

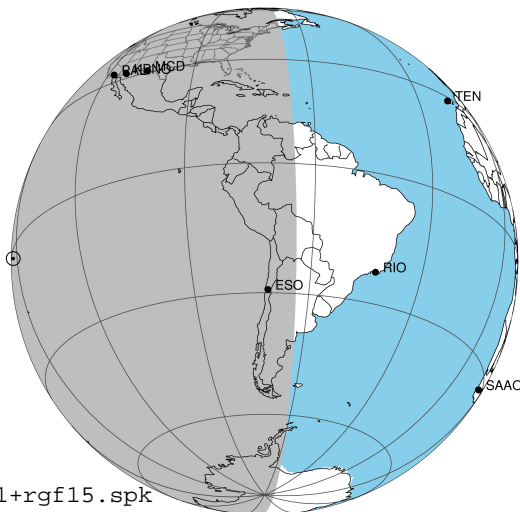
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-03-26T10:24:25.210  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068710828448334208  
 2Mass ID (if available) : 17505886-2253101

Jupiter 2031-03-26T10:24:25 K9.38 G13.79 Pgt

ICRS Star Coord at Epoch: 17h 50m 58.85293s -22:53:10.27531s

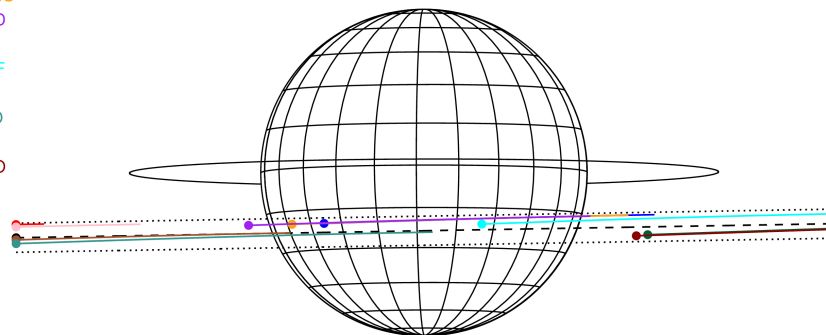
RUWE (>1.4 is poor) : 1.11  
 K magnitude : 9.382  
 G magnitude : 13.792  
 RP magnitude : 12.631  
 BP magnitude : 15.199  
 DUPflag : 0  
 Distance (au) : 5.089  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 9.40  
 Sun-Target sep (deg) : 97.21  
 Sun-Moon sep (deg) : 136.55  
 B (ring opening deg) : -2.62  
 PA of pole (deg) : 0.13  
 Pole direction: RA (deg): 268.05699  
 Dec (deg): 64.49651  
 C/A sky separation (") : 6.910  
 C/A sky separation (km) : 25505.7  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2031-03-26T10:24:25 K9.38 G13.79  
 Pgt



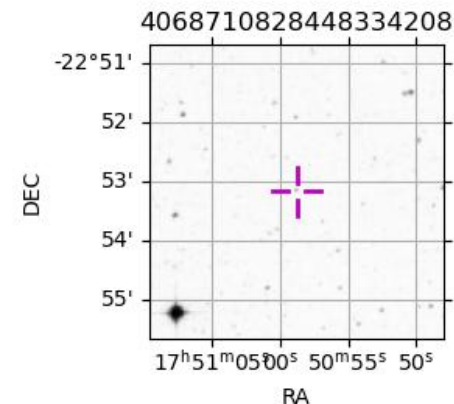
2031-03-26T10:24:25.2100 α: 17 50 58.85293 δ: -22 53 10.275 C/A 6.921" PA 0.98 deg v\_sky + 9.40 km/s D 05.09 AU  
 Credit: Styled after SORA/Lucky Star

