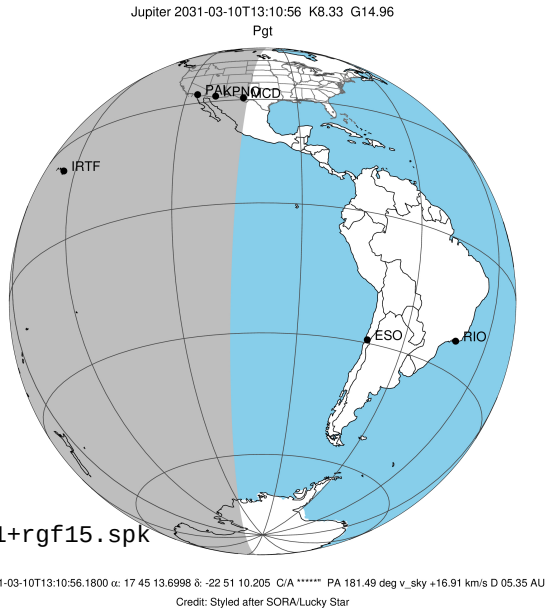
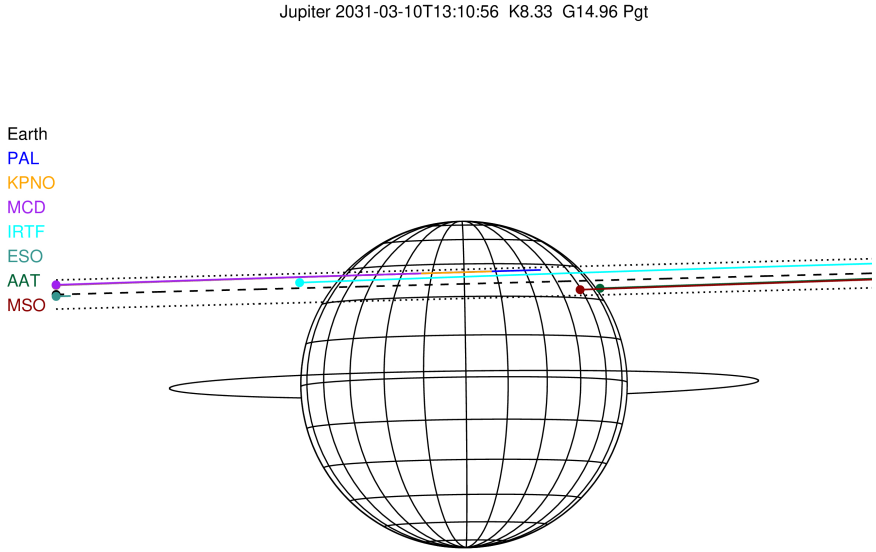
Stellar occultation prediction by rfrench@wellesley.edu Sun Jun 25 08:32:39 2023

target : Jupiter
target radius (km) : 71492.00
C/A epoch : 2031-03-10T13:10:56.180
Event type : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Gaia source ID : 4068852665435325824
2Mass ID (if available) : 17451371-2251099

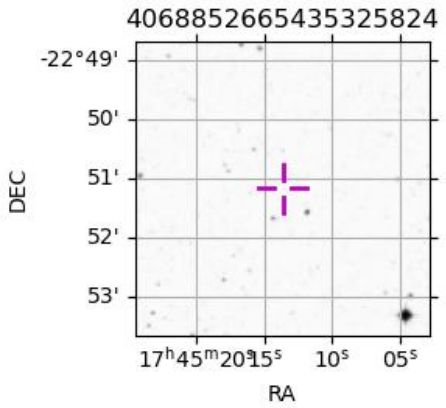
ICRS Star Coord at Epoch: 17h 45m 13.69981s -22:51:10.20511s
RUWE (>1.4 is poor) : 1.01
K magnitude : 8.333
G magnitude : 14.964
RP magnitude : 13.404
BP magnitude : 18.760
DUPflag : 0
Distance (au) : 5.346
f0 (km) : 0.00
g0 (km) : 0.00
skyplane vel. (km/s) : 16.90
Sun-Target sep (deg) : 82.73
Sun-Moon sep (deg) : 80.66
B (ring opening deg) : -2.64
PA of pole (deg) : 0.75
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 11.362
C/A sky separation (km) : 44053.8
NAIF SPICE kernels : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat440l.bsp



