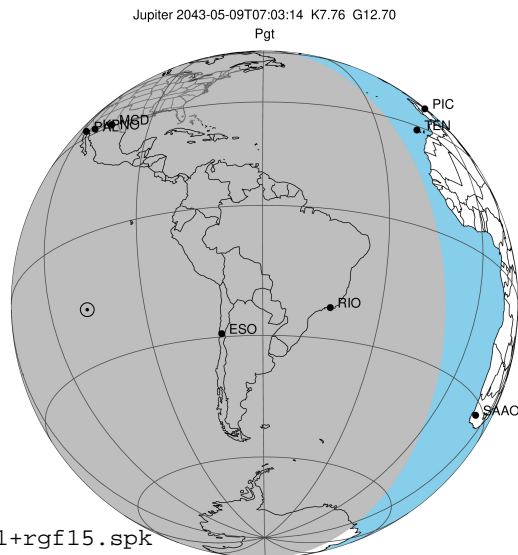


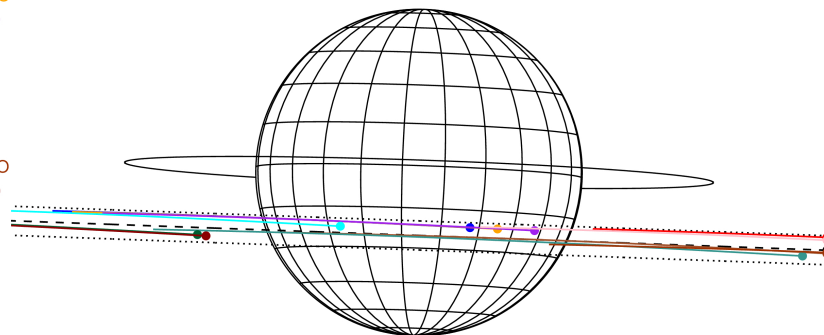
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-05-09T07:03:14.660
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4066632403454998016
 2Mass ID (if available) : 18103010-2300127

Jupiter 2043-05-09T07:03:14 K7.76 G12.70 Pgt

ICRS Star Coord at Epoch: 18h 10m 30.11801s -23°00'12.85979s
 RUWE (>1.4 is poor) : 0.85
 K magnitude : 7.756
 G magnitude : 12.704
 RP magnitude : 11.472
 BP magnitude : 14.384
 DUPflag : 0
 Distance (au) : 4.513
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -7.98
 Sun-Target sep (deg) : 135.56
 Sun-Moon sep (deg) : 137.61
 B (ring opening deg) : -2.43
 PA of pole (deg) : -1.97
 Pole direction: RA (deg): 268.05666
 Dec (deg): 64.49732
 C/A sky separation (") : 8.423
 C/A sky separation (km) : 27567.4
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



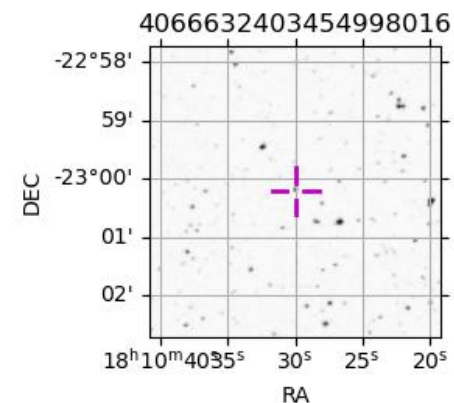
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 AAT
 SAAO
 MSO



2043-05-09T07:03:14.6600 α: 18 10 30.11801 δ: -23 00 12.860 C/A 8.434° PA 357.93 deg v_sky - 7.98 km/s D 04.51 AU
 Credit: Styled after SORA/Lucky Star

