

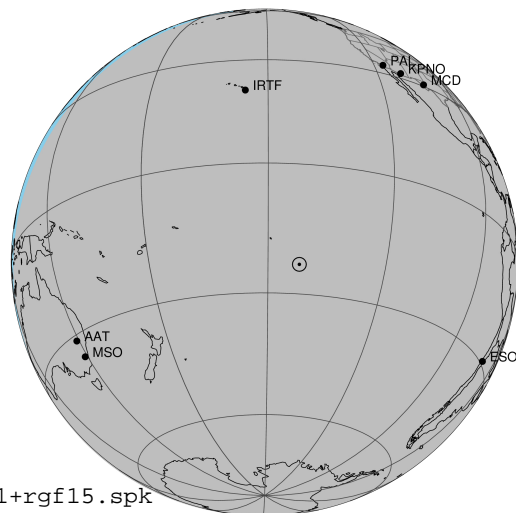
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-06-27T09:32:00.120  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068786724814004224  
 2Mass ID (if available) : 17474290-2304474

Jupiter 2043-06-27T09:32:00 K9.25 G14.06 Pgt

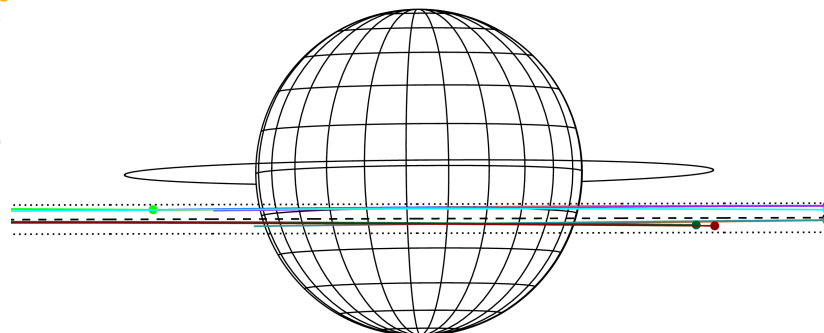
ICRS Star Coord at Epoch: 17h 47m 42.91938s -23:04:47.69136s

RUWE (>1.4 is poor) : 0.89  
 K magnitude : 9.254  
 G magnitude : 14.057  
 RP magnitude : 12.831  
 BP magnitude : 15.659  
 DUPflag : 0  
 Distance (au) : 4.255  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -16.15  
 Sun-Target sep (deg) : 172.10  
 Sun-Moon sep (deg) : 63.96  
 B (ring opening deg) : -2.42  
 PA of pole (deg) : 0.49  
 Pole direction: RA (deg): 268.05669  
 Dec (deg): 64.49732  
 C/A sky separation (") : 6.553  
 C/A sky separation (km) : 20222.9  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2043-06-27T09:32:00 K9.25 G14.06  
 Pgt



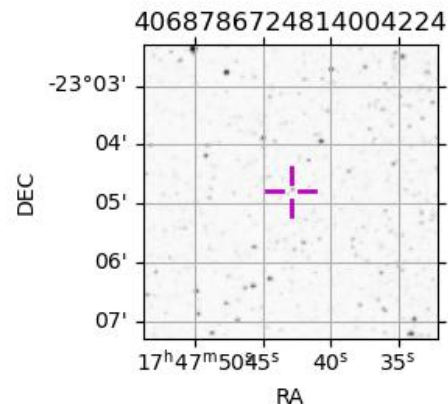
Earth  
 PAL  
 PMO  
 KPNO  
 MCD  
 IRTF  
 RIO  
 ESO  
 AAT  
 MSO



2043-06-27T09:32:00.1200 a: 17 47 42.9194 ð -23 04 47.691 C/A 6.564" PA 0.14 deg v\_sky -16.15 km/s D 04.26 AU  
 Credit: Styled after SORA/Lucky Star

