

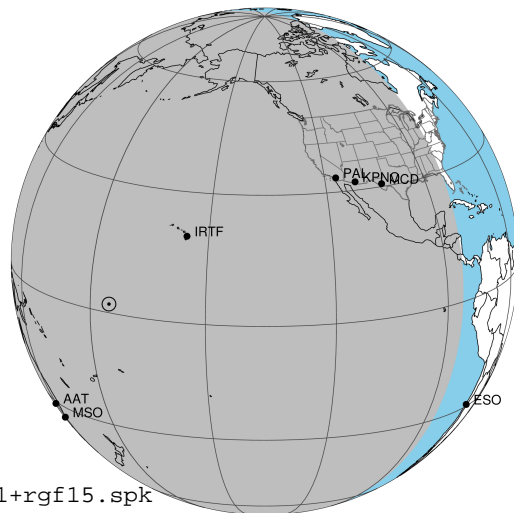
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2023-09-28T11:28:16.080
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 33228894954662656
 2Mass ID (if available) : 02490505+1447500

Jupiter 2023-09-28T11:28:16 K9.49 G11.32 Pgt

ICRS Star Coord at Epoch: 02h 49m 05.07478s +14:47:48.19359s

RUWE (>1.4 is poor) : 0.96
 K magnitude : 9.493
 G magnitude : 11.321
 RP magnitude : 10.714
 BP magnitude : 11.767
 DUPflag : 0
 Distance (au) : 4.155
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -9.71
 Sun-Target sep (deg) : 140.44
 Sun-Moon sep (deg) : 52.62
 B (ring opening deg) : 3.43
 PA of pole (deg) : -18.01
 Pole direction: RA (deg): 268.05804
 Dec (deg): 64.49678
 C/A sky separation (") : 1.481
 C/A sky separation (km) : 4463.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

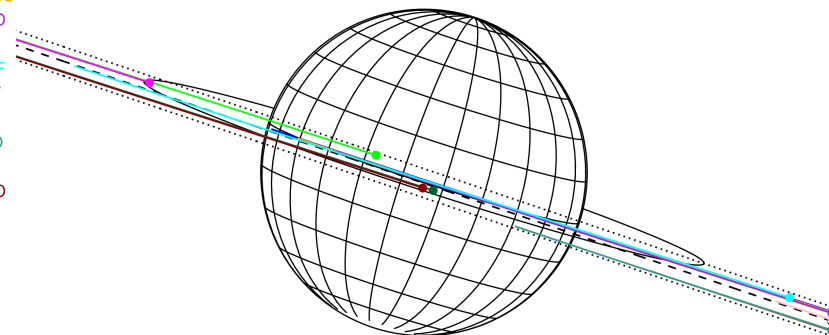
Jupiter 2023-09-28T11:28:16 K9.49 G11.32
 Pgt



2023-09-28T11:28:16.0800 α: 02 49 05.0748 δ: +14 47 48.194 C/A 1.469° PA 341.30 deg v_sky - 9.71 km/s D 04.16 AU

