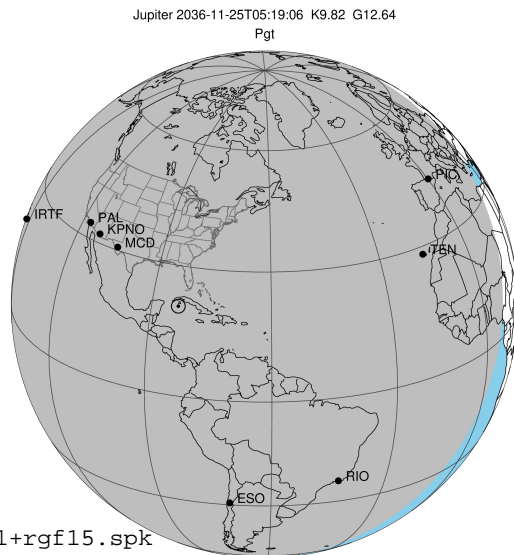


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2036-11-25T05:19:06.370
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 3404111299794787712
 2Mass ID (if available) : 05291814+2240160

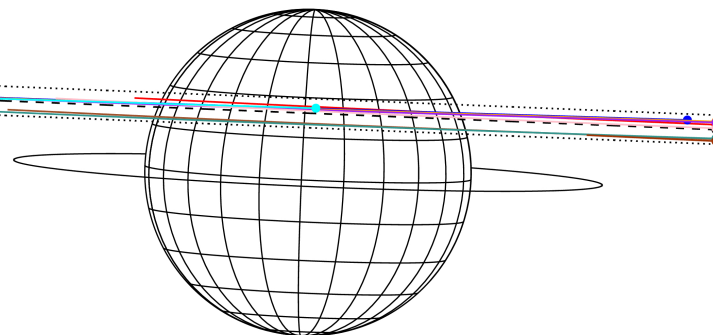
Jupiter 2036-11-25T05:19:06 K9.82 G12.64 Pgt

ICRS Star Coord at Epoch: 05h 29m 18.15093s +22:40:16.09845s
 RUWE (>1.4 is poor) : 1.09
 K magnitude : 9.825
 G magnitude : 12.645
 RP magnitude : 11.814
 BP magnitude : 13.375
 DUPflag : 0
 Distance (au) : 4.147
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.20
 Sun-Target sep (deg) : 160.08
 Sun-Moon sep (deg) : 117.60
 B (ring opening deg) : 2.72
 PA of pole (deg) : -2.47
 Pole direction: RA (deg): 268.05632
 Dec (deg): 64.49687
 C/A sky separation (") : 8.632
 C/A sky separation (km) : 25963.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



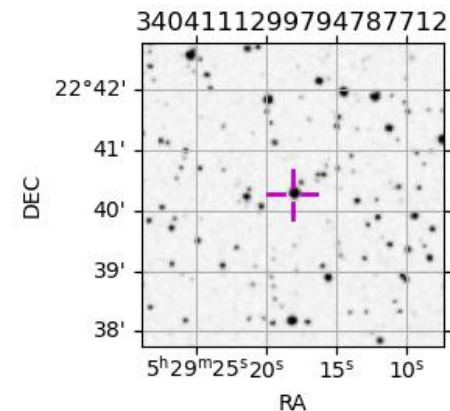
2036-11-25T05:19:06.3700 ex: 05 29 18.15093 s: +22 40 16.098 C/A 8.645" PA 177.68 deg v_sky -15.20 km/s D 04.15 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 SAAO



