

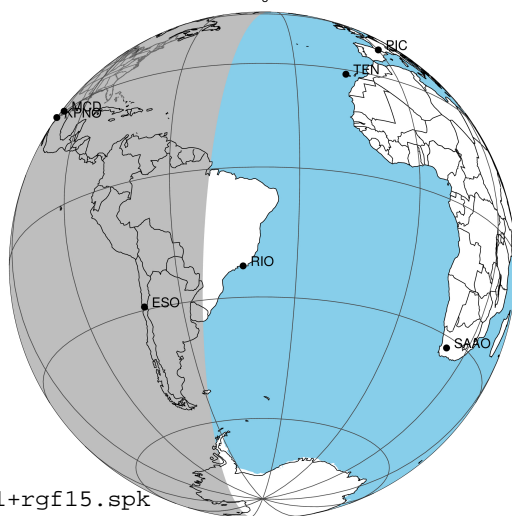
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-03-03T09:33:22.480
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116928497718251008
 2Mass ID (if available) : 17414251-2249483

Jupiter 2031-03-03T09:33:22 K9.82 G13.94 Pgt

ICRS Star Coord at Epoch: 17h 41m 42.50582s -22:49:48.33512s

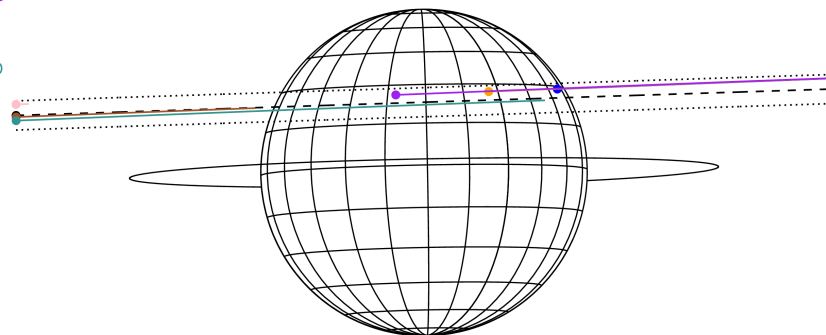
RUWE (>1.4 is poor) : 1.01
 K magnitude : 9.822
 G magnitude : 13.938
 RP magnitude : 12.829
 BP magnitude : 15.177
 DUPflag : 0
 Distance (au) : 5.460
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 20.14
 Sun-Target sep (deg) : 76.39
 Sun-Moon sep (deg) : 169.26
 B (ring opening deg) : -2.65
 PA of pole (deg) : 1.13
 Pole direction: RA (deg): 268.05701
 Dec (deg): 64.49651
 C/A sky separation (") : 7.770
 C/A sky separation (km) : 30770.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-03-03T09:33:22 K9.82 G13.94
 Pgt



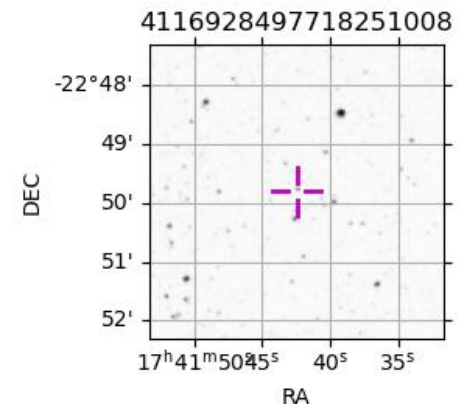
2031-03-03T09:33:22.4800 cr: 17 41 42.5058 s: -22 49 48.335 C/A 7.760" PA 181.85 deg v_sky +20.14 km/s D 05.46 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PAL
 KPNO
 MCD
 TEN
 RIO
 ESO



