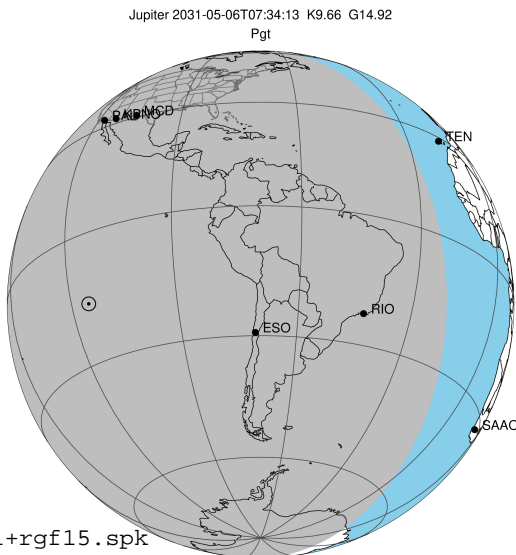


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-05-06T07:34:13.530
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068711339432437120
 2Mass ID (if available) : 17504493-2253494

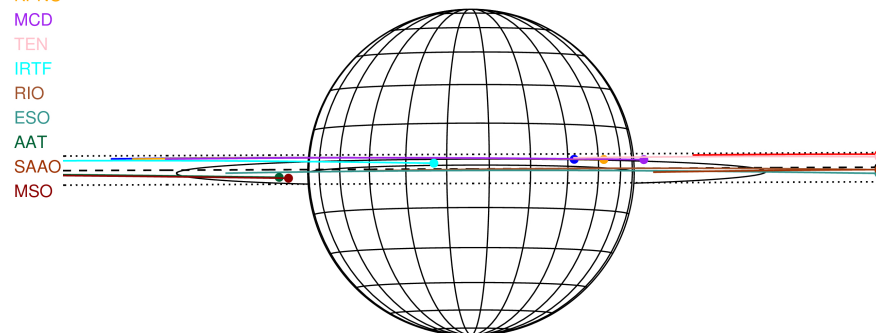
Jupiter 2031-05-06T07:34:13 K9.66 G14.92 Pgt

ICRS Star Coord at Epoch: 17h 50m 44.92085s -22:53:49.61041s
 RUWE (>1.4 is poor) : 0.93
 K magnitude : 9.658
 G magnitude : 14.920
 RP magnitude : 13.618
 BP magnitude : 16.805
 DUPflag : 0
 Distance (au) : 4.508
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -8.62
 Sun-Target sep (deg) : 137.30
 Sun-Moon sep (deg) : 53.99
 B (ring opening deg) : -2.61
 PA of pole (deg) : 0.16
 Pole direction: RA (deg): 268.05695
 Dec (deg): 64.49651
 C/A sky separation (") : 0.482
 C/A sky separation (km) : 1575.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp



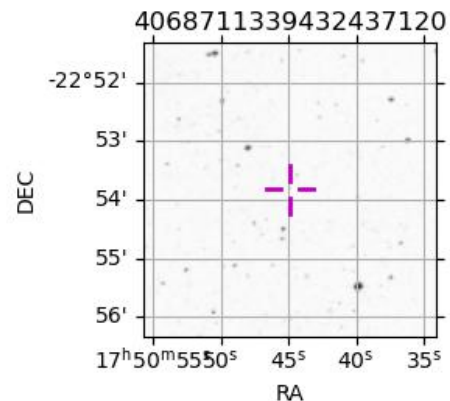
2031-05-06T07:34:13.5300 α: 17 50 44.9209 δ: -22 53 49.610 C/A 0.470° PA 180.24 deg v_sky - 8.62 km/s D 04.51 AU
 Credit: Styled after SORA/Lucky Star