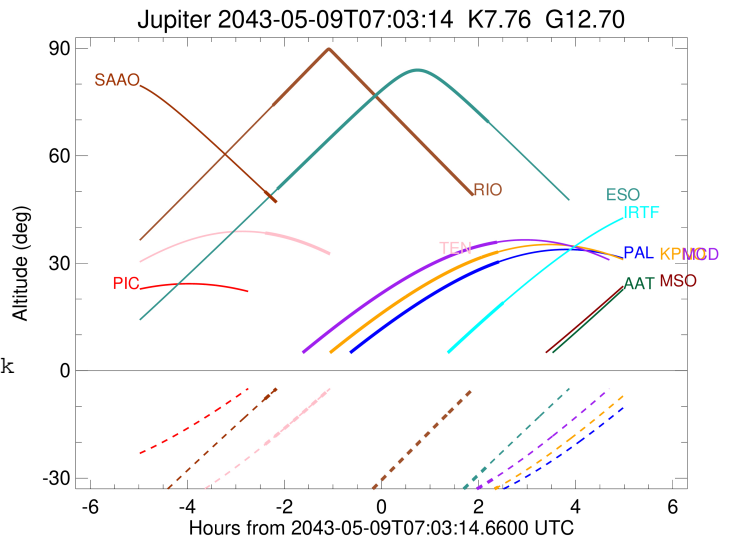
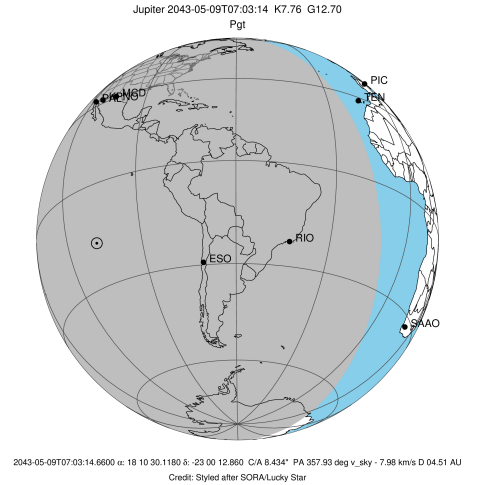
Observable events with sun below -5 deg and altitude above 5 deg

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 09 09:28	- MAY 09 09:28	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8				Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	MAY 09 09:27	- MAY 09 09:27	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	MAY 09 09:26	- MAY 09 09:26	Pne
TEN	Teide Obs./Tenerife	28.3	343.5	+	MAY 09 04:39	- MAY 09 04:39	Pin
IRTF	Mauna Kea/IRTF	19.8	204.5	+	MAY 09 09:33	- MAY 09 09:33	Pne
KAV	Kavalur Observatory	12.6	78.8				Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	MAY 09 04:48	- MAY 09 04:48	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	MAY 09 04:54	- MAY 09 09:15	Pie
AAT	Siding Spring (AAT)	-31.3	149.1				Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	MAY 09 04:38	- MAY 09 04:38	Pin
MSO	Mt. Stromlo Observatory	-35.3	149.0				Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-09T07:12:39.670
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       : 4066632403454998016
2Mass ID (if available) : 18103010-2300127
ICRS Star Coord at Epoch: 18h 10m 30.11801s -23:00:12.85979s
RUWE (>1.4 is poor) : 0.85
K magnitude           : 7.756
G magnitude           : 12.704
RP magnitude         : 11.472
BP magnitude         : 14.384
DUPflag              : 0
Distance (au)        : 4.513
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -7.98
Sun-Target sep (deg) : 135.56
Sun-Moon sep (deg)   : 137.28
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.97
Pole direction: RA (deg): 268.05666
Dec (deg): 64.49732
C/A sky separation ("): 7.024
C/A sky separation (km): 22988.2
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
    
