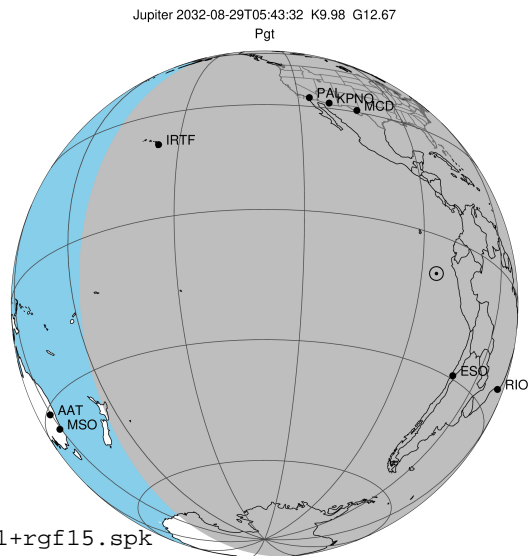


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2032-08-29T05:43:32.040
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 6771949324440576640
 2Mass ID (if available) : 19372336-2205022

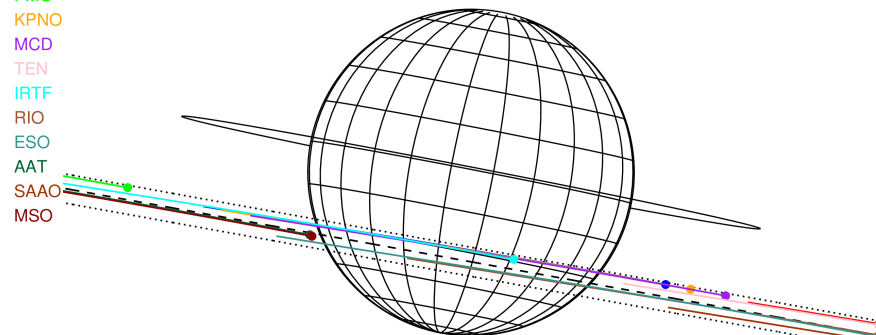
Jupiter 2032-08-29T05:43:32 K9.98 G12.67 Pgt

ICRS Star Coord at Epoch: 19h 37m 23.37146s -22:05:02.28984s

RUWE (>1.4 is poor) : 0.99
 K magnitude : 9.983
 G magnitude : 12.668
 RP magnitude : 11.876
 BP magnitude : 13.354
 DUPflag : 0
 Distance (au) : 4.344
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -8.07
 Sun-Target sep (deg) : 136.46
 Sun-Moon sep (deg) : 149.92
 B (ring opening deg) : -1.05
 PA of pole (deg) : -11.00
 Pole direction: RA (deg): 268.05660
 Dec (deg): 64.49656
 C/A sky separation (") : 12.220
 C/A sky separation (km) : 38497.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



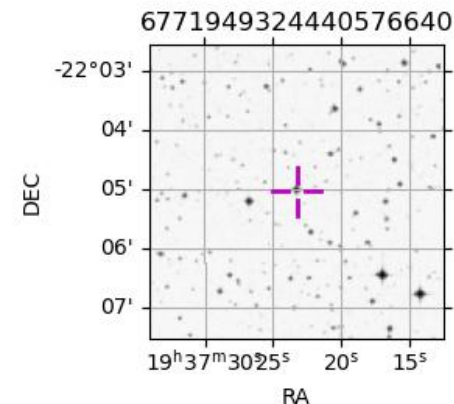
Earth
 PIC
 PAL
 PMO
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 AAT
 SAAO
 MSO



2032-08-29T05:43:32.0400 α: 19 37 23.3715 δ: -22 05 02.290 C/A ***** PA 349.77 deg v_sky - 8.07 km/s D 04.34 AU
 Credit: Styled after SORA/Lucky Star

