

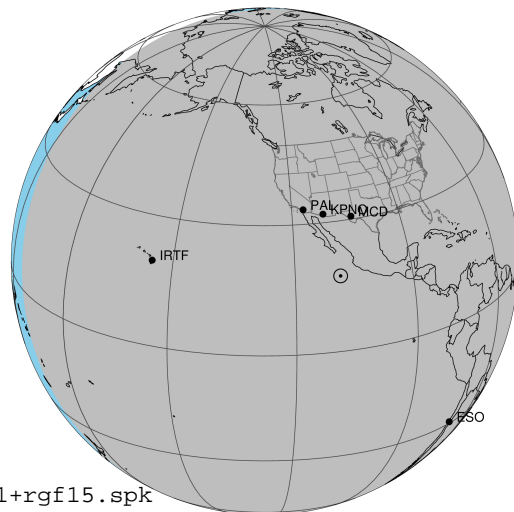
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2038-01-30T07:29:07.410
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 865487832005346048
 2Mass ID (if available) : 07361032+2200520

Jupiter 2038-01-30T07:29:07 K9.08 G9.99 Pgt

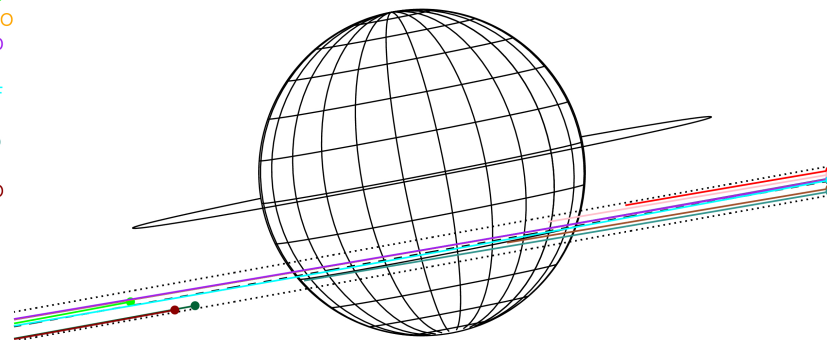
ICRS Star Coord at Epoch: 07h 36m 10.30610s +22:00:52.08808s

RUWE (>1.4 is poor) : 1.72
 K magnitude : 9.080
 G magnitude : 9.986
 RP magnitude : 9.660
 BP magnitude : 10.172
 DUPflag : 0
 Distance (au) : 4.292
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.90
 Sun-Target sep (deg) : 162.22
 Sun-Moon sep (deg) : 138.30
 B (ring opening deg) : 1.17
 PA of pole (deg) : 10.88
 Pole direction: RA (deg): 268.05621
 Dec (deg): 64.49691
 C/A sky separation (") : 11.242
 C/A sky separation (km) : 34994.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2038-01-30T07:29:07 K9.08 G9.99
 Pgt



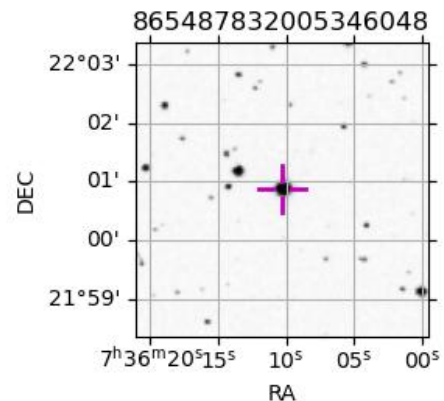
Earth
 PIC
 PAL
 PMO
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 AAT
 MSO



2038-01-30T07:29:07.4100 a: 07 36 10.3061 s: +22 00 52.088 C/A ***** PA 10.13 deg v_sky -15.90 km/s D 04.29 AU
 Credit: Styled after SORA/Lucky Star