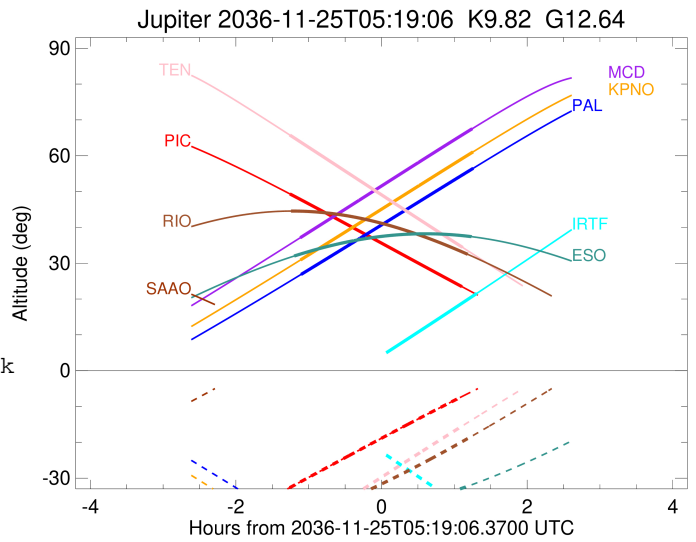
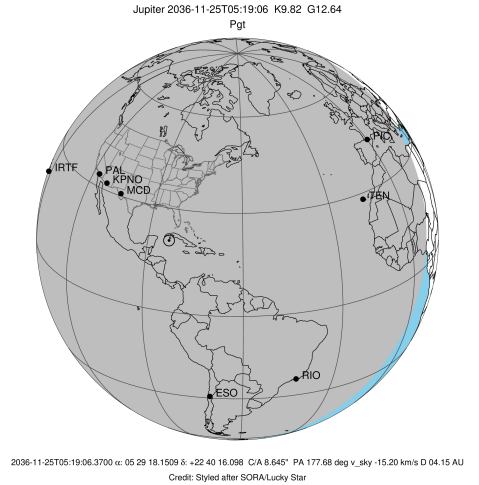
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events	Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	NOV 25 04:03 - NOV 25 06:25	Pie	
PAL	Palomar Mt (200")	33.4	243.1	+ +	NOV 25 04:12 - NOV 25 06:34	Pie	
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn	
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	NOV 25 04:12 - NOV 25 06:34	Pie	
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	NOV 25 04:12 - NOV 25 06:33	Pie	
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	NOV 25 04:03 - NOV 25 06:25	Pie	
IRTF	Mauna Kea/IRTF	19.8	204.5		NOV 25 06:37 - NOV 25 06:37	Pne	
KAV	Kavalur Observatory	12.6	78.8			Pnn	
RIO	Rio de Janeiro	-22.9	316.8	+ +	NOV 25 04:04 - NOV 25 06:30	Pie	
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	NOV 25 04:07 - NOV 25 06:33	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            : 2036-11-25T05:14:17.600
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      : 3404111299794787712
2Mass ID (if available) : 05291814+2240160
ICRS Star Coord at Epoch: 05h 29m 18.15093s +22:40:16.09845s
RUWE (>1.4 is poor) : 1.09
K magnitude          : 9.825
G magnitude          : 12.645
RP magnitude         : 11.814
BP magnitude         : 13.375
DUPflag             : 0
Distance (au)       : 4.147
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.20
Sun-Target sep (deg) : 160.08
Sun-Moon sep (deg)  : 117.77
B (ring opening deg) : 2.72
PA of pole (deg)    : -2.47
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation ("): 9.614
C/A sky separation (km): 28915.5
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
    
