

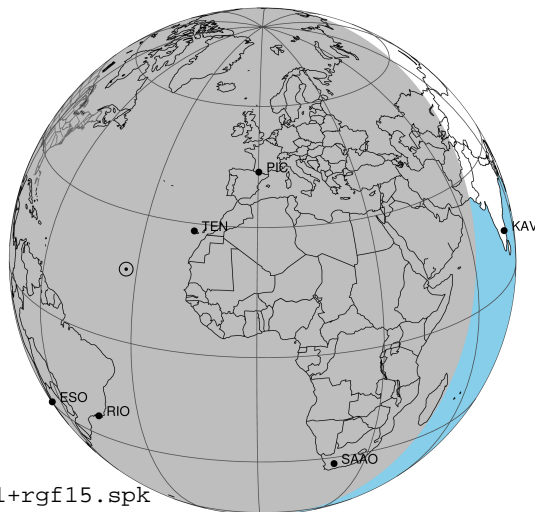
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2024-11-09T01:55:32.300  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 3415436716238052224  
 2Mass ID (if available) : 05141830+2218013

Jupiter 2024-11-09T01:55:32 K9.62 G12.24 Pgt

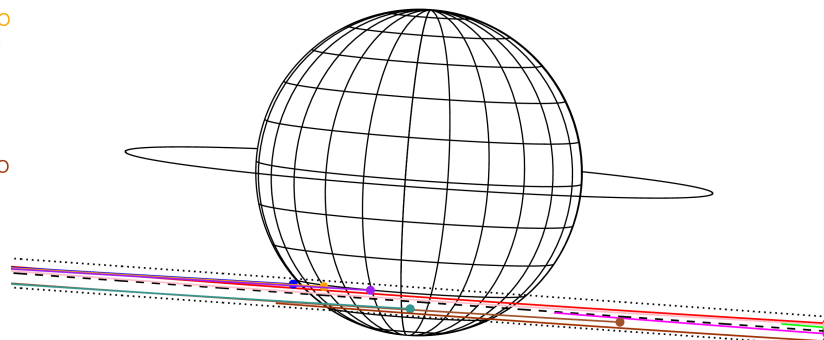
ICRS Star Coord at Epoch: 05h 14m 18.28233s +22:18:01.44701s

RUWE (>1.4 is poor) : 0.00  
 K magnitude : 9.624  
 G magnitude : 12.239  
 RP magnitude : 11.383  
 BP magnitude : 12.913  
 DUPflag : 0  
 Distance (au) : 4.203  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -12.28  
 Sun-Target sep (deg) : 147.37  
 Sun-Moon sep (deg) : 124.57  
 B (ring opening deg) : 2.89  
 PA of pole (deg) : -4.07  
 Pole direction: RA (deg): 268.05786  
 Dec (deg): 64.49673  
 C/A sky separation (") : 18.575  
 C/A sky separation (km) : 56623.0  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2024-11-09T01:55:32 K9.62 G12.24  
 Pgt



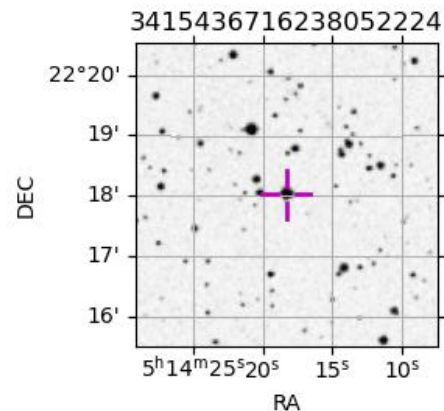
Earth  
 PIC  
 PAL  
 PMO  
 KPNO  
 MCD  
 TEN  
 KAV  
 RIO  
 ESO  
 SAAO



2024-11-09T01:55:32.3000 a: 05 14 18.2823 s: +22 18 01.447 C/A \*\*\*\*\* PA 355.91 deg v\_sky -12.28 km/s D 04.20 AU  
 Credit: Styled after SORA/Lucky Star

