

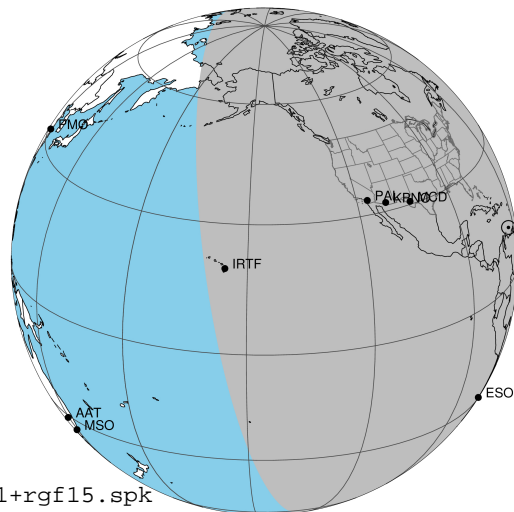
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2025-02-16T04:37:51.610
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 144833207824900992
 2Mass ID (if available) : 04383969+2140393

Jupiter 2025-02-16T04:37:51 K9.96 G12.81 Pgt

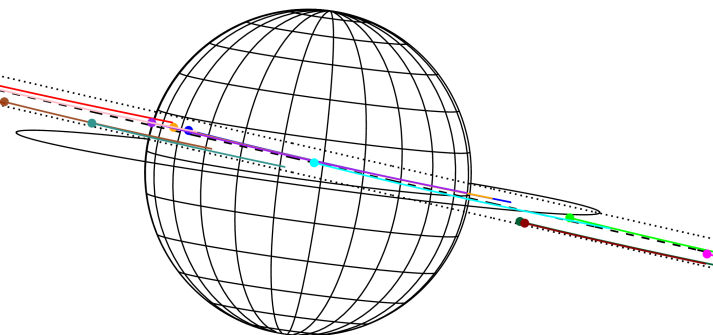
ICRS Star Coord at Epoch: 04h 38m 39.68202s +21:40:39.48860s

RUWE (>1.4 is poor) : 0.98
 K magnitude : 9.965
 G magnitude : 12.813
 RP magnitude : 11.959
 BP magnitude : 13.576
 DUPflag : 0
 Distance (au) : 4.772
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 5.70
 Sun-Target sep (deg) : 103.75
 Sun-Moon sep (deg) : 116.90
 B (ring opening deg) : 2.65
 PA of pole (deg) : -7.82
 Pole direction: RA (deg): 268.05782
 Dec (deg): 64.49672
 C/A sky separation (") : 1.372
 C/A sky separation (km) : 4748.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2025-02-16T04:37:51 K9.96 G12.81
 Pgt



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

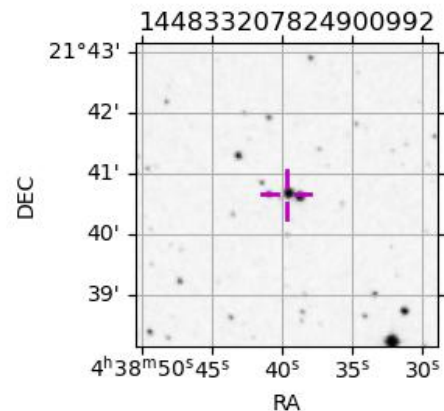


2025-02-16T04:37:51.61000000: 04 38 39.68202 s: +21 40 39.48860 s: C/A 1.383" PA 167.12 deg v_sky + 5.70 km/s D 04.77 AU

