

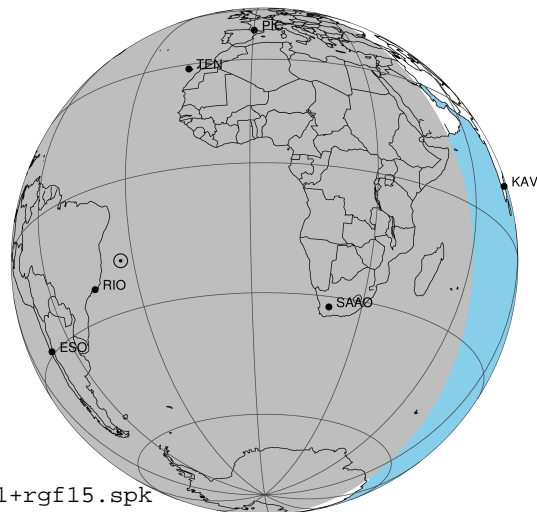
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-05-14T02:10:13.860
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068886715885252096
 2Mass ID (if available) : 17481562-2253378

Jupiter 2031-05-14T02:10:13 K9.34 G14.08 Pgt

ICRS Star Coord at Epoch: 17h 48m 15.61864s -22:53:38.02220s

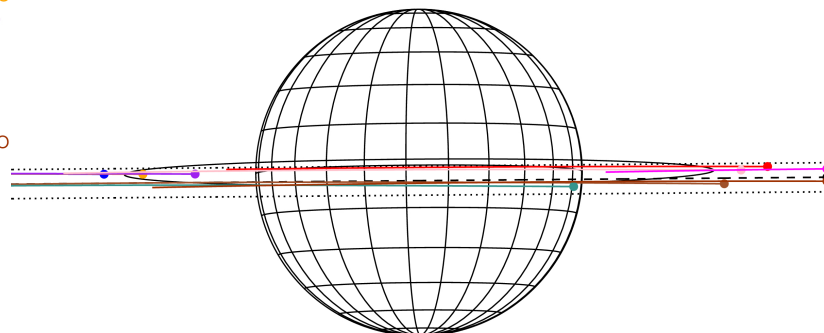
RUWE (>1.4 is poor) : 0.91
 K magnitude : 9.339
 G magnitude : 14.078
 RP magnitude : 12.865
 BP magnitude : 15.749
 DUPflag : 0
 Distance (au) : 4.429
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -11.22
 Sun-Target sep (deg) : 145.38
 Sun-Moon sep (deg) : 59.27
 B (ring opening deg) : -2.61
 PA of pole (deg) : 0.43
 Pole direction: RA (deg): 268.05695
 Dec (deg): 64.49651
 C/A sky separation (") : 1.113
 C/A sky separation (km) : 3575.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-05-14T02:10:13 K9.34 G14.08
 Pgt



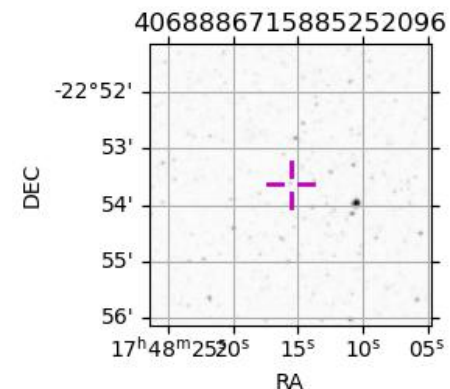
2031-05-14T02:10:13.8600 a: 17 48 15.6186 s: -22 53 38.022 C/A 1.125" PA 0.49 deg v_sky -11.22 km/s D 04.43 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 KAV
 RIO
 ESO
 SAAO



