

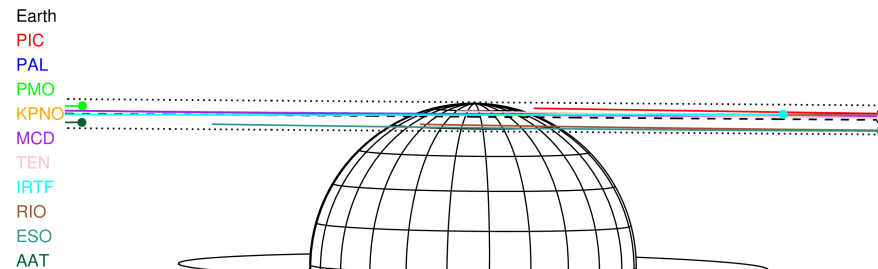
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2048-12-04T07:19:48.020
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 342753216877227008
 2Mass ID (if available) : 05465342+2257288

Jupiter 2048-12-04T07:19:48 K9.85 G10.80 Pgt

ICRS Star Coord at Epoch: 05h 46m 53.43627s +22:57:28.57487s
 RUWE (>1.4 is poor) : 0.90
 K magnitude : 9.845
 G magnitude : 10.797
 RP magnitude : 10.451
 BP magnitude : 10.997
 DUPflag : 0
 Distance (au) : 4.142
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -16.02
 Sun-Target sep (deg) : 165.14
 Sun-Moon sep (deg) : 146.29
 B (ring opening deg) : 2.54
 PA of pole (deg) : -0.58
 Pole direction: RA (deg): 268.05737
 Dec (deg): 64.49721
 C/A sky separation (") : 21.829
 C/A sky separation (km) : 65583.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

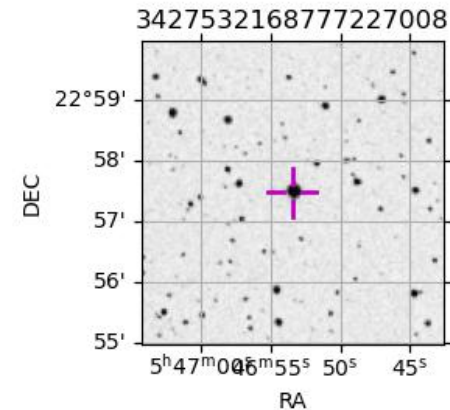
URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

2048-12-04T07:19:48.0200 a: 05 46 53.4363 & +22 57 28.575 C/A ***** PA 179.55 deg v_sky -16.02 km/s D 04.14 AU
 Credit: Styled after SORA/Lucky Star