```

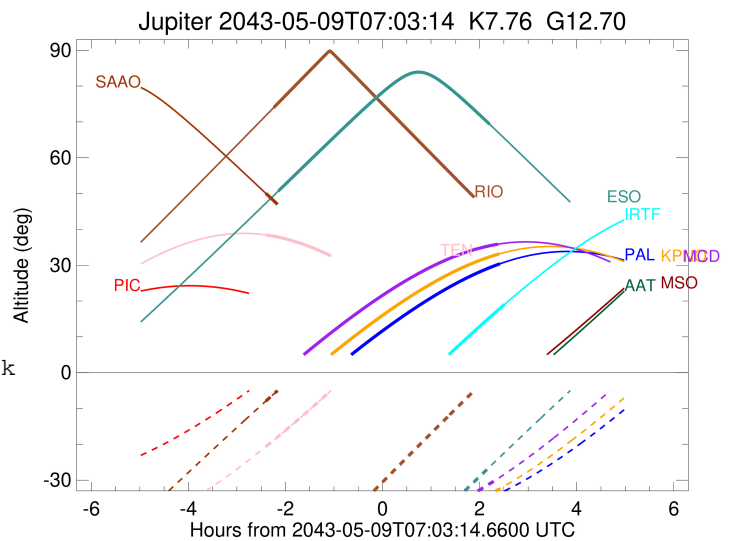
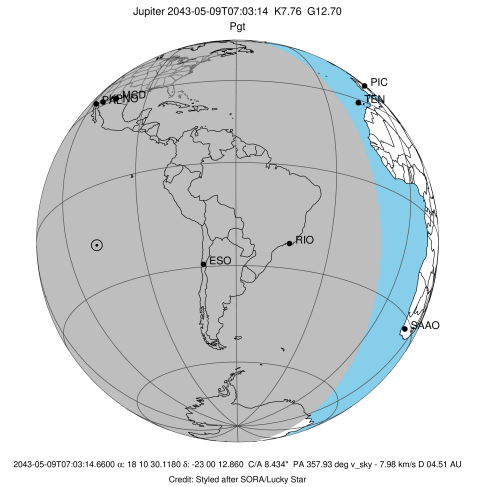


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-09T04:53:13.721	-12.27x	-25.12	71491.1	-19.82	-22.38
Jupiter	E	2043-05-09T09:28:22.959	30.39	-33.62	71491.2	-18.09	-20.46

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-09T07:12:08.000
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       : 4066632403454998016
2Mass ID (if available) : 18103010-2300127
ICRS Star Coord at Epoch: 18h 10m 30.11801s -23:00:12.85979s
RUWE (>1.4 is poor) : 0.85
K magnitude          : 7.756
G magnitude          : 12.704
RP magnitude         : 11.472
BP magnitude         : 14.384
DUPflag             : 0
Distance (au)        : 4.513
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -7.98
Sun-Target sep (deg) : 135.56
Sun-Moon sep (deg)   : 137.36
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.97
Pole direction: RA (deg): 268.05666
Dec (deg): 64.49732
C/A sky separation ("): 7.012
C/A sky separation (km): 22947.8
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
    
```

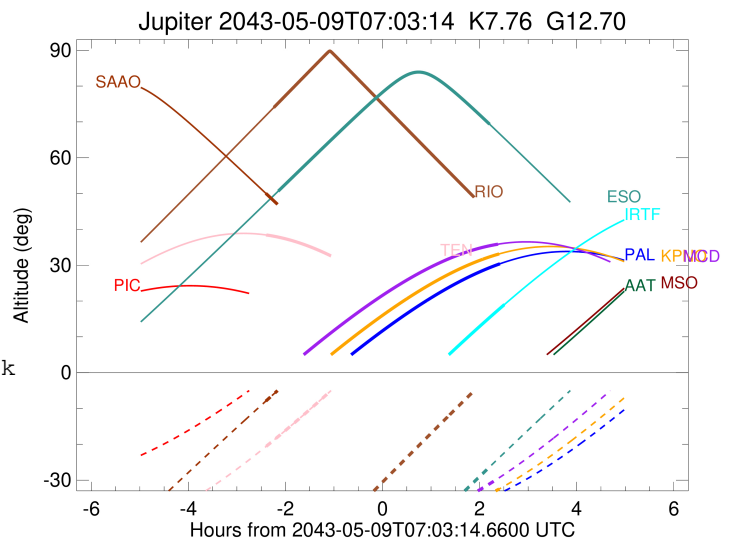
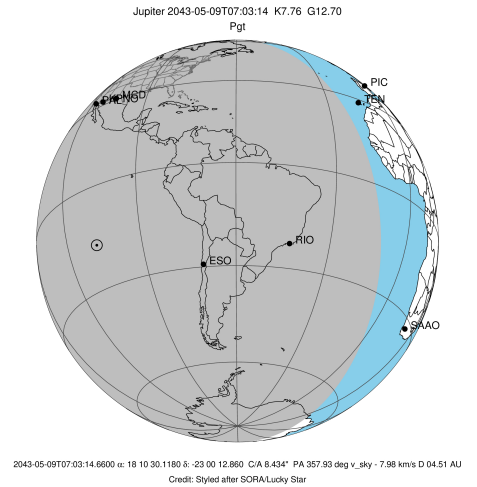