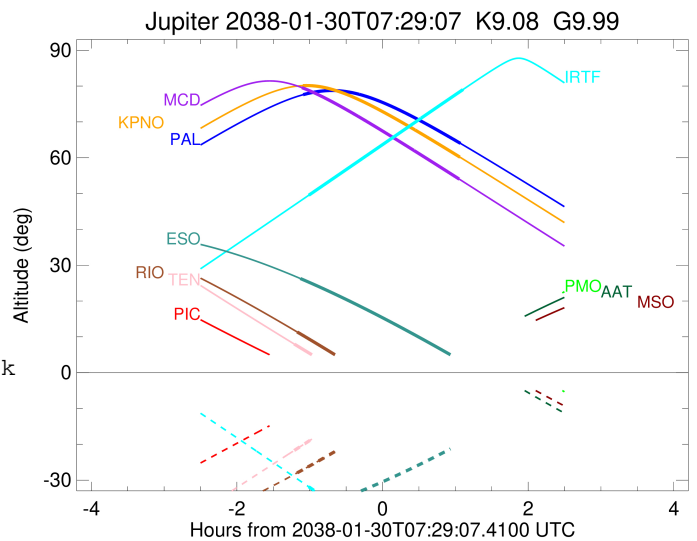
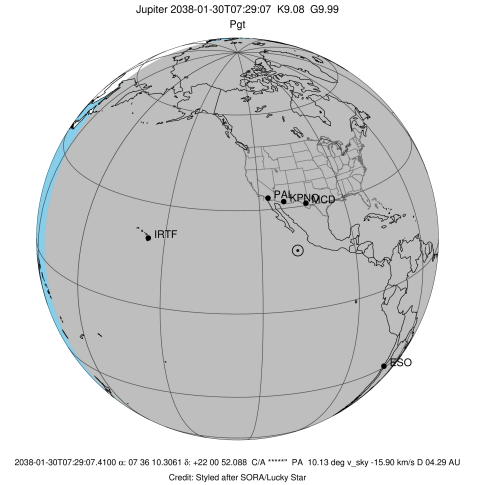
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	JAN 30 06:23 - JAN 30 08:33	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JAN 30 06:23 - JAN 30 08:32	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JAN 30 06:22 - JAN 30 08:32	Pie
TEN	Teide Obs./Tenerife	28.3	343.5	+	JAN 30 06:16 - JAN 30 06:16	Pin
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	JAN 30 06:28 - JAN 30 08:35	Pie
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	JAN 30 06:18 - JAN 30 06:18	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	JAN 30 06:21 - JAN 30 06:21	Pin
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             : 2038-01-30T07:28:34.860
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        : 865487832005346048
2Mass ID (if available) : 07361032+2200520
ICRS Star Coord at Epoch: 07h 36m 10.30610s +22:00:52.08808s
RUWE (>1.4 is poor) : 1.72
K magnitude           : 9.080
G magnitude           : 9.986
RP magnitude          : 9.660
BP magnitude          : 10.172
DUPflag              : 0
Distance (au)         : 4.292
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.90
Sun-Target sep (deg) : 162.22
Sun-Moon sep (deg)   : 139.01
B (ring opening deg) : 1.17
PA of pole (deg)     : 10.88
Pole direction: RA (deg): 268.05621
Dec (deg): 64.49691
C/A sky separation (") : 10.784
C/A sky separation (km) : 33568.6
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
    