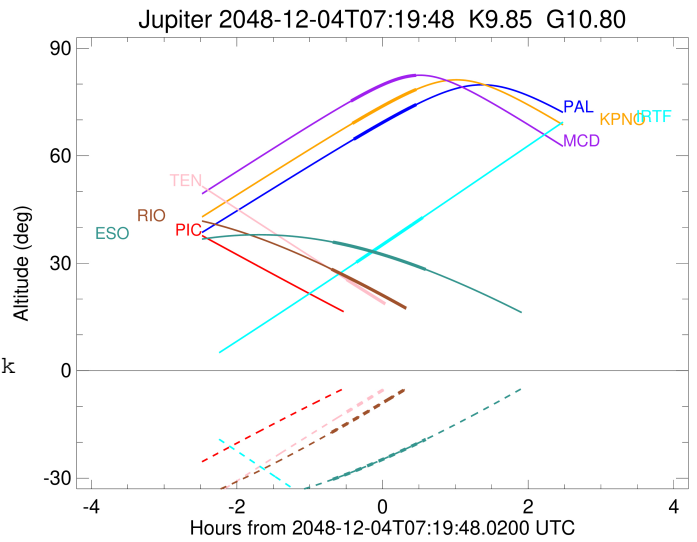
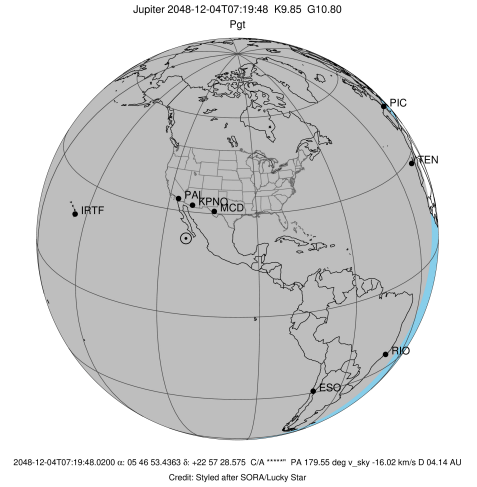
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	DEC 04 06:56 - DEC 04 07:47	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	DEC 04 06:55 - DEC 04 07:47	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	DEC 04 06:53 - DEC 04 07:47	Pie
TEN	Teide Obs./Tenerife	28.3	343.5	+	DEC 04 06:50 - DEC 04 06:50	Pin
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	DEC 04 06:58 - DEC 04 07:52	Pie
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	DEC 04 06:37 - DEC 04 06:37	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	DEC 04 06:38 - DEC 04 07:55	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            : 2048-12-04T07:21:55.310
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      : 3427532168777227008
2Mass ID (if available) : 05465342+2257288
ICRS Star Coord at Epoch: 05h 46m 53.43627s +22:57:28.57487s
RUWE (>1.4 is poor) : 0.90
K magnitude          : 9.845
G magnitude          : 10.797
RP magnitude         : 10.451
BP magnitude         : 10.997
DUPflag             : 0
Distance (au)       : 4.142
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.02
Sun-Target sep (deg) : 165.14
Sun-Moon sep (deg)  : 146.55
B (ring opening deg) : 2.54
PA of pole (deg)    : -0.58
Pole direction: RA (deg): 268.05737
Dec (deg): 64.49721
C/A sky separation ("): 22.249
C/A sky separation (km): 66844.2
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
    
```

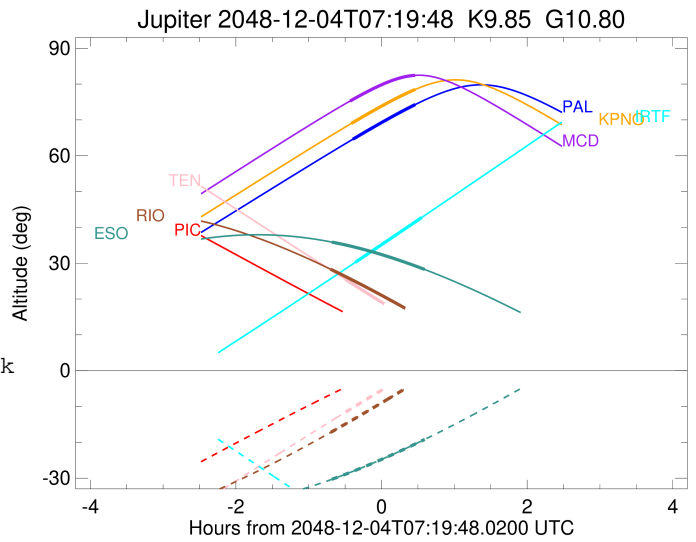
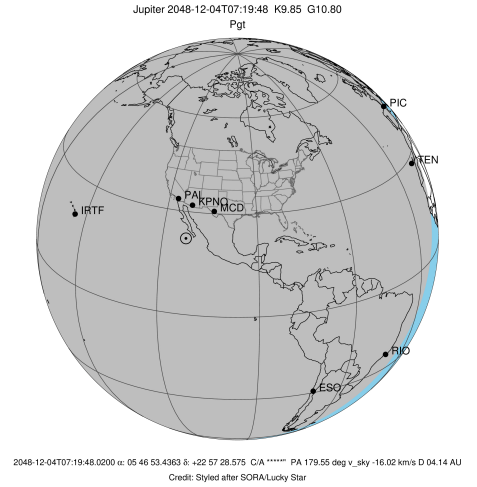


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-12-04T06:56:10.660	64.59	-75.81	71484.2	69.43	71.71
Jupiter	E	2048-12-04T07:47:38.279	74.28	-78.93	71484.3	68.81	71.15

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2048-12-04T07:21:25.040
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       : 3427532168777227008
2Mass ID (if available) : 05465342+2257288
ICRS Star Coord at Epoch: 05h 46m 53.43627s +22:57:28.57487s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 9.845
G magnitude           : 10.797
RP magnitude          : 10.451
BP magnitude          : 10.997
DUPflag              : 0
Distance (au)        : 4.142
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.02
Sun-Target sep (deg) : 165.14
Sun-Moon sep (deg)   : 146.62
B (ring opening deg) : 2.54
PA of pole (deg)     : -0.58
Pole direction: RA (deg): 268.05737
Dec (deg): 64.49721
C/A sky separation (") : 22.179
C/A sky separation (km) : 66635.8
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
    
```