Credit: Styled after SORA/Lucky Star

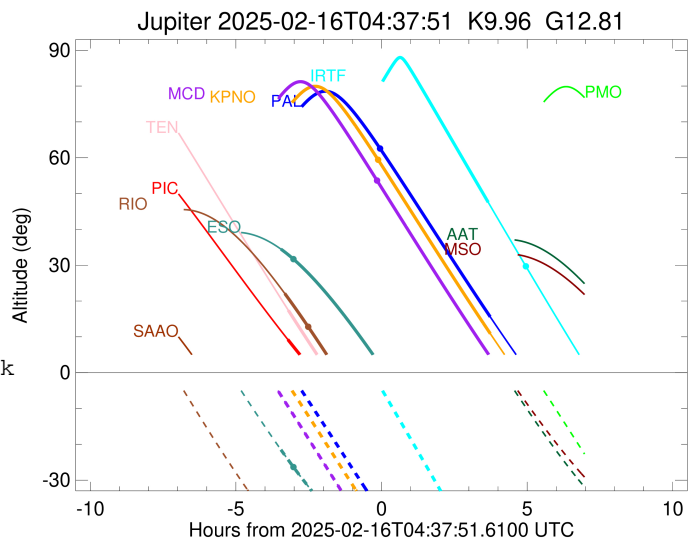
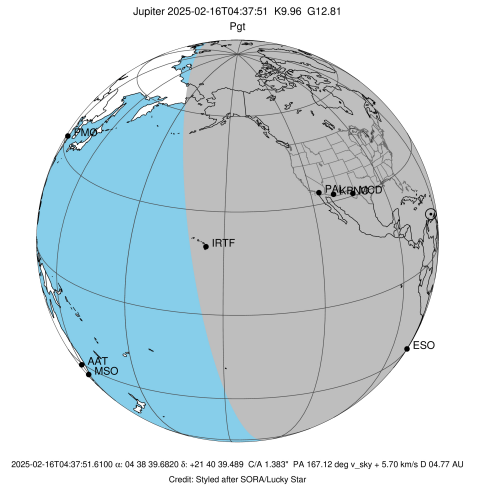
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events	Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	FEB 16 01:24 - FEB 16 01:24		Pin
PAL	Palomar Mt (200")	33.4	243.1	+	FEB 16 08:21 - FEB 16 08:21		Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8				Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	FEB 16 08:22 - FEB 16 08:22		Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	FEB 16 01:05 - FEB 16 01:05		Pin
TEN	Teide Obs./Tenerife	28.3	343.5	+	FEB 16 01:25 - FEB 16 01:25		Pin
IRTF	Mauna Kea/IRTF	19.8	204.5	+	FEB 16 08:17 - FEB 16 08:17		Pne
KAV	Kavalur Observatory	12.6	78.8				Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	FEB 16 01:18 - FEB 16 01:18		Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	FEB 16 01:10 - FEB 16 01:10		Pin
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            : 2025-02-16T04:47:46.670
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       : 144833207824900992
2Mass ID (if available) : 04383969+2140393
ICRS Star Coord at Epoch: 04h 38m 39.68202s +21:40:39.48860s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 9.965
G magnitude           : 12.813
RP magnitude         : 11.959
BP magnitude         : 13.576
DUPflag              : 0
Distance (au)        : 4.772
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 5.70
Sun-Target sep (deg) : 103.75
Sun-Moon sep (deg)   : 116.85
B (ring opening deg) : 2.65
PA of pole (deg)     : -7.82
Pole direction: RA (deg): 268.05782
Dec (deg): 64.49672
C/A sky separation (") : 2.765
C/A sky separation (km) : 9569.4
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
    
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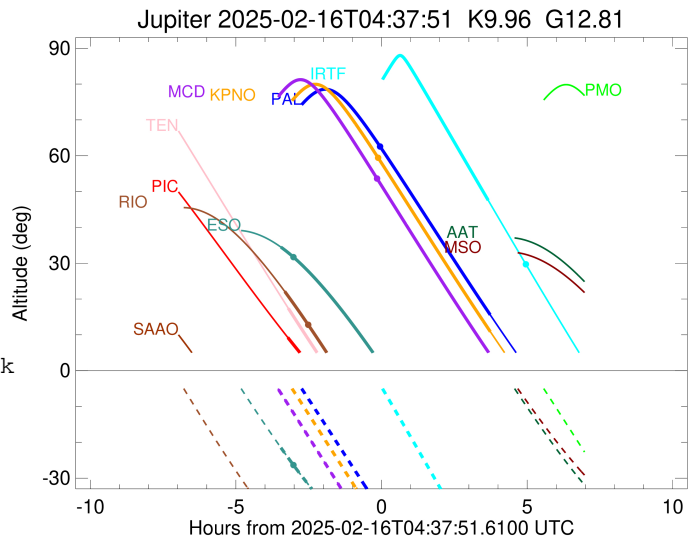
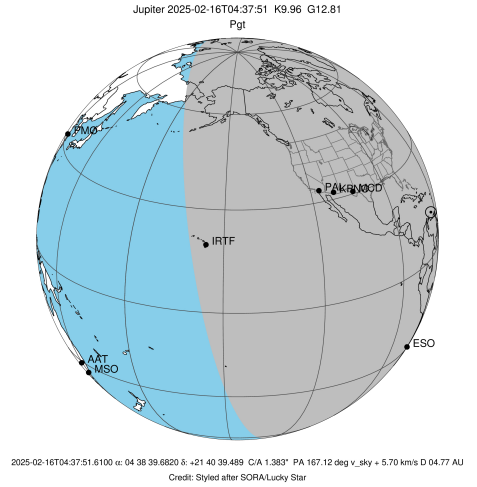