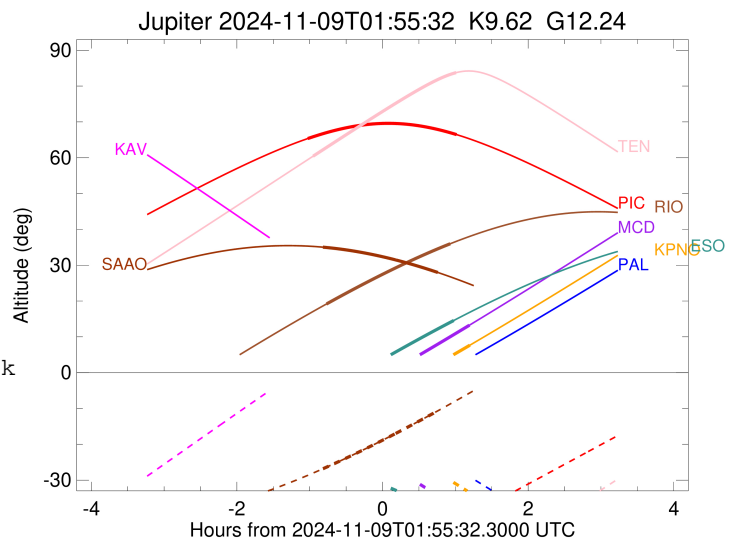
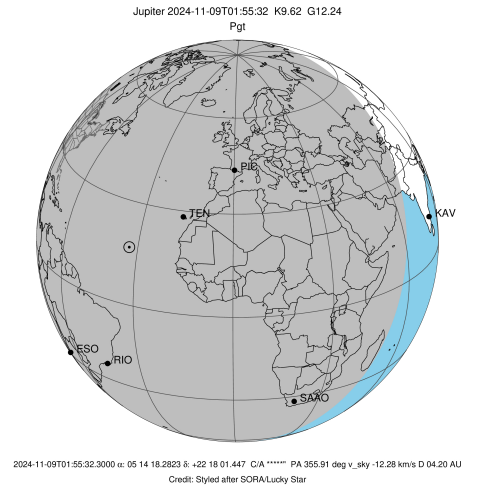
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	NOV 09 00:53 - NOV 09 02:56	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	+ +	NOV 09 03:07 - NOV 09 03:07	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	NOV 09 03:07 - NOV 09 03:07	Pne
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	NOV 09 00:58 - NOV 09 02:56	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	+ +	NOV 09 01:09 - NOV 09 02:51	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	NOV 09 02:54 - NOV 09 02:54	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	NOV 09 01:06 - NOV 09 02:41	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2024-11-09T01:55:18.900
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     : 3415436716238052224
2Mass ID (if available) : 05141830+2218013
ICRS Star Coord at Epoch: 05h 14m 18.28233s +22:18:01.44701s
RUWE (>1.4 is poor) : 0.00
K magnitude         : 9.624
G magnitude         : 12.239
RP magnitude        : 11.383
BP magnitude        : 12.913
DUPflag            : 0
Distance (au)      : 4.203
f0 (km)            : 0.00
g0 (km)            : 0.00
skyplane vel. (km/s) : -12.28
Sun-Target sep (deg) : 147.37
Sun-Moon sep (deg) : 125.28
B (ring opening deg) : 2.89
PA of pole (deg)   : -4.07
Pole direction: RA (deg): 268.05786
Dec (deg): 64.49673
C/A sky separation (") : 17.845
C/A sky separation (km) : 54398.6
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
    