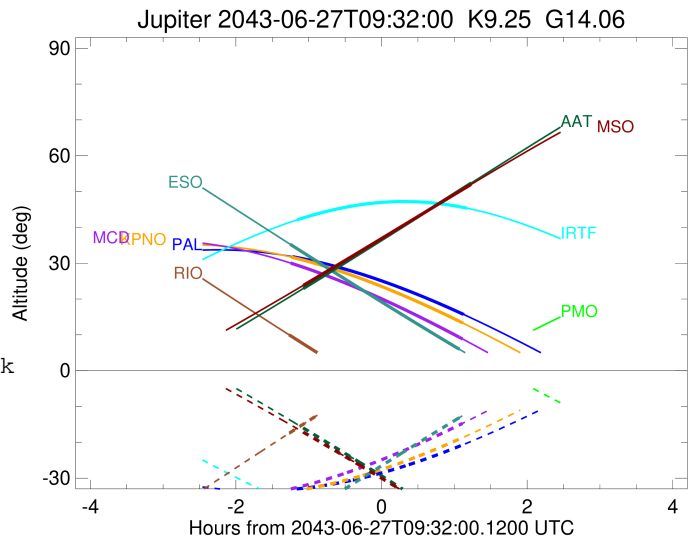
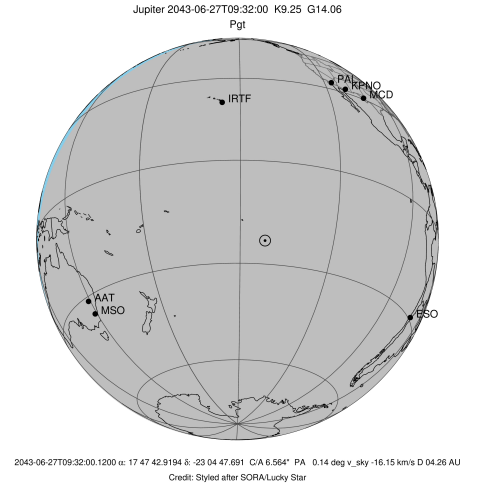
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	JUN 27 08:18 - JUN 27 10:39	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JUN 27 08:17 - JUN 27 10:39	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JUN 27 08:17 - JUN 27 10:38	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	JUN 27 08:22 - JUN 27 10:42	Pie
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	JUN 27 08:15 - JUN 27 08:15	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUN 27 08:16 - JUN 27 10:36	Pie
AAT	Siding Spring (AAT)	-31.3	149.1	+ +	JUN 27 08:27 - JUN 27 10:46	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	JUN 27 08:27 - JUN 27 10:45	Pie



```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2043-06-27T09:28:53.850
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        : 4068786724814004224
2Mass ID (if available) : 17474290-2304474
ICRS Star Coord at Epoch: 17h 47m 42.91938s -23:04:47.69136s
RUWE (>1.4 is poor)  : 0.89
K magnitude           : 9.254
G magnitude           : 14.057
RP magnitude          : 12.831
BP magnitude          : 15.659
DUPflag              : 0
Distance (au)         : 4.255
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -16.15
Sun-Target sep (deg)  : 172.10
Sun-Moon sep (deg)    : 64.16
B (ring opening deg)  : -2.42
PA of pole (deg)      : 0.49
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 4.948
C/A sky separation (km) : 15270.1
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
    
```