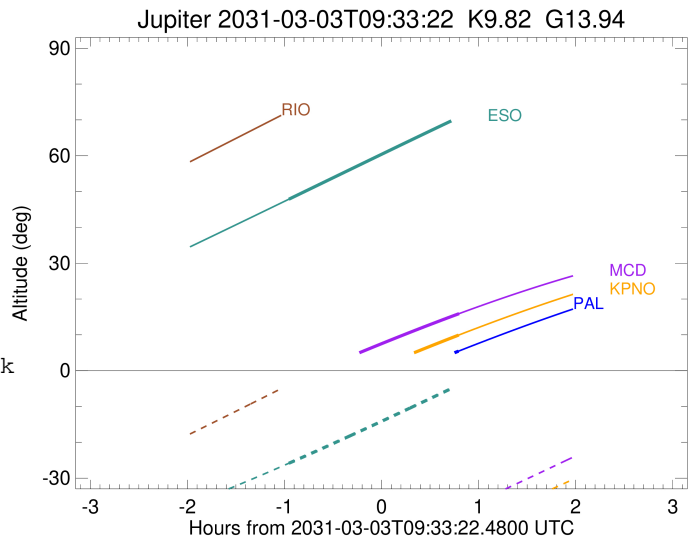
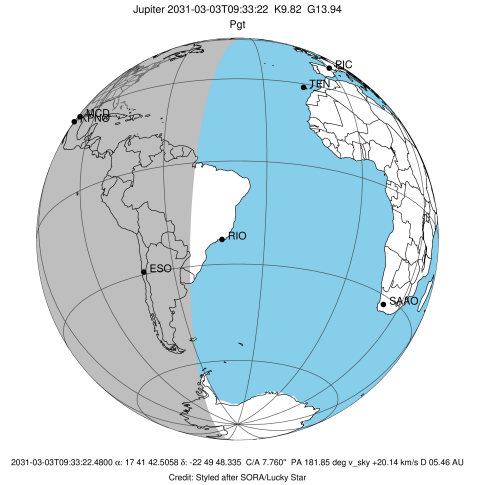
Observable events with sun below -5 deg and altitude above 5 deg

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	+	MAR 03 10:21 - MAR 03 10:21	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	MAR 03 10:21 - MAR 03 10:21	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	MAR 03 10:21 - MAR 03 10:21	Pne
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
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			Pnn
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	MAR 03 08:36 - MAR 03 08:36	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



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-03T09:28:44.120
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       : 4116928497718251008
2Mass ID (if available) : 17414251-2249483
ICRS Star Coord at Epoch: 17h 41m 42.50582s -22:49:48.33512s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 9.822
G magnitude           : 13.938
RP magnitude         : 12.829
BP magnitude         : 15.177
DUPflag              : 0
Distance (au)        : 5.460
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 20.14
Sun-Target sep (deg) : 76.39
Sun-Moon sep (deg)   : 169.84
B (ring opening deg) : -2.65
PA of pole (deg)     : 1.13
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation ("): 8.638
C/A sky separation (km): 34205.1
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
    
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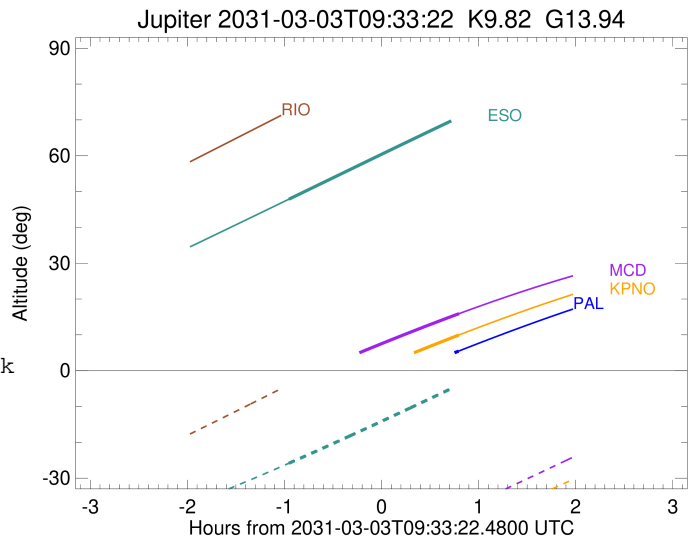
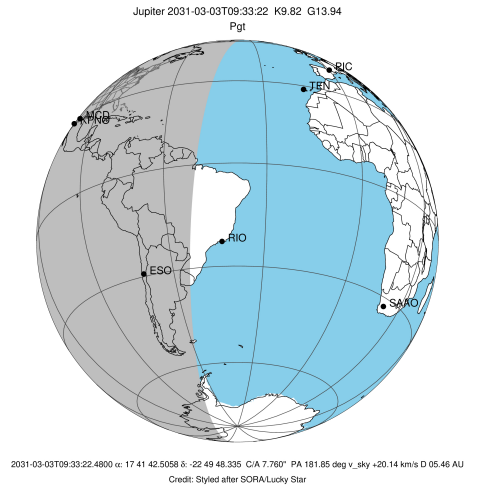