Earth  
 PIC  
 PAL  
 KPNO  
 MCD  
 TEN  
 IRTF  
 RIO  
 ESO  
 AAT  
 MSO



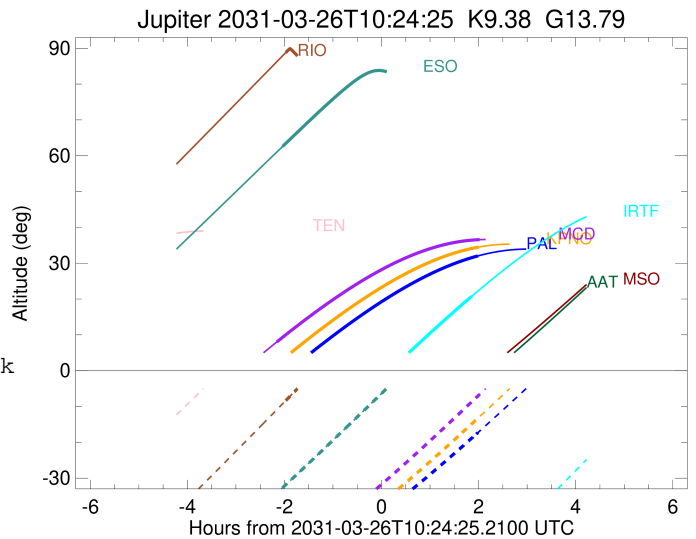
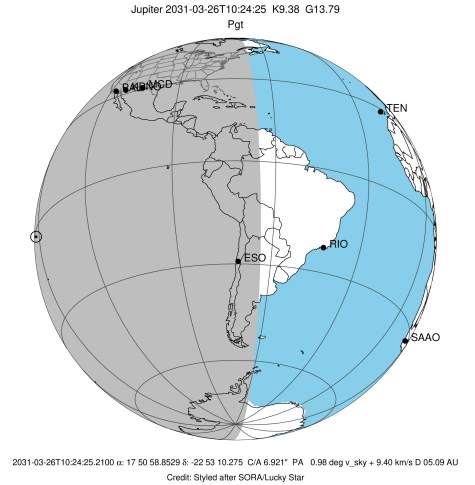
Observable events with sun below -5 deg and altitude above 5 deg

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 26 12:23	- MAR 26 12:23	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8				Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	MAR 26 12:24	- MAR 26 12:24	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	MAR 26 08:15	- MAR 26 12:25	Pie
TEN	Teide Obs./Tenerife	28.3	343.5				Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	MAR 26 12:16	- MAR 26 12:16	Pne
KAV	Kavalur Observatory	12.6	78.8				Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	MAR 26 08:26	- MAR 26 08:26	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	MAR 26 08:22	- MAR 26 08:22	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             : 2031-03-26T10:17:51.670
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        : 4068710828448334208
2Mass ID (if available) : 17505886-2253101
ICRS Star Coord at Epoch: 17h 50m 58.85293s -22:53:10.27531s
RUWE (>1.4 is poor) : 1.11
K magnitude           : 9.382
G magnitude           : 13.792
RP magnitude          : 12.631
BP magnitude          : 15.199
DUPflag              : 0
Distance (au)         : 5.089
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 9.40
Sun-Target sep (deg)  : 97.21
Sun-Moon sep (deg)   : 136.38
B (ring opening deg) : -2.62
PA of pole (deg)     : 0.13
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (") : 5.671
C/A sky separation (km) : 20932.0
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
    