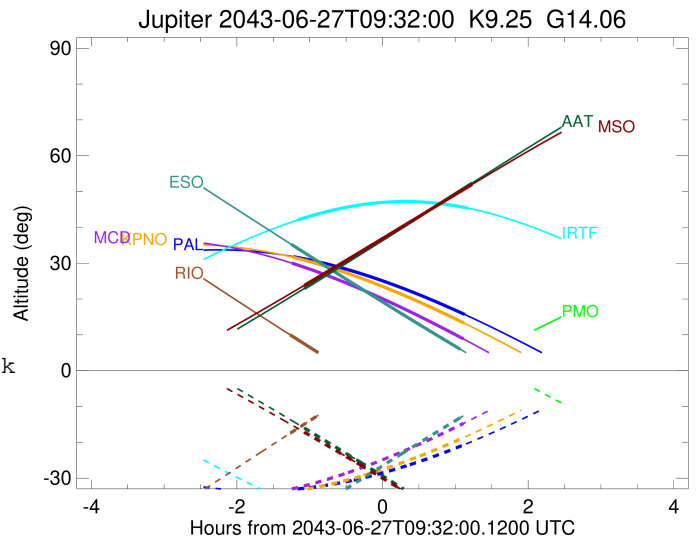
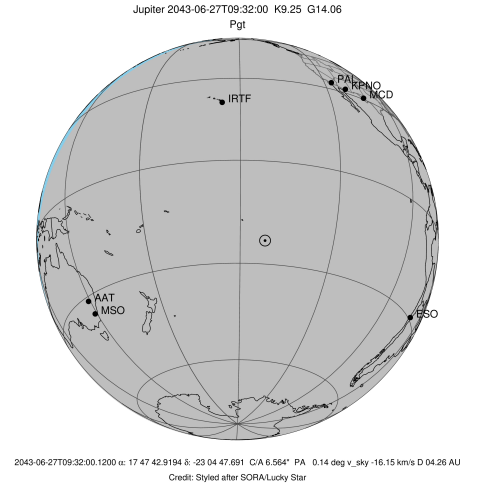


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-27T08:18:24.253	31.82	-33.11	71491.6	-12.45	-14.17
Jupiter	E	2043-06-27T10:39:41.187	15.69	-20.61	71491.6	-12.33	-14.03

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-27T09:28:25.800
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      : 4068786724814004224
2Mass ID (if available) : 17474290-2304474
ICRS Star Coord at Epoch: 17h 47m 42.91938s -23:04:47.69136s
RUWE (>1.4 is poor) : 0.89
K magnitude          : 9.254
G magnitude          : 14.057
RP magnitude         : 12.831
BP magnitude         : 15.659
DUPflag             : 0
Distance (au)       : 4.255
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.15
Sun-Target sep (deg) : 172.10
Sun-Moon sep (deg)  : 64.11
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.49
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 5.014
C/A sky separation (km): 15474.6
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
    