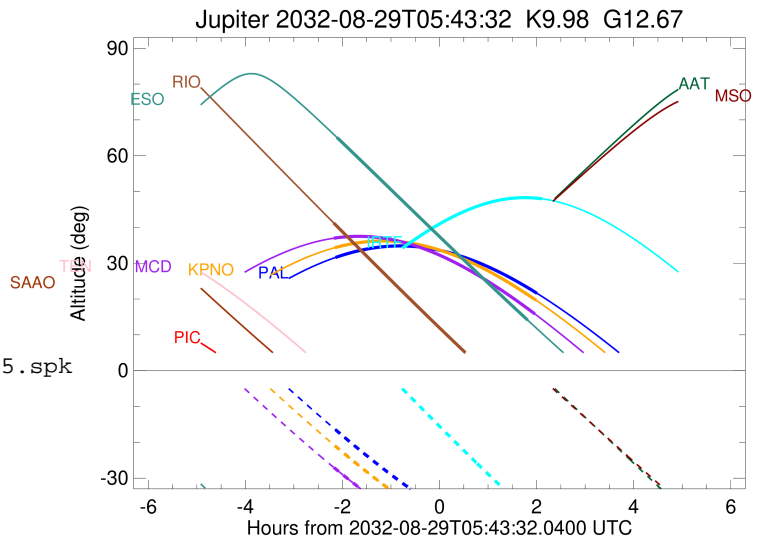
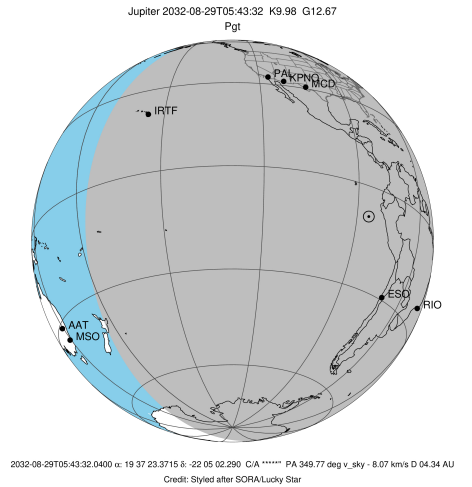
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	AUG 29 03:34 - AUG 29 07:43	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	AUG 29 03:34 - AUG 29 07:42	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	AUG 29 03:32 - AUG 29 07:41	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5			Pne
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	AUG 29 03:32 - AUG 29 03:32	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	AUG 29 03:36 - AUG 29 07:32	Pie
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            : 2032-08-29T05:38:44.550
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      : 67719493244440576640
2Mass ID (if available) : 19372336-2205022
ICRS Star Coord at Epoch: 19h 37m 23.37146s -22:05:02.28984s
RUWE (>1.4 is poor) : 0.99
K magnitude          : 9.983
G magnitude          : 12.668
RP magnitude         : 11.876
BP magnitude         : 13.354
DUPflag             : 0
Distance (au)       : 4.344
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -8.07
Sun-Target sep (deg) : 136.46
Sun-Moon sep (deg)  : 150.32
B (ring opening deg) : -1.05
PA of pole (deg)    : -11.00
Pole direction: RA (deg): 268.05660
Dec (deg): 64.49656
C/A sky separation ("): 10.657
C/A sky separation (km): 33572.6
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
    