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-03T08:36:44.759	-14.36x	-62.28	71490.0	27.40	30.61
Jupiter	E	2031-03-03T10:21:00.081	5.45	-47.93	71489.6	29.69	33.04

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-03T09:28:45.420
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      : 4116928497718251008
2Mass ID (if available) : 17414251-2249483
ICRS Star Coord at Epoch: 17h 41m 42.50582s -22:49:48.33512s
RUWE (>1.4 is poor) : 1.01
K magnitude         : 9.822
G magnitude         : 13.938
RP magnitude        : 12.829
BP magnitude        : 15.177
DUPflag            : 0
Distance (au)       : 5.460
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 20.14
Sun-Target sep (deg) : 76.39
Sun-Moon sep (deg)  : 169.85
B (ring opening deg) : -2.65
PA of pole (deg)    : 1.13
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 8.657
C/A sky separation (km) : 34280.5
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
    
```

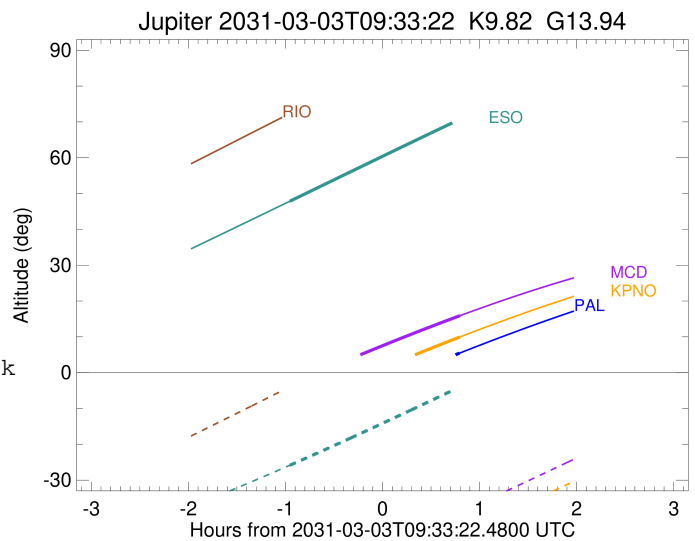
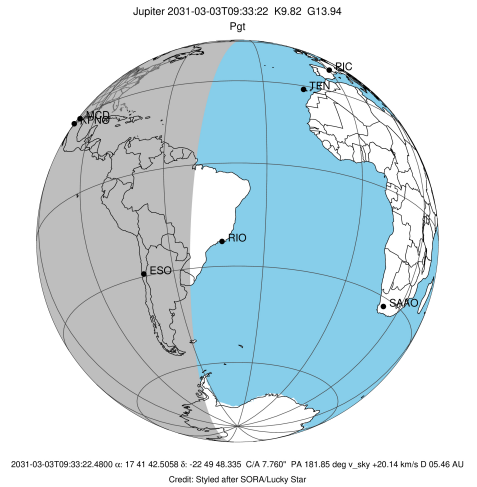


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-03T08:36:42.340	-9.72x	-61.58	71490.0	27.46	30.68
Jupiter	E	2031-03-03T10:21:05.128	9.93	-44.63	71489.6	29.76	33.11

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-03T09:28:53.890
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        : 4116928497718251008
2Mass ID (if available) : 17414251-2249483
ICRS Star Coord at Epoch: 17h 41m 42.50582s -22:49:48.33512s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 9.822
G magnitude           : 13.938
RP magnitude          : 12.829
BP magnitude          : 15.177
DUPflag              : 0
Distance (au)         : 5.460
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 20.14
Sun-Target sep (deg) : 76.39
Sun-Moon sep (deg)   : 169.84
B (ring opening deg) : -2.65
PA of pole (deg)     : 1.13
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 8.699
C/A sky separation (km) : 34447.3
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
    
```

