

target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-05-25T03:57:58.220
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116870017450574464
 2Mass ID (if available) : 17433737-2252490

Jupiter 2031-05-25T03:57:58 K8.38 G14.42 Pgt

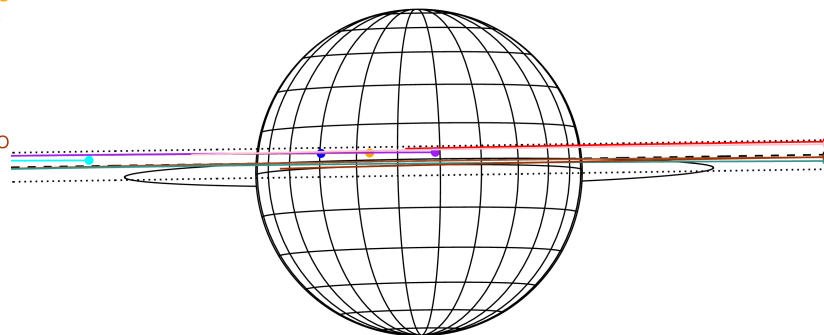
ICRS Star Coord at Epoch: 17h 43m 37.37574s -22:52:49.21363s

RUWE (>1.4 is poor) : 1.01
 K magnitude : 8.383
 G magnitude : 14.419
 RP magnitude : 12.949
 BP magnitude : 17.342
 DUPflag : 0
 Distance (au) : 4.340
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -14.14
 Sun-Target sep (deg) : 157.12
 Sun-Moon sep (deg) : 160.21
 B (ring opening deg) : -2.61
 PA of pole (deg) : 0.93
 Pole direction: RA (deg): 268.05694
 Dec (deg): 64.49651
 C/A sky separation (") : 1.607
 C/A sky separation (km) : 5058.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-05-25T03:57:58 K8.38 G14.42
 Pgt



Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 SAAO

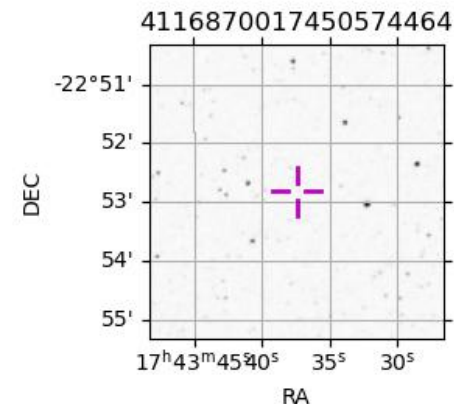


2031-05-25T03:57:58.2200 at: 17 43 37.3757 s: -22 52 49.214 C/A 1.595" PA 180.89 deg v_sky -14.14 km/s D 04.34 AU