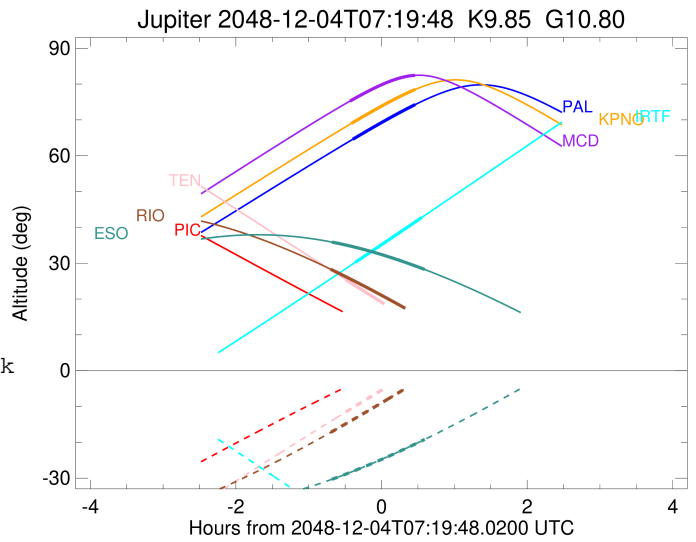
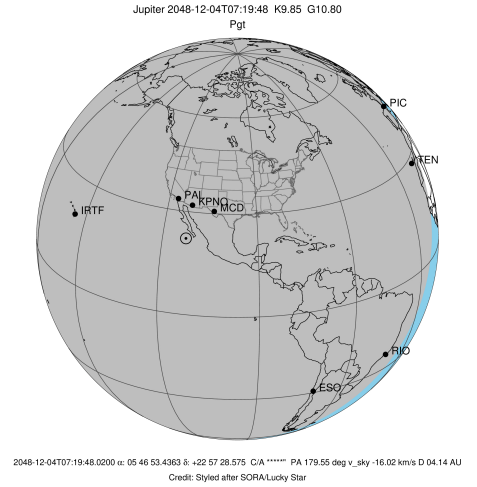


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-12-04T06:55:09.071	69.04	-79.40	71484.3	68.93	71.25
Jupiter	E	2048-12-04T07:47:39.624	78.51	-78.29	71484.3	68.39	70.77

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-12-04T07:20:38.100
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      : 3427532168777227008
2Mass ID (if available) : 05465342+2257288
ICRS Star Coord at Epoch: 05h 46m 53.43627s +22:57:28.57487s
RUWE (>1.4 is poor) : 0.90
K magnitude          : 9.845
G magnitude          : 10.797
RP magnitude         : 10.451
BP magnitude         : 10.997
DUPflag             : 0
Distance (au)       : 4.142
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.02
Sun-Target sep (deg) : 165.14
Sun-Moon sep (deg)  : 146.73
B (ring opening deg) : 2.54
PA of pole (deg)    : -0.58
Pole direction: RA (deg): 268.05737
Dec (deg): 64.49721
C/A sky separation (") : 22.114
C/A sky separation (km) : 66439.5
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
    