```

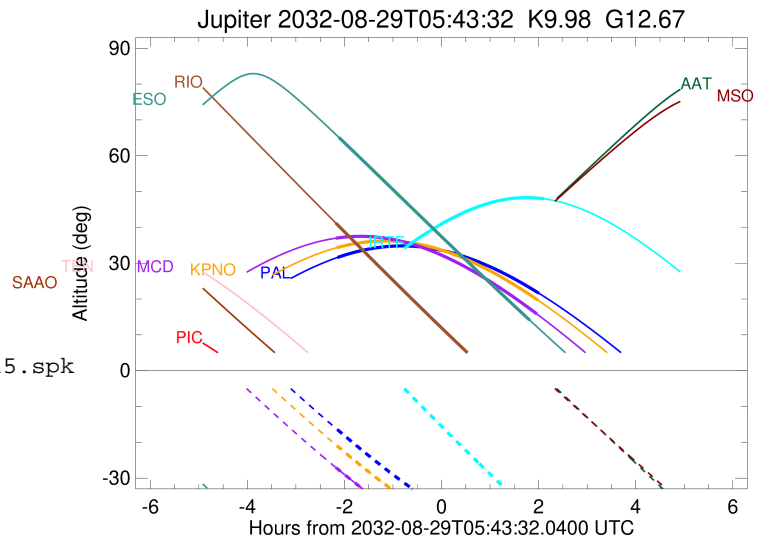
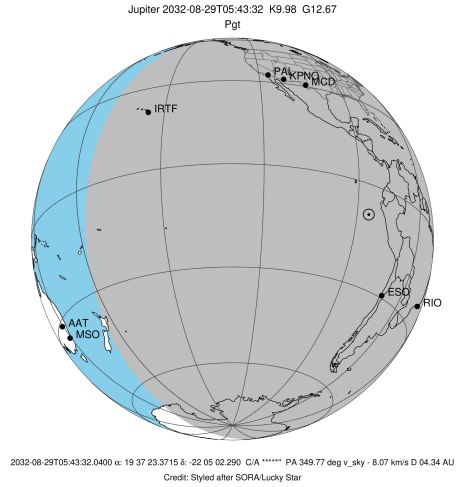


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-08-29T03:34:48.850	31.58	-16.45	71491.7	-26.85	-30.01
Jupiter	E	2032-08-29T07:43:56.541	21.61	-47.70	71491.6	-29.63	-32.97

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-08-29T05:37:42.980
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        : 6771949324440576640
2Mass ID (if available) : 19372336-2205022
ICRS Star Coord at Epoch: 19h 37m 23.37146s -22:05:02.28984s
RUWE (>1.4 is poor)  : 0.99
K magnitude           : 9.983
G magnitude           : 12.668
RP magnitude          : 11.876
BP magnitude          : 13.354
DUPflag              : 0
Distance (au)         : 4.343
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.07
Sun-Target sep (deg)  : 136.46
Sun-Moon sep (deg)    : 150.38
B (ring opening deg) : -1.05
PA of pole (deg)      : -11.00
Pole direction: RA (deg): 268.05660
Dec (deg): 64.49656
C/A sky separation (" ) : 10.726
C/A sky separation (km) : 33788.1
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
    
```

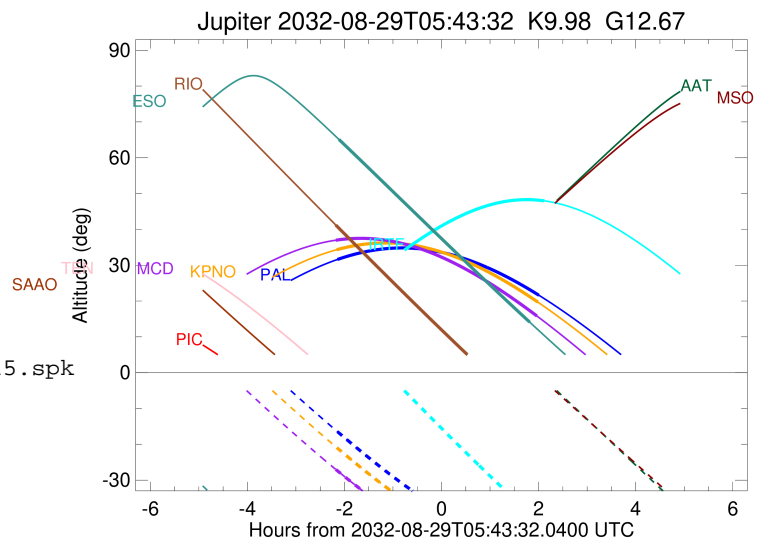
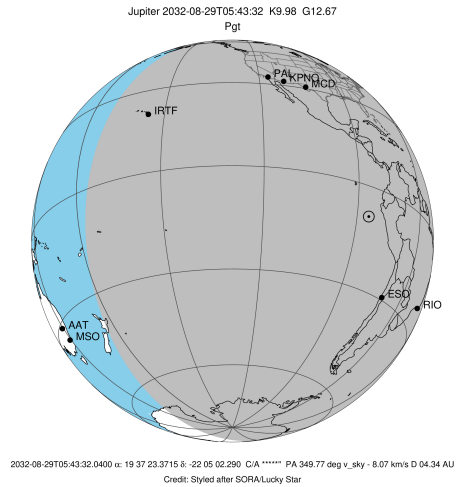