Credit: Styled after SORA/Lucky Star

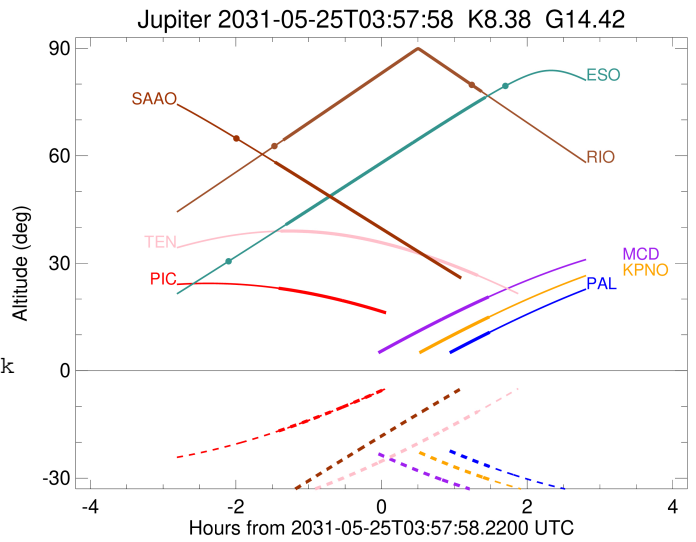
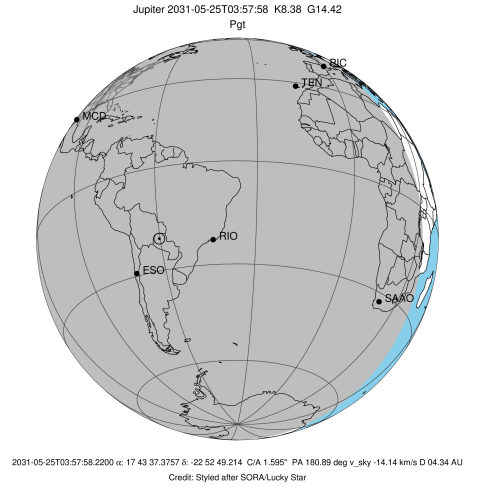
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	MAY 25 02:33 - MAY 25 02:33	Pin
PAL	Palomar Mt (200")	33.4	243.1	+	MAY 25 05:26 - MAY 25 05:26	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	MAY 25 05:26 - MAY 25 05:26	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	MAY 25 05:26 - MAY 25 05:26	Pne
TEN	Teide Obs./Tenerife	28.3	343.5	+	MAY 25 02:34 - MAY 25 05:17	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 25 02:37 - MAY 25 05:20	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	MAY 25 02:39 - MAY 25 05:23	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	MAY 25 02:30 - MAY 25 02:30	Pin
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-25T03:54:56.640
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     : 4116870017450574464
2Mass ID (if available) : 17433737-2252490
ICRS Star Coord at Epoch: 17h 43m 37.37574s -22:52:49.21363s
RUWE (>1.4 is poor) : 1.01
K magnitude         : 8.383
G magnitude         : 14.419
RP magnitude        : 12.949
BP magnitude        : 17.342
DUPflag            : 0
Distance (au)      : 4.340
f0 (km)            : 0.00
g0 (km)            : 0.00
skyplane vel. (km/s) : -14.14
Sun-Target sep (deg) : 157.12
Sun-Moon sep (deg) : 159.82
B (ring opening deg) : -2.61
PA of pole (deg)   : 0.93
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation (" ) : 3.356
C/A sky separation (km) : 10564.4
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
    
```

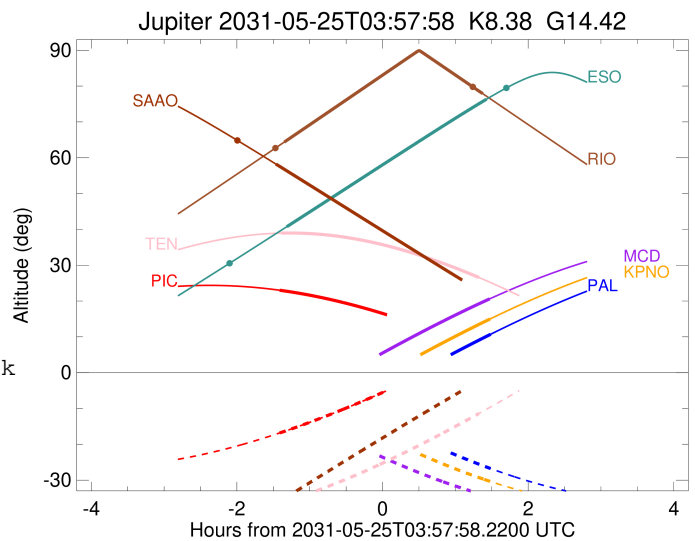
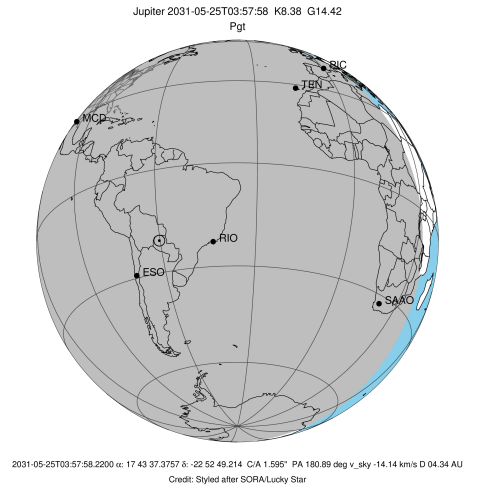


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-25T02:33:18.353	23.00	-16.82	71491.8	8.65	9.87
Jupiter	E	2031-05-25T05:16:54.401	6.79	7.17x	71491.8	8.17	9.32

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-25T04:04:06.110
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       : 4116870017450574464
2Mass ID (if available) : 17433737-2252490
ICRS Star Coord at Epoch: 17h 43m 37.37574s -22:52:49.21363s
RUWE (>1.4 is poor) : 1.01
K magnitude          : 8.383
G magnitude           : 14.419
RP magnitude         : 12.949
BP magnitude         : 17.342
DUPflag              : 0
Distance (au)        : 4.340
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.14
Sun-Target sep (deg) : 157.12
Sun-Moon sep (deg)   : 160.79
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.93
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation (") : 2.726
C/A sky separation (km) : 8580.4
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
    
```