```

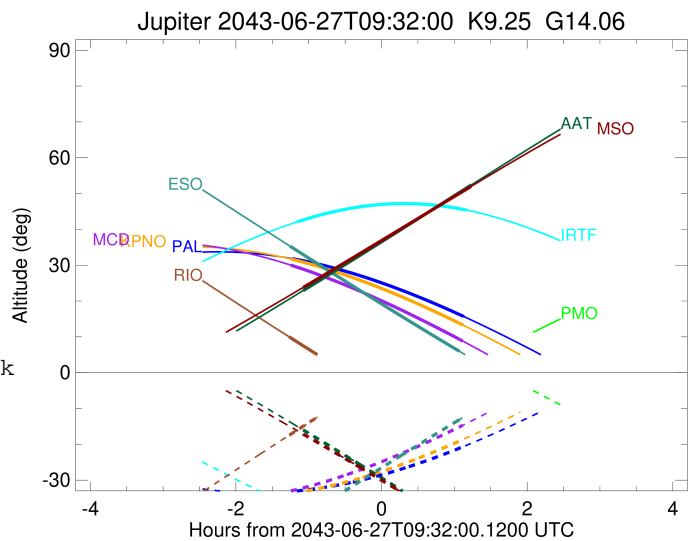
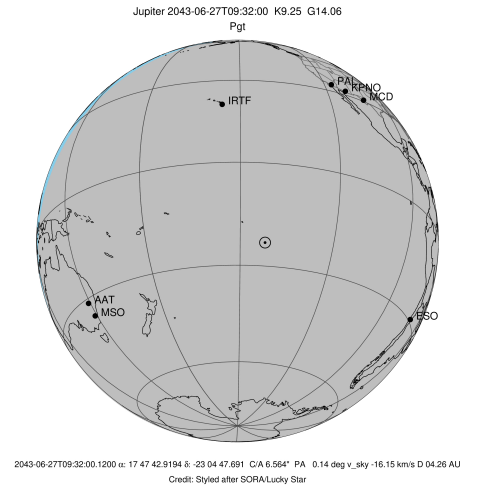


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-27T08:17:56.239	31.67	-33.69	71491.6	-12.57	-14.30
Jupiter	E	2043-06-27T10:39:15.683	13.27	-18.62	71491.6	-12.54	-14.26

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-27T09:27:49.190
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       : 4068786724814004224
2Mass ID (if available) : 17474290-2304474
ICRS Star Coord at Epoch: 17h 47m 42.91938s -23:04:47.69136s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 9.254
G magnitude           : 14.057
RP magnitude          : 12.831
BP magnitude          : 15.659
DUPflag              : 0
Distance (au)         : 4.255
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.15
Sun-Target sep (deg) : 172.10
Sun-Moon sep (deg)   : 64.02
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.49
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 5.104
C/A sky separation (km) : 15752.6
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
    
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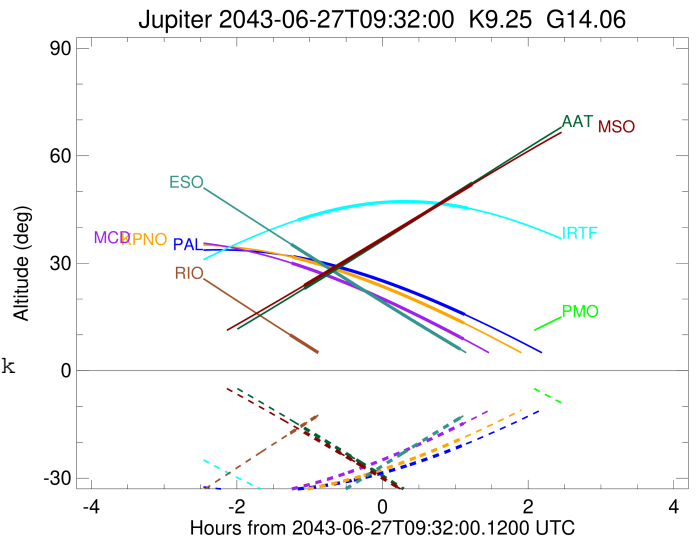
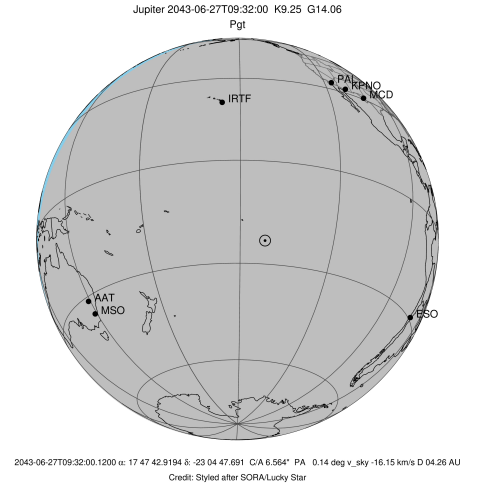


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-27T08:17:17.317	30.02	-33.01	71491.6	-12.74	-14.49
Jupiter	E	2043-06-27T10:38:44.823	8.86	-14.72	71491.6	-12.82	-14.58

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-27T09:32:29.570
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      : 4068786724814004224
2Mass ID (if available) : 17474290-2304474
ICRS Star Coord at Epoch: 17h 47m 42.91938s -23:04:47.69136s
RUWE (>1.4 is poor) : 0.89
K magnitude          : 9.254
G magnitude          : 14.057
RP magnitude         : 12.831
BP magnitude         : 15.659
DUPflag             : 0
Distance (au)       : 4.255
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.15
Sun-Target sep (deg) : 172.10
Sun-Moon sep (deg)  : 64.64
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.49
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 5.150
C/A sky separation (km) : 15894.6
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
    