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2025-02-16T01:24:49.136	9.26	-55.86	71491.6	11.40	12.98
Jupiter	E	2025-02-16T08:03:03.928	-23.55x	10.77x	71492.0	3.48	3.97

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2025-02-16T04:46:44.930
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      : 144833207824900992
2Mass ID (if available) : 04383969+2140393
ICRS Star Coord at Epoch: 04h 38m 39.68202s +21:40:39.48860s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 9.965
G magnitude          : 12.813
RP magnitude         : 11.959
BP magnitude         : 13.576
DUPflag             : 0
Distance (au)       : 4.772
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 5.70
Sun-Target sep (deg) : 103.75
Sun-Moon sep (deg)  : 117.79
B (ring opening deg) : 2.65
PA of pole (deg)    : -7.82
Pole direction: RA (deg): 268.05782
Dec (deg): 64.49672
C/A sky separation (" ) : 1.633
C/A sky separation (km) : 5651.5
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
    
```

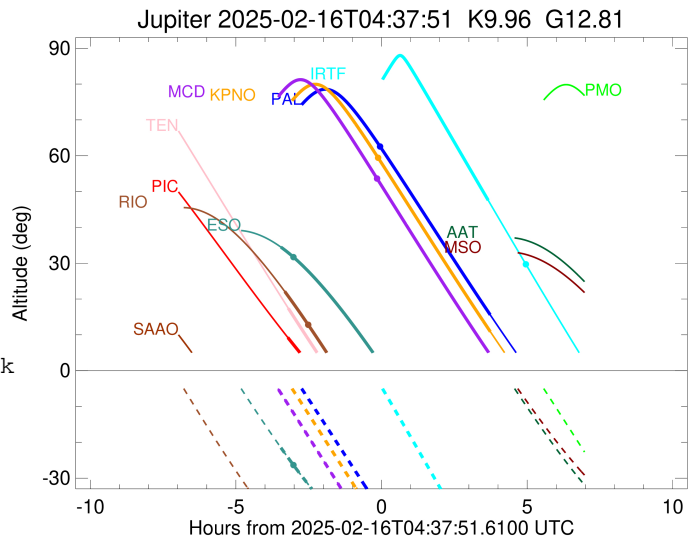
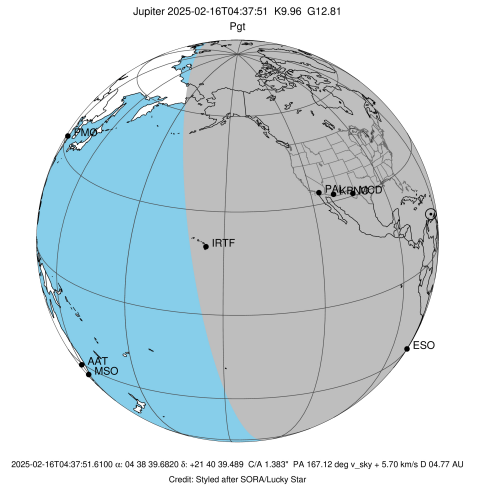


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2025-02-16T01:02:43.441	65.18	5.21x	71491.7	10.43	11.89
Jupiter	E	2025-02-16T08:21:44.194	15.60	-68.51	71492.0	0.24	0.28

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2025-02-16T04:48:02.900
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        : 144833207824900992
2Mass ID (if available) : 04383969+2140393
ICRS Star Coord at Epoch: 04h 38m 39.68202s +21:40:39.48860s
RUWE (>1.4 is poor)  : 0.98
K magnitude            : 9.965
G magnitude            : 12.813
RP magnitude           : 11.959
BP magnitude           : 13.576
DUPflag               : 0
Distance (au)         : 4.772
f0 (km)                : 0.00
g0 (km)                : 0.00
skyplane vel. (km/s)  : 5.70
Sun-Target sep (deg)  : 103.75
Sun-Moon sep (deg)    : 117.79
B (ring opening deg)  : 2.65
PA of pole (deg)      : -7.82
Pole direction: RA (deg): 268.05782
Dec (deg): 64.49672
C/A sky separation (") : 1.592
C/A sky separation (km) : 5508.6
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
    
```