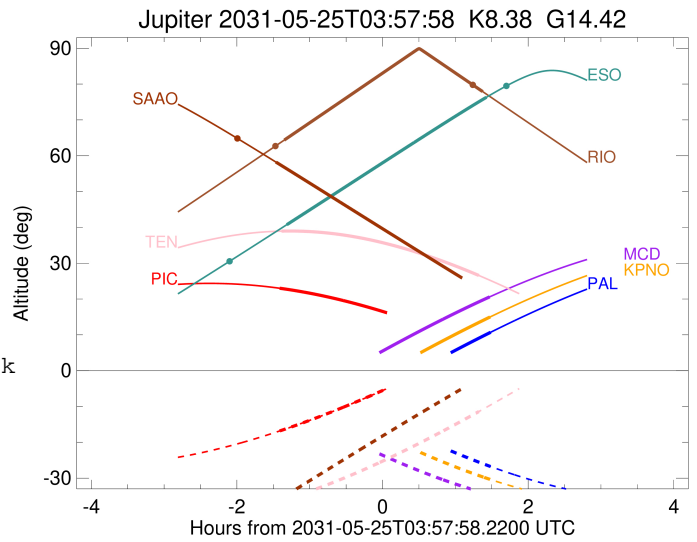
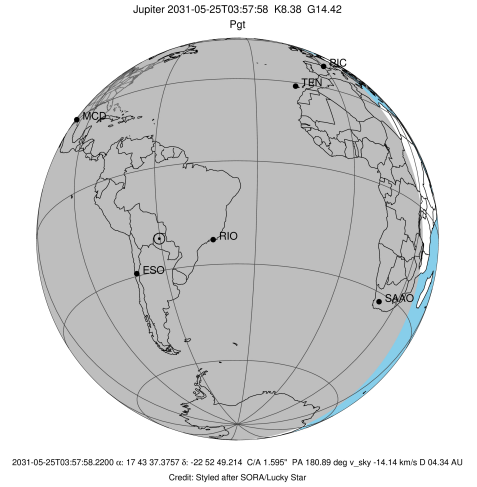


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-25T02:40:22.485	-20.82x	0.34x	71491.9	6.24	7.12
Jupiter	E	2031-05-25T05:26:57.482	10.69	-26.75	71491.8	7.49	8.55

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-25T04:04:04.100
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        : 4116870017450574464
2Mass ID (if available) : 17433737-2252490
ICRS Star Coord at Epoch: 17h 43m 37.37574s -22:52:49.21363s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 8.383
G magnitude           : 14.419
RP magnitude          : 12.949
BP magnitude          : 17.342
DUPflag              : 0
Distance (au)         : 4.340
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.14
Sun-Target sep (deg) : 157.12
Sun-Moon sep (deg)   : 160.81
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.93
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation ("): 2.750
C/A sky separation (km): 8655.2
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
    