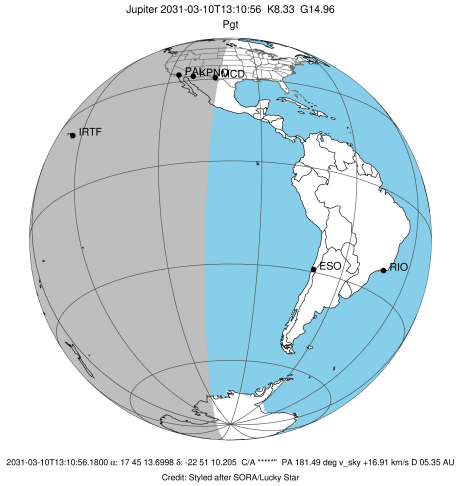


Observable events with sun below -5 deg and altitude above 5 deg

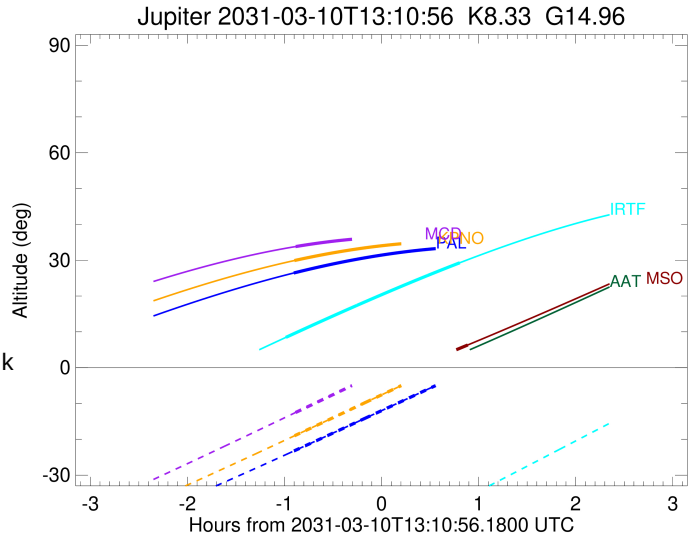
Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+	MAR 10 12:16 - MAR 10 12:16	Pin
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	MAR 10 12:17 - MAR 10 12:17	Pin
MCD	McDonald Obs. 2.7m	30.7	256.0	+	MAR 10 12:17 - MAR 10 12:17	Pin
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	MAR 10 12:11 - MAR 10 13:59	Pie
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			Pnn
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	+	MAR 10 14:04 - MAR 10 14:04	Pne



Jupiter_2031-03-10T13_10_56.1800_PAL.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:15:42 2023



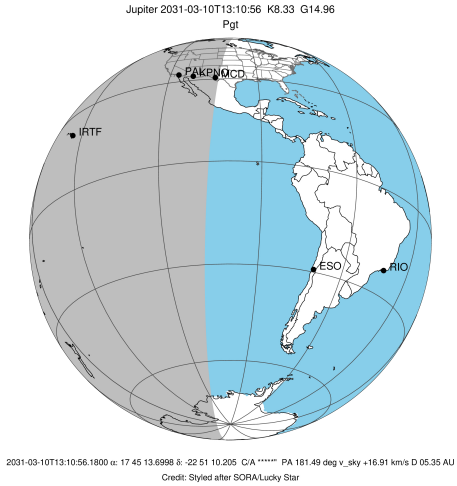

```
target                  : Jupiter
target radius (km)      :  71492.00
C/A epoch               : 2031-03-10T13:08:59.910
Event type              : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code           : PAL
Location                : Palomar Mt (200")
Latitude (deg)          :  33.35622
E. Longitude (deg)      : 243.13601
Altitude (km)           :   1.706
Gaia source ID          : 4068852665435325824
2Mass ID (if available) : 17451371-2251099
ICRS Star Coord at Epoch: 17h 45m 13.69981s -22:51:10.20511s
RUWE (>1.4 is poor)     :   1.01
K magnitude             :  8.333
G magnitude             : 14.964
RP magnitude            : 13.404
BP magnitude            : 18.760
DUPflag                 : 0
Distance (au)           :  5.346
f0 (km)                 :       0.00
g0 (km)                 :       0.00
skyplane vel. (km/s)    :  16.90
Sun-Target sep (deg)    :   82.73
Sun-Moon sep (deg)      :   81.12
B (ring opening deg)    :   -2.64
PA of pole (deg)        :    0.75
Pole direction: RA (deg): 268.05700
Dec (deg):  64.49651
C/A sky separation (")  :  12.688
C/A sky separation (km) :  49195.3
NAIF SPICE kernels      : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat440l.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
ura116.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	2031-03-10T12:16:45.809	26.43	-23.26	71487.7	42.44	46.16
Jupiter	E	2031-03-10T14:01:23.155	33.73	-1.45x	71487.4	44.30	48.01

Jupiter_2031-03-10T13_10_56.1800_KPNO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:19:44 2023