```

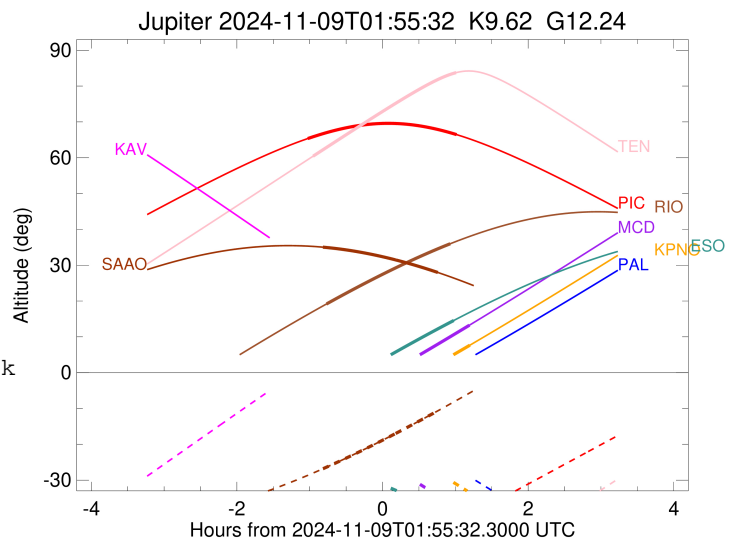
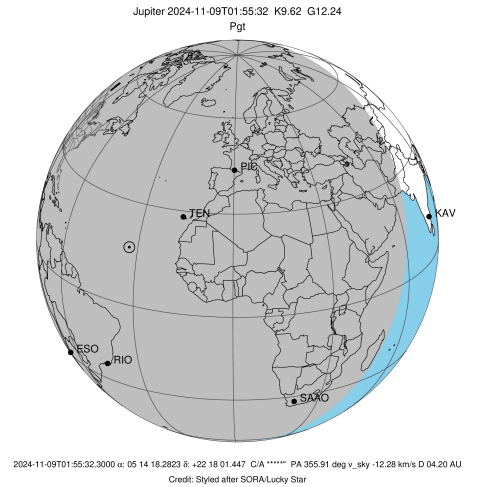


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2024-11-09T00:53:55.859	65.34	-60.14	71485.4	-49.28	-52.89
Jupiter	E	2024-11-09T02:56:37.445	66.44	-41.69	71485.4	-49.49	-53.09

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2024-11-09T02:01:14.560
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      : 3415436716238052224
2Mass ID (if available) : 05141830+2218013
ICRS Star Coord at Epoch: 05h 14m 18.28233s +22:18:01.44701s
RUWE (>1.4 is poor) : 0.00
K magnitude          : 9.624
G magnitude          : 12.239
RP magnitude         : 11.383
BP magnitude         : 12.913
DUPflag             : 0
Distance (au)       : 4.203
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.28
Sun-Target sep (deg) : 147.37
Sun-Moon sep (deg)  : 124.85
B (ring opening deg) : 2.89
PA of pole (deg)    : -4.07
Pole direction: RA (deg): 268.05786
Dec (deg): 64.49673
C/A sky separation (") : 17.199
C/A sky separation (km) : 52428.0
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
    
```

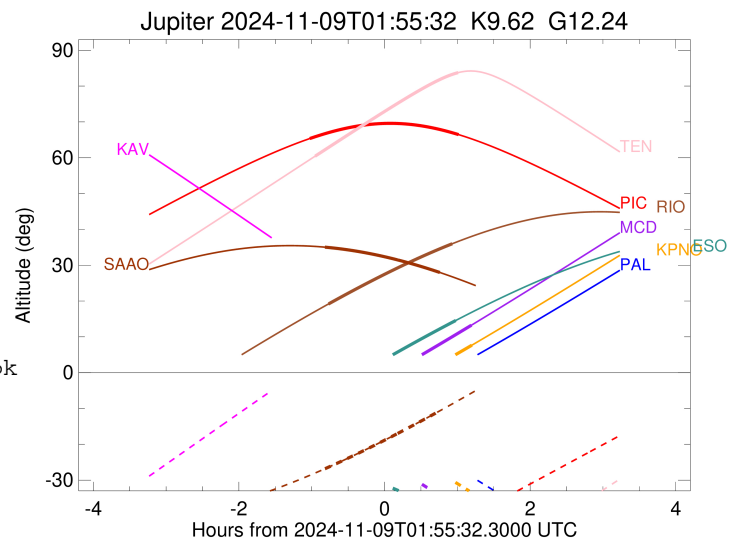
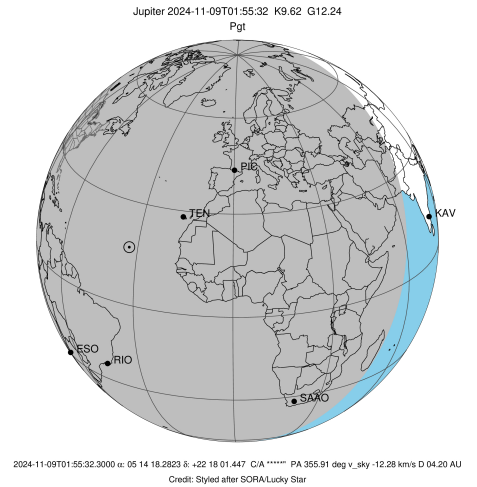


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2024-11-09T00:54:14.634	-16.68x	-5.56	71486.0	-46.56	-50.24
Jupiter	E	2024-11-09T03:07:36.890	7.68	-33.52	71485.8	-47.73	-51.38