```

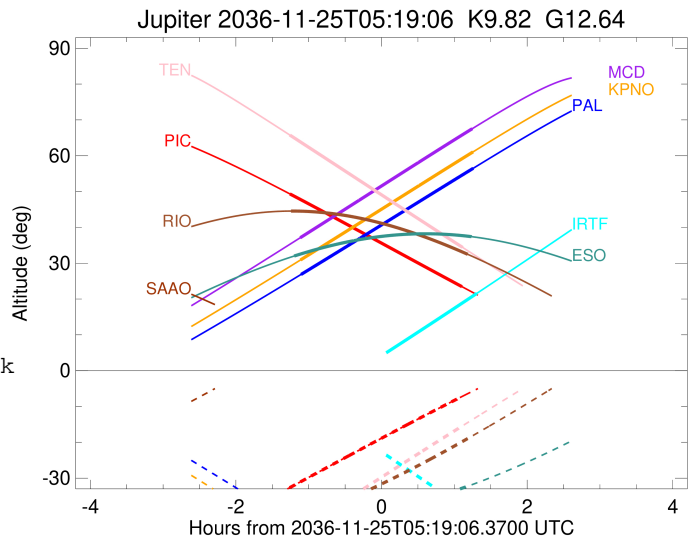
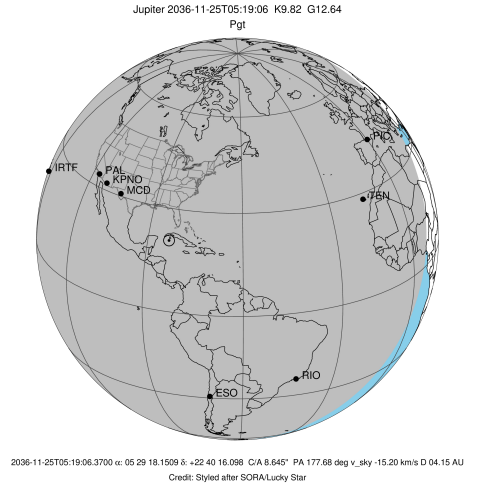


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2036-11-25T04:03:37.605	49.33	-32.63	71490.4	23.62	26.53
Jupiter	E	2036-11-25T06:25:20.626	23.46	-7.23	71490.3	24.13	27.08

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2036-11-25T05:24:00.670
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        : 3404111299794787712
2Mass ID (if available) : 05291814+2240160
ICRS Star Coord at Epoch: 05h 29m 18.15093s +22:40:16.09845s
RUWE (>1.4 is poor) : 1.09
K magnitude           : 9.825
G magnitude           : 12.645
RP magnitude          : 11.814
BP magnitude          : 13.375
DUPflag              : 0
Distance (au)         : 4.147
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.20
Sun-Target sep (deg) : 160.08
Sun-Moon sep (deg)   : 118.40
B (ring opening deg) : 2.72
PA of pole (deg)     : -2.47
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation ("): 9.352
C/A sky separation (km): 28129.3
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
    
```

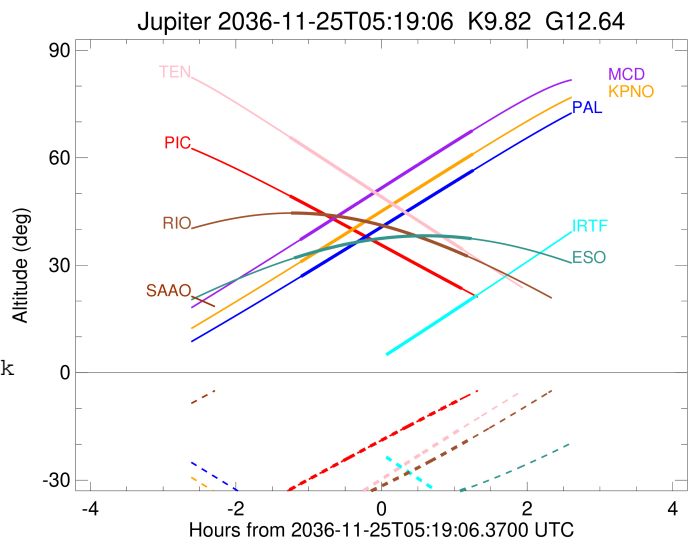
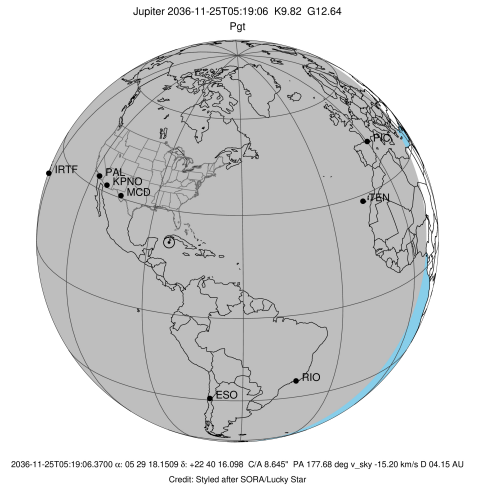


