

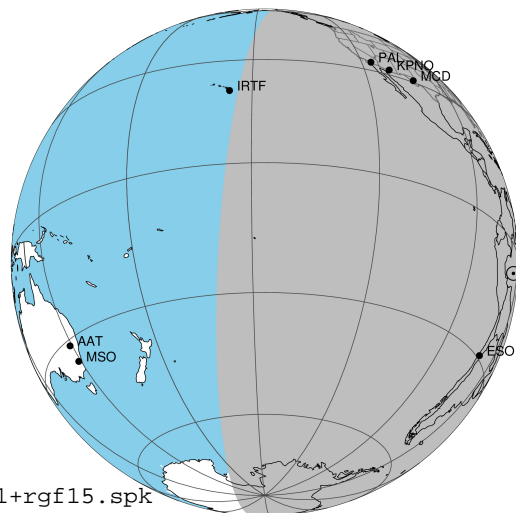
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-09-06T04:21:53.230
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4117419640173117696
 2Mass ID (if available) : 17315757-2308207

Jupiter 2043-09-06T04:21:53 K8.76 G13.71 Pgt

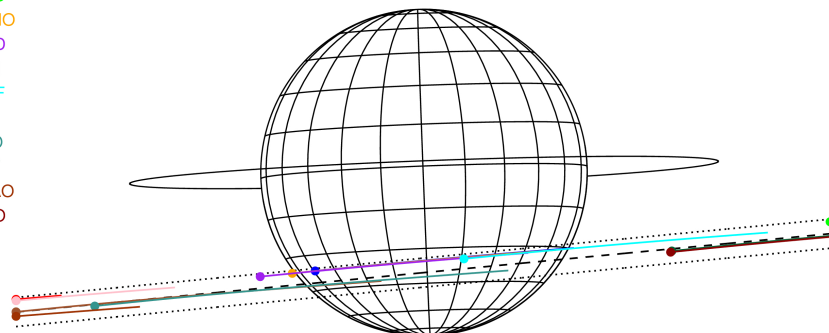
ICRS Star Coord at Epoch: 17h 31m 57.59579s -23:08:20.72565s

RUWE (>1.4 is poor) : 0.92
 K magnitude : 8.764
 G magnitude : 13.706
 RP magnitude : 12.466
 BP magnitude : 15.398
 DUPflag : 0
 Distance (au) : 4.958
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 7.57
 Sun-Target sep (deg) : 100.66
 Sun-Moon sep (deg) : 69.78
 B (ring opening deg) : -2.27
 PA of pole (deg) : 2.18
 Pole direction: RA (deg): 268.05673
 Dec (deg): 64.49731
 C/A sky separation (") : 12.138
 C/A sky separation (km) : 43648.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-09-06T04:21:53 K8.76 G13.71
 Pgt



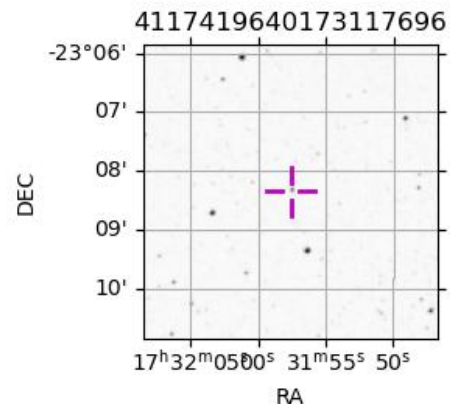
Earth
 PIC
 PAL
 PMO
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 AAT
 SAAO
 MSO



2043-09-06T04:21:53.2300 α: 17 31 57.5958 δ: -23 08 20.726 C/A ***** PA 5.49 deg v_sky + 7.57 km/s D 04.96 AU
 Credit: Styled after SORA/Lucky Star

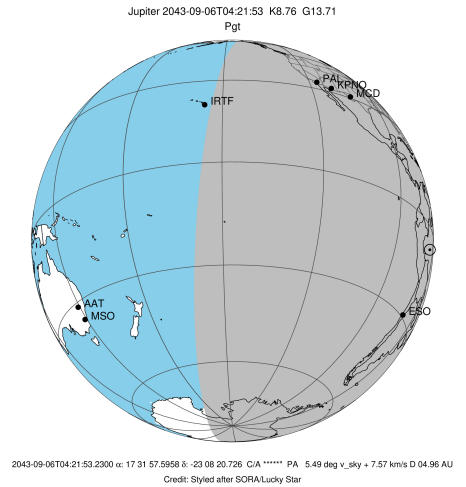
Observable events with sun below -5 deg and altitude above 5 deg

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	+	SEP 06 06:42 - SEP 06 06:42	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	SEP 06 02:08 - SEP 06 02:08	Pin
MCD	McDonald Obs. 2.7m	30.7	256.0	+	SEP 06 02:09 - SEP 06 02:09	Pin
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	SEP 06 06:37 - SEP 06 06:37	Pne
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	SEP 06 02:31 - SEP 06 02:31	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	SEP 06 02:28 - SEP 06 02:28	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