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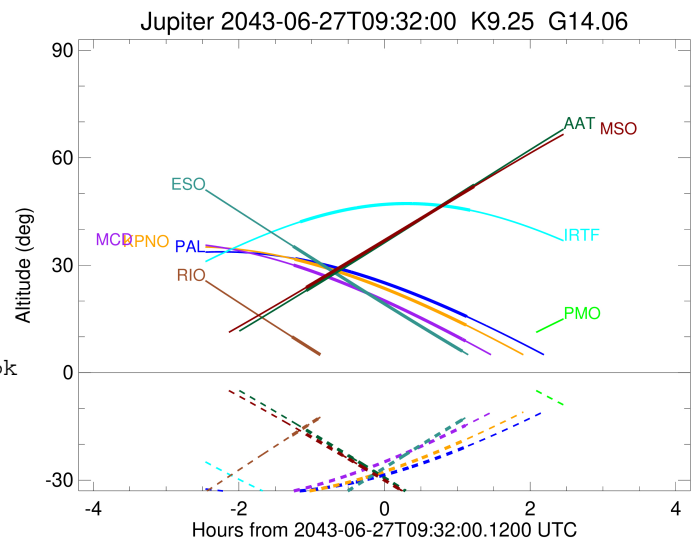
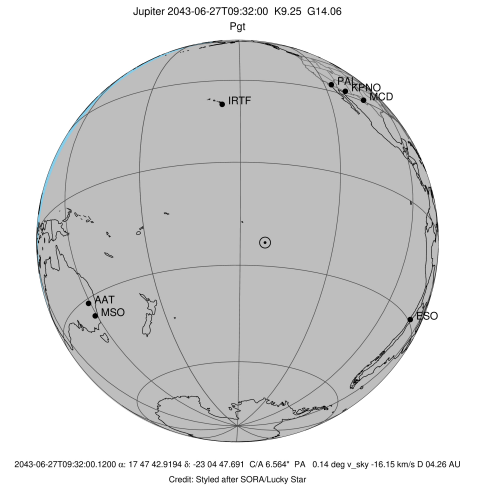


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-27T08:22:26.980	42.09	-37.64	71491.6	-13.32	-15.14
Jupiter	E	2043-06-27T10:42:30.331	45.35	-46.77	71491.6	-12.53	-14.26

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-27T09:25:56.430
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      : 4068786724814004224
2Mass ID (if available) : 17474290-2304474
ICRS Star Coord at Epoch: 17h 47m 42.91938s -23:04:47.69136s
RUWE (>1.4 is poor) : 0.89
K magnitude         : 9.254
G magnitude         : 14.057
RP magnitude        : 12.831
BP magnitude        : 15.659
DUPflag            : 0
Distance (au)       : 4.255
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -16.15
Sun-Target sep (deg) : 172.10
Sun-Moon sep (deg)  : 63.49
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.49
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 7.499
C/A sky separation (km) : 23143.9
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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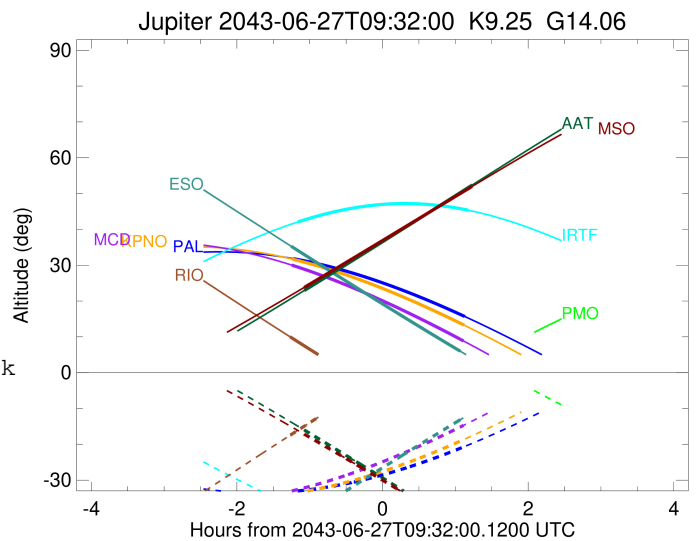
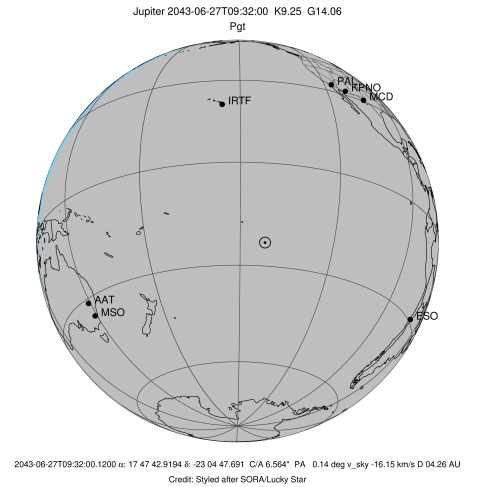


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-27T08:15:55.111	9.99	-17.47	71491.2	-18.63	-21.06
Jupiter	E	2043-06-27T10:36:32.136	-18.67x	11.94x	71491.1	-19.07	-21.54

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-27T09:26:08.830
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       : 4068786724814004224
2Mass ID (if available) : 17474290-2304474
ICRS Star Coord at Epoch: 17h 47m 42.91938s -23:04:47.69136s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 9.254
G magnitude           : 14.057
RP magnitude          : 12.831
BP magnitude          : 15.659
DUPflag              : 0
Distance (au)         : 4.255
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.15
Sun-Target sep (deg)  : 172.10
Sun-Moon sep (deg)   : 63.88
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.49
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 7.341
C/A sky separation (km) : 22657.1
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
    
```

