

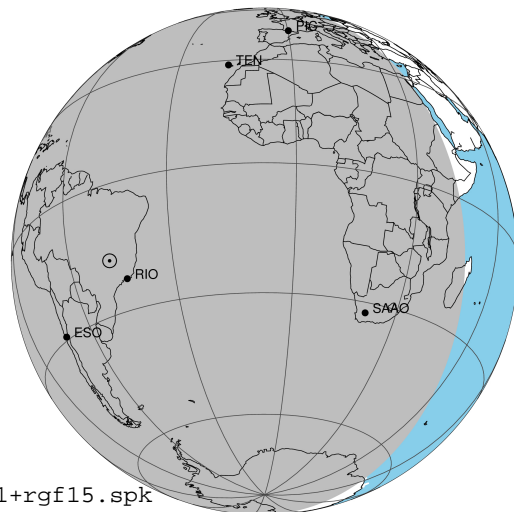
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-05-11T03:05:04.550  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068878435185468928  
 2Mass ID (if available) : 17491740-2253479

Jupiter 2031-05-11T03:05:04 K8.57 G14.93 Pgt

ICRS Star Coord at Epoch: 17h 49m 17.39476s -22:53:47.98254s

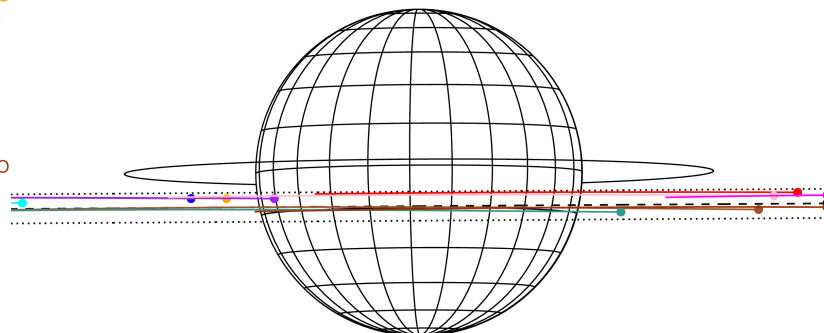
RUWE (>1.4 is poor) : 1.01  
 K magnitude : 8.570  
 G magnitude : 14.932  
 RP magnitude : 13.391  
 BP magnitude : 18.485  
 DUPflag : 0  
 Distance (au) : 4.457  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -10.27  
 Sun-Target sep (deg) : 142.29  
 Sun-Moon sep (deg) : 17.08  
 B (ring opening deg) : -2.60  
 PA of pole (deg) : 0.32  
 Pole direction: RA (deg): 268.05695  
 Dec (deg): 64.49651  
 C/A sky separation (") : 4.561  
 C/A sky separation (km) : 14744.3  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2031-05-11T03:05:04 K8.57 G14.93  
 Pgt



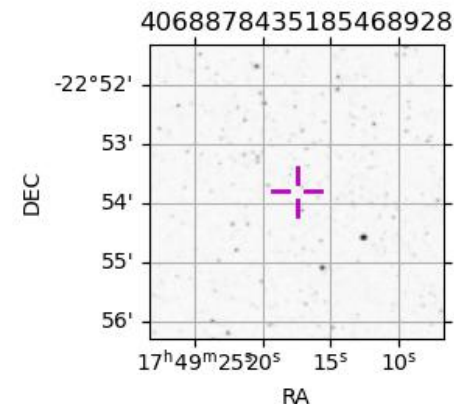
2031-05-11T03:05:04.5500 a: 17 49 17.3948 δ: -22 53 47.983 C/A 4.573° PA 0.39 deg v\_sky -10.27 km/s D 04.46 AU  
 Credit: Styled after SORA/Lucky Star