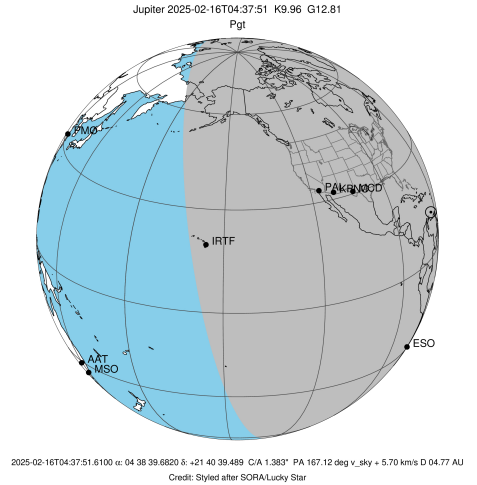


x: target alt < 5.0 deg or sun > -5.0 deg

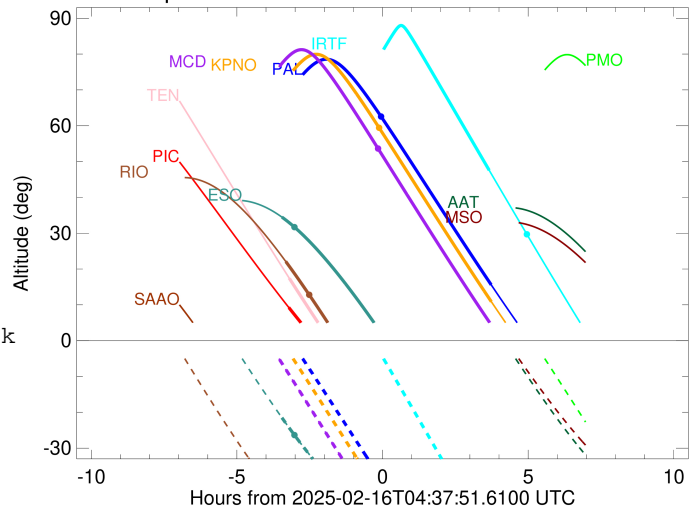
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2025-02-16T01:03:47.451	70.01	1.14x	71491.7	10.18	11.60
Jupiter	E	2025-02-16T08:22:03.378	10.88	-68.19	71492.0	0.27	0.31

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2025-02-16T04:49:47.800
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        : 144833207824900992
2Mass ID (if available) : 04383969+2140393
ICRS Star Coord at Epoch: 04h 38m 39.68202s +21:40:39.48860s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 9.965
G magnitude           : 12.813
RP magnitude          : 11.959
BP magnitude          : 13.576
DUPflag              : 0
Distance (au)         : 4.772
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 5.70
Sun-Target sep (deg)  : 103.75
Sun-Moon sep (deg)   : 117.78
B (ring opening deg) : 2.65
PA of pole (deg)     : -7.82
Pole direction: RA (deg): 268.05782
Dec (deg): 64.49672
C/A sky separation (") : 1.566
C/A sky separation (km) : 5419.6
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
    