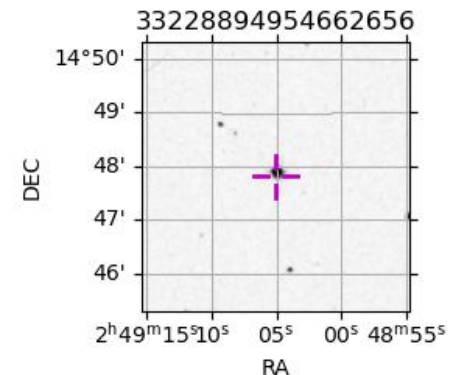
Credit: Styled after SORA/Lucky Star

Earth
 PAL
 PMO
 KPNO
 MCD
 TEN
 IRTF
 KAV
 RIO
 ESO
 AAT
 MSO



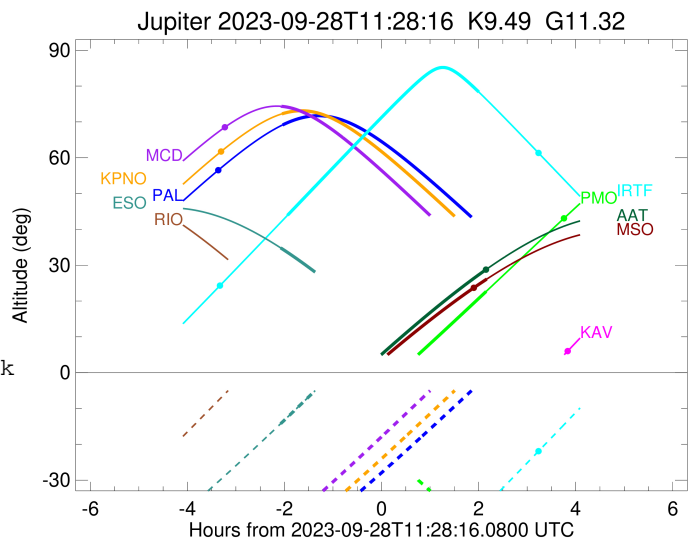
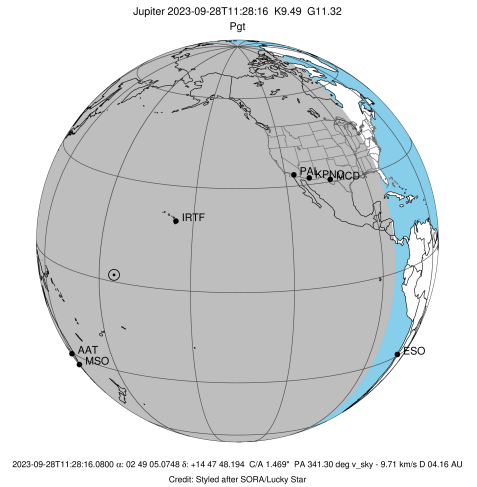
Observable events with sun below -5 deg and altitude above 5 deg

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	+	SEP 28 09:26 - SEP 28 09:26	Pin
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	SEP 28 13:37 - SEP 28 13:37	Pne
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	SEP 28 09:25 - SEP 28 09:25	Pin
MCD	McDonald Obs. 2.7m	30.7	256.0	+	SEP 28 09:24 - SEP 28 09:24	Pin
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	SEP 28 09:32 - SEP 28 13:28	Pie
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8			Pnn
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	SEP 28 09:23 - SEP 28 09:23	Pin
AAT	Siding Spring (AAT)	-31.3	149.1	+	SEP 28 13:38 - SEP 28 13:38	Pne
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	SEP 28 13:38 - SEP 28 13:38	Pne



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2023-09-28T11:24:19.210
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       : 33228894954662656
2Mass ID (if available) : 02490505+1447500
ICRS Star Coord at Epoch: 02h 49m 05.07478s +14:47:48.19359s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.493
G magnitude           : 11.321
RP magnitude         : 10.714
BP magnitude         : 11.767
DUPflag              : 0
Distance (au)        : 4.155
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.71
Sun-Target sep (deg) : 140.44
Sun-Moon sep (deg)   : 53.58
B (ring opening deg) : 3.43
PA of pole (deg)     : -18.01
Pole direction: RA (deg): 268.05804
Dec (deg): 64.49678
C/A sky separation ("): 1.010
C/A sky separation (km): 3043.7
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
    