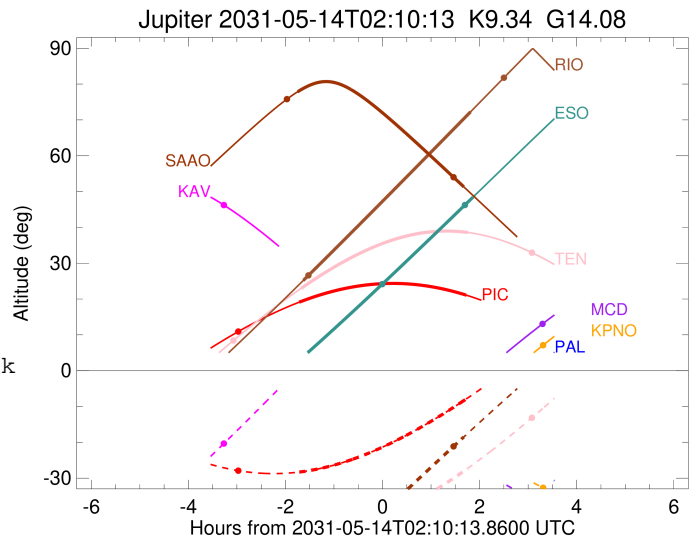
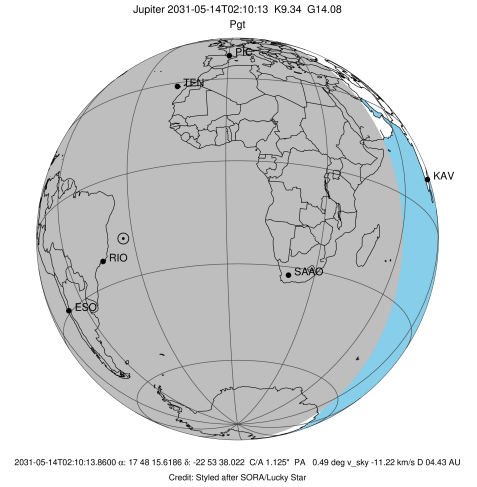
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	MAY 14 00:27 - MAY 14 03:53	Pie
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4			Pnn
MCD	McDonald Obs. 2.7m	30.7	256.0			Pnn
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	MAY 14 00:29 - MAY 14 03:55	Pie
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	+ +	MAY 14 00:32 - MAY 14 03:59	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	MAY 14 04:02 - MAY 14 04:02	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	MAY 14 00:25 - MAY 14 03:50	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-14T02:10:38.900
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : PIC
Location              : Pic du Midi
Latitude (deg)        : 42.93656
E. Longitude (deg)    : 0.14231
Altitude (km)         : 2.890
Gaia source ID        : 4068886715885252096
2Mass ID (if available) : 17481562-2253378
ICRS Star Coord at Epoch: 17h 48m 15.61864s -22:53:38.02220s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 9.339
G magnitude           : 14.078
RP magnitude          : 12.865
BP magnitude          : 15.749
DUPflag              : 0
Distance (au)         : 4.429
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -11.22
Sun-Target sep (deg) : 145.38
Sun-Moon sep (deg)   : 59.60
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.43
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation ("): 0.693
C/A sky separation (km): 2224.4
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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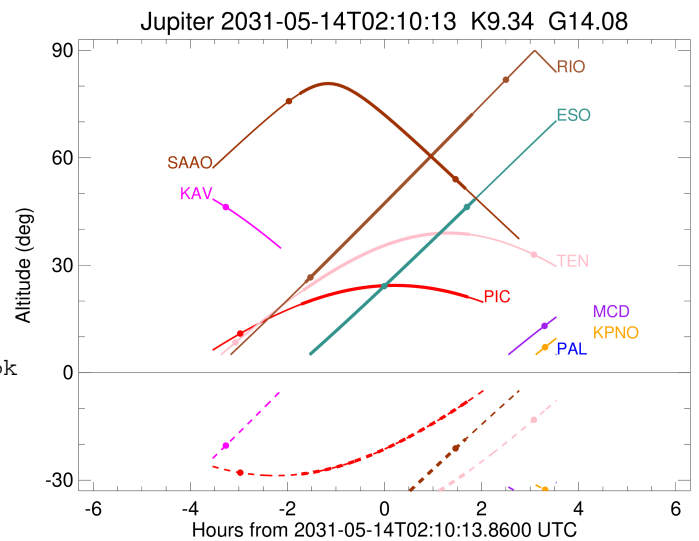
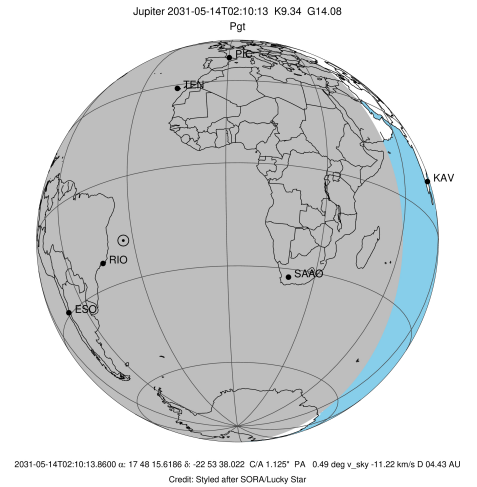


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-14T00:27:21.710	19.12	-28.29	71492.0	1.65	1.88
Jupiter	E	2031-05-14T03:53:40.517	21.09	-7.91	71492.0	1.62	1.85