```



Jupiter 2025-02-16T04:37:51 K9.96 G12.81

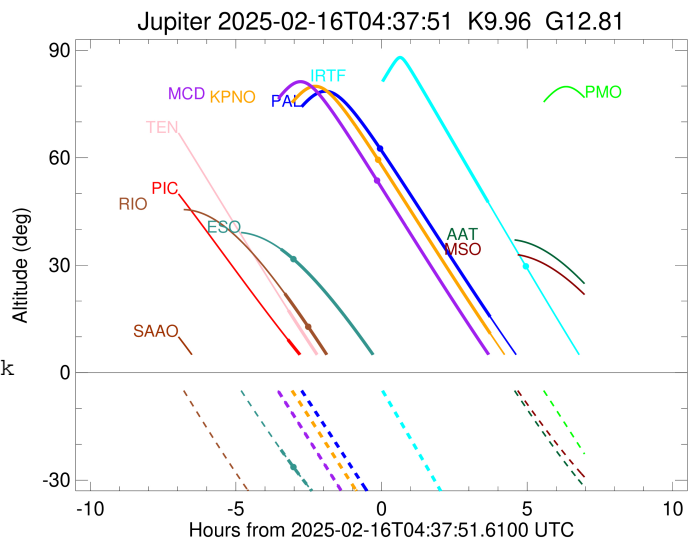
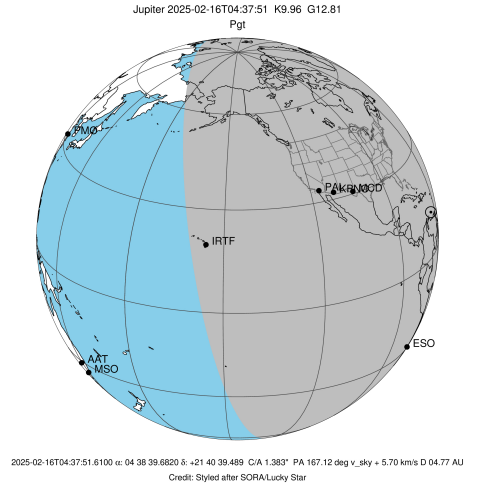


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2025-02-16T01:05:37.788	76.56	-5.26	71491.7	9.88	11.27
Jupiter	E	2025-02-16T08:22:10.335	4.34x	-65.25	71492.0	0.39	0.45

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2025-02-16T04:51:40.330
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        : 144833207824900992
2Mass ID (if available) : 04383969+2140393
ICRS Star Coord at Epoch: 04h 38m 39.68202s +21:40:39.48860s
RUWE (>1.4 is poor) : 0.98
K magnitude            : 9.965
G magnitude           : 12.813
RP magnitude          : 11.959
BP magnitude          : 13.576
DUPflag              : 0
Distance (au)         : 4.772
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 5.70
Sun-Target sep (deg) : 103.75
Sun-Moon sep (deg)   : 116.93
B (ring opening deg) : 2.65
PA of pole (deg)     : -7.82
Pole direction: RA (deg): 268.05782
Dec (deg): 64.49672
C/A sky separation ("): 2.296
C/A sky separation (km): 7945.7
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
    
```

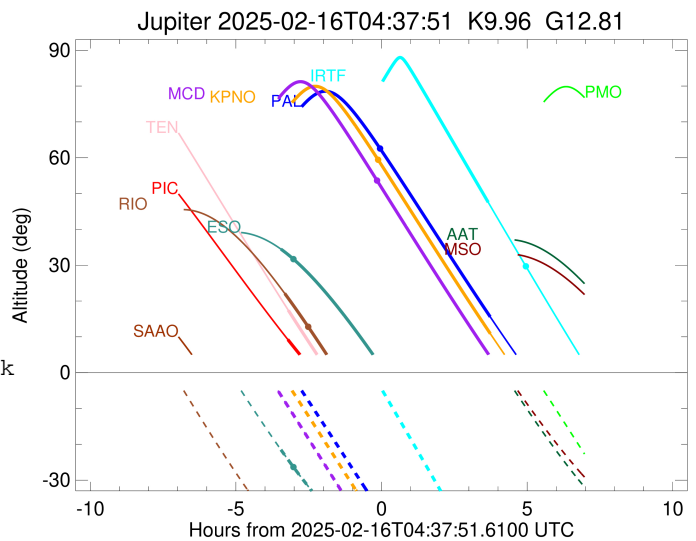
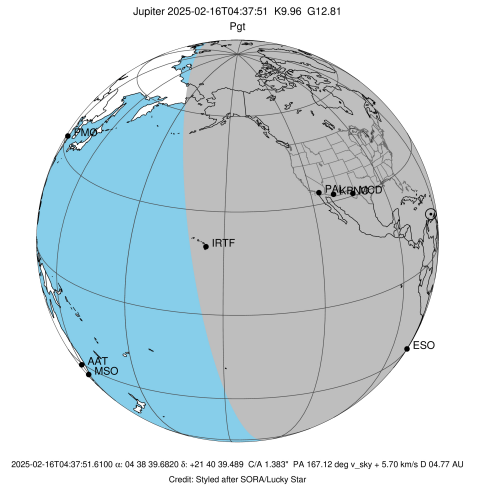