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-08-29T03:34:04.932	34.32	-20.92	71491.7	-26.95	-30.12
Jupiter	E	2032-08-29T07:42:53.731	19.65	-48.93	71491.6	-29.89	-33.25

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-08-29T05:36:16.490
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       : 6771949324440576640
2Mass ID (if available) : 19372336-2205022
ICRS Star Coord at Epoch: 19h 37m 23.37146s -22:05:02.28984s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 9.983
G magnitude           : 12.668
RP magnitude          : 11.876
BP magnitude          : 13.354
DUPflag              : 0
Distance (au)        : 4.343
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -8.07
Sun-Target sep (deg) : 136.46
Sun-Moon sep (deg)   : 150.46
B (ring opening deg) : -1.05
PA of pole (deg)     : -11.00
Pole direction: RA (deg): 268.05660
Dec (deg): 64.49656
C/A sky separation ("): 10.819
C/A sky separation (km): 34081.1
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
    
```

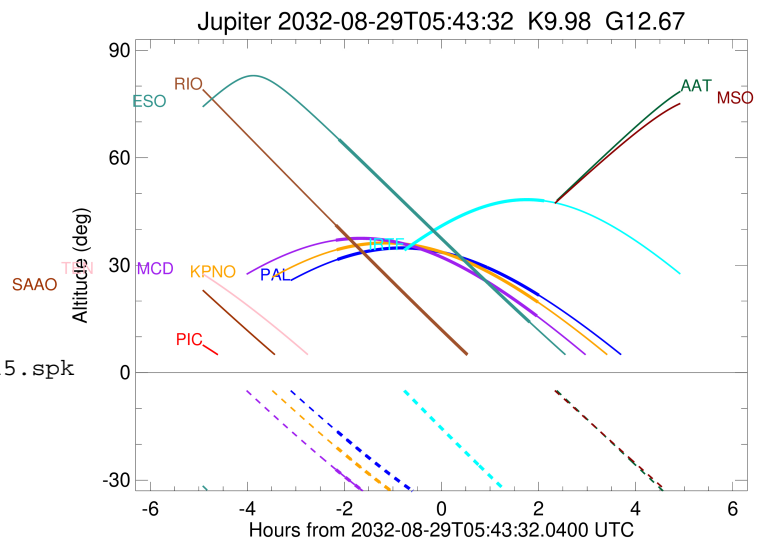
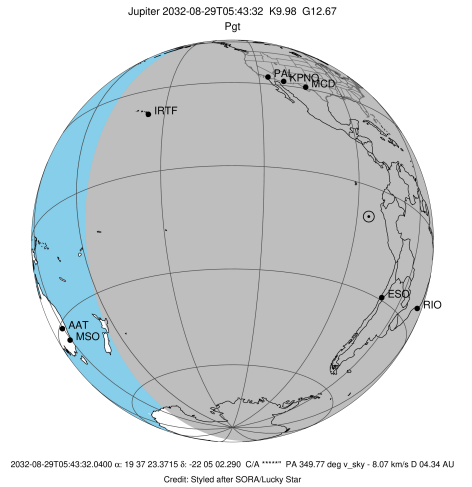


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-08-29T03:32:55.053	36.97	-27.02	71491.7	-27.09	-30.27
Jupiter	E	2032-08-29T07:41:33.738	15.80	-48.96	71491.6	-30.24	-33.62

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-08-29T05:47:15.870
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        : 6771949324440576640
2Mass ID (if available) : 19372336-2205022
ICRS Star Coord at Epoch: 19h 37m 23.37146s -22:05:02.28984s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 9.983
G magnitude           : 12.668
RP magnitude          : 11.876
BP magnitude          : 13.354
DUPflag              : 0
Distance (au)         : 4.344
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.07
Sun-Target sep (deg) : 136.46
Sun-Moon sep (deg)   : 149.89
B (ring opening deg) : -1.05
PA of pole (deg)     : -11.00
Pole direction: RA (deg): 268.05660
Dec (deg): 64.49656
C/A sky separation ("): 10.815
C/A sky separation (km): 34070.6
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
    
```