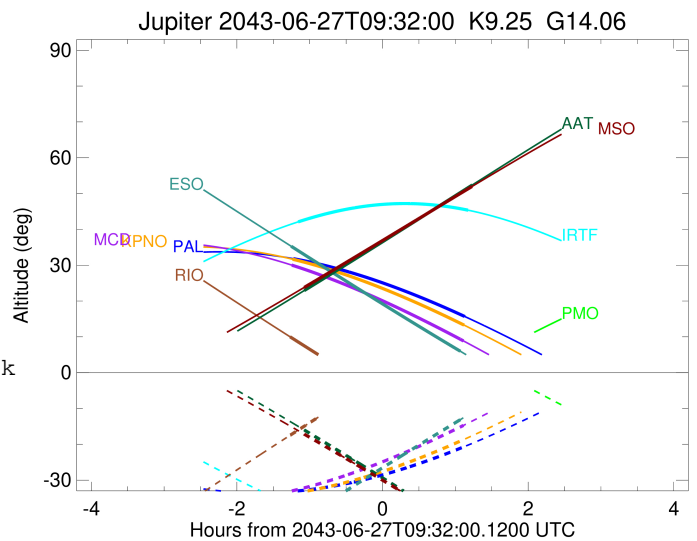
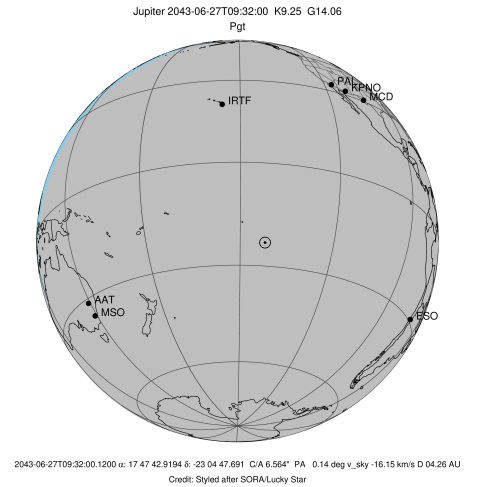