```

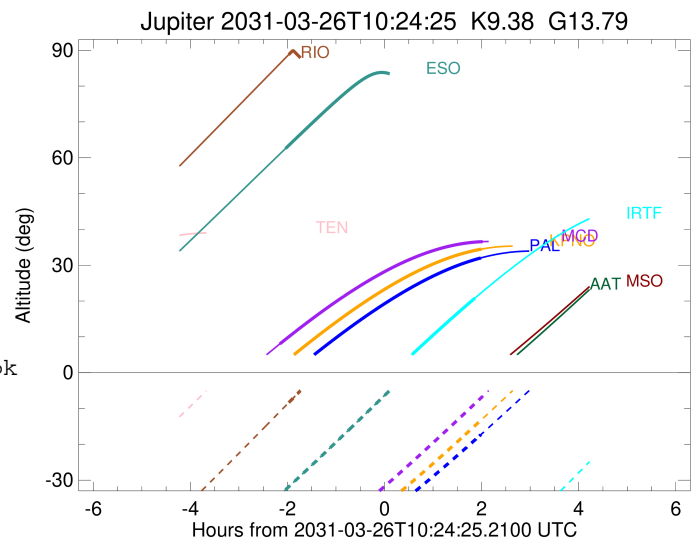
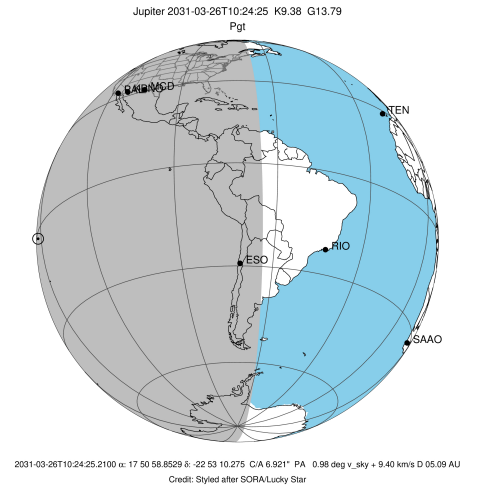


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-26T08:14:45.791	-2.86x	-54.28	71491.0	-18.69	-21.13
Jupiter	E	2031-03-26T12:23:34.068	32.03	-17.29	71491.3	-15.64	-17.74

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-26T10:18:21.960
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      : 4068710828448334208
2Mass ID (if available) : 17505886-2253101
ICRS Star Coord at Epoch: 17h 50m 58.85293s -22:53:10.27531s
RUWE (>1.4 is poor) : 1.11
K magnitude          : 9.382
G magnitude          : 13.792
RP magnitude         : 12.631
BP magnitude         : 15.199
DUPflag             : 0
Distance (au)        : 5.089
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 9.40
Sun-Target sep (deg) : 97.21
Sun-Moon sep (deg)  : 136.45
B (ring opening deg) : -2.62
PA of pole (deg)    : 0.13
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (" ) : 5.659
C/A sky separation (km) : 20886.6
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
    
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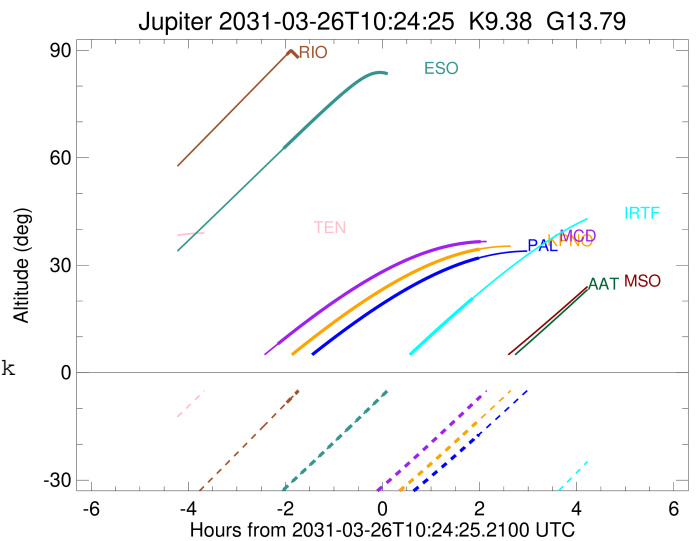
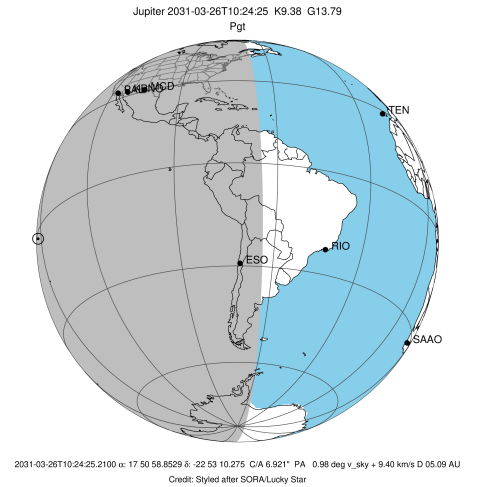


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-26T08:14:47.962	1.73x	-54.56	71491.0	-18.63	-21.06
Jupiter	E	2031-03-26T12:24:24.511	34.49	-13.10	71491.3	-15.67	-17.77

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-26T10:19:15.890
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        : 4068710828448334208
2Mass ID (if available) : 17505886-2253101
ICRS Star Coord at Epoch: 17h 50m 58.85293s -22:53:10.27531s
RUWE (>1.4 is poor) : 1.11
K magnitude           : 9.382
G magnitude           : 13.792
RP magnitude          : 12.631
BP magnitude          : 15.199
DUPflag              : 0
Distance (au)         : 5.089
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 9.40