Earth  
 PIC  
 PAL  
 KPNO  
 MCD  
 TEN  
 IRTF  
 KAV  
 RIO  
 ESO  
 SAAO



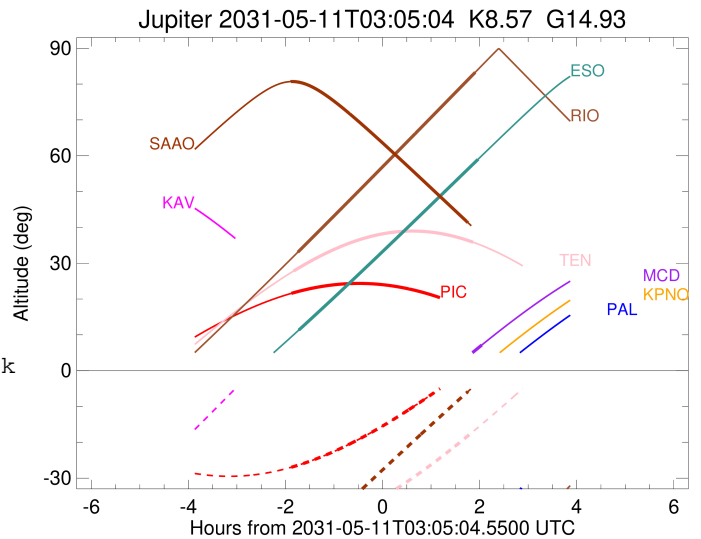
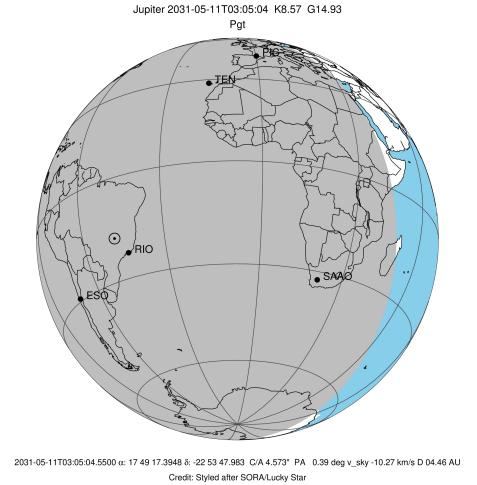
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	MAY 11 01:12 - MAY 11 01:12	Pin
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	+	MAY 11 05:07 - MAY 11 05:07	Pne
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	MAY 11 01:15 - MAY 11 04:56	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 11 01:20 - MAY 11 04:59	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	MAY 11 01:21 - MAY 11 05:03	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	MAY 11 01:11 - MAY 11 04:50	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-11T03:04:08.930
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      : 4068878435185468928
2Mass ID (if available) : 17491740-2253479
ICRS Star Coord at Epoch: 17h 49m 17.39476s -22:53:47.98254s
RUWE (>1.4 is poor) : 1.01
K magnitude          : 8.570
G magnitude          : 14.932
RP magnitude         : 13.391
BP magnitude         : 18.485
DUPflag             : 0
Distance (au)        : 4.457
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.27
Sun-Target sep (deg) : 142.29
Sun-Moon sep (deg)  : 16.97
B (ring opening deg) : -2.60
PA of pole (deg)    : 0.32
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (" ) : 2.769
C/A sky separation (km) : 8952.0
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
    
```

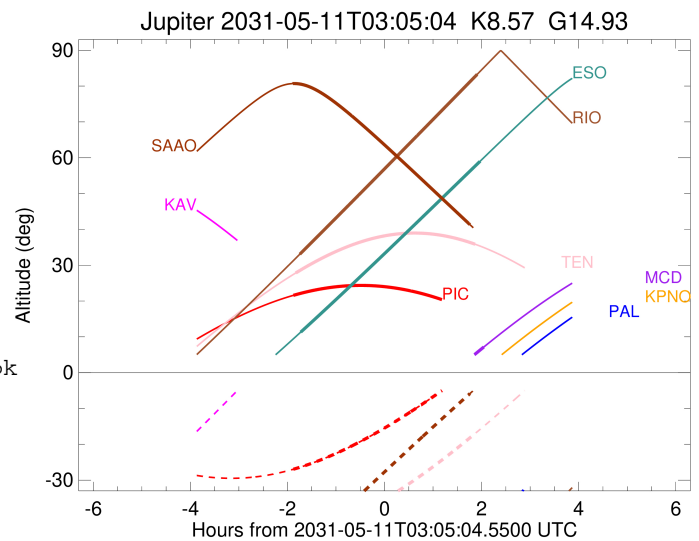
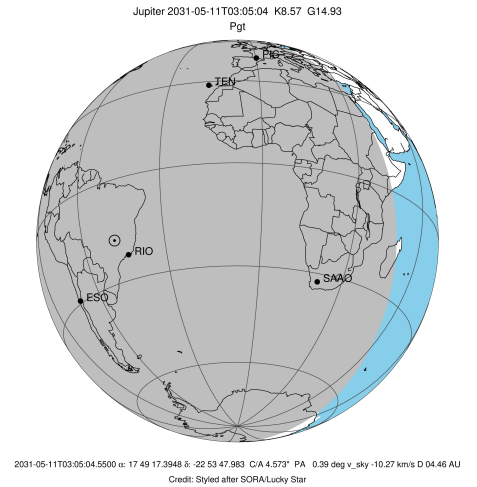


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-11T01:12:35.580	21.59	-26.94	71491.9	-7.21	-8.23
Jupiter	E	2031-05-11T04:55:39.760	16.83	1.51x	71491.8	-7.51	-8.57

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-11T03:14:16.220
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       : 4068878435185468928
2Mass ID (if available) : 17491740-2253479
ICRS Star Coord at Epoch: 17h 49m 17.39476s -22:53:47.98255s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 8.570
G magnitude           : 14.932
RP magnitude          : 13.391
BP magnitude          : 18.485
DUPflag              : 0
Distance (au)         : 4.457
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -10.27
Sun-Target sep (deg)  : 142.29
Sun-Moon sep (deg)   : 17.72
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.32
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 3.697
C/A sky separation (km) : 11952.5
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
    
```