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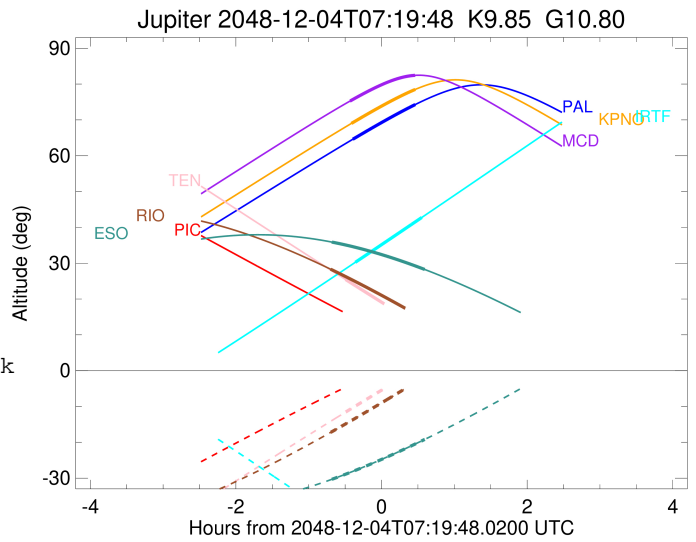
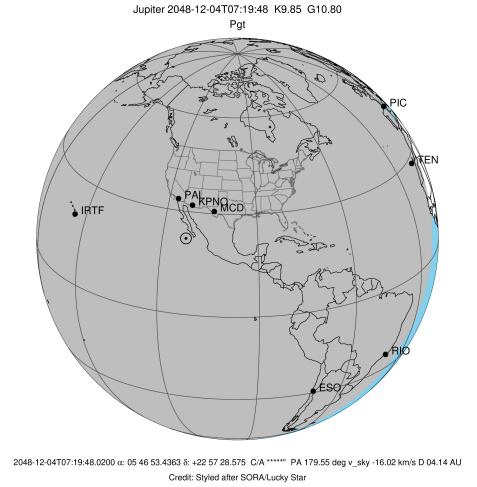


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-12-04T06:53:53.512	75.26	-81.65	71484.3	68.44	70.81
Jupiter	E	2048-12-04T07:47:21.824	82.43	-74.10	71484.4	68.03	70.44

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-12-04T07:13:23.040
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      : 3427532168777227008
2Mass ID (if available) : 05465342+2257288
ICRS Star Coord at Epoch: 05h 46m 53.43627s +22:57:28.57487s
RUWE (>1.4 is poor) : 0.90
K magnitude         : 9.845
G magnitude         : 10.797
RP magnitude        : 10.451
BP magnitude        : 10.997
DUPflag            : 0
Distance (au)       : 4.142
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -16.02
Sun-Target sep (deg) : 165.14
Sun-Moon sep (deg)  : 147.18
B (ring opening deg) : 2.54
PA of pole (deg)    : -0.58
Pole direction: RA (deg): 268.05737
Dec (deg): 64.49721
C/A sky separation (" ) : 22.597
C/A sky separation (km) : 67891.5
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
    
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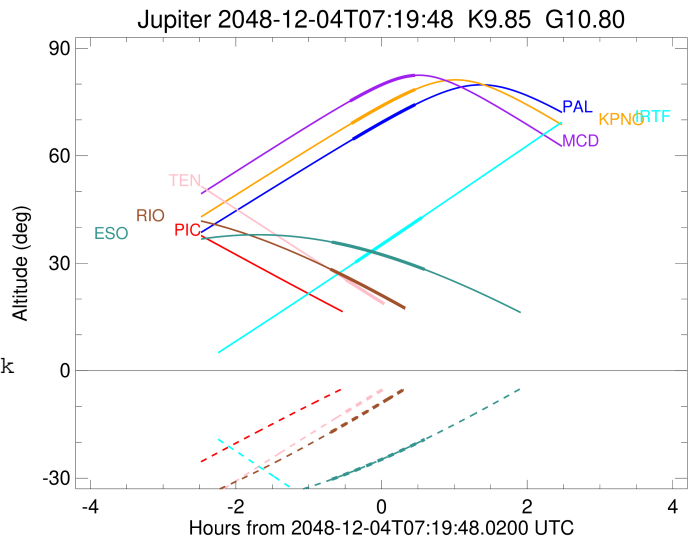
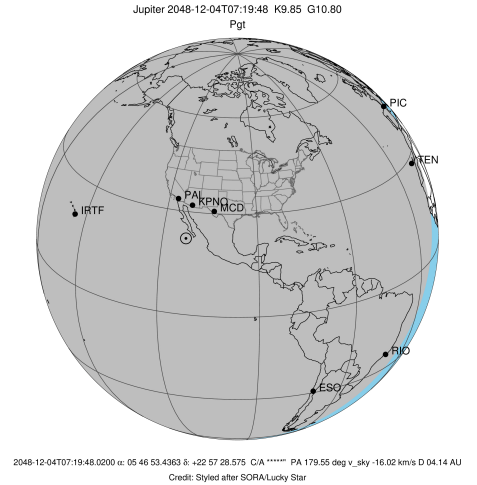