```

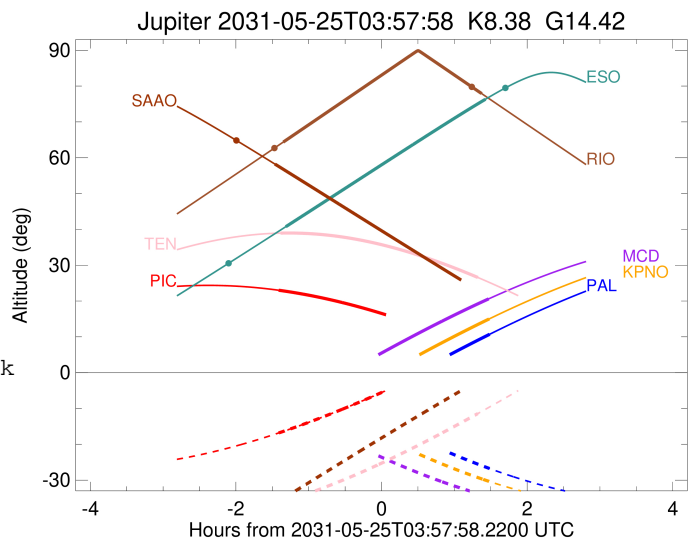
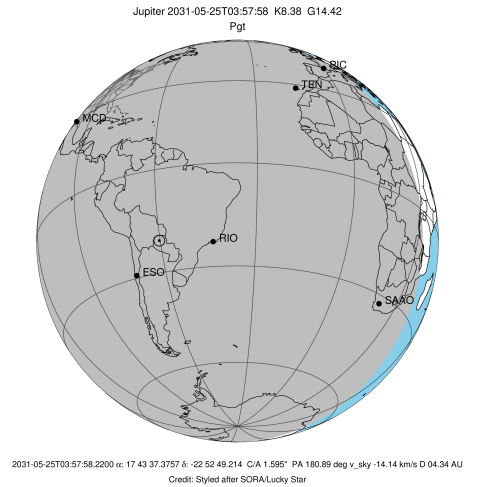


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-25T02:40:33.830	-16.13x	-4.29x	71491.9	6.29	7.18
Jupiter	E	2031-05-25T05:26:42.761	15.00	-30.35	71491.8	7.54	8.61

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-25T04:03:52.480
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        : 4116870017450574464
2Mass ID (if available) : 17433737-2252490
ICRS Star Coord at Epoch: 17h 43m 37.37574s -22:52:49.21363s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 8.383
G magnitude           : 14.419
RP magnitude          : 12.949
BP magnitude          : 17.342
DUPflag              : 0
Distance (au)         : 4.340
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.14
Sun-Target sep (deg) : 157.12
Sun-Moon sep (deg)   : 160.82
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.93
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation ("): 2.801
C/A sky separation (km): 8817.0
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
    
```

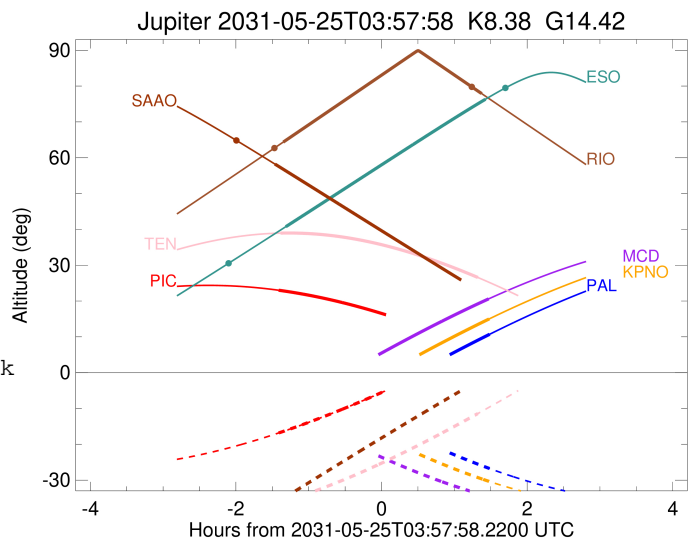
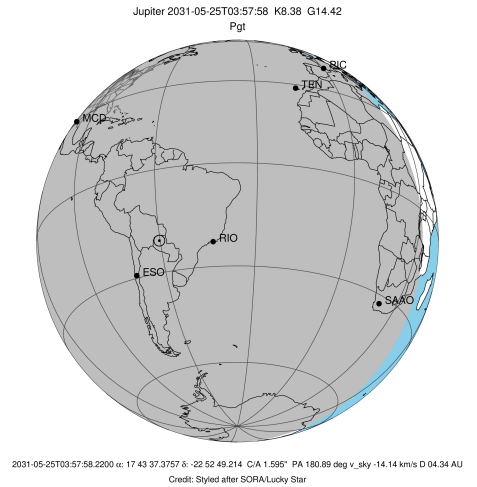


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-25T02:40:41.930	-9.56x	-10.57	71491.9	6.42	7.34
Jupiter	E	2031-05-25T05:26:13.483	20.59	-34.52	71491.8	7.64	8.72

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-25T03:55:57.360
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       : 4116870017450574464
2Mass ID (if available) : 17433737-2252490
ICRS Star Coord at Epoch: 17h 43m 37.37574s -22:52:49.21363s
RUWE (>1.4 is poor) : 1.01
K magnitude          : 8.383
G magnitude          : 14.419
RP magnitude         : 12.949
BP magnitude         : 17.342
DUPflag             : 0
Distance (au)        : 4.340
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.14
Sun-Target sep (deg) : 157.12
Sun-Moon sep (deg)  : 160.04
B (ring opening deg) : -2.61
PA of pole (deg)    : 0.93
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation (") : 3.152
C/A sky separation (km) : 9921.3
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
    