```

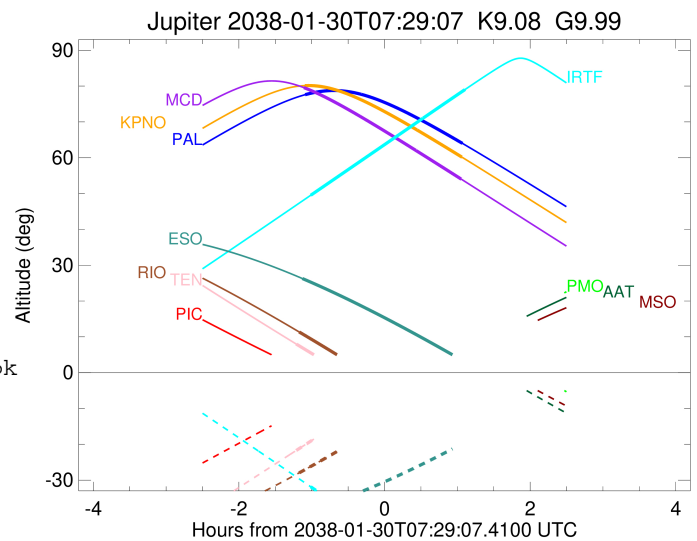
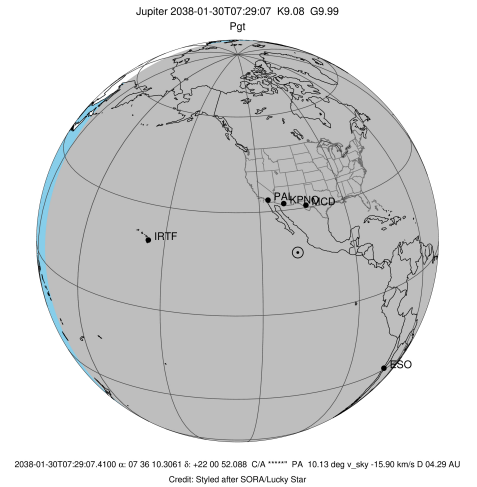


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2038-01-30T06:23:55.322	77.61	-63.30	71491.6	-29.01	-32.32
Jupiter	E	2038-01-30T08:33:22.091	63.99	-72.76	71491.6	-26.86	-30.03

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2038-01-30T07:28:05.040
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      : 865487832005346048
2Mass ID (if available) : 07361032+2200520
ICRS Star Coord at Epoch: 07h 36m 10.30610s +22:00:52.08808s
RUWE (>1.4 is poor) : 1.72
K magnitude          : 9.080
G magnitude          : 9.986
RP magnitude         : 9.660
BP magnitude         : 10.172
DUPflag             : 0
Distance (au)       : 4.292
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.90
Sun-Target sep (deg) : 162.22
Sun-Moon sep (deg)  : 139.06
B (ring opening deg) : 1.17
PA of pole (deg)    : 10.88
Pole direction: RA (deg): 268.05621
Dec (deg): 64.49691
C/A sky separation (") : 10.791
C/A sky separation (km) : 33590.0
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
    
```

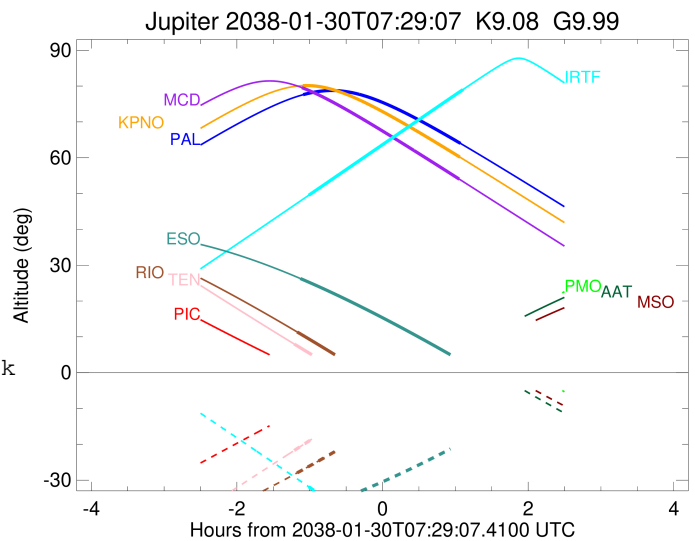
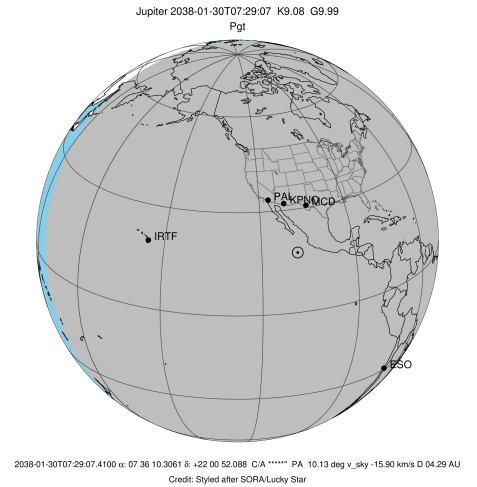


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2038-01-30T06:23:26.498	80.12	-67.71	71491.6	-29.08	-32.39
Jupiter	E	2038-01-30T08:32:53.582	60.16	-71.37	71491.6	-26.84	-30.00

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2038-01-30T07:27:23.850
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       : 865487832005346048
2Mass ID (if available) : 07361032+2200520
ICRS Star Coord at Epoch: 07h 36m 10.30610s +22:00:52.08808s
RUWE (>1.4 is poor) : 1.72
K magnitude           : 9.080
G magnitude           : 9.986
RP magnitude          : 9.660
BP magnitude          : 10.172
DUPflag              : 0
Distance (au)        : 4.292
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.90
Sun-Target sep (deg) : 162.22
Sun-Moon sep (deg)   : 139.12
B (ring opening deg) : 1.17
PA of pole (deg)     : 10.88
Pole direction: RA (deg): 268.05621
Dec (deg): 64.49691
C/A sky separation ("): 10.768
C/A sky separation (km): 33518.9
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
    