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2024-11-09T02:01:36.190
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       : 3415436716238052224
2Mass ID (if available) : 05141830+2218013
ICRS Star Coord at Epoch: 05h 14m 18.28233s +22:18:01.44701s
RUWE (>1.4 is poor) : 0.00
K magnitude          : 9.624
G magnitude          : 12.239
RP magnitude         : 11.383
BP magnitude         : 12.913
DUPflag             : 0
Distance (au)        : 4.203
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.28
Sun-Target sep (deg) : 147.37
Sun-Moon sep (deg)   : 124.95
B (ring opening deg) : 2.89
PA of pole (deg)     : -4.07
Pole direction: RA (deg): 268.05786
Dec (deg): 64.49673
C/A sky separation (") : 17.313
C/A sky separation (km) : 52776.4
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
    
```

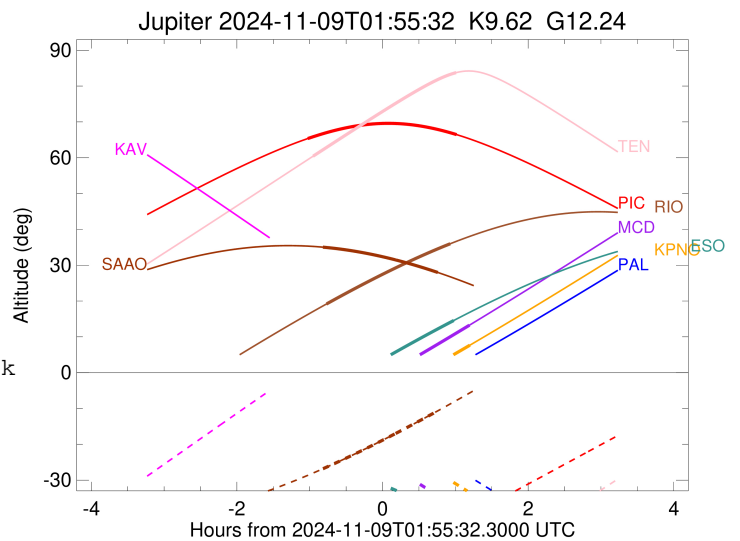
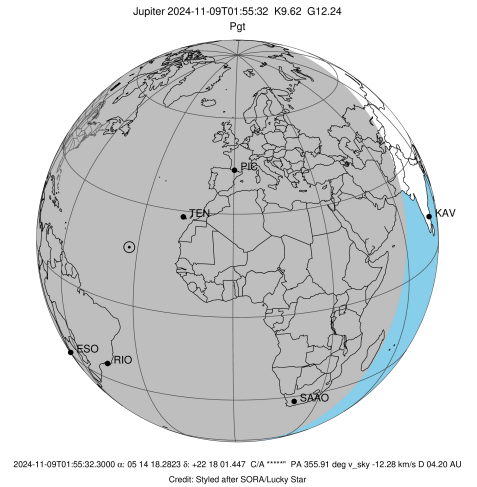


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2024-11-09T00:55:21.622	-12.17x	-11.74	71485.9	-46.91	-50.58
Jupiter	E	2024-11-09T03:07:12.166	13.26	-39.94	71485.7	-48.18	-51.82

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2024-11-09T01:57:18.300
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      : 3415436716238052224
2Mass ID (if available) : 05141830+2218013
ICRS Star Coord at Epoch: 05h 14m 18.28233s +22:18:01.44701s
RUWE (>1.4 is poor) : 0.00
K magnitude          : 9.624
G magnitude          : 12.239
RP magnitude         : 11.383
BP magnitude         : 12.913
DUPflag             : 0
Distance (au)       : 4.203
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.28
Sun-Target sep (deg) : 147.37
Sun-Moon sep (deg)  : 125.46
B (ring opening deg) : 2.89
PA of pole (deg)    : -4.07
Pole direction: RA (deg): 268.05786
Dec (deg): 64.49673
C/A sky separation (") : 18.294
C/A sky separation (km) : 55768.2
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
    
```