```

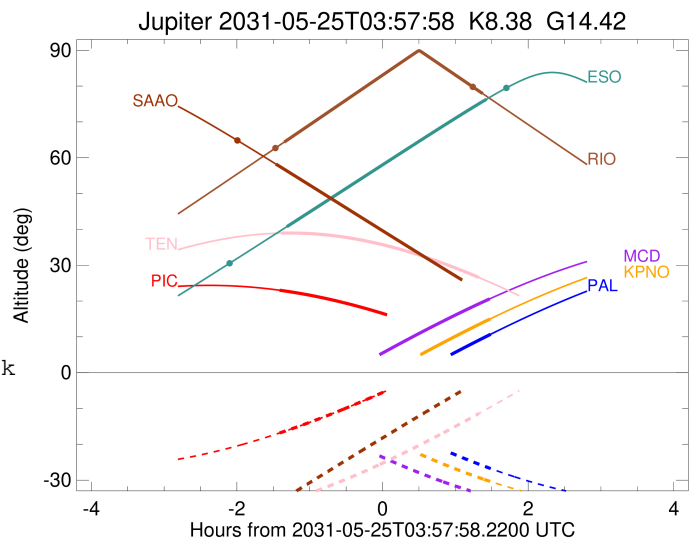
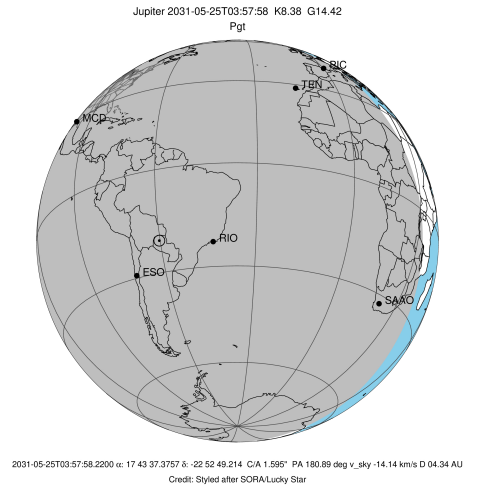


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-25T02:34:44.460	38.95	-36.19	71491.8	8.00	9.13
Jupiter	E	2031-05-25T05:17:21.709	26.57	-11.41	71491.8	7.72	8.81

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-25T03:58:50.710
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       : 4116870017450574464
2Mass ID (if available) : 17433737-2252490
ICRS Star Coord at Epoch: 17h 43m 37.37574s -22:52:49.21363s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 8.383
G magnitude           : 14.419
RP magnitude          : 12.949
BP magnitude          : 17.342
DUPflag              : 0
Distance (au)         : 4.340
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.14
Sun-Target sep (deg) : 157.12
Sun-Moon sep (deg)   : 160.61
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.93
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation ("): 1.603
C/A sky separation (km): 5045.4
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
    
```

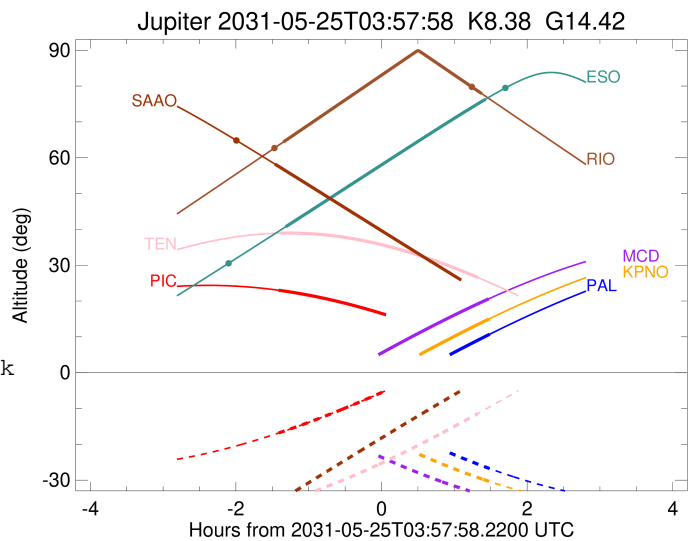
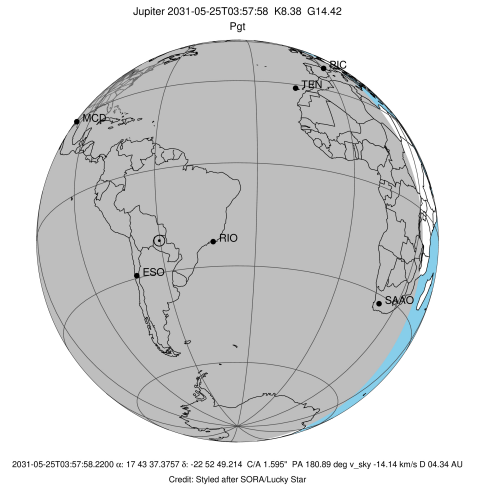