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2036-11-25T04:12:46.607	26.85	-43.88	71490.3	23.81	26.74
Jupiter	E	2036-11-25T06:34:44.923	56.50	-71.91	71490.5	22.57	25.39

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2036-11-25T05:23:44.810
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      : 3404111299794787712
2Mass ID (if available) : 05291814+2240160
ICRS Star Coord at Epoch: 05h 29m 18.15093s +22:40:16.09845s
RUWE (>1.4 is poor) : 1.09
K magnitude          : 9.825
G magnitude          : 12.645
RP magnitude         : 11.814
BP magnitude         : 13.375
DUPflag             : 0
Distance (au)       : 4.147
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.20
Sun-Target sep (deg) : 160.08
Sun-Moon sep (deg)  : 118.43
B (ring opening deg) : 2.72
PA of pole (deg)    : -2.47
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation ("): 9.254
C/A sky separation (km): 27833.7
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
    
```

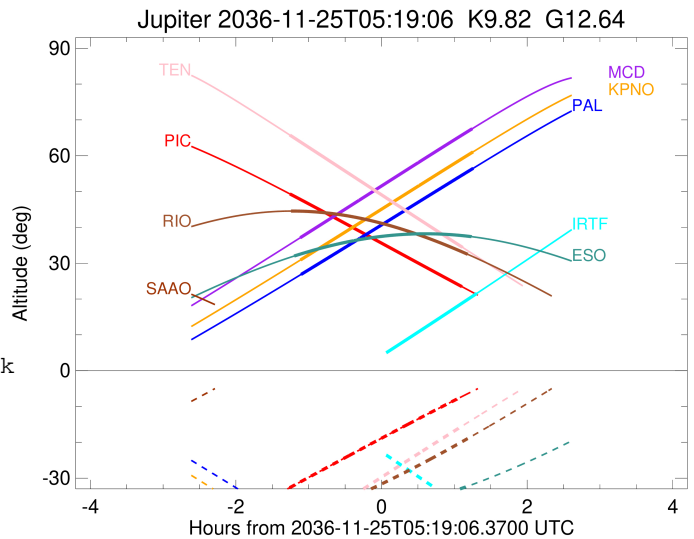
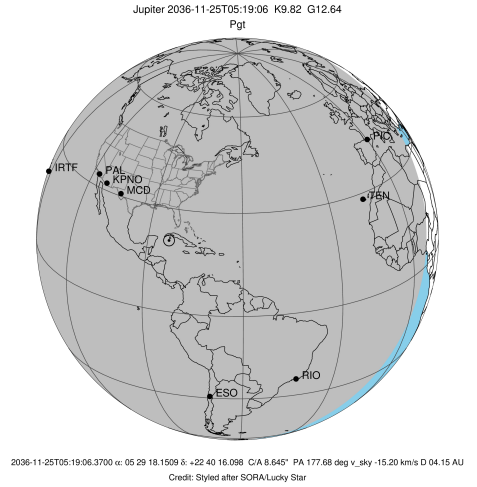


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2036-11-25T04:12:32.203	30.94	-48.33	71490.4	23.54	26.44
Jupiter	E	2036-11-25T06:34:29.149	61.05	-76.03	71490.5	22.34	25.14

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2036-11-25T05:23:14.630
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       : 3404111299794787712
2Mass ID (if available) : 05291814+2240160
ICRS Star Coord at Epoch: 05h 29m 18.15093s +22:40:16.09845s
RUWE (>1.4 is poor) : 1.09
K magnitude           : 9.825
G magnitude           : 12.645
RP magnitude          : 11.814
BP magnitude          : 13.375
DUPflag              : 0
Distance (au)        : 4.147
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.20
Sun-Target sep (deg) : 160.08
Sun-Moon sep (deg)   : 118.46
B (ring opening deg) : 2.72
PA of pole (deg)     : -2.47
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation (") : 9.140
C/A sky separation (km) : 27490.4
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
    
```