Sun-Target sep (deg)  : 97.21
Sun-Moon sep (deg)   : 136.55
B (ring opening deg) : -2.62
PA of pole (deg)      : 0.13
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (" ) : 5.633
C/A sky separation (km) : 20792.2
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
    
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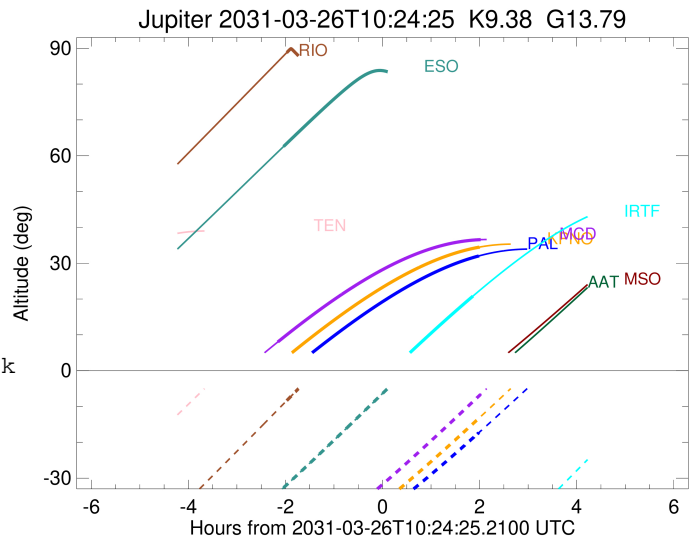
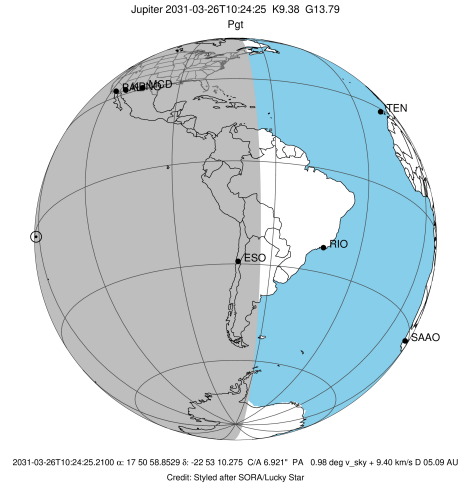


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-26T08:15:02.791	8.02	-52.95	71491.1	-18.49	-20.91
Jupiter	E	2031-03-26T12:25:42.287	36.57	-6.61	71491.3	-15.71	-17.82

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-26T10:14:29.910
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       : 4068710828448334208
2Mass ID (if available) : 17505886-2253101
ICRS Star Coord at Epoch: 17h 50m 58.85293s -22:53:10.27531s
RUWE (>1.4 is poor) : 1.11
K magnitude           : 9.382
G magnitude           : 13.792
RP magnitude          : 12.631
BP magnitude          : 15.199
DUPflag              : 0
Distance (au)        : 5.089
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 9.40
Sun-Target sep (deg) : 97.21
Sun-Moon sep (deg)  : 135.91
B (ring opening deg) : -2.62
PA of pole (deg)    : 0.13
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (" ) : 6.357
C/A sky separation (km) : 23464.3
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
    
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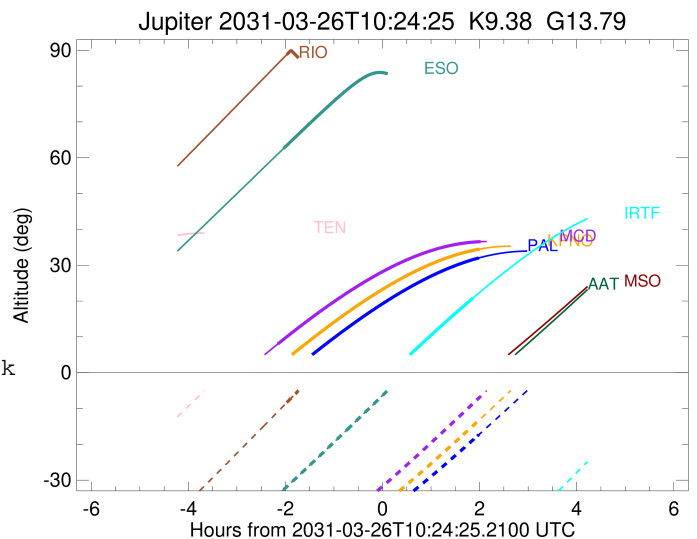
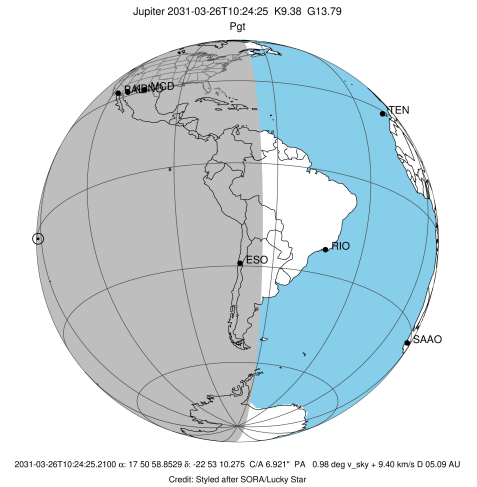


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-26T08:16:08.953	-30.80x	-51.01	71490.8	-20.98	-23.65
Jupiter	E	2031-03-26T12:16:11.562	20.81	-55.48	71491.2	-17.29	-19.58

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-26T10:29:10.490
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       : 4068710828448334208
2Mass ID (if available) : 17505886-2253101