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2025-02-16T01:25:45.400	17.44	-74.11	71491.7	9.85	11.22
Jupiter	E	2025-02-16T08:06:29.031	-40.11x	4.24x	71492.0	2.63	3.00

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2025-02-16T04:34:59.410
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       : 144833207824900992
2Mass ID (if available) : 04383969+2140393
ICRS Star Coord at Epoch: 04h 38m 39.68202s +21:40:39.48860s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 9.965
G magnitude           : 12.813
RP magnitude         : 11.959
BP magnitude         : 13.576
DUPflag              : 0
Distance (au)        : 4.772
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 5.70
Sun-Target sep (deg) : 103.75
Sun-Moon sep (deg)   : 117.63
B (ring opening deg) : 2.65
PA of pole (deg)     : -7.82
Pole direction: RA (deg): 268.05782
Dec (deg): 64.49672
C/A sky separation ("): 1.388
C/A sky separation (km): 4802.7
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
    
```

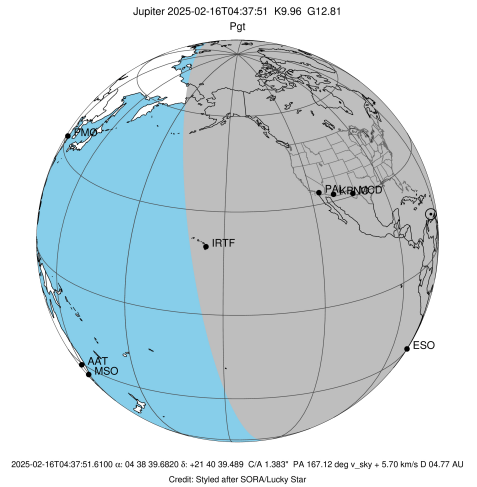


x: target alt < 5.0 deg or sun > -5.0 deg

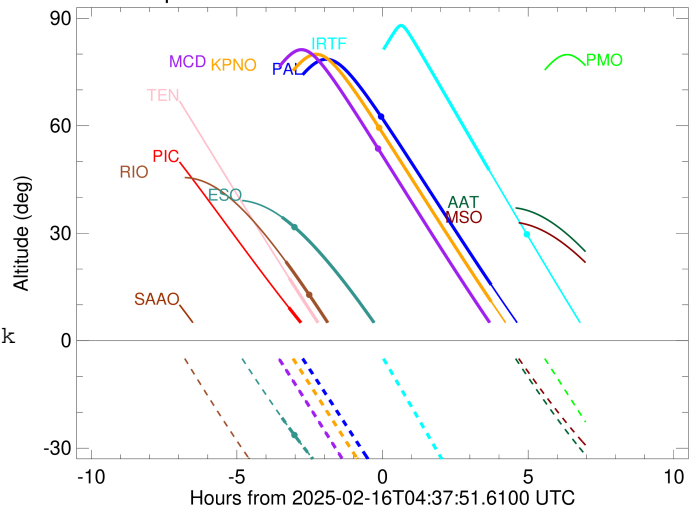
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2025-02-16T00:53:14.367	28.79	43.45x	71491.7	10.73	12.22
Jupiter	E	2025-02-16T08:17:40.280	47.56	-56.00	71492.0	-1.64	-1.87

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2025-02-16T04:52:42.080
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       : 144833207824900992
2Mass ID (if available) : 04383969+2140393
ICRS Star Coord at Epoch: 04h 38m 39.68202s +21:40:39.48860s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 9.965
G magnitude           : 12.813
RP magnitude         : 11.959
BP magnitude         : 13.576
DUPflag              : 0
Distance (au)        : 4.772
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 5.70
Sun-Target sep (deg) : 103.75
Sun-Moon sep (deg)   : 116.99
B (ring opening deg) : 2.65
PA of pole (deg)     : -7.82
Pole direction: RA (deg): 268.05782
Dec (deg): 64.49672
C/A sky separation ("): 0.540
C/A sky separation (km): 1868.3
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
    
```