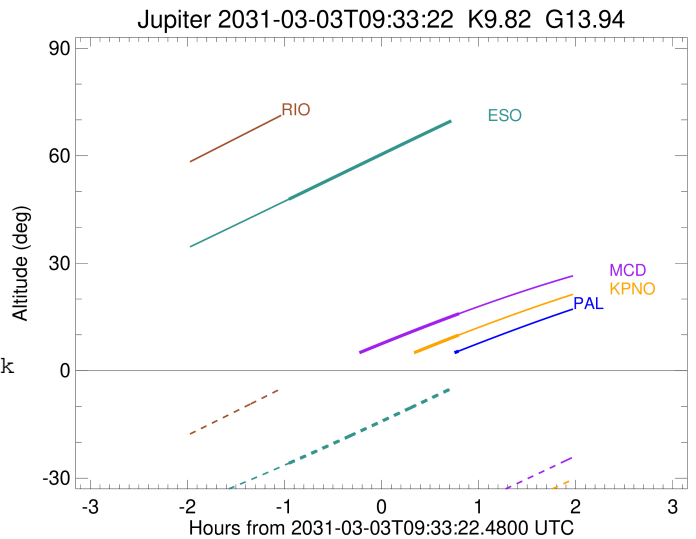
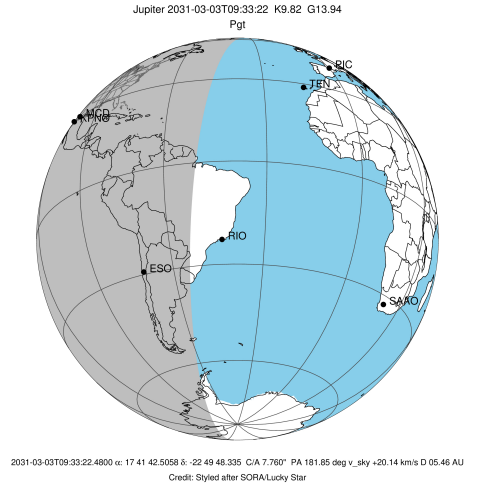


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-03T08:36:46.963	-3.22x	-58.50	71489.9	27.62	30.84
Jupiter	E	2031-03-03T10:21:17.094	15.91	-38.99	71489.6	29.89	33.26

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-03T09:30:46.380
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       : 4116928497718251008
2Mass ID (if available) : 17414251-2249483
ICRS Star Coord at Epoch: 17h 41m 42.50582s -22:49:48.33512s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 9.822
G magnitude           : 13.938
RP magnitude         : 12.829
BP magnitude         : 15.177
DUPflag              : 0
Distance (au)        : 5.460
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 20.14
Sun-Target sep (deg) : 76.39
Sun-Moon sep (deg)   : 169.83
B (ring opening deg) : -2.65
PA of pole (deg)     : 1.13
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 7.485
C/A sky separation (km) : 29640.0
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	2031-03-03T08:36:05.926	47.85	-25.85	71490.5	23.43	26.33
Jupiter	E	2031-03-03T10:25:39.070	71.66	-3.02x	71490.2	25.42	28.48