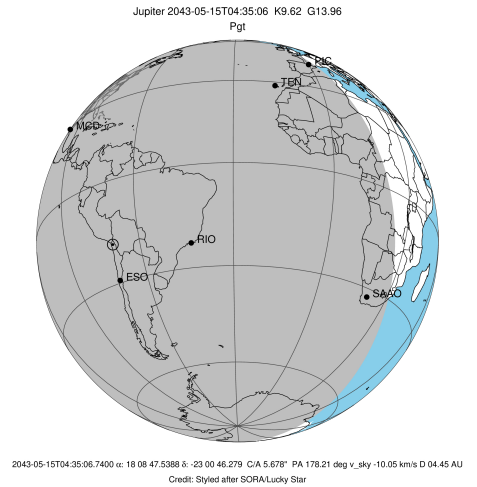


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-15T02:46:41.414	51.76	-86.02	71491.5	14.51	16.48
Jupiter	E	2043-05-15T06:27:20.580	77.40	-39.16	71491.5	14.80	16.80


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-15T04:40:55.770
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      : 4066588255539512064
2Mass ID (if available) : 18084755-2300461
ICRS Star Coord at Epoch: 18h 08m 47.53878s -23:00:46.27861s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 9.623
G magnitude          : 13.958
RP magnitude         : 12.844
BP magnitude         : 15.251
DUPflag             : 0
Distance (au)       : 4.449
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.05
Sun-Target sep (deg) : 141.65
Sun-Moon sep (deg)  : 137.36
B (ring opening deg) : -2.43
PA of pole (deg)    : -1.78
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation ("): 5.359
C/A sky separation (km): 17290.5
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
    
```

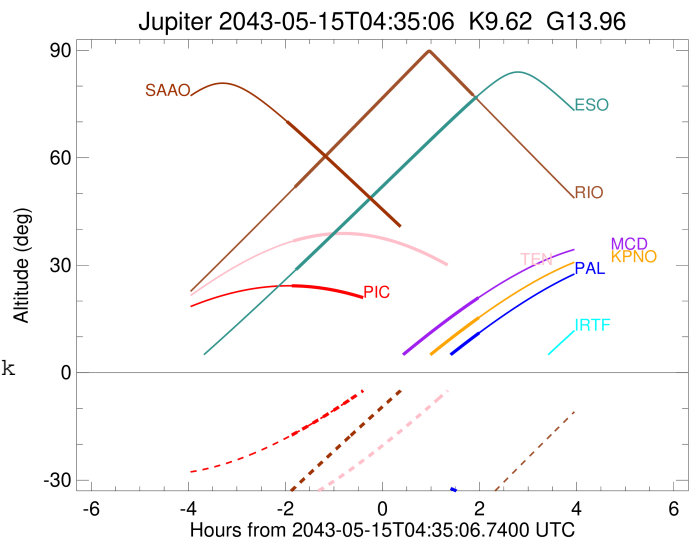
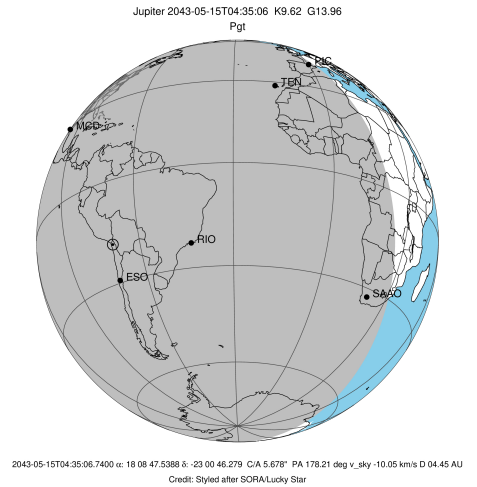


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-15T02:48:18.734	28.78	-62.74	71491.6	13.30	15.12
Jupiter	E	2043-05-15T06:31:57.689	77.10	-62.39	71491.5	14.31	16.25


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-05-15T04:28:53.830
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        : 4066588255539512064
2Mass ID (if available) : 18084755-2300461
ICRS Star Coord at Epoch: 18h 08m 47.53878s -23:00:46.27861s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.623
G magnitude           : 13.958
RP magnitude          : 12.844
BP magnitude          : 15.251
DUPflag              : 0
Distance (au)         : 4.449
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -10.05
Sun-Target sep (deg)  : 141.65
Sun-Moon sep (deg)    : 136.46
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.78
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (") : 5.114
C/A sky separation (km) : 16499.6
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	2043-05-15T02:36:50.615	70.15	-34.12	71491.5	13.85	15.74
Jupiter	E	2043-05-15T06:22:13.424	23.02	11.23x	71491.6	12.55	14.28