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-12-04T06:50:16.165	25.43	-11.55	71484.1	71.17	73.28
Jupiter	E	2048-12-04T07:36:33.343	15.59	-2.08x	71484.0	72.02	74.04

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2048-12-04T07:25:41.630
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        : 3427532168777227008
2Mass ID (if available) : 05465342+2257288
ICRS Star Coord at Epoch: 05h 46m 53.43627s +22:57:28.57487s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 9.845
G magnitude           : 10.797
RP magnitude          : 10.451
BP magnitude          : 10.997
DUPflag              : 0
Distance (au)         : 4.142
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.02
Sun-Target sep (deg) : 165.14
Sun-Moon sep (deg)   : 145.93
B (ring opening deg) : 2.54
PA of pole (deg)     : -0.58
Pole direction: RA (deg): 268.05737
Dec (deg): 64.49721
C/A sky separation (") : 22.077
C/A sky separation (km) : 66327.0
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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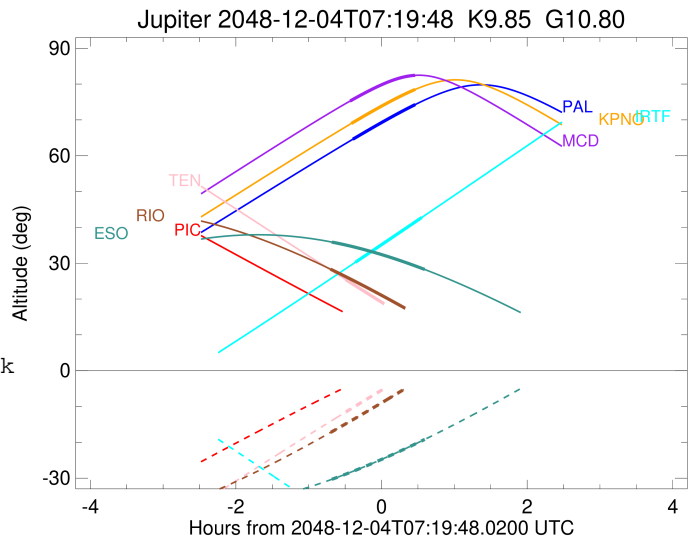
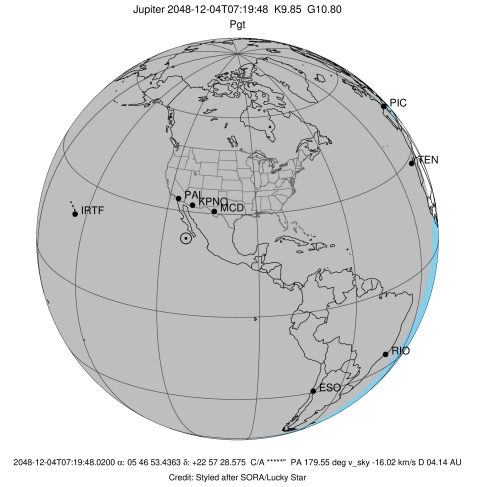


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-12-04T06:58:20.903	30.27	-44.90	71484.3	68.62	70.97
Jupiter	E	2048-12-04T07:52:57.509	42.75	-57.49	71484.5	67.35	69.82