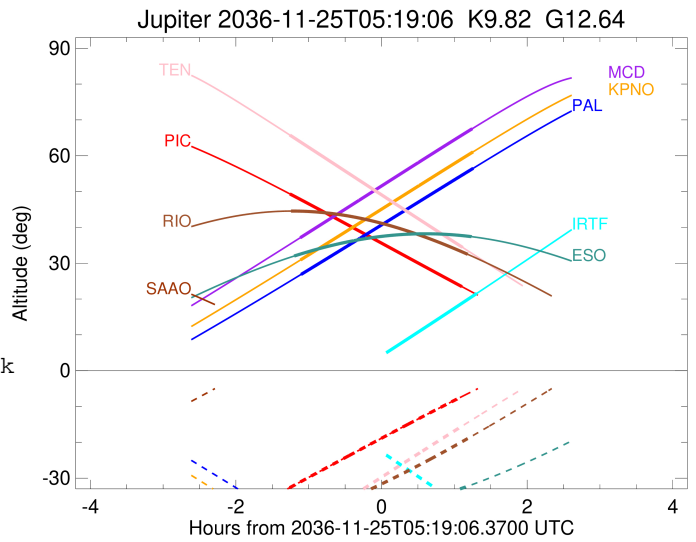
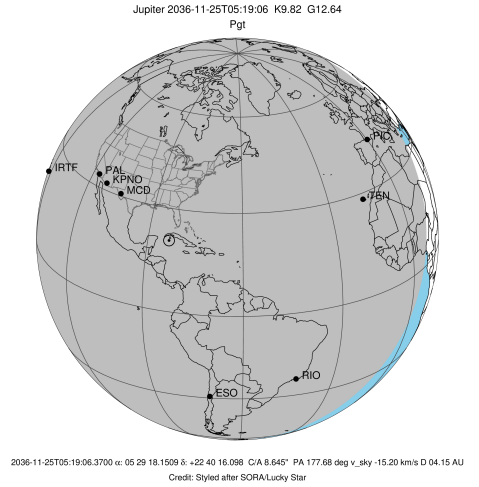


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2036-11-25T04:12:05.444	37.09	-54.81	71490.4	23.21	26.08
Jupiter	E	2036-11-25T06:33:58.400	67.55	-80.14	71490.6	22.09	24.87

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2036-11-25T05:14:35.290
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       : 3404111299794787712
2Mass ID (if available) : 05291814+2240160
ICRS Star Coord at Epoch: 05h 29m 18.15093s +22:40:16.09845s
RUWE (>1.4 is poor) : 1.09
K magnitude           : 9.825
G magnitude           : 12.645
RP magnitude         : 11.814
BP magnitude         : 13.375
DUPflag              : 0
Distance (au)        : 4.147
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.20
Sun-Target sep (deg) : 160.08
Sun-Moon sep (deg)   : 117.93
B (ring opening deg) : 2.72
PA of pole (deg)     : -2.47
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation ("): 8.988
C/A sky separation (km): 27033.3
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
    