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



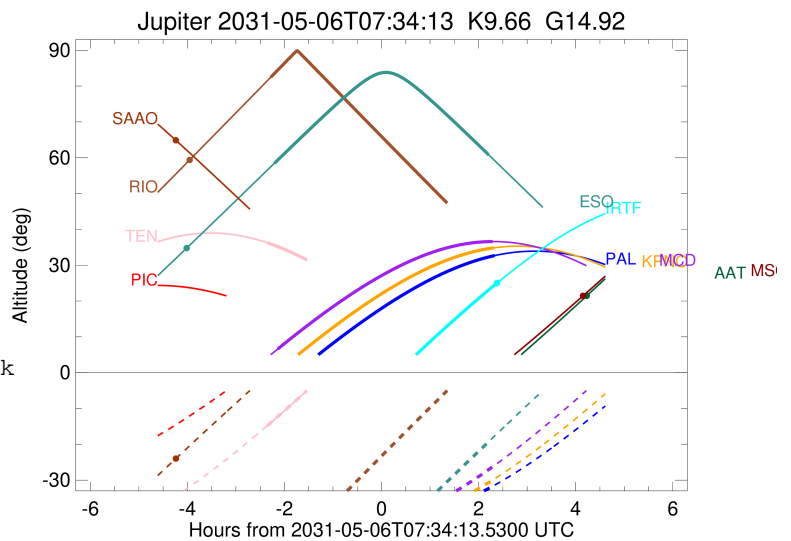
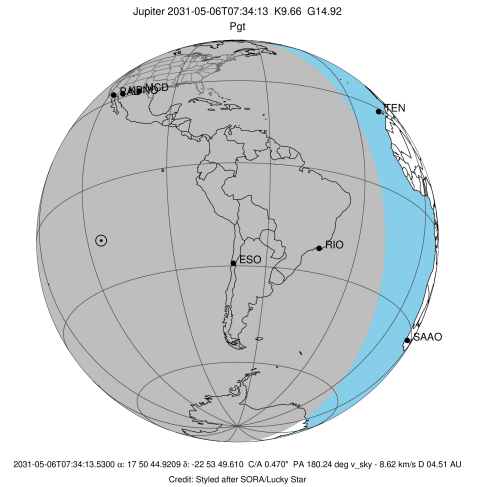
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events	Interval	OCode
PIC	Pic du Midi	42.9	0.1				Pnn
PAL	Palomar Mt (200")	33.4	243.1	+	MAY 06 09:53	- MAY 06 09:53	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8				Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	MAY 06 09:53	- MAY 06 09:53	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	MAY 06 05:25	- MAY 06 09:51	Pie
TEN	Teide Obs./Tenerife	28.3	343.5	+	MAY 06 05:12	- MAY 06 05:12	Pin
IRTF	Mauna Kea/IRTF	19.8	204.5	+	MAY 06 10:00	- MAY 06 10:00	Pne
KAV	Kavalur Observatory	12.6	78.8				Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	MAY 06 05:17	- MAY 06 05:17	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	MAY 06 05:21	- MAY 06 09:46	Pie
AAT	Siding Spring (AAT)	-31.3	149.1				Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8				Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0				Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-06T07:41:28.070
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      : 4068711339432437120
2Mass ID (if available) : 17504493-2253494
ICRS Star Coord at Epoch: 17h 50m 44.92085s -22:53:49.61041s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 9.658
G magnitude          : 14.920
RP magnitude         : 13.618
BP magnitude         : 16.805
DUPflag             : 0
Distance (au)       : 4.508
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -8.62
Sun-Target sep (deg) : 137.30
Sun-Moon sep (deg)  : 53.90
B (ring opening deg) : -2.61
PA of pole (deg)    : 0.16
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation ("): 1.907
C/A sky separation (km): 6236.0
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
    