ICRS Star Coord at Epoch: 17h 50m 58.85293s -22:53:10.27531s
RUWE (>1.4 is poor) : 1.11
K magnitude           : 9.382
G magnitude           : 13.792
RP magnitude          : 12.631
BP magnitude          : 15.199
DUPflag              : 0
Distance (au)        : 5.089
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 9.40
Sun-Target sep (deg) : 97.21
Sun-Moon sep (deg)  : 137.41
B (ring opening deg) : -2.62
PA of pole (deg)    : 0.13
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation ("): 6.976
C/A sky separation (km): 25748.7
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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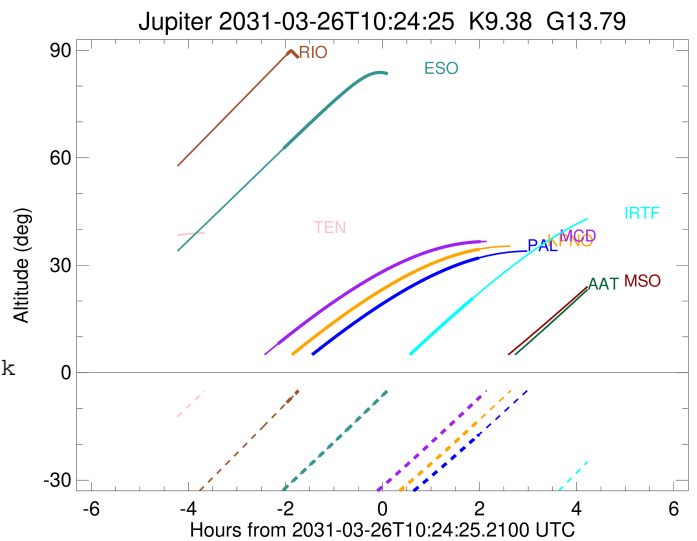
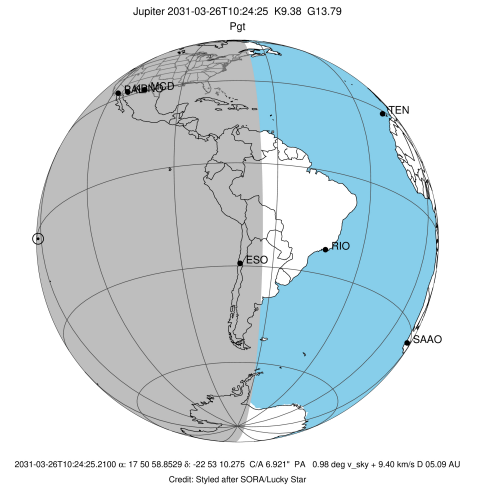


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-26T08:26:01.436	88.77	-8.37	71490.7	-21.72	-24.46
Jupiter	E	2031-03-26T12:31:27.755	34.95	46.28x	71490.8	-20.95	-23.61

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2031-03-26T10:24:36.290
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        : 4068710828448334208
2Mass ID (if available) : 17505886-2253101
ICRS Star Coord at Epoch: 17h 50m 58.85293s -22:53:10.27531s
RUWE (>1.4 is poor)  : 1.11
K magnitude            : 9.382
G magnitude            : 13.792
RP magnitude           : 12.631
BP magnitude           : 15.199
DUPflag               : 0
Distance (au)         : 5.089
f0 (km)                : 0.00
g0 (km)                : 0.00
skyplane vel. (km/s)  : 9.40
Sun-Target sep (deg)  : 97.21
Sun-Moon sep (deg)    : 137.19
B (ring opening deg)  : -2.62
PA of pole (deg)      : 0.13
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (") : 7.097
C/A sky separation (km) : 26193.9
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	2031-03-26T08:22:06.501	62.56	-32.66	71490.6	-22.60	-25.42
Jupiter	E	2031-03-26T12:27:39.459	60.91	20.27x	71490.8	-20.87	-23.53