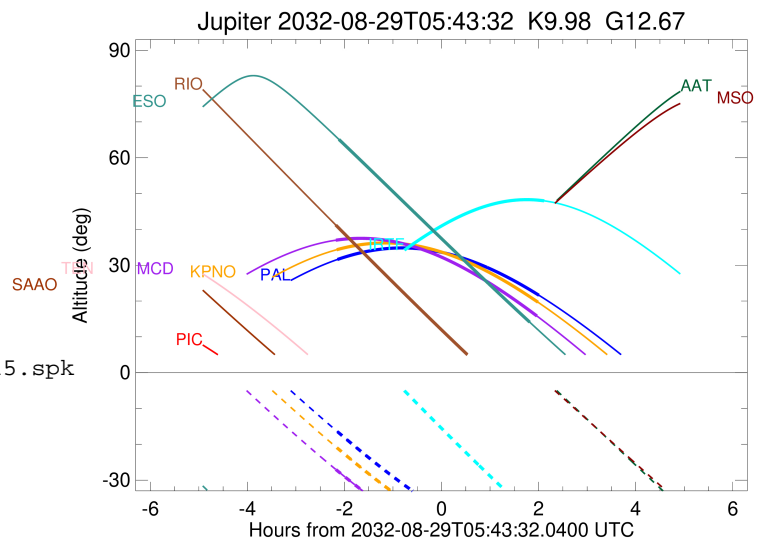
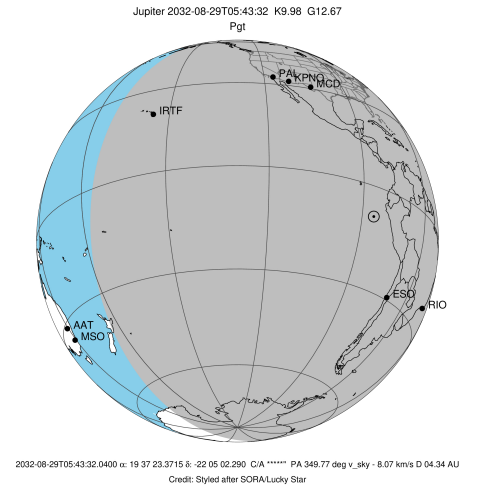


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-08-29T03:43:20.764	20.78	12.28x	71491.7	-28.00	-31.25
Jupiter	E	2032-08-29T07:50:23.436	47.96	-42.72	71491.6	-29.55	-32.90