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-09T04:53:17.378	-7.62x	-29.20	71491.1	-19.75	-22.30
Jupiter	E	2043-05-09T09:27:28.549	33.15	-32.46	71491.2	-18.13	-20.51

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-09T07:11:08.550
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      : 4066632403454998016
2Mass ID (if available) : 18103010-2300127
ICRS Star Coord at Epoch: 18h 10m 30.11801s -23:00:12.85979s
RUWE (>1.4 is poor) : 0.85
K magnitude          : 7.756
G magnitude          : 12.704
RP magnitude         : 11.472
BP magnitude         : 14.384
DUPflag             : 0
Distance (au)        : 4.513
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -7.98
Sun-Target sep (deg) : 135.56
Sun-Moon sep (deg)   : 137.47
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.97
Pole direction: RA (deg): 268.05666
Dec (deg): 64.49732
C/A sky separation ("): 6.985
C/A sky separation (km): 22861.0
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
    
```

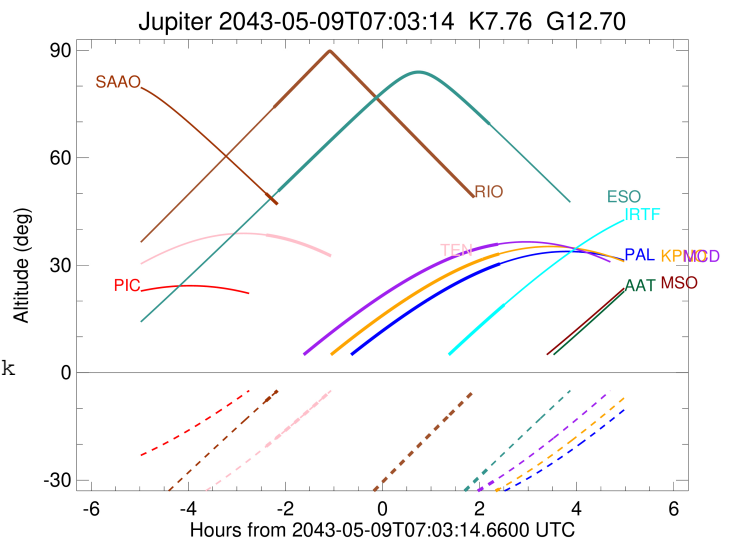
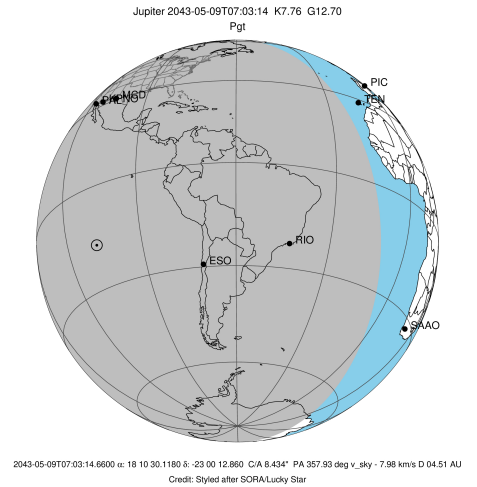


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-09T04:53:04.005	-1.22x	-34.20	71491.1	-19.61	-22.15
Jupiter	E	2043-05-09T09:26:04.618	35.86	-29.53	71491.2	-18.17	-20.56

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-09T06:54:29.810
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       : 4066632403454998016
2Mass ID (if available) : 18103010-2300127
ICRS Star Coord at Epoch: 18h 10m 30.11801s -23:00:12.85979s
RUWE (>1.4 is poor) : 0.85
K magnitude          : 7.756
G magnitude          : 12.704
RP magnitude         : 11.472
BP magnitude         : 14.384
DUPflag             : 0
Distance (au)        : 4.513
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -7.98
Sun-Target sep (deg) : 135.56
Sun-Moon sep (deg)   : 138.41
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.97
Pole direction: RA (deg): 268.05666
Dec (deg): 64.49732
C/A sky separation ("): 7.117
C/A sky separation (km): 23294.6
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
    
```