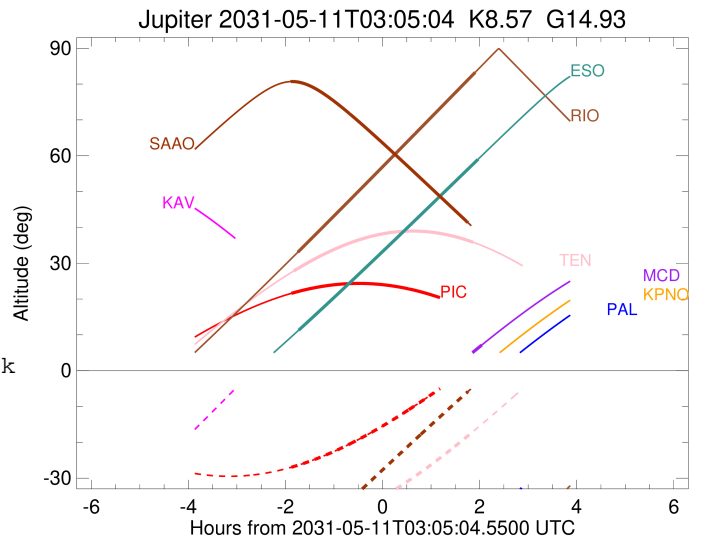
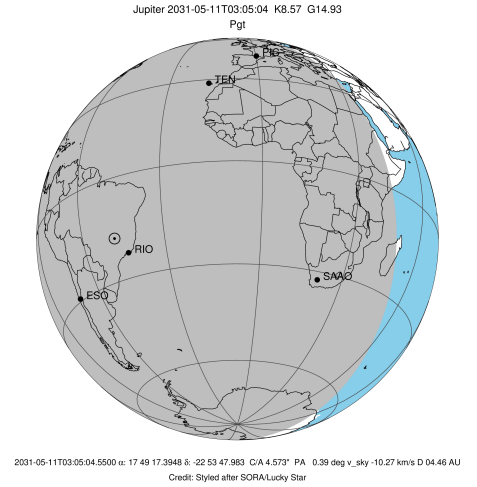


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-11T01:18:17.435	-39.56x	3.61x	71491.7	-10.37	-11.81
Jupiter	E	2031-05-11T05:07:45.043	7.14	-35.50	71491.8	-8.84	-10.09