```

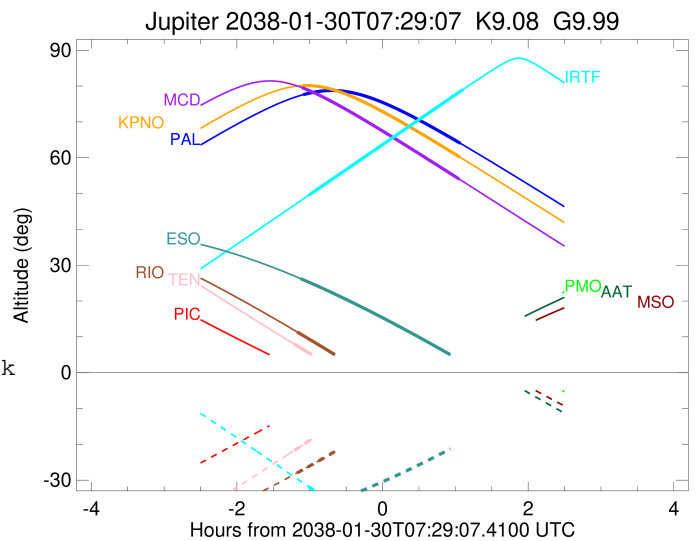
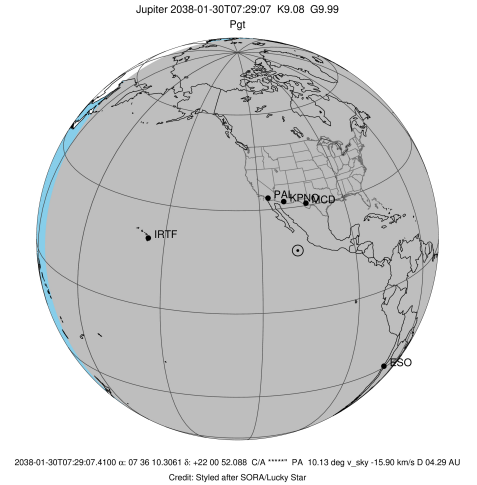


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2038-01-30T06:22:41.351	79.56	-73.32	71491.6	-29.08	-32.39
Jupiter	E	2038-01-30T08:32:19.613	54.03	-67.12	71491.6	-26.72	-29.88

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2038-01-30T07:24:33.580
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      : 865487832005346048
2Mass ID (if available) : 07361032+2200520
ICRS Star Coord at Epoch: 07h 36m 10.30610s +22:00:52.08808s
RUWE (>1.4 is poor) : 1.72
K magnitude         : 9.080
G magnitude         : 9.986
RP magnitude        : 9.660
BP magnitude        : 10.172
DUPflag            : 0
Distance (au)      : 4.292
f0 (km)            : 0.00
g0 (km)            : 0.00
skyplane vel. (km/s) : -15.90
Sun-Target sep (deg) : 162.22
Sun-Moon sep (deg)  : 138.79
B (ring opening deg) : 1.17
PA of pole (deg)    : 10.88
Pole direction: RA (deg): 268.05621
Dec (deg): 64.49691
C/A sky separation (") : 9.832
C/A sky separation (km) : 30606.6
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
    
```