```

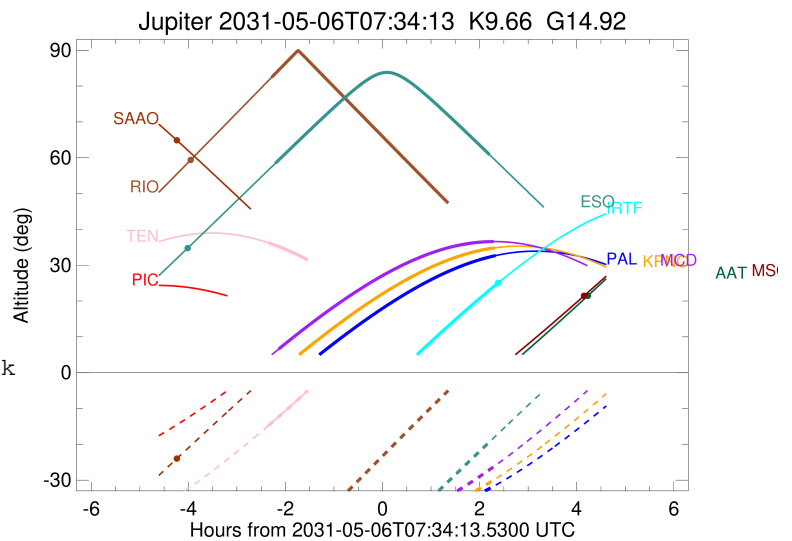
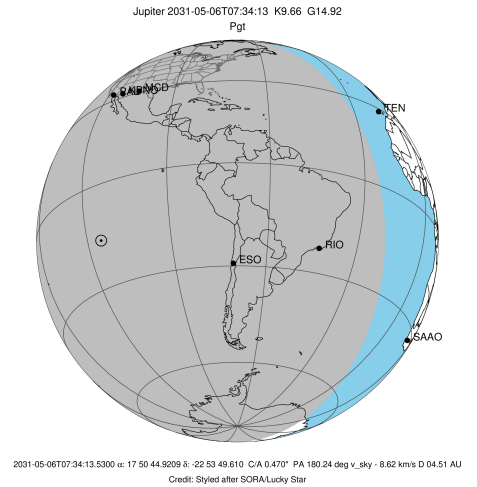


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-06T05:26:13.153	-4.23x	-30.42	71492.0	4.21	4.81
Jupiter	E	2031-05-06T09:53:52.393	32.67	-31.43	71491.9	5.38	6.15

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-06T07:40:54.650
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        : 4068711339432437120
2Mass ID (if available) : 17504493-2253494
ICRS Star Coord at Epoch: 17h 50m 44.92085s -22:53:49.61041s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 9.658
G magnitude           : 14.920
RP magnitude          : 13.618
BP magnitude          : 16.805
DUPflag              : 0
Distance (au)         : 4.508
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.62
Sun-Target sep (deg) : 137.30
Sun-Moon sep (deg)   : 53.98
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.16
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 1.917
C/A sky separation (km) : 6268.2
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
    
```

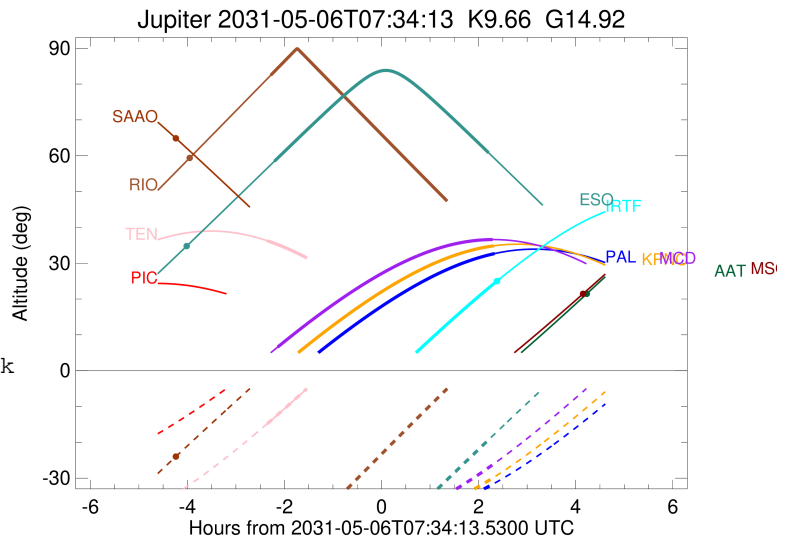
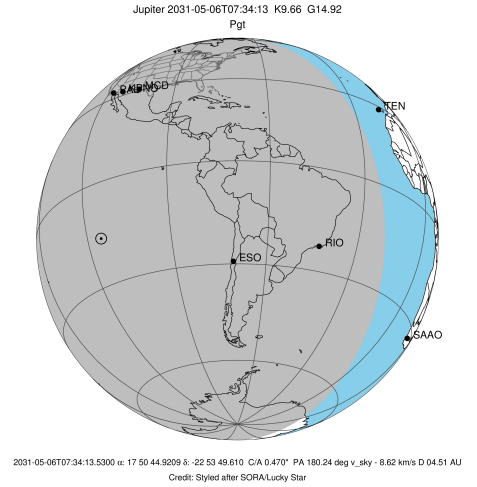


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-06T05:26:10.338	0.36x	-34.18	71491.9	4.27	4.88
Jupiter	E	2031-05-06T09:53:00.742	34.85	-29.78	71491.9	5.34	6.10