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-11T03:06:33.580
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       : 4068878435185468928
2Mass ID (if available) : 17491740-2253479
ICRS Star Coord at Epoch: 17h 49m 17.39476s -22:53:47.98254s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 8.570
G magnitude           : 14.932
RP magnitude          : 13.391
BP magnitude          : 18.485
DUPflag              : 0
Distance (au)         : 4.457
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -10.27
Sun-Target sep (deg) : 142.29
Sun-Moon sep (deg)   : 17.28
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.32
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 3.037
C/A sky separation (km) : 9816.6
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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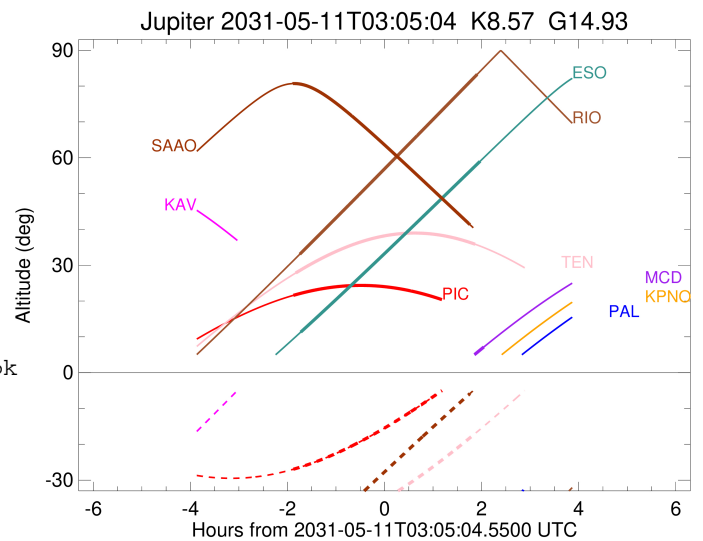
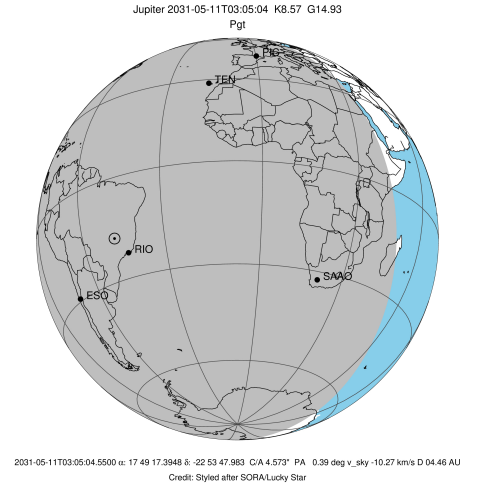


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-11T01:15:36.413	27.86	-43.97	71491.8	-8.15	-9.30
Jupiter	E	2031-05-11T04:56:56.808	35.86	-17.01	71491.8	-8.02	-9.15

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-11T03:10:42.950
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        : 4068878435185468928
2Mass ID (if available) : 17491740-2253479
ICRS Star Coord at Epoch: 17h 49m 17.39476s -22:53:47.98255s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 8.570
G magnitude           : 14.932
RP magnitude          : 13.391
BP magnitude          : 18.485
DUPflag              : 0
Distance (au)         : 4.457
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -10.27
Sun-Target sep (deg) : 142.29
Sun-Moon sep (deg)   : 17.85
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.32
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation ("): 4.685
C/A sky separation (km): 15145.2
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
    
```

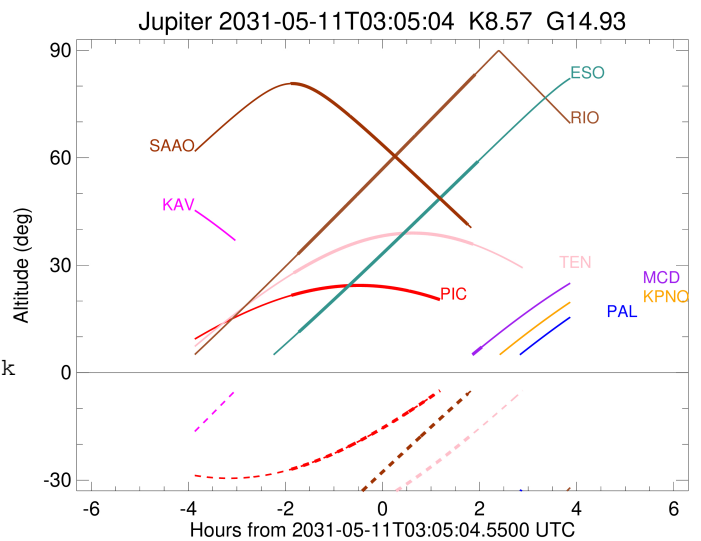
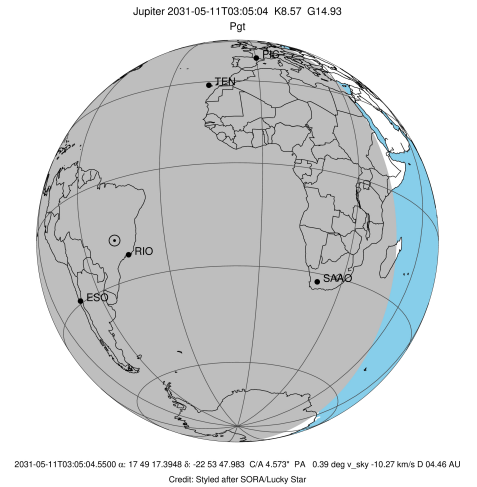


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-11T01:20:18.634	33.05	-68.57	71491.5	-12.82	-14.58
Jupiter	E	2031-05-11T04:59:40.697	83.27	-59.10	71491.6	-11.97	-13.62

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-11T03:13:21.990
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       : 4068878435185468928
2Mass ID (if available) : 17491740-2253479
ICRS Star Coord at Epoch: 17h 49m 17.39476s -22:53:47.98255s
RUWE (>1.4 is poor) : 1.01
K magnitude          : 8.570
G magnitude          : 14.932
RP magnitude         : 13.391
BP magnitude         : 18.485
DUPflag             : 0
Distance (au)        : 4.457
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.27
Sun-Target sep (deg) : 142.29
Sun-Moon sep (deg)   : 18.03
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.32
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation ("): 5.130
C/A sky separation (km): 16582.8
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
    
```