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2048-12-04T07:14:29.530
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       : 3427532168777227008
2Mass ID (if available) : 05465342+2257288
ICRS Star Coord at Epoch: 05h 46m 53.43627s +22:57:28.57487s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 9.845
G magnitude           : 10.797
RP magnitude          : 10.451
BP magnitude          : 10.997
DUPflag              : 0
Distance (au)        : 4.142
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.02
Sun-Target sep (deg) : 165.14
Sun-Moon sep (deg)  : 147.14
B (ring opening deg) : 2.54
PA of pole (deg)    : -0.58
Pole direction: RA (deg): 268.05737
Dec (deg): 64.49721
C/A sky separation ("): 20.597
C/A sky separation (km): 61882.8
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
    
```

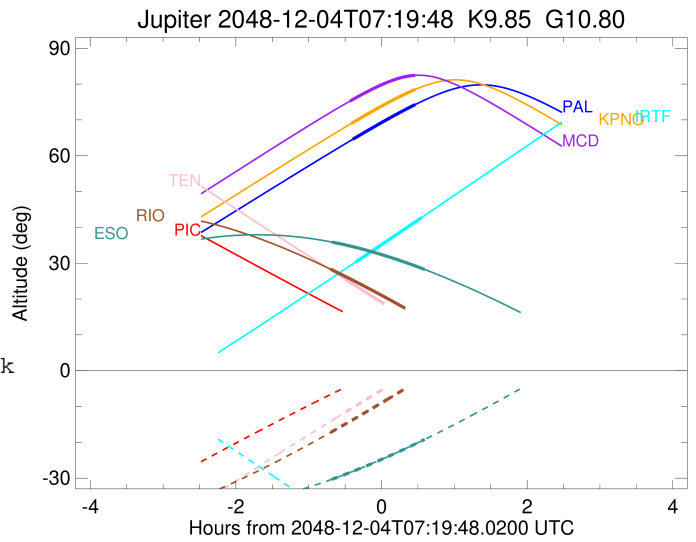
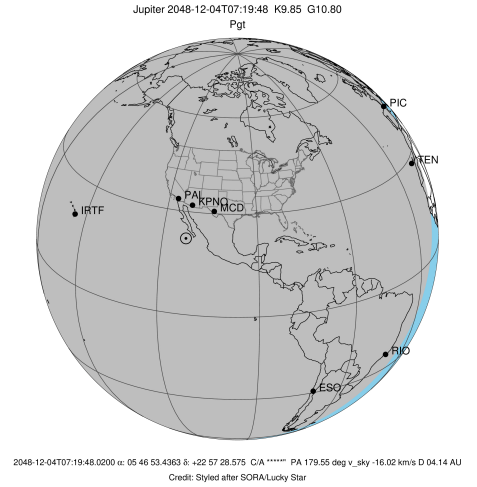


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-12-04T06:37:58.049	28.30	-17.22	71485.4	59.56	62.66
Jupiter	E	2048-12-04T07:51:07.995	15.16	-2.57x	71485.3	60.22	63.27


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-12-04T07:17:07.220
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      : 3427532168777227008
2Mass ID (if available) : 05465342+2257288
ICRS Star Coord at Epoch: 05h 46m 53.43627s +22:57:28.57487s
RUWE (>1.4 is poor) : 0.90
K magnitude          : 9.845
G magnitude          : 10.797
RP magnitude         : 10.451
BP magnitude         : 10.997
DUPflag             : 0
Distance (au)        : 4.142
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.02
Sun-Target sep (deg) : 165.14
Sun-Moon sep (deg)  : 146.94
B (ring opening deg) : 2.54
PA of pole (deg)    : -0.58
Pole direction: RA (deg): 268.05737
Dec (deg): 64.49721
C/A sky separation (") : 20.221
C/A sky separation (km) : 60751.6
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	2048-12-04T06:38:53.240	35.89	-30.33	71485.6	58.05	61.24
Jupiter	E	2048-12-04T07:55:24.780	28.25	-19.19	71485.6	58.25	61.43