```

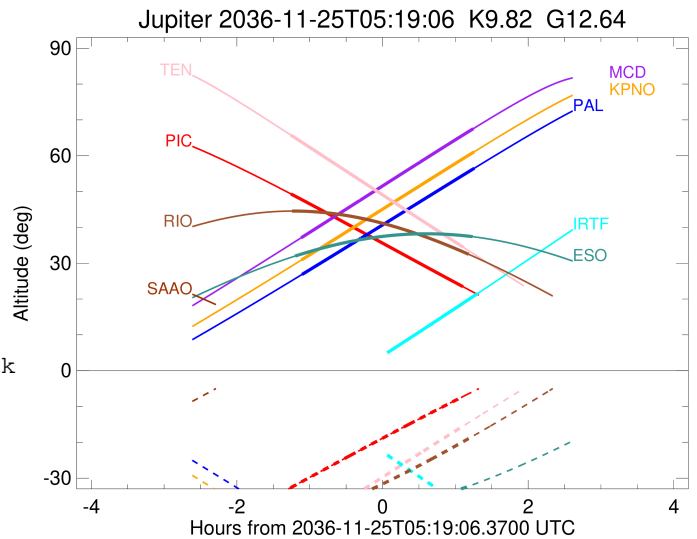
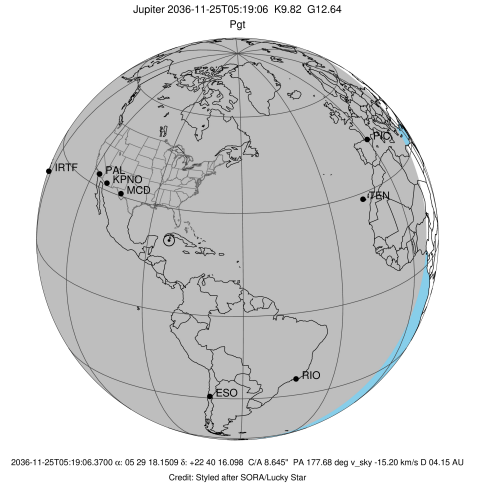


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2036-11-25T04:03:38.008	65.75	-46.29	71490.6	22.05	24.82
Jupiter	E	2036-11-25T06:25:54.321	34.41	-15.38	71490.5	22.48	25.29

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2036-11-25T05:25:56.440
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       : 3404111299794787712
2Mass ID (if available) : 05291814+2240160
ICRS Star Coord at Epoch: 05h 29m 18.15093s +22:40:16.09845s
RUWE (>1.4 is poor) : 1.09
K magnitude           : 9.825
G magnitude           : 12.645
RP magnitude         : 11.814
BP magnitude         : 13.375
DUPflag              : 0
Distance (au)        : 4.147
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.20
Sun-Target sep (deg) : 160.08
Sun-Moon sep (deg)  : 118.04
B (ring opening deg) : 2.72
PA of pole (deg)    : -2.47
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation (") : 9.394
C/A sky separation (km) : 28253.9
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
    
```

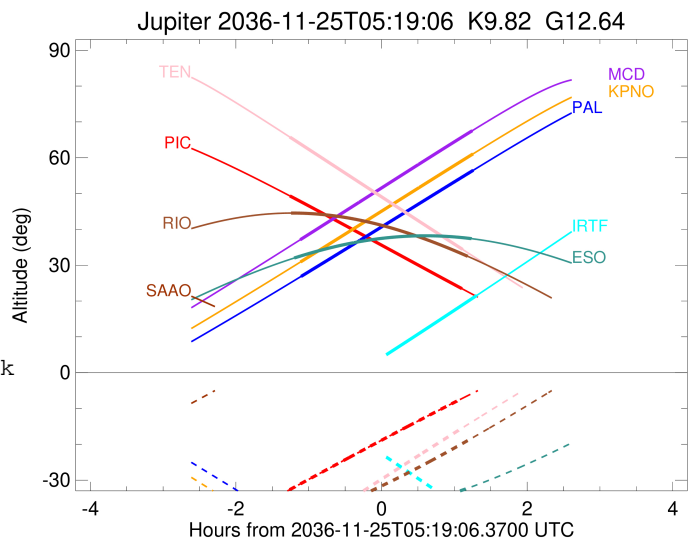
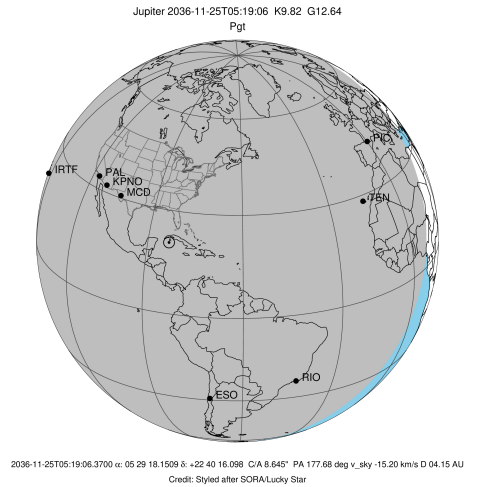