```

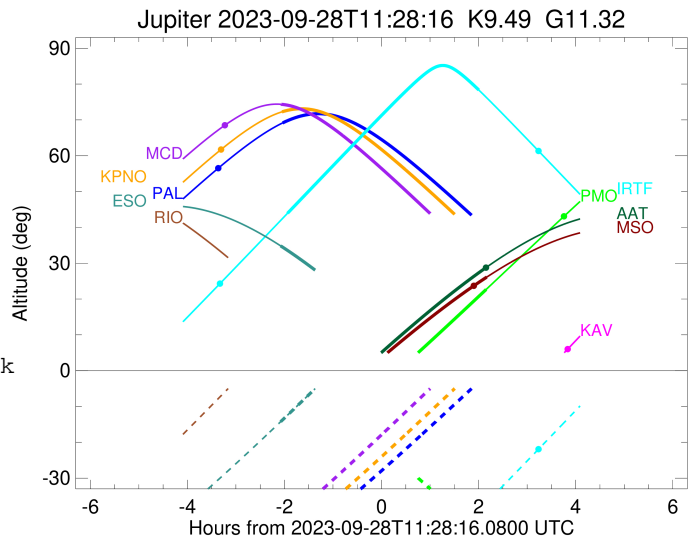
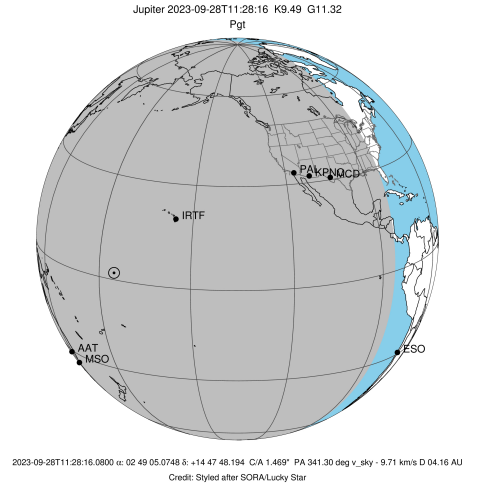


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-09-28T09:25:59.511	69.14	-49.88	71492.0	-2.47	-2.82
Jupiter	E	2023-09-28T13:22:52.408	42.72	-4.33x	71492.0	-2.04	-2.33

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2023-09-28T11:34:53.650
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : PMO
Location             : Purple Mtn Obs. Nanking
Latitude (deg)       : 32.06667
E. Longitude (deg)   : 118.82089
Altitude (km)        : 0.364
Gaia source ID       : 33228894954662656
2Mass ID (if available) : 02490505+1447500
ICRS Star Coord at Epoch: 02h 49m 05.07478s +14:47:48.19359s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.493
G magnitude          : 11.321
RP magnitude         : 10.714
BP magnitude         : 11.767
DUPflag             : 0
Distance (au)        : 4.155
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.71
Sun-Target sep (deg) : 140.44
Sun-Moon sep (deg)   : 52.20
B (ring opening deg) : 3.43
PA of pole (deg)     : -18.01
Pole direction: RA (deg): 268.05804
Dec (deg): 64.49678
C/A sky separation (") : 0.199
C/A sky separation (km) : 599.9
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
    
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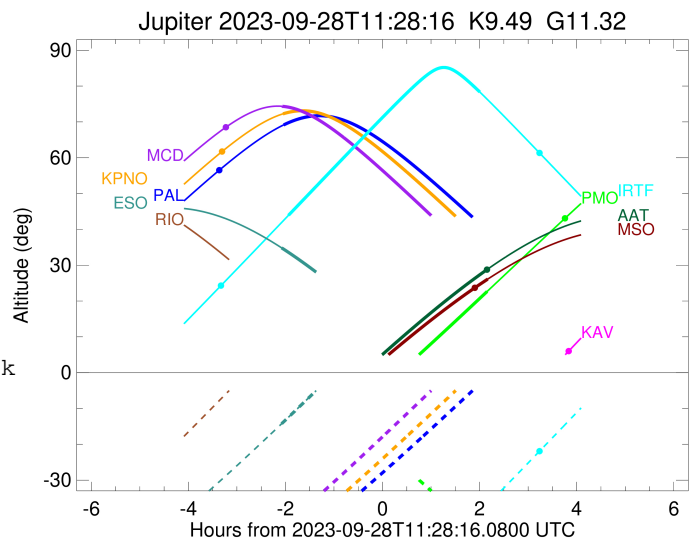
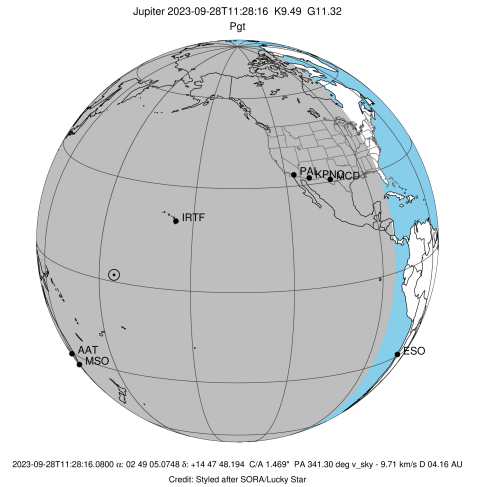


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-09-28T09:29:21.002	-26.08x	4.49x	71492.0	-0.07	-0.08
Jupiter	E	2023-09-28T13:37:38.089	22.67	-45.94	71492.0	0.58	0.66

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2023-09-28T11:23:36.310
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       : 33228894954662656
2Mass ID (if available) : 02490505+1447500
ICRS Star Coord at Epoch: 02h 49m 05.07478s +14:47:48.19360s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.493
G magnitude           : 11.321
RP magnitude          : 10.714