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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-14T02:12:59.960
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        : 4068886715885252096
2Mass ID (if available) : 17481562-2253378
ICRS Star Coord at Epoch: 17h 48m 15.61864s -22:53:38.02220s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 9.339
G magnitude           : 14.078
RP magnitude          : 12.865
BP magnitude          : 15.749
DUPflag              : 0
Distance (au)         : 4.429
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -11.22
Sun-Target sep (deg) : 145.38
Sun-Moon sep (deg)   : 59.88
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.43
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation ("): 0.389
C/A sky separation (km): 1251.0
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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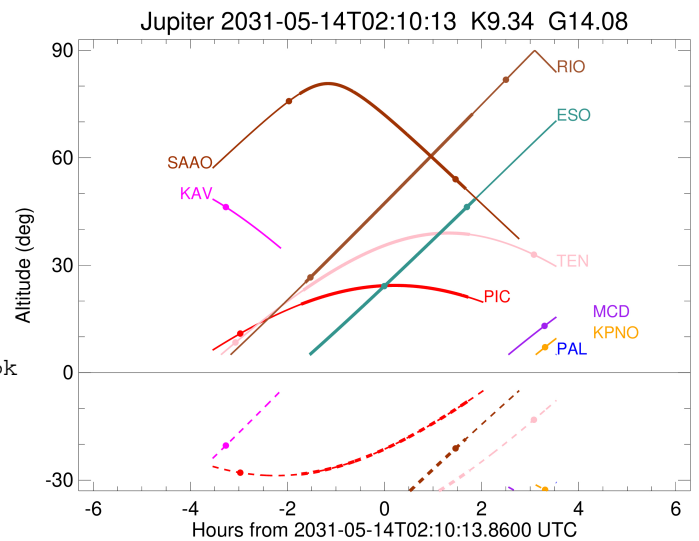
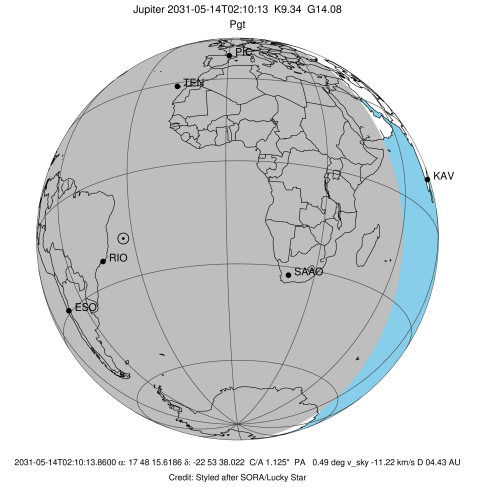


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-14T00:29:51.566	23.01	-42.68	71492.0	0.63	0.72
Jupiter	E	2031-05-14T03:55:25.733	38.58	-27.30	71492.0	1.04	1.19

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-14T02:16:28.100
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      : 4068886715885252096
2Mass ID (if available) : 17481562-2253378
ICRS Star Coord at Epoch: 17h 48m 15.61864s -22:53:38.02220s
RUWE (>1.4 is poor) : 0.91
K magnitude          : 9.339
G magnitude          : 14.078
RP magnitude         : 12.865
BP magnitude         : 15.749
DUPflag             : 0
Distance (au)       : 4.428
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -11.22
Sun-Target sep (deg) : 145.38
Sun-Moon sep (deg)  : 60.22
B (ring opening deg) : -2.61
PA of pole (deg)    : 0.43
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (" ) : 1.324
C/A sky separation (km) : 4251.6
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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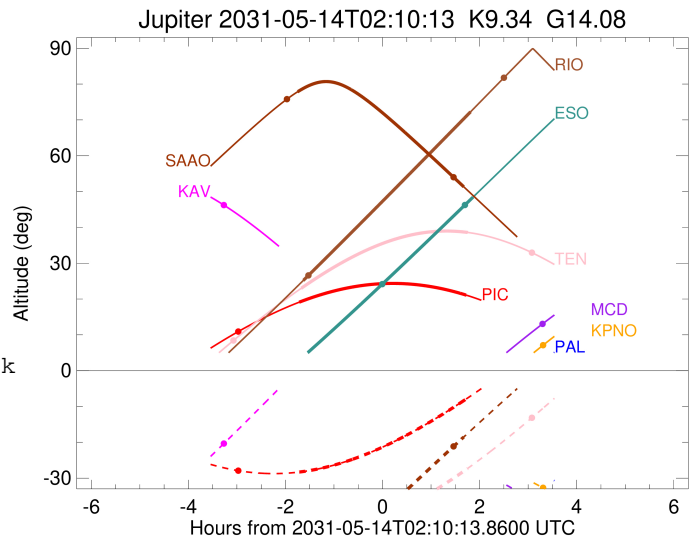
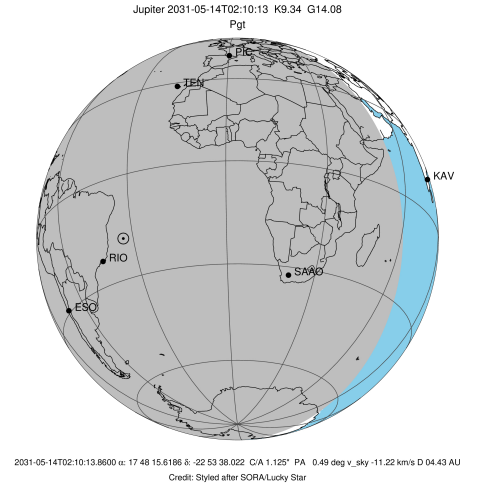