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-06T07:39:56.200
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      : 4068711339432437120
2Mass ID (if available) : 17504493-2253494
ICRS Star Coord at Epoch: 17h 50m 44.92085s -22:53:49.61041s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 9.658
G magnitude          : 14.920
RP magnitude         : 13.618
BP magnitude         : 16.805
DUPflag             : 0
Distance (au)        : 4.508
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -8.62
Sun-Target sep (deg) : 137.30
Sun-Moon sep (deg)   : 54.09
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.16
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 1.940
C/A sky separation (km) : 6341.9
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
    
```

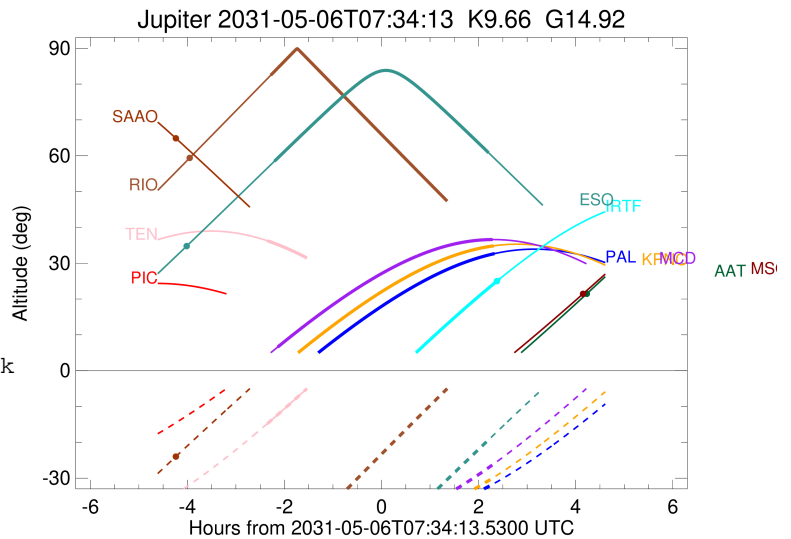
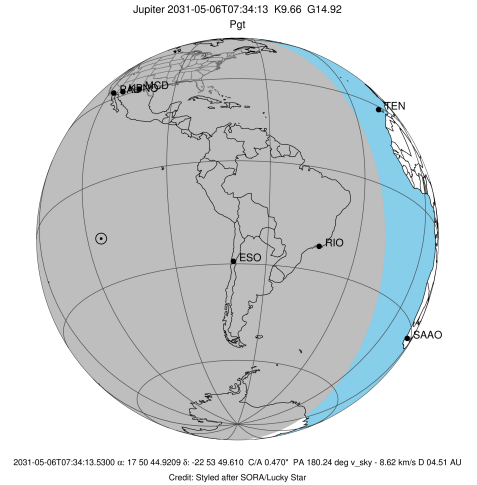


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-06T05:25:52.252	6.58	-38.57	71491.9	4.40	5.03
Jupiter	E	2031-05-06T09:51:42.417	36.59	-26.25	71491.9	5.29	6.04

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-06T07:25:57.400
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      : 4068711339432437120
2Mass ID (if available) : 17504493-2253494
ICRS Star Coord at Epoch: 17h 50m 44.92085s -22:53:49.61041s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 9.658
G magnitude          : 14.920
RP magnitude         : 13.618
BP magnitude         : 16.805
DUPflag             : 0
Distance (au)       : 4.508
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -8.62
Sun-Target sep (deg) : 137.30
Sun-Moon sep (deg)  : 54.66
B (ring opening deg) : -2.61
PA of pole (deg)    : 0.16
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 1.753
C/A sky separation (km) : 5731.5
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
    
```