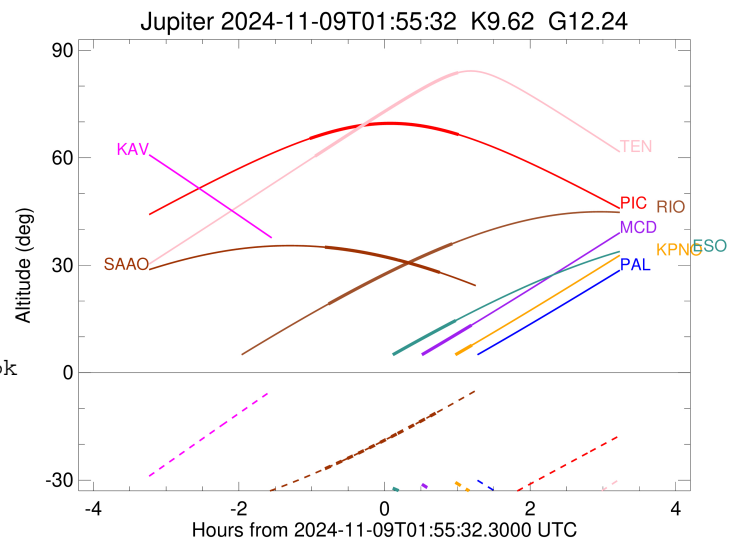
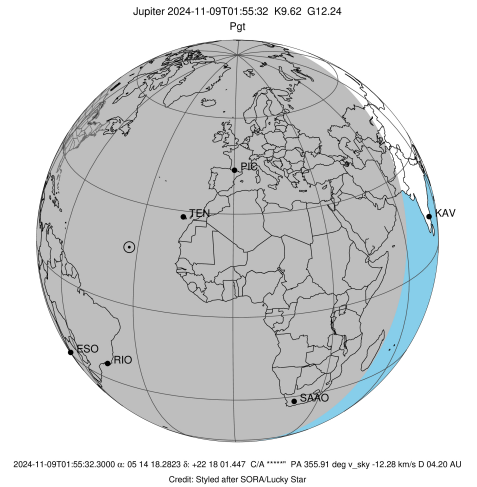


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2024-11-09T00:58:15.564	60.40	-78.65	71485.2	-50.79	-54.35
Jupiter	E	2024-11-09T02:56:08.924	83.74	-58.89	71485.0	-51.41	-54.95

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2024-11-09T02:00:29.840
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       : 3415436716238052224
2Mass ID (if available) : 05141830+2218013
ICRS Star Coord at Epoch: 05h 14m 18.28233s +22:18:01.44701s
RUWE (>1.4 is poor) : 0.00
K magnitude           : 9.624
G magnitude           : 12.239
RP magnitude          : 11.383
BP magnitude          : 12.913
DUPflag              : 0
Distance (au)         : 4.203
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.28
Sun-Target sep (deg) : 147.37
Sun-Moon sep (deg)   : 125.34
B (ring opening deg) : 2.89
PA of pole (deg)     : -4.07
Pole direction: RA (deg): 268.05786
Dec (deg): 64.49673
C/A sky separation (") : 19.763
C/A sky separation (km) : 60246.4
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
    
```

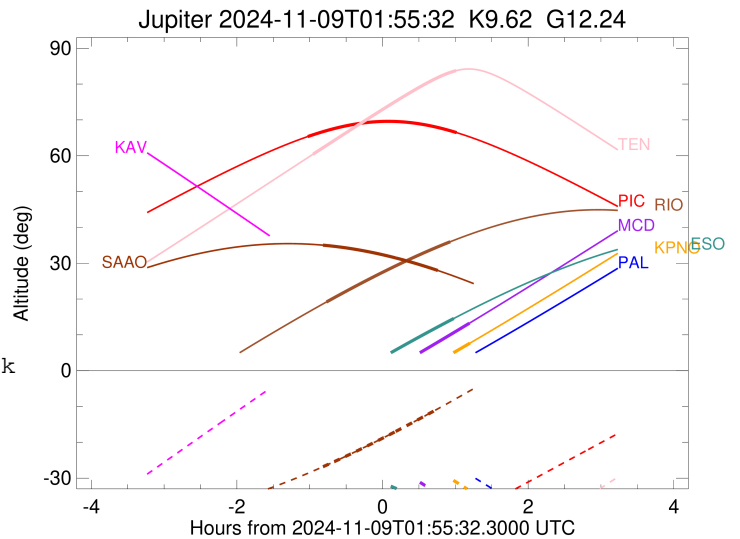
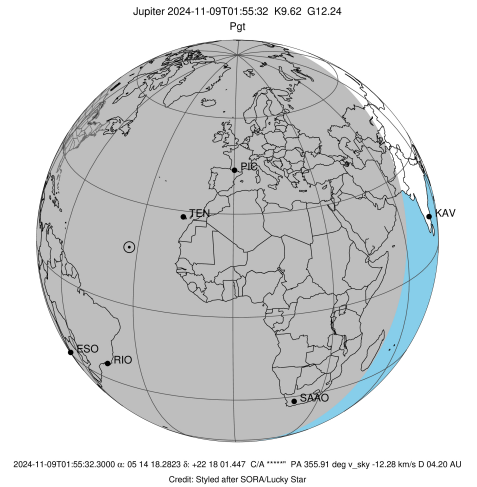


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2024-11-09T01:09:19.793	19.16	-44.91	71484.0	-56.69	-59.96
Jupiter	E	2024-11-09T02:51:21.995	35.98	-50.11	71483.8	-57.85	-61.06

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2024-11-09T02:01:58.000
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       : 3415436716238052224
2Mass ID (if available) : 05141830+2218013
ICRS Star Coord at Epoch: 05h 14m 18.28233s +22:18:01.44701s
RUWE (>1.4 is poor) : 0.00
K magnitude           : 9.624
G magnitude           : 12.239
RP magnitude         : 11.383
BP magnitude         : 12.913
DUPflag              : 0
Distance (au)        : 4.203
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.28
Sun-Target sep (deg) : 147.37
Sun-Moon sep (deg)   : 125.12
B (ring opening deg) : 2.89
PA of pole (deg)     : -4.07
Pole direction: RA (deg): 268.05786
Dec (deg): 64.49673
C/A sky separation (") : 19.628
C/A sky separation (km) : 59834.6
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
    
```