BP magnitude          : 11.767
DUPflag              : 0
Distance (au)        : 4.155
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.71
Sun-Target sep (deg) : 140.44
Sun-Moon sep (deg)   : 53.60
B (ring opening deg) : 3.43
PA of pole (deg)     : -18.01
Pole direction: RA (deg): 268.05804
Dec (deg): 64.49678
C/A sky separation (") : 1.092
C/A sky separation (km) : 3291.3
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
    
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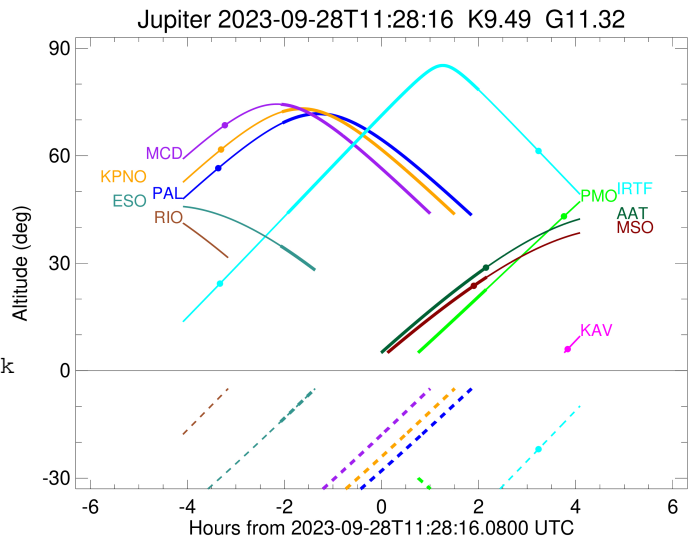
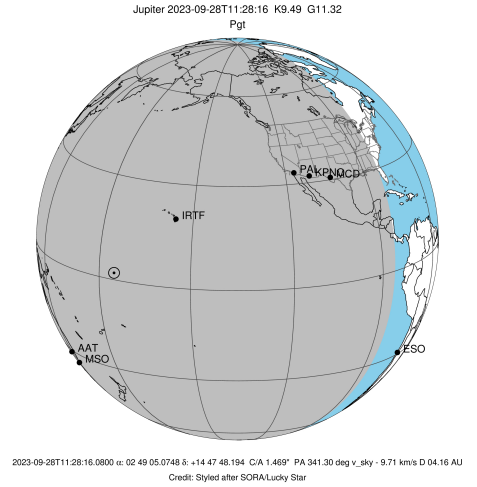


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-09-28T09:25:20.869	72.25	-47.59	71492.0	-2.71	-3.10
Jupiter	E	2023-09-28T13:22:17.230	38.66	0.01x	71492.0	-2.17	-2.48

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2023-09-28T11:22:34.750
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        : 33228894954662656
2Mass ID (if available) : 02490505+1447500
ICRS Star Coord at Epoch: 02h 49m 05.07478s +14:47:48.19360s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.493
G magnitude           : 11.321
RP magnitude          : 10.714
BP magnitude          : 11.767
DUPflag              : 0
Distance (au)         : 4.155
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.71
Sun-Target sep (deg)  : 140.44
Sun-Moon sep (deg)    : 53.62
B (ring opening deg) : 3.43
PA of pole (deg)      : -18.01
Pole direction: RA (deg): 268.05804
Dec (deg): 64.49678
C/A sky separation (") : 1.178
C/A sky separation (km) : 3549.8
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
    
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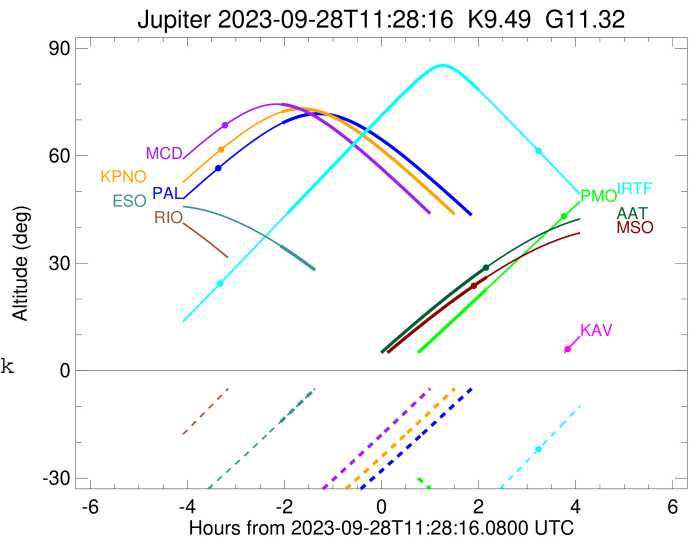
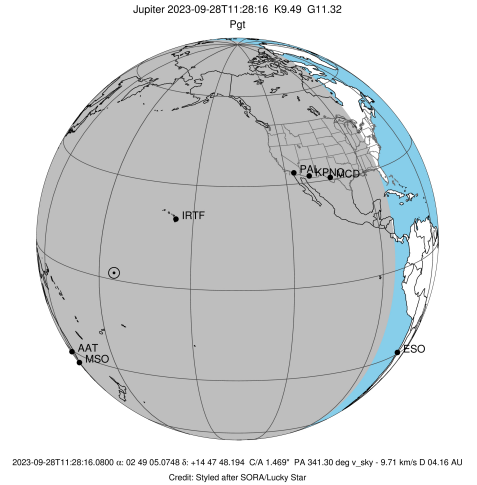


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-09-28T09:24:19.202	74.34	-43.11	71492.0	-3.00	-3.43
Jupiter	E	2023-09-28T13:21:32.608	32.43	6.41x	71492.0	-2.26	-2.59