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-14T00:32:26.646	25.20	-57.79	71492.0	-4.06	-4.64
Jupiter	E	2031-05-14T03:59:05.678	72.25	-73.15	71492.0	-3.02	-3.45

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-14T02:18:12.260
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        : 4068886715885252096
2Mass ID (if available) : 17481562-2253378
ICRS Star Coord at Epoch: 17h 48m 15.61864s -22:53:38.02220s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 9.339
G magnitude           : 14.078
RP magnitude          : 12.865
BP magnitude          : 15.749
DUPflag              : 0
Distance (au)         : 4.428
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -11.22
Sun-Target sep (deg) : 145.38
Sun-Moon sep (deg)   : 60.04
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.43
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 1.803
C/A sky separation (km) : 5792.3
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
    
```

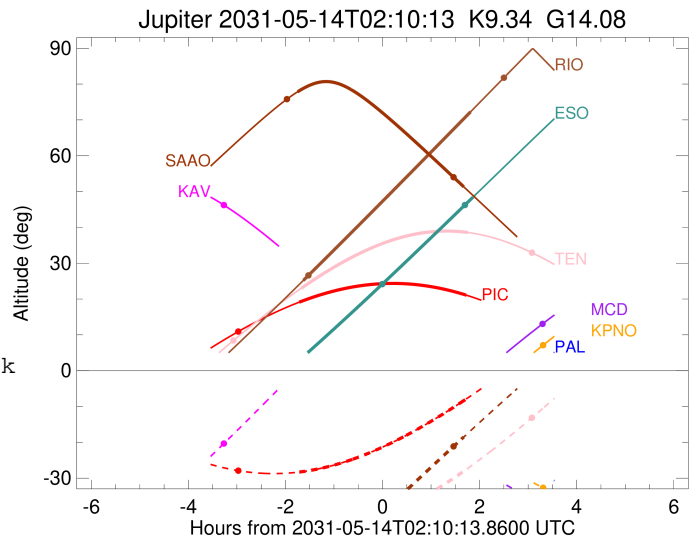
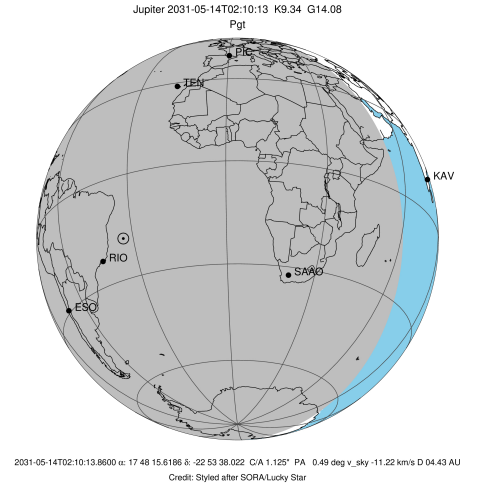


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-14T00:32:33.533	3.97x	-33.20	71491.9	-5.38	-6.15
Jupiter	E	2031-05-14T04:02:02.530	48.41	-76.47	71492.0	-4.02	-4.60

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-14T02:07:52.270
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : SAAO
Location             : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)       : -32.37953
E. Longitude (deg)   : 20.81070
Altitude (km)        : 1.768
Gaia source ID       : 4068886715885252096
2Mass ID (if available) : 17481562-2253378
ICRS Star Coord at Epoch: 17h 48m 15.61864s -22:53:38.02220s
RUWE (>1.4 is poor) : 0.91
K magnitude          : 9.339
G magnitude          : 14.078
RP magnitude         : 12.865
BP magnitude         : 15.749
DUPflag             : 0
Distance (au)        : 4.429
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -11.22
Sun-Target sep (deg) : 145.38
Sun-Moon sep (deg)   : 59.96
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.43
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 1.460
C/A sky separation (km) : 4688.9
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	2031-05-14T00:25:21.055	77.85	-61.33	71492.0	-3.66	-4.18
Jupiter	E	2031-05-14T03:50:39.244	51.33	-18.51	71491.9	-4.18	-4.77