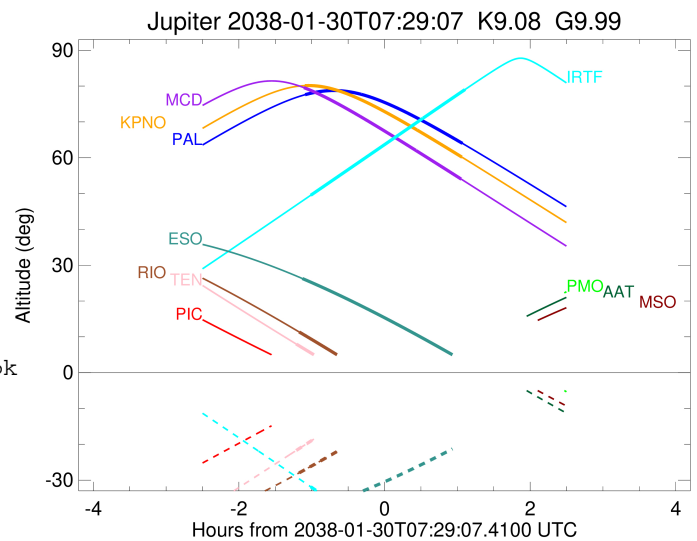
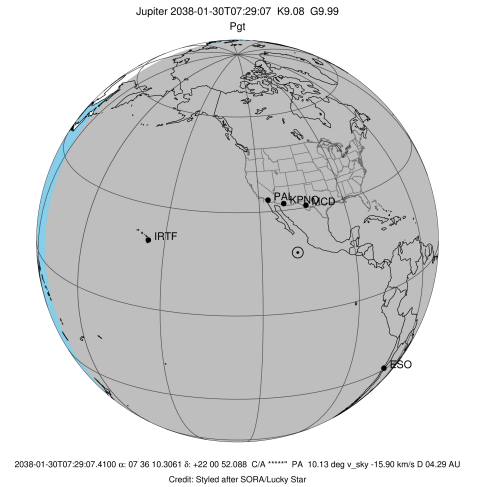


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2038-01-30T06:16:25.490	7.98	-21.71	71491.6	-26.57	-29.72
Jupiter	E	2038-01-30T08:33:11.924	-18.37x	7.14x	71491.7	-24.24	-27.20

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2038-01-30T07:31:58.090
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        : 865487832005346048
2Mass ID (if available) : 07361032+2200520
ICRS Star Coord at Epoch: 07h 36m 10.30610s +22:00:52.08808s
RUWE (>1.4 is poor) : 1.72
K magnitude           : 9.080
G magnitude           : 9.986
RP magnitude          : 9.660
BP magnitude          : 10.172
DUPflag              : 0
Distance (au)         : 4.292
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.90
Sun-Target sep (deg)  : 162.22
Sun-Moon sep (deg)    : 138.55
B (ring opening deg) : 1.17
PA of pole (deg)      : 10.88
Pole direction: RA (deg): 268.05621
Dec (deg): 64.49691
C/A sky separation (") : 11.400
C/A sky separation (km) : 35486.7
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
    
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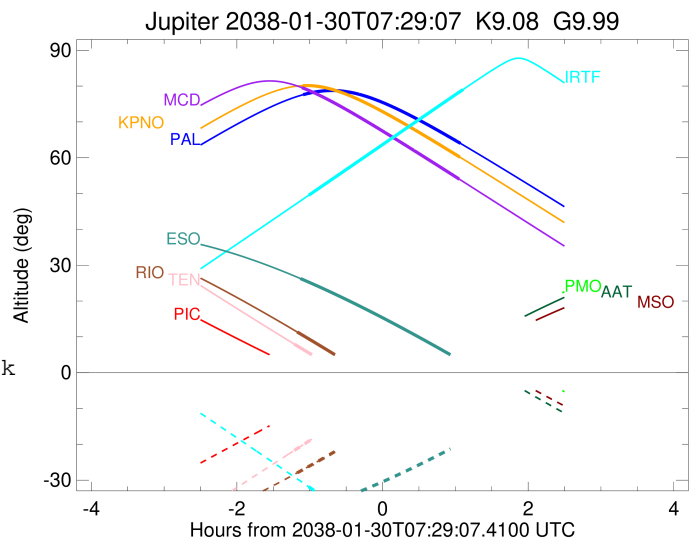
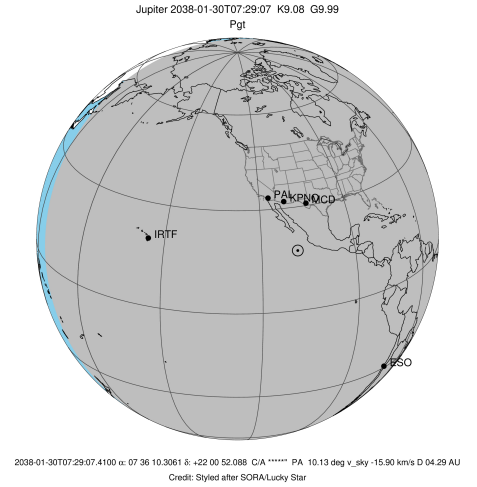