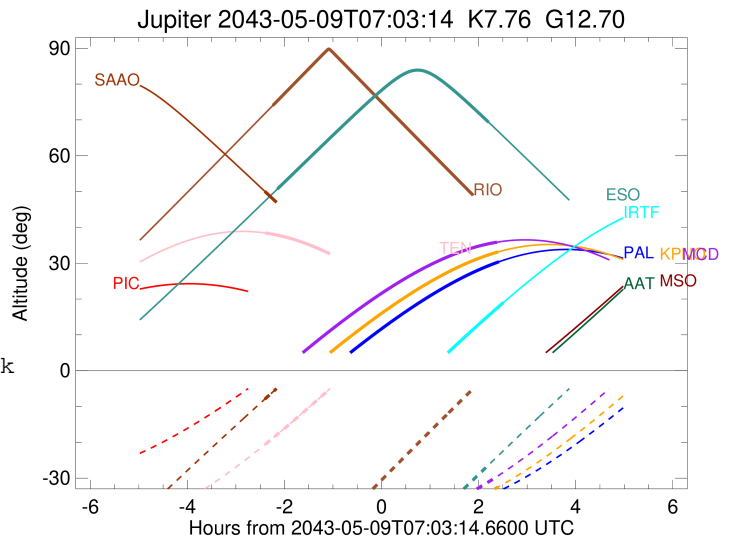
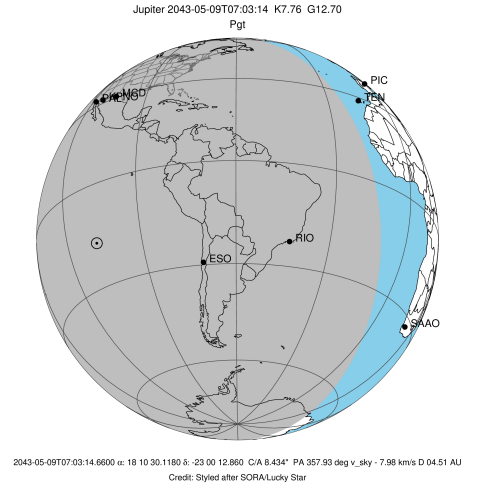


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-09T04:39:22.876	38.44	-20.58	71491.2	-18.56	-20.99
Jupiter	E	2043-05-09T09:11:43.993	1.28x	36.22x	71491.1	-19.89	-22.46

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-05-09T07:16:45.360
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        : 4066632403454998016
2Mass ID (if available) : 18103010-2300127
ICRS Star Coord at Epoch: 18h 10m 30.11801s -23:00:12.85979s
RUWE (>1.4 is poor) : 0.85
K magnitude           : 7.756
G magnitude           : 12.704
RP magnitude          : 11.472
BP magnitude          : 14.384
DUPflag              : 0
Distance (au)         : 4.513
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -7.98
Sun-Target sep (deg)  : 135.56
Sun-Moon sep (deg)    : 136.78
B (ring opening deg) : -2.43
PA of pole (deg)      : -1.97
Pole direction: RA (deg): 268.05666
Dec (deg): 64.49732
C/A sky separation (") : 7.778
C/A sky separation (km) : 25454.3
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
    