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-08-29T05:30:40.990
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        : 6771949324440576640
2Mass ID (if available) : 19372336-2205022
ICRS Star Coord at Epoch: 19h 37m 23.37146s -22:05:02.28984s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 9.983
G magnitude           : 12.668
RP magnitude          : 11.876
BP magnitude          : 13.354
DUPflag              : 0
Distance (au)         : 4.343
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.07
Sun-Target sep (deg) : 136.46
Sun-Moon sep (deg)   : 150.75
B (ring opening deg) : -1.05
PA of pole (deg)     : -11.00
Pole direction: RA (deg): 268.05660
Dec (deg): 64.49656
C/A sky separation ("): 13.183
C/A sky separation (km): 41529.3
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
    
```

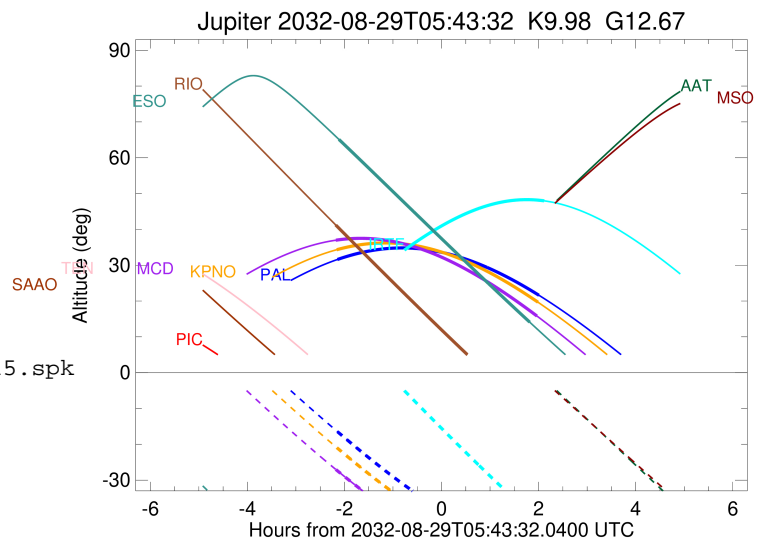
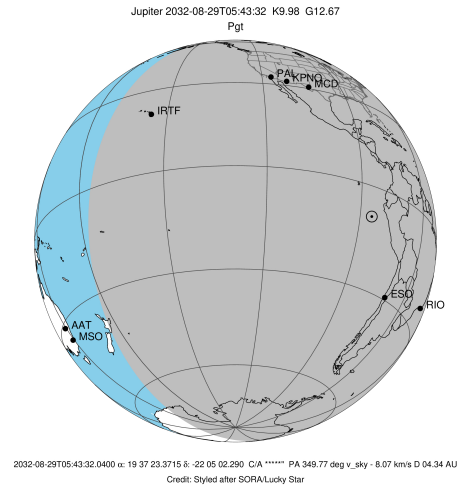


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-08-29T03:32:41.424	41.24	-73.52	71491.5	-33.53	-37.08
Jupiter	E	2032-08-29T07:32:28.338	-11.02x	-22.17	71491.4	-37.31	-40.97

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-08-29T05:33:08.180
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       : 67719493244440576640
2Mass ID (if available) : 19372336-2205022
ICRS Star Coord at Epoch: 19h 37m 23.37146s -22:05:02.28984s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 9.983
G magnitude           : 12.668
RP magnitude          : 11.876
BP magnitude          : 13.354
DUPflag              : 0
Distance (au)        : 4.343
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -8.07
Sun-Target sep (deg) : 136.46
Sun-Moon sep (deg)   : 150.79
B (ring opening deg) : -1.05
PA of pole (deg)     : -11.00
Pole direction: RA (deg): 268.05660
Dec (deg): 64.49656
C/A sky separation ("): 13.018
C/A sky separation (km): 41007.6
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
    
```



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	2032-08-29T03:36:40.905	65.11	-64.61	71491.5	-33.19	-36.72
Jupiter	E	2032-08-29T07:32:37.062	14.09	-45.72	71491.5	-36.91	-40.56