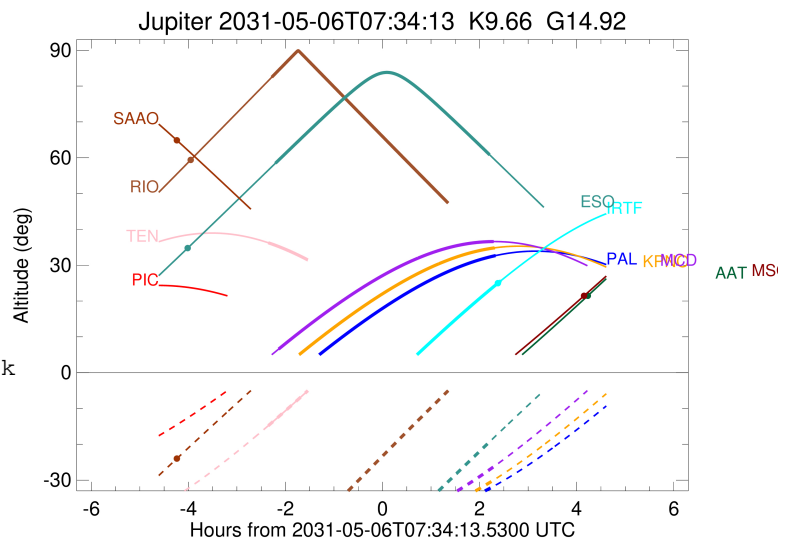
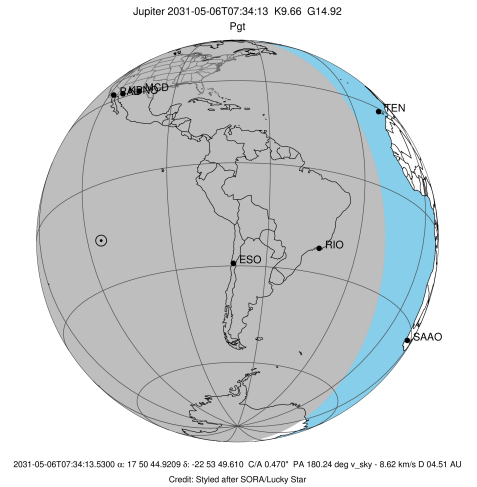


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-06T05:12:57.683	36.26	-14.82	71491.9	5.23	5.98
Jupiter	E	2031-05-06T09:41:12.134	-6.23x	42.34x	71492.0	3.57	4.08

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-06T07:45:37.270
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : IRTF
Location            : Mauna Kea/IRTF
Latitude (deg)      : 19.82622
E. Longitude (deg)  : 204.52800
Altitude (km)       : 4.168
Gaia source ID      : 4068711339432437120
2Mass ID (if available) : 17504493-2253494
ICRS Star Coord at Epoch: 17h 50m 44.92085s -22:53:49.61041s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 9.658
G magnitude          : 14.920
RP magnitude         : 13.618
BP magnitude         : 16.805
DUPflag             : 0
Distance (au)       : 4.508
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -8.62
Sun-Target sep (deg) : 137.30
Sun-Moon sep (deg)  : 53.39
B (ring opening deg) : -2.61
PA of pole (deg)    : 0.16
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 1.171
C/A sky separation (km) : 3827.5
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
    
```

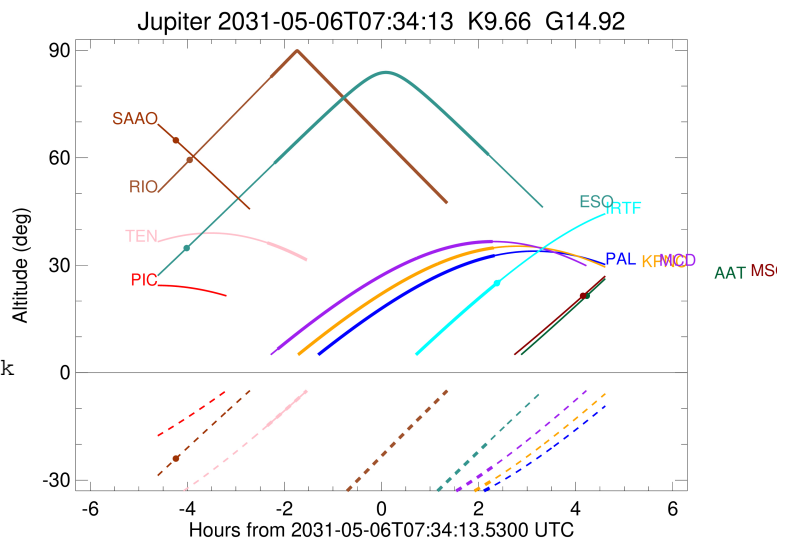
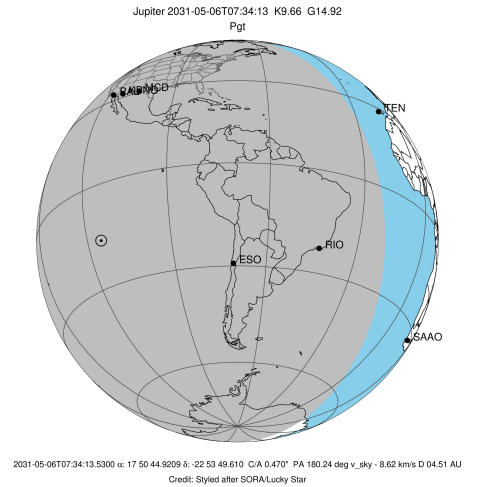


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-06T05:26:01.280	-32.80x	-9.57	71492.0	2.04	2.33
Jupiter	E	2031-05-06T10:00:42.784	25.69	-53.49	71492.0	3.99	4.56

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-06T07:29:26.960
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       : 4068711339432437120
2Mass ID (if available) : 17504493-2253494
ICRS Star Coord at Epoch: 17h 50m 44.92085s -22:53:49.61041s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 9.658
G magnitude          : 14.920
RP magnitude         : 13.618
BP magnitude         : 16.805
DUPflag             : 0
Distance (au)        : 4.508
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -8.62
Sun-Target sep (deg) : 137.30
Sun-Moon sep (deg)  : 54.96
B (ring opening deg) : -2.61
PA of pole (deg)    : 0.16
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation ("): 0.422
C/A sky separation (km): 1380.3
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
    
```