```
target                  : Jupiter
target radius (km)      :  71492.00
C/A epoch               : 2031-03-10T13:09:29.650
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          : 4068852665435325824
2Mass ID (if available) : 17451371-2251099
ICRS Star Coord at Epoch: 17h 45m 13.69981s -22:51:10.20511s
RUWE (>1.4 is poor)     :   1.01
K magnitude             :  8.333
G magnitude             : 14.964
RP magnitude            : 13.404
BP magnitude            : 18.760
DUPflag                 : 0
Distance (au)           :  5.346
f0 (km)                 :       0.00
g0 (km)                 :       0.00
skyplane vel. (km/s)    :  16.90
Sun-Target sep (deg)    :   82.73
Sun-Moon sep (deg)      :   81.17
B (ring opening deg)    :   -2.64
PA of pole (deg)        :    0.75
Pole direction: RA (deg): 268.05700
Dec (deg):  64.49651
C/A sky separation (")  :  12.682
C/A sky separation (km) :  49170.4
NAIF SPICE kernels      : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat440l.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
ura116.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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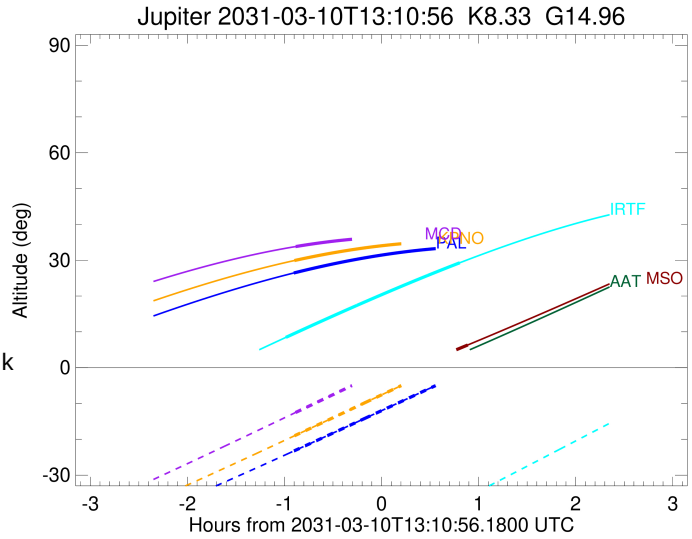
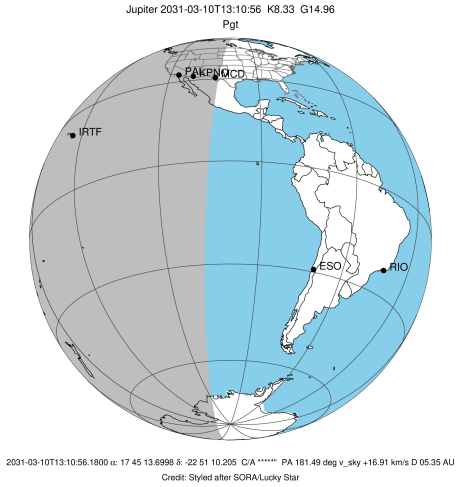


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-10T12:17:10.154	29.91	-19.01	71487.7	42.46	46.17
Jupiter	E	2031-03-10T14:01:56.802	35.34	3.22x	71487.4	44.23	47.94