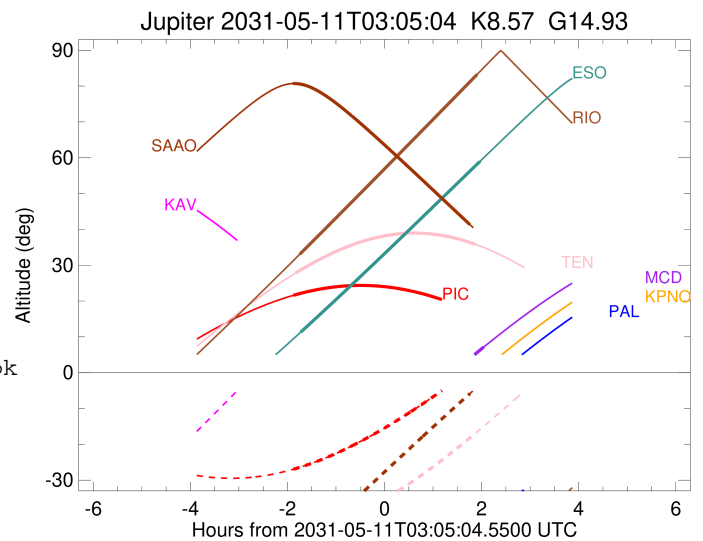
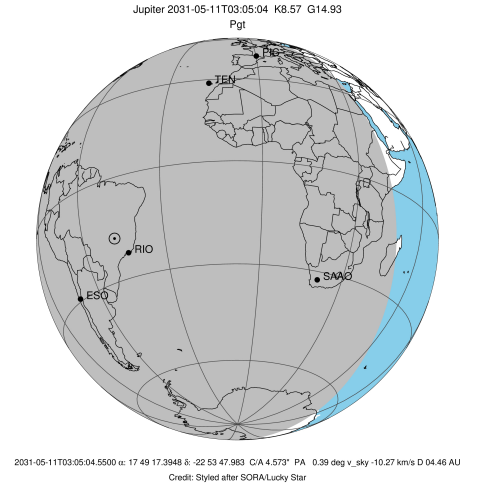


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-11T01:21:32.225	11.32	-43.59	71491.4	-14.17	-16.09
Jupiter	E	2031-05-11T05:03:07.340	58.98	-77.49	71491.5	-12.84	-14.60

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-11T03:00:56.040
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       : 4068878435185468928
2Mass ID (if available) : 17491740-2253479
ICRS Star Coord at Epoch: 17h 49m 17.39476s -22:53:47.98254s
RUWE (>1.4 is poor) : 1.01
K magnitude          : 8.570
G magnitude          : 14.932
RP magnitude         : 13.391
BP magnitude         : 18.485
DUPflag             : 0
Distance (au)        : 4.457
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.27
Sun-Target sep (deg) : 142.29
Sun-Moon sep (deg)   : 17.00
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.32
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 4.948
C/A sky separation (km) : 15994.7
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	2031-05-11T01:11:49.963	80.69	-51.54	71491.6	-12.66	-14.40
Jupiter	E	2031-05-11T04:50:39.738	41.32	-5.84	71491.5	-13.52	-15.36