```

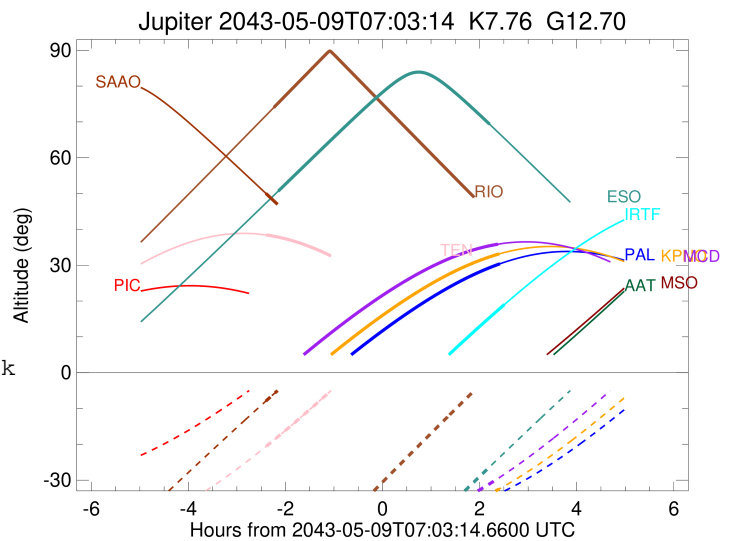
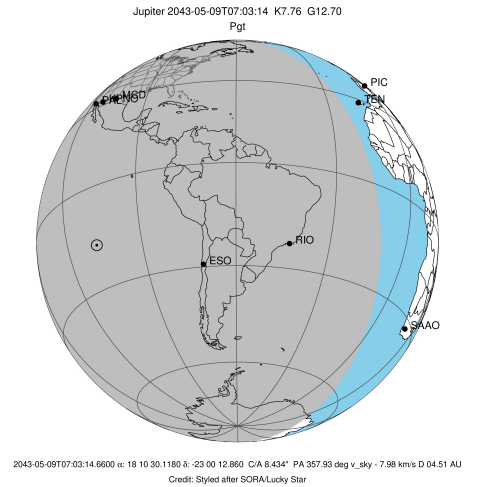


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-09T04:54:20.145	-41.93x	-2.31x	71490.9	-22.14	-24.92
Jupiter	E	2043-05-09T09:33:53.901	19.00	-51.35	71491.1	-19.62	-22.16

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-09T06:59:33.970
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       : 4066632403454998016
2Mass ID (if available) : 18103010-2300127
ICRS Star Coord at Epoch: 18h 10m 30.11801s -23:00:12.85979s
RUWE (>1.4 is poor) : 0.85
K magnitude          : 7.756
G magnitude          : 12.704
RP magnitude         : 11.472
BP magnitude         : 14.384
DUPflag             : 0
Distance (au)        : 4.513
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -7.98
Sun-Target sep (deg) : 135.56
Sun-Moon sep (deg)  : 138.46
B (ring opening deg) : -2.43
PA of pole (deg)    : -1.97
Pole direction: RA (deg): 268.05666
Dec (deg): 64.49732
C/A sky separation ("): 8.460
C/A sky separation (km): 27687.8
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
    
```

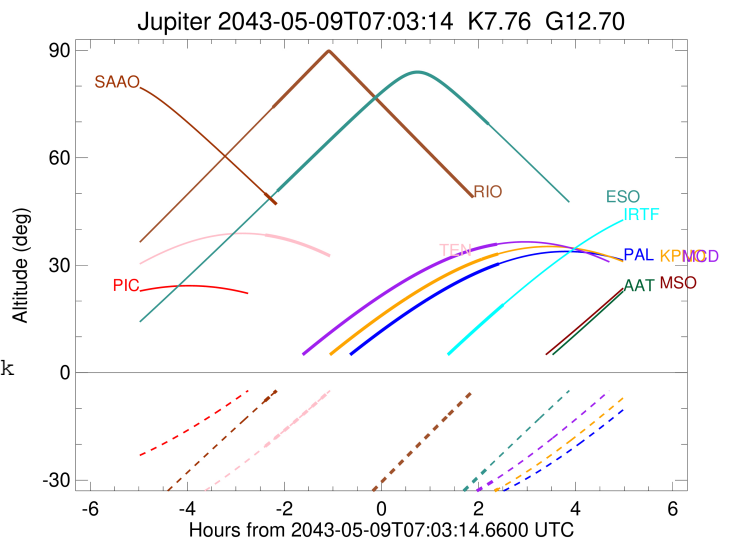
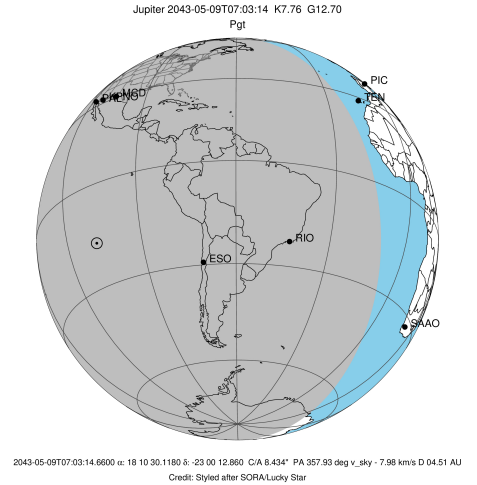


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-09T04:48:48.377	73.99	-61.47	71490.8	-22.77	-25.61
Jupiter	E	2043-05-09T09:10:54.736	45.68	-1.88x	71490.7	-23.36	-26.25