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2023-09-28T11:30:54.980
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       : 33228894954662656
2Mass ID (if available) : 02490505+1447500
ICRS Star Coord at Epoch: 02h 49m 05.07478s +14:47:48.19359s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.493
G magnitude           : 11.321
RP magnitude         : 10.714
BP magnitude         : 11.767
DUPflag              : 0
Distance (au)        : 4.155
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.71
Sun-Target sep (deg) : 140.44
Sun-Moon sep (deg)   : 53.23
B (ring opening deg) : 3.43
PA of pole (deg)     : -18.01
Pole direction: RA (deg): 268.05804
Dec (deg): 64.49678
C/A sky separation (") : 1.088
C/A sky separation (km) : 3279.2
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
    
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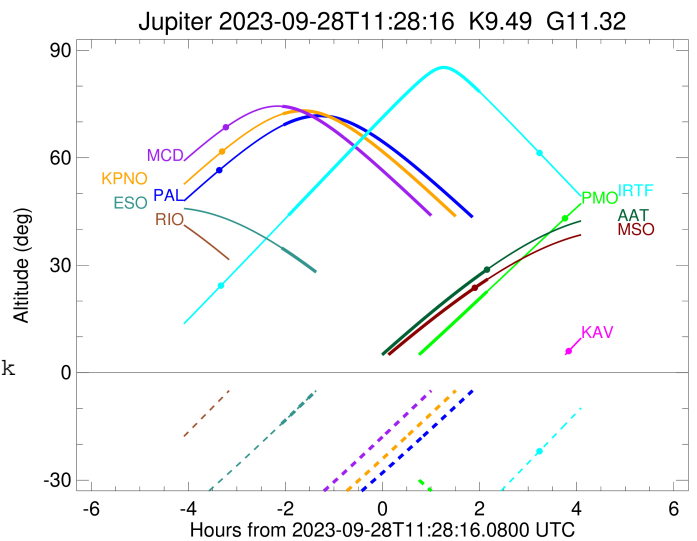
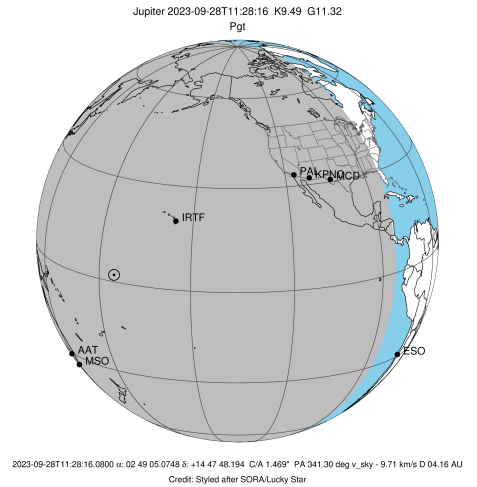


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-09-28T09:32:08.724	43.94	-69.71	71492.0	-2.33	-2.66
Jupiter	E	2023-09-28T13:28:24.845	78.36	-39.05	71492.0	-2.76	-3.15

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2023-09-28T11:22:08.740
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       : 33228894954662656
2Mass ID (if available) : 02490505+1447500
ICRS Star Coord at Epoch: 02h 49m 05.07478s +14:47:48.19360s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.493
G magnitude          : 11.321
RP magnitude         : 10.714
BP magnitude         : 11.767
DUPflag             : 0
Distance (au)        : 4.155
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.71
Sun-Target sep (deg) : 140.44
Sun-Moon sep (deg)   : 53.14
B (ring opening deg) : 3.43
PA of pole (deg)     : -18.01
Pole direction: RA (deg): 268.05804
Dec (deg): 64.49678
C/A sky separation (") : 3.150
C/A sky separation (km) : 9494.4
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
    
```