Jupiter_2031-03-10T13_10_56.1800_MCD.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:21:49 2023




```
target                  : Jupiter
target radius (km)      :  71492.00
C/A epoch               : 2031-03-10T13:10:15.700
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          : 4068852665435325824
2Mass ID (if available) : 17451371-2251099
ICRS Star Coord at Epoch: 17h 45m 13.69981s -22:51:10.20511s
RUWE (>1.4 is poor)     :   1.01
K magnitude             :  8.333
G magnitude             : 14.964
RP magnitude            : 13.404
BP magnitude            : 18.760
DUPflag                 : 0
Distance (au)           :  5.346
f0 (km)                 :       0.00
g0 (km)                 :       0.00
skyplane vel. (km/s)    :  16.90
Sun-Target sep (deg)    :   82.73
Sun-Moon sep (deg)      :   81.22
B (ring opening deg)    :   -2.64
PA of pole (deg)        :    0.75
Pole direction: RA (deg): 268.05700
Dec (deg):  64.49651
C/A sky separation (")  :  12.676
C/A sky separation (km) :  49147.8
NAIF SPICE kernels      : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat440l.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
ura116.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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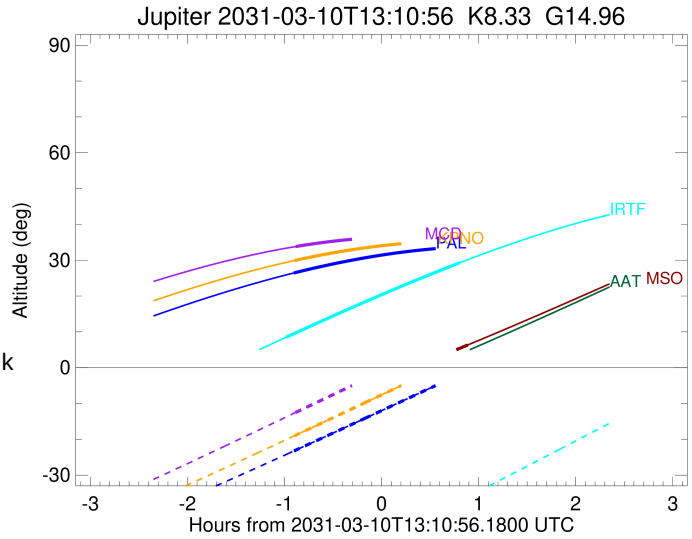
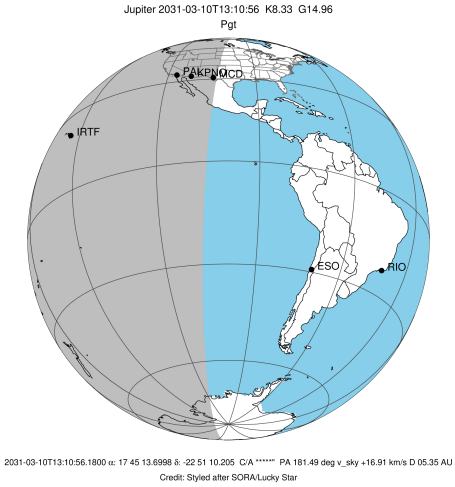


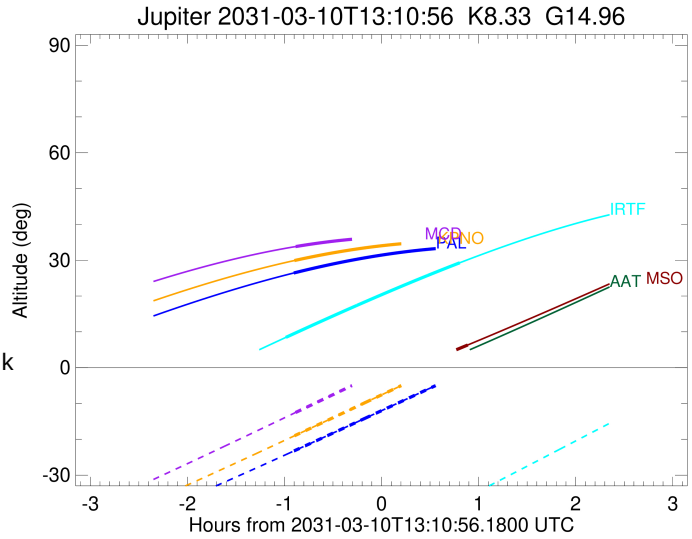
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-10T12:17:50.841	33.80	-12.51	71487.7	42.50	46.22
Jupiter	E	2031-03-10T14:02:45.899	36.09	10.00x	71487.4	44.13	47.84

Jupiter_2031-03-10T13_10_56.1800_IRTF.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:25:59 2023