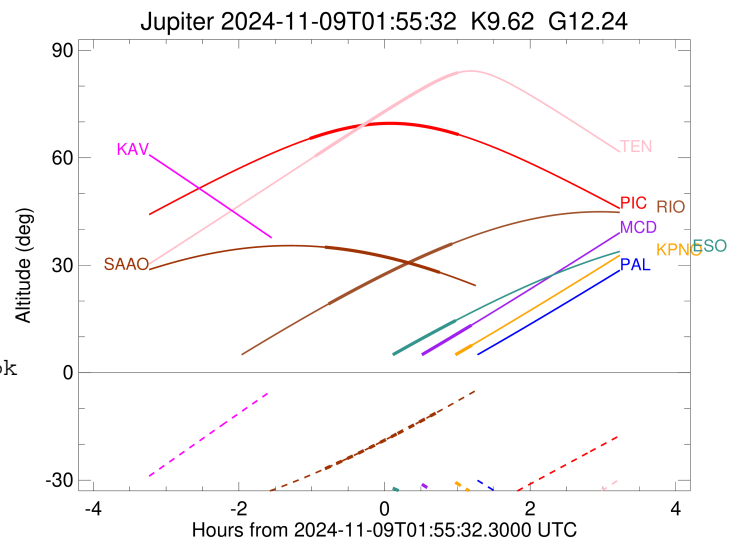
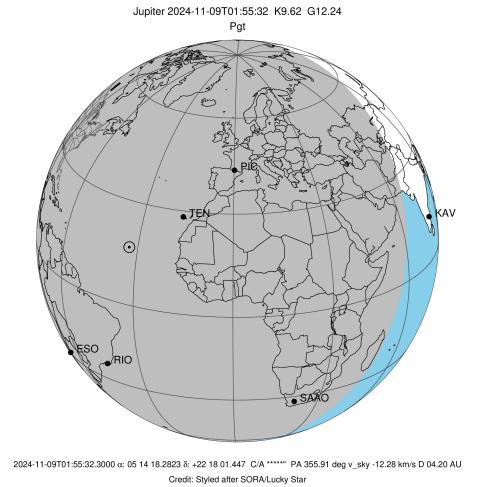


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2024-11-09T01:09:13.116	-5.49x	-23.73	71484.2	-56.01	-59.33
Jupiter	E	2024-11-09T02:54:18.923	14.57	-38.81	71483.9	-57.39	-60.62

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2024-11-09T01:53:47.000
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       : 3415436716238052224
2Mass ID (if available) : 05141830+2218013
ICRS Star Coord at Epoch: 05h 14m 18.28233s +22:18:01.44701s
RUWE (>1.4 is poor) : 0.00
K magnitude           : 9.624
G magnitude           : 12.239
RP magnitude          : 11.383
BP magnitude          : 12.913
DUPflag              : 0
Distance (au)        : 4.203
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.28
Sun-Target sep (deg) : 147.37
Sun-Moon sep (deg)   : 124.91
B (ring opening deg) : 2.89
PA of pole (deg)     : -4.07
Pole direction: RA (deg): 268.05786
Dec (deg): 64.49673
C/A sky separation (") : 20.276
C/A sky separation (km) : 61811.2
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	2024-11-09T01:06:25.457	35.03	-26.82	71483.5	-59.77	-62.85
Jupiter	E	2024-11-09T02:41:11.868	27.96	-10.64	71483.5	-59.53	-62.63