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2038-01-30T06:28:19.481	49.52	-31.85	71491.5	-30.40	-33.79
Jupiter	E	2038-01-30T08:35:27.193	79.02	-61.63	71491.6	-28.93	-32.24

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2038-01-30T07:23:01.580
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        : 865487832005346048
2Mass ID (if available) : 07361032+2200520
ICRS Star Coord at Epoch: 07h 36m 10.30610s +22:00:52.08808s
RUWE (>1.4 is poor) : 1.72
K magnitude           : 9.080
G magnitude           : 9.986
RP magnitude          : 9.660
BP magnitude          : 10.172
DUPflag              : 0
Distance (au)         : 4.292
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.90
Sun-Target sep (deg) : 162.22
Sun-Moon sep (deg)   : 138.95
B (ring opening deg) : 1.17
PA of pole (deg)     : 10.88
Pole direction: RA (deg): 268.05621
Dec (deg): 64.49691
C/A sky separation ("): 11.719
C/A sky separation (km): 36480.5
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
    
```

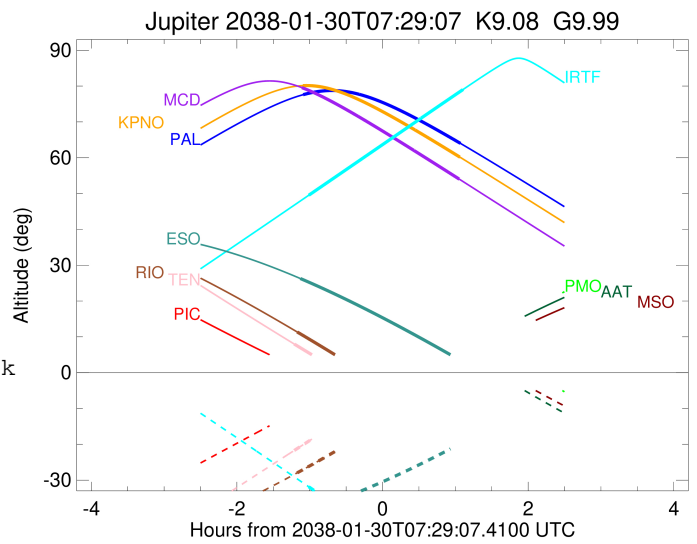
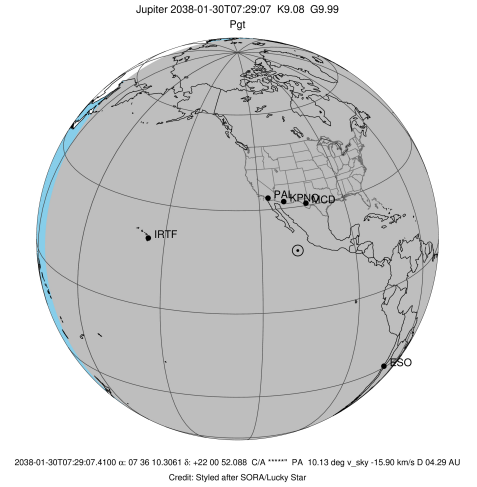


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2038-01-30T06:18:56.211	11.33	-27.94	71491.5	-32.04	-35.51
Jupiter	E	2038-01-30T08:27:36.665	-15.96x	-1.71x	71491.6	-29.36	-32.70


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2038-01-30T07:24:02.560
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       : 865487832005346048
2Mass ID (if available) : 07361032+2200520
ICRS Star Coord at Epoch: 07h 36m 10.30610s +22:00:52.08808s
RUWE (>1.4 is poor) : 1.72
K magnitude           : 9.080
G magnitude           : 9.986
RP magnitude          : 9.660
BP magnitude          : 10.172
DUPflag              : 0
Distance (au)         : 4.292
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.90
Sun-Target sep (deg) : 162.22
Sun-Moon sep (deg)   : 139.03
B (ring opening deg) : 1.17
PA of pole (deg)     : 10.88
Pole direction: RA (deg): 268.05621
Dec (deg): 64.49691
C/A sky separation ("): 12.262
C/A sky separation (km): 38168.7
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	2038-01-30T06:21:38.755	26.25	-38.93	71491.4	-33.57	-37.12
Jupiter	E	2038-01-30T08:26:49.222	4.67x	-20.98	71491.5	-30.92	-34.34