```
target                  : Jupiter
target radius (km)      :  71492.00
C/A epoch               : 2031-03-10T13:05:26.050
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          : 4068852665435325824
2Mass ID (if available) : 17451371-2251099
ICRS Star Coord at Epoch: 17h 45m 13.69981s -22:51:10.20511s
RUWE (>1.4 is poor)     :   1.01
K magnitude             :  8.333
G magnitude             : 14.964
RP magnitude            : 13.404
BP magnitude            : 18.760
DUPflag                 : 0
Distance (au)           :  5.346
f0 (km)                 :       0.00
g0 (km)                 :       0.00
skyplane vel. (km/s)    :  16.90
Sun-Target sep (deg)    :   82.73
Sun-Moon sep (deg)      :   80.87
B (ring opening deg)    :   -2.64
PA of pole (deg)        :    0.75
Pole direction: RA (deg): 268.05700
Dec (deg):  64.49651
C/A sky separation (")  :  12.164
C/A sky separation (km) :  47162.2
NAIF SPICE kernels      : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat440l.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
ura116.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
```



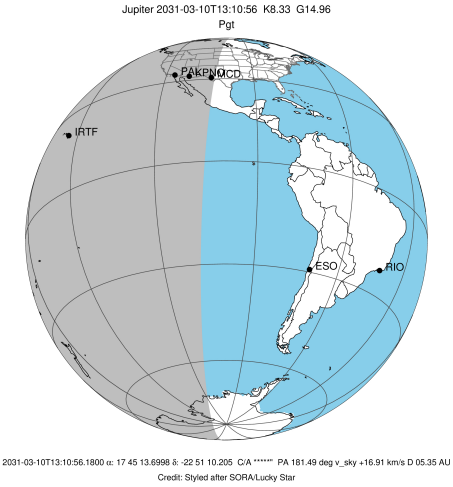


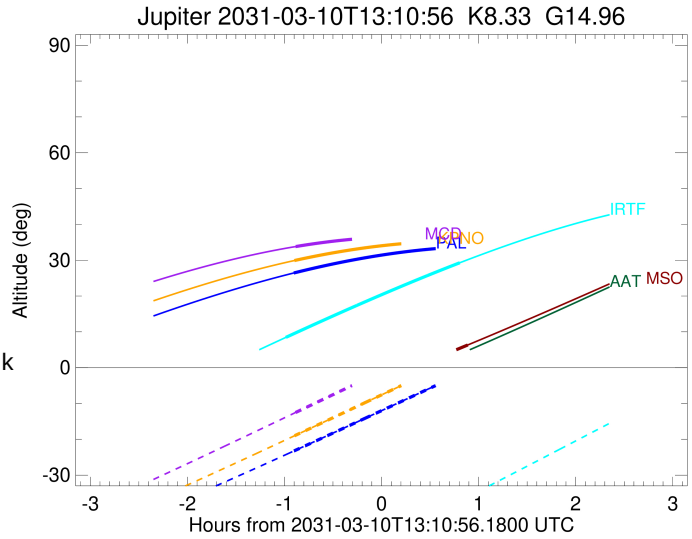
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-10T12:11:54.041	8.47	-61.10	71488.1	39.95	43.66
Jupiter	E	2031-03-10T13:59:19.059	29.28	-37.20	71487.7	42.44	46.16

Jupiter_2031-03-10T13_10_56.1800_MSO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:38:12 2023

```
target                   : Jupiter
target radius (km)       :  71492.00
C/A epoch                : 2031-03-10T13:06:00.450
Event type               : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code            : MSO
Location                 : Mt. Stromlo Observatory
Latitude (deg)           : -35.32000
E. Longitude (deg)       : 149.00833
Altitude (km)            :   0.770
Gaia source ID           : 4068852665435325824
2Mass ID (if available) : 17451371-2251099
ICRS Star Coord at Epoch: 17h 45m 13.69981s -22:51:10.20511s
RUWE (>1.4 is poor)      :   1.01
K magnitude              :  8.333
G magnitude              : 14.964
RP magnitude             : 13.404
BP magnitude             : 18.760
DUPflag                  : 0
Distance (au)            :  5.346
f0 (km)                  :       0.00
g0 (km)                  :       0.00
skyplane vel. (km/s)     :  16.90
Sun-Target sep (deg)     :   82.73
Sun-Moon sep (deg)       :   80.48
B (ring opening deg)     :   -2.64
PA of pole (deg)         :    0.75
Pole direction: RA (deg): 268.05700
Dec (deg):  64.49651
C/A sky separation (")   :  10.257
C/A sky separation (km)  :  39768.9
NAIF SPICE kernels       : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat440l.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
ura116.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	2031-03-10T12:08:10.239	-13.75x	-40.88	71489.2	32.61	36.12
Jupiter	E	2031-03-10T14:04:13.090	6.32	-50.76	71488.9	34.96	38.56