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2036-11-25T04:13:29.999	-9.84x	-7.91	71490.3	24.01	26.96
Jupiter	E	2036-11-25T06:37:40.752	21.58	-40.68	71490.5	22.47	25.29

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2036-11-25T05:17:14.690
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       : 3404111299794787712
2Mass ID (if available) : 05291814+2240160
ICRS Star Coord at Epoch: 05h 29m 18.15093s +22:40:16.09845s
RUWE (>1.4 is poor) : 1.09
K magnitude          : 9.825
G magnitude          : 12.645
RP magnitude         : 11.814
BP magnitude         : 13.375
DUPflag             : 0
Distance (au)        : 4.147
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.20
Sun-Target sep (deg) : 160.08
Sun-Moon sep (deg)   : 118.02
B (ring opening deg) : 2.72
PA of pole (deg)     : -2.47
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation (") : 7.137
C/A sky separation (km) : 21467.3
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
    
```

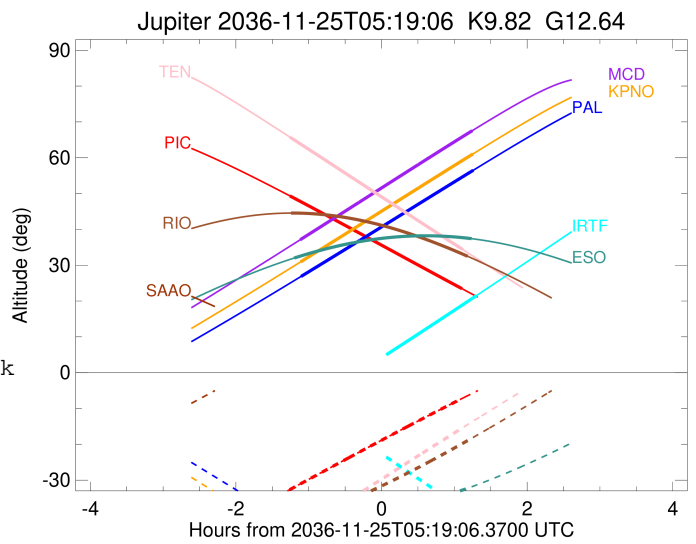
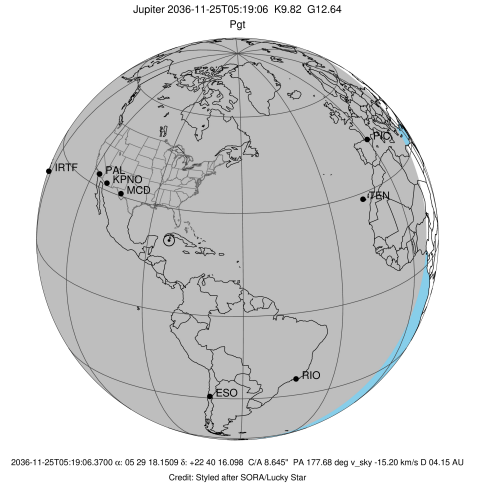


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2036-11-25T04:04:32.005	44.55	-41.77	71491.1	17.56	19.88
Jupiter	E	2036-11-25T06:30:06.126	32.48	-18.95	71491.1	17.53	19.85


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2036-11-25T05:20:17.750
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       : 3404111299794787712
2Mass ID (if available) : 05291814+2240160
ICRS Star Coord at Epoch: 05h 29m 18.15093s +22:40:16.09845s
RUWE (>1.4 is poor) : 1.09
K magnitude           : 9.825
G magnitude           : 12.645
RP magnitude          : 11.814
BP magnitude          : 13.375
DUPflag              : 0
Distance (au)        : 4.147
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.20
Sun-Target sep (deg) : 160.08
Sun-Moon sep (deg)   : 118.16
B (ring opening deg) : 2.72
PA of pole (deg)     : -2.47
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation (") : 6.987
C/A sky separation (km) : 21013.7
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	2036-11-25T04:07:14.776	32.01	-39.76	71491.1	17.45	19.75
Jupiter	E	2036-11-25T06:33:12.152	37.41	-31.88	71491.1	16.88	19.12