Jupiter 2025-02-16T04:37:51 K9.96 G12.81

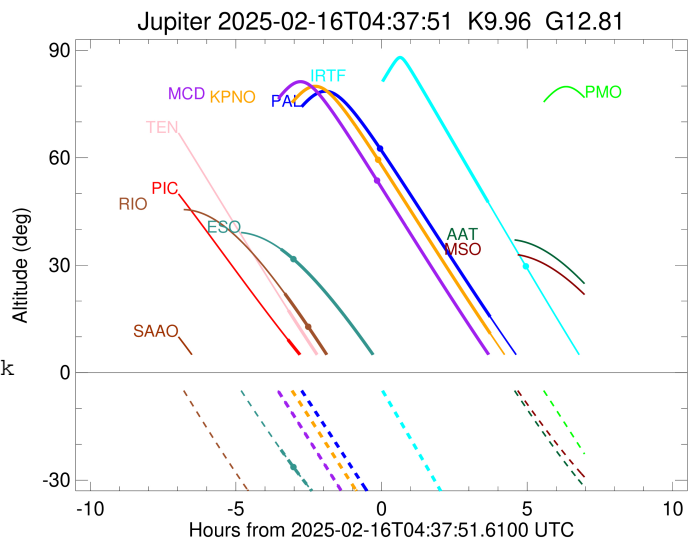
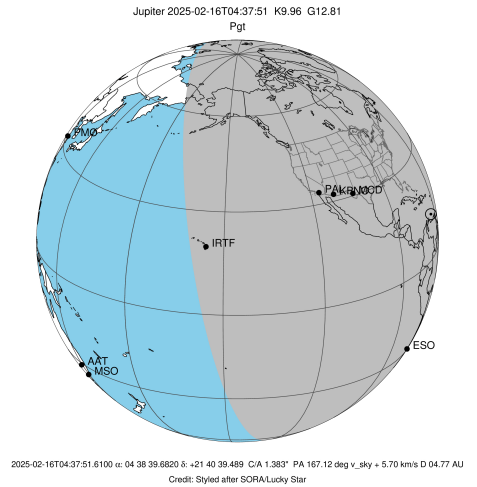


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2025-02-16T01:18:29.573	22.11	-46.02	71491.9	5.25	6.00
Jupiter	E	2025-02-16T08:11:51.085	-68.04x	-7.63	71492.0	-1.88	-2.15


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2025-02-16T04:51:17.110
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      : 144833207824900992
2Mass ID (if available) : 04383969+2140393
ICRS Star Coord at Epoch: 04h 38m 39.68202s +21:40:39.48860s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 9.965
G magnitude          : 12.813
RP magnitude         : 11.959
BP magnitude         : 13.576
DUPflag             : 0
Distance (au)       : 4.772
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 5.70
Sun-Target sep (deg) : 103.75
Sun-Moon sep (deg)  : 117.25
B (ring opening deg) : 2.65
PA of pole (deg)    : -7.82
Pole direction: RA (deg): 268.05782
Dec (deg): 64.49672
C/A sky separation ("): 0.097
C/A sky separation (km): 334.2
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	2025-02-16T01:10:33.518	34.49	-21.49	71491.9	4.78	5.46
Jupiter	E	2025-02-16T08:16:37.458	-44.53x	-26.57	71492.0	-3.19	-3.65