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-09T07:05:32.280
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       : 4066632403454998016
2Mass ID (if available) : 18103010-2300127
ICRS Star Coord at Epoch: 18h 10m 30.11801s -23:00:12.85979s
RUWE (>1.4 is poor) : 0.85
K magnitude          : 7.756
G magnitude          : 12.704
RP magnitude         : 11.472
BP magnitude         : 14.384
DUPflag             : 0
Distance (au)        : 4.513
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -7.98
Sun-Target sep (deg) : 135.56
Sun-Moon sep (deg)  : 138.14
B (ring opening deg) : -2.43
PA of pole (deg)    : -1.97
Pole direction: RA (deg): 268.05666
Dec (deg): 64.49732
C/A sky separation (") : 8.629
C/A sky separation (km) : 28240.1
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
    
```

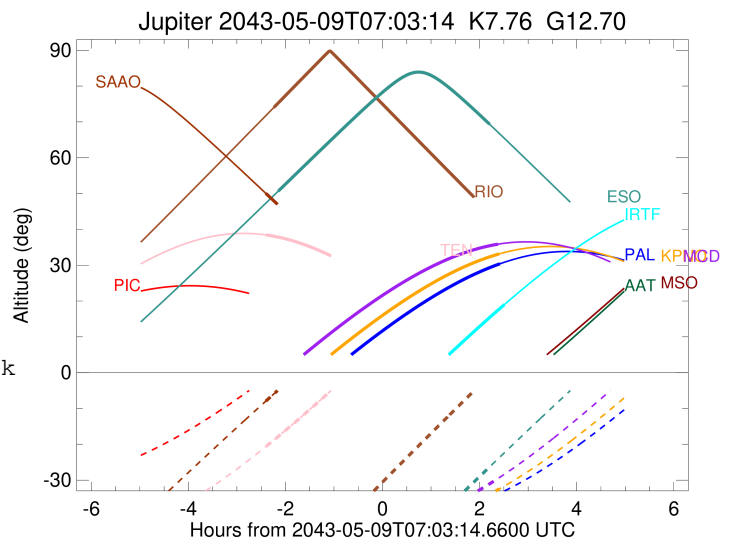
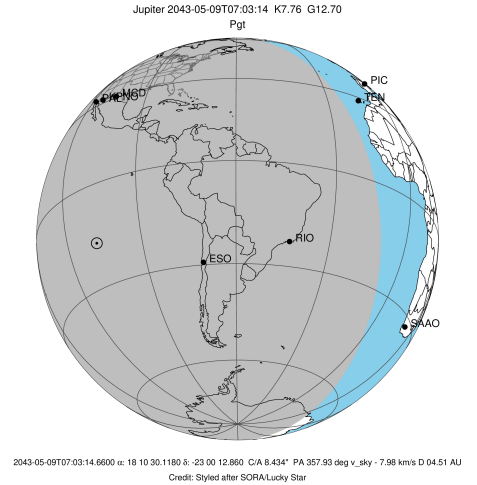


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-09T04:54:16.087	50.64	-77.75	71490.7	-23.74	-26.66
Jupiter	E	2043-05-09T09:15:42.533	69.32	-26.29	71490.7	-23.36	-26.25


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-05-09T06:51:16.220
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        : 4066632403454998016
2Mass ID (if available) : 18103010-2300127
ICRS Star Coord at Epoch: 18h 10m 30.11801s -23:00:12.85979s
RUWE (>1.4 is poor) : 0.85
K magnitude           : 7.756
G magnitude           : 12.704
RP magnitude          : 11.472
BP magnitude          : 14.384
DUPflag              : 0
Distance (au)         : 4.513
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -7.98
Sun-Target sep (deg)  : 135.56
Sun-Moon sep (deg)    : 138.43
B (ring opening deg) : -2.43
PA of pole (deg)      : -1.97
Pole direction: RA (deg): 268.05666
Dec (deg): 64.49732
C/A sky separation (") : 9.304
C/A sky separation (km) : 30450.8
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	2043-05-09T04:38:58.649	50.06	-7.95	71490.6	-24.31	-27.28
Jupiter	E	2043-05-09T09:06:47.890	-4.32x	36.27x	71490.4	-26.16	-29.28