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-25T02:37:03.982	64.37	-86.51	71492.0	3.79	4.33
Jupiter	E	2031-05-25T05:20:26.968	77.91	-55.09	71492.0	4.07	4.65


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-25T04:01:36.760
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      : 4116870017450574464
2Mass ID (if available) : 17433737-2252490
ICRS Star Coord at Epoch: 17h 43m 37.37574s -22:52:49.21363s
RUWE (>1.4 is poor) : 1.01
K magnitude          : 8.383
G magnitude          : 14.419
RP magnitude         : 12.949
BP magnitude         : 17.342
DUPflag             : 0
Distance (au)       : 4.340
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.14
Sun-Target sep (deg) : 157.12
Sun-Moon sep (deg)  : 160.90
B (ring opening deg) : -2.61
PA of pole (deg)    : 0.93
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation (") : 1.257
C/A sky separation (km) : 3957.5
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
    
```

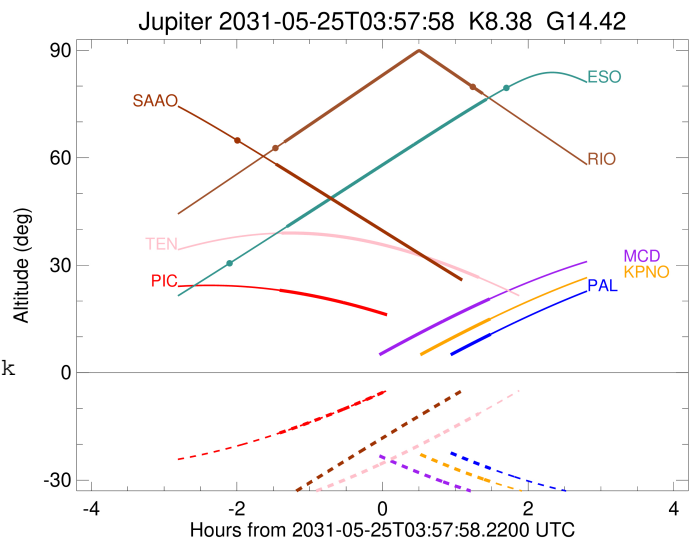
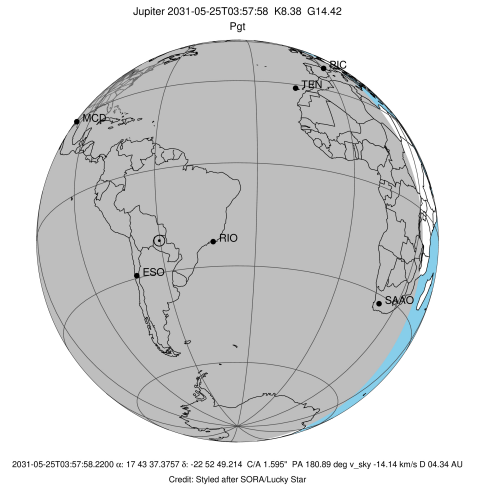


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-25T02:39:05.295	40.74	-61.53	71492.0	2.68	3.06
Jupiter	E	2031-05-25T05:23:36.648	76.31	-77.16	71492.0	3.48	3.97


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-25T03:52:45.340
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       : 4116870017450574464
2Mass ID (if available) : 17433737-2252490
ICRS Star Coord at Epoch: 17h 43m 37.37574s -22:52:49.21363s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 8.383
G magnitude           : 14.419
RP magnitude          : 12.949
BP magnitude          : 17.342
DUPflag              : 0
Distance (au)        : 4.340
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.14
Sun-Target sep (deg) : 157.12
Sun-Moon sep (deg)   : 159.85
B (ring opening deg) : -2.61
PA of pole (deg)     : 0.93
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation (") : 1.011
C/A sky separation (km) : 3181.2
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	2031-05-25T02:30:08.075	58.22	-36.57	71492.0	2.92	3.34
Jupiter	E	2031-05-25T05:15:58.547	23.29	-2.59x	71492.0	2.04	2.33