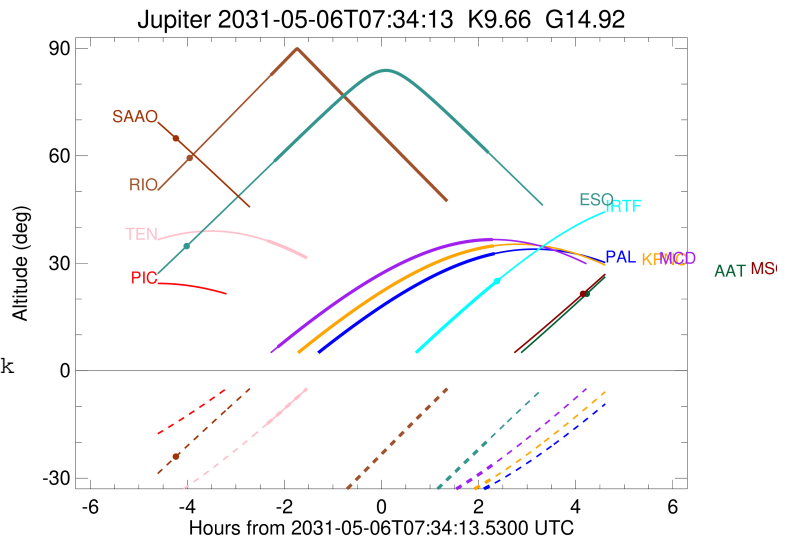
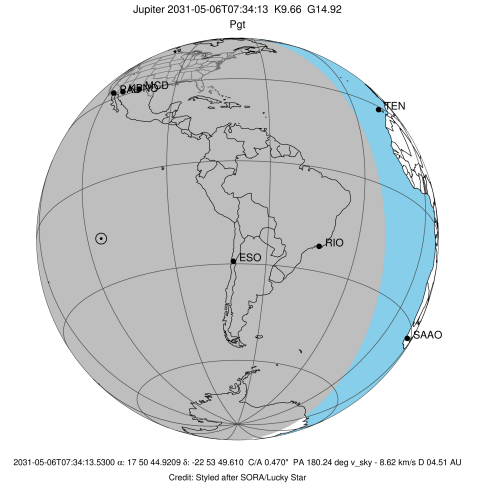


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-06T05:17:19.365	82.46	-54.74	71492.0	1.33	1.52
Jupiter	E	2031-05-06T09:42:37.175	36.61	5.32x	71492.0	0.33	0.37

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-06T07:34:28.140
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        : 4068711339432437120
2Mass ID (if available) : 17504493-2253494
ICRS Star Coord at Epoch: 17h 50m 44.92085s -22:53:49.61041s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 9.658
G magnitude           : 14.920
RP magnitude          : 13.618
BP magnitude          : 16.805
DUPflag              : 0
Distance (au)         : 4.508
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.62
Sun-Target sep (deg)  : 137.30
Sun-Moon sep (deg)   : 54.78
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.16
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 0.271
C/A sky separation (km) : 886.7
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	2031-05-06T05:21:48.231	58.44	-74.09	71492.0	0.48	0.55
Jupiter	E	2031-05-06T09:46:36.100	60.82	-19.29	71492.0	0.37	0.42