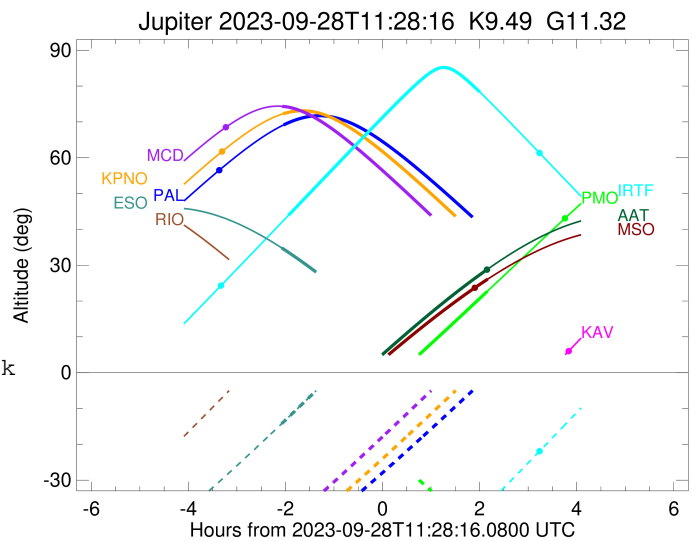
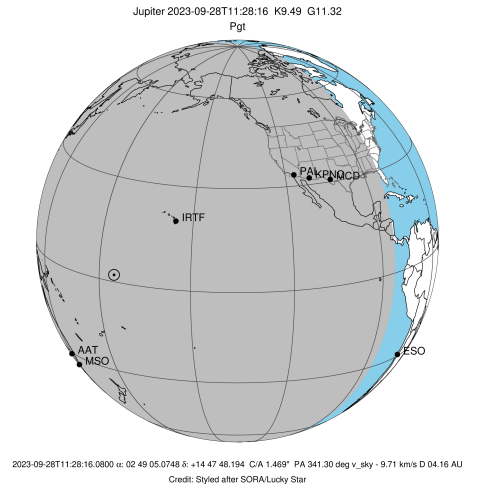