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-27T08:16:48.177	35.27	-42.73	71491.2	-18.29	-20.68
Jupiter	E	2043-06-27T10:36:01.663	6.00	-13.14	71491.2	-18.67	-21.11

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-27T09:37:00.650
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        : 4068786724814004224
2Mass ID (if available) : 17474290-2304474
ICRS Star Coord at Epoch: 17h 47m 42.91938s -23:04:47.69136s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 9.254
G magnitude           : 14.057
RP magnitude          : 12.831
BP magnitude          : 15.659
DUPflag              : 0
Distance (au)         : 4.255
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.15
Sun-Target sep (deg)  : 172.10
Sun-Moon sep (deg)    : 64.77
B (ring opening deg) : -2.42
PA of pole (deg)      : 0.49
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 7.172
C/A sky separation (km) : 22134.9
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
    
```



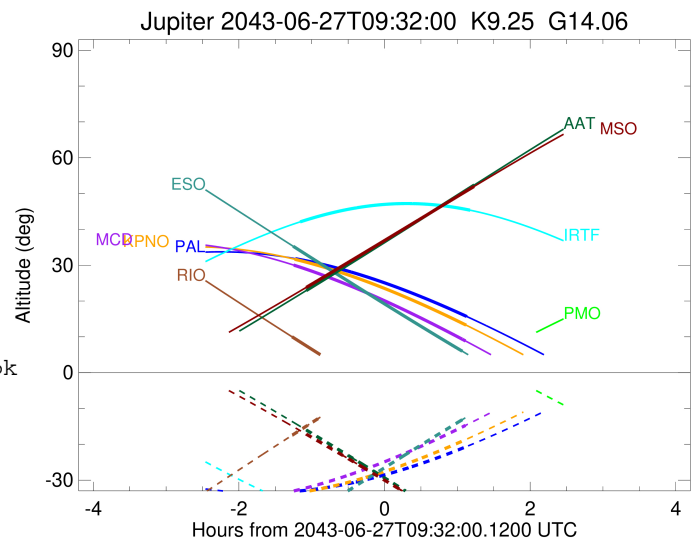
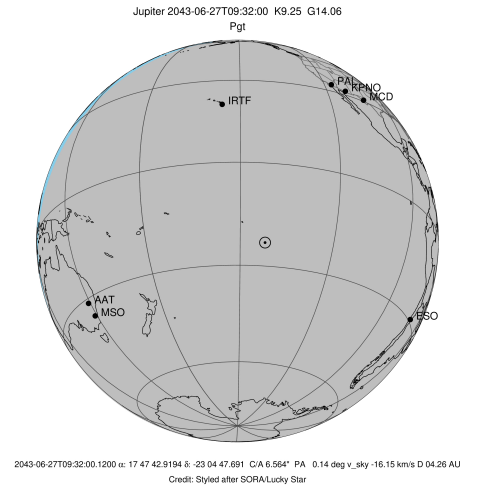
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-27T08:27:32.902	22.93	-16.01	71491.2	-18.87	-21.33
Jupiter	E	2043-06-27T10:46:02.938	52.39	-45.07	71491.3	-17.26	-19.54



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-27T09:36:47.680
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        : 4068786724814004224
2Mass ID (if available) : 17474290-2304474
ICRS Star Coord at Epoch: 17h 47m 42.91938s -23:04:47.69136s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 9.254
G magnitude           : 14.057
RP magnitude          : 12.831
BP magnitude          : 15.659
DUPflag              : 0
Distance (au)         : 4.255
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.15
Sun-Target sep (deg) : 172.10
Sun-Moon sep (deg)   : 64.75
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.49
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 7.301
C/A sky separation (km) : 22533.3
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	2043-06-27T08:27:26.022	23.78	-17.14	71491.1	-19.19	-21.68
Jupiter	E	2043-06-27T10:45:45.072	51.97	-45.02	71491.3	-17.61	-19.93