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-09-28T09:23:36.110	34.83	-14.25	71491.7	-8.26	-9.42
Jupiter	E	2023-09-28T13:22:24.932	-10.89x	37.15x	71491.8	-6.51	-7.44

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2023-09-28T11:38:32.600
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : AAT
Location             : Siding Spring (AAT)
Latitude (deg)       : -31.27703
E. Longitude (deg)   : 149.06608
Altitude (km)        : 1.164
Gaia source ID       : 33228894954662656
2Mass ID (if available) : 02490505+1447500
ICRS Star Coord at Epoch: 02h 49m 05.07478s +14:47:48.19359s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.493
G magnitude           : 11.321
RP magnitude         : 10.714
BP magnitude         : 11.767
DUPflag              : 0
Distance (au)        : 4.155
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.71
Sun-Target sep (deg) : 140.44
Sun-Moon sep (deg)   : 52.09
B (ring opening deg) : 3.43
PA of pole (deg)     : -18.01
Pole direction: RA (deg): 268.05804
Dec (deg): 64.49678
C/A sky separation ("): 2.070
C/A sky separation (km): 6237.6
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
    
```

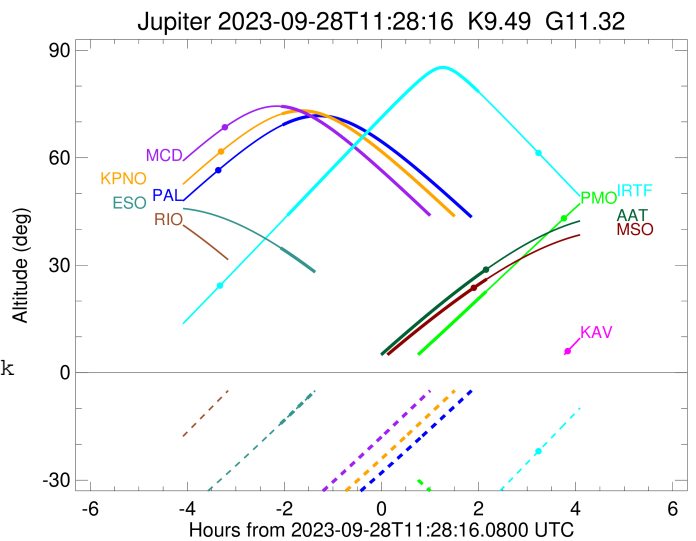
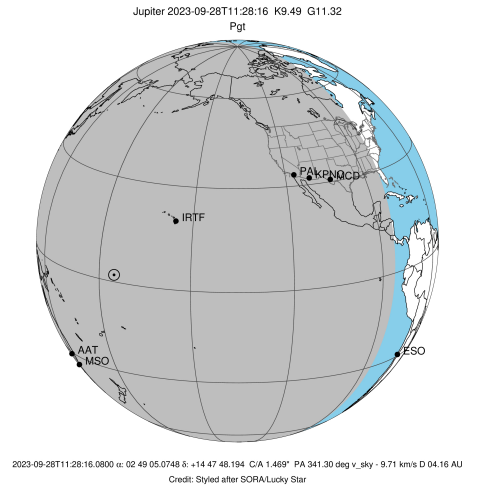


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2023-09-28T09:36:00.260	-18.28x	-20.41	71491.9	-5.09	-5.81
Jupiter	E	2023-09-28T13:38:23.640	28.92	-56.62	71491.9	-5.17	-5.91


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2023-09-28T11:38:21.070
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : MSO
Location              : Mt. Stromlo Observatory
Latitude (deg)        : -35.32000
E. Longitude (deg)    : 149.00833
Altitude (km)         : 0.770
Gaia source ID        : 33228894954662656
2Mass ID (if available) : 02490505+1447500
ICRS Star Coord at Epoch: 02h 49m 05.07478s +14:47:48.19359s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.493
G magnitude           : 11.321
RP magnitude          : 10.714
BP magnitude          : 11.767
DUPflag              : 0
Distance (au)         : 4.155
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.71
Sun-Target sep (deg) : 140.44
Sun-Moon sep (deg)   : 52.08
B (ring opening deg) : 3.43
PA of pole (deg)     : -18.01
Pole direction: RA (deg): 268.05804
Dec (deg): 64.49678
C/A sky separation (") : 2.201
C/A sky separation (km) : 6633.6
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	2023-09-28T09:35:52.432	-18.78x	-19.21	71491.9	-5.43	-6.21
Jupiter	E	2023-09-28T13:38:14.765	26.09	-52.61	71491.9	-5.45	-6.23