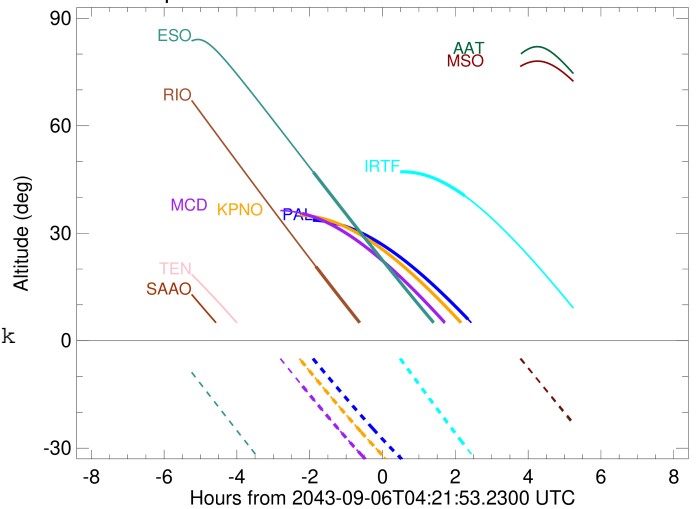


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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-09-06T04:26:22.820
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : PAL
Location              : Palomar Mt (200")
Latitude (deg)        : 33.35622
E. Longitude (deg)    : 243.13601
Altitude (km)         : 1.706
Gaia source ID        : 4117419640173117696
2Mass ID (if available) : 17315757-2308207
ICRS Star Coord at Epoch: 17h 31m 57.59579s -23:08:20.72565s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 8.764
G magnitude           : 13.706
RP magnitude          : 12.466
BP magnitude          : 15.398
DUPflag              : 0
Distance (au)         : 4.958
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 7.57
Sun-Target sep (deg) : 100.66
Sun-Moon sep (deg)   : 70.30
B (ring opening deg) : -2.27
PA of pole (deg)     : 2.18
Pole direction: RA (deg): 268.05673
Dec (deg): 64.49731
C/A sky separation ("): 10.683
C/A sky separation (km): 38417.0
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
    
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Jupiter 2043-09-06T04:21:53 K8.76 G13.71

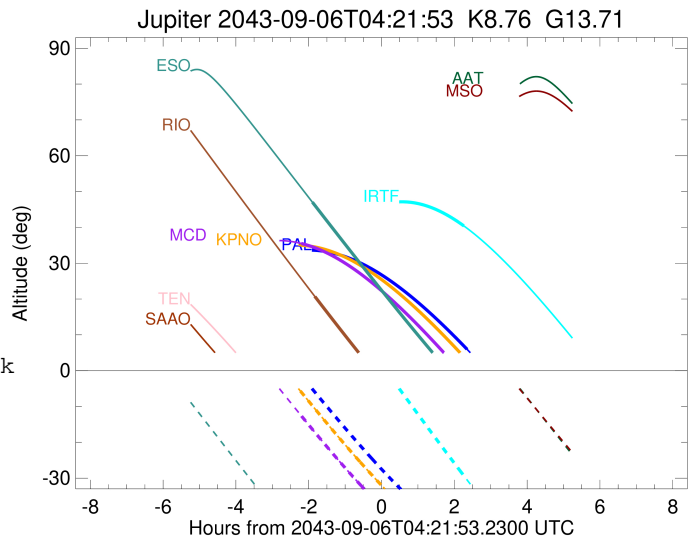
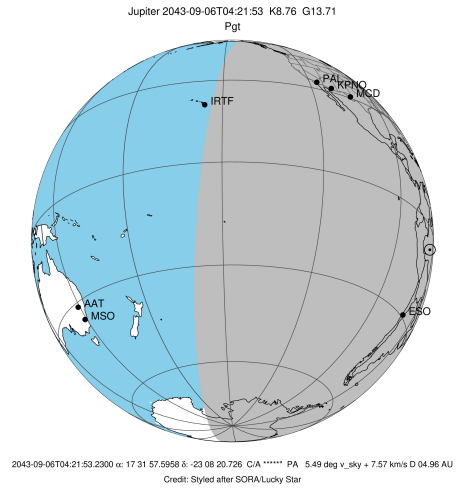


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-09-06T02:06:58.771	33.54	-0.81x	71489.6	-35.78	-39.40
Jupiter	E	2043-09-06T06:42:52.706	5.97	-47.65	71490.2	-29.87	-33.24

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-09-06T04:27:16.940
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        : 4117419640173117696
2Mass ID (if available) : 17315757-2308207
ICRS Star Coord at Epoch: 17h 31m 57.59579s -23:08:20.72565s
RUWE (>1.4 is poor)  : 0.92
K magnitude           : 8.764
G magnitude           : 13.706
RP magnitude          : 12.466
BP magnitude          : 15.398
DUPflag              : 0
Distance (au)         : 4.958
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 7.57
Sun-Target sep (deg)  : 100.66
Sun-Moon sep (deg)   : 70.30
B (ring opening deg) : -2.27
PA of pole (deg)     : 2.18
Pole direction: RA (deg): 268.05673
Dec (deg): 64.49731
C/A sky separation (") : 10.728
C/A sky separation (km) : 38579.0
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
    
```

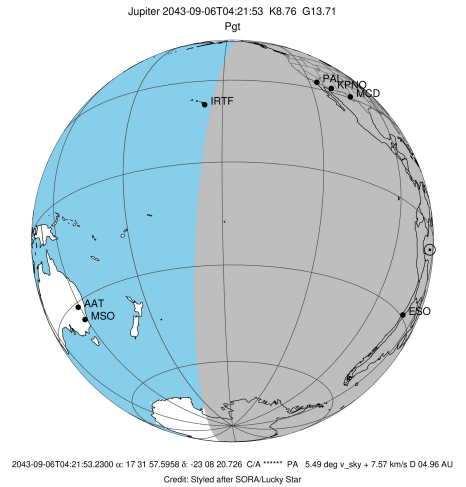


x: target alt < 5.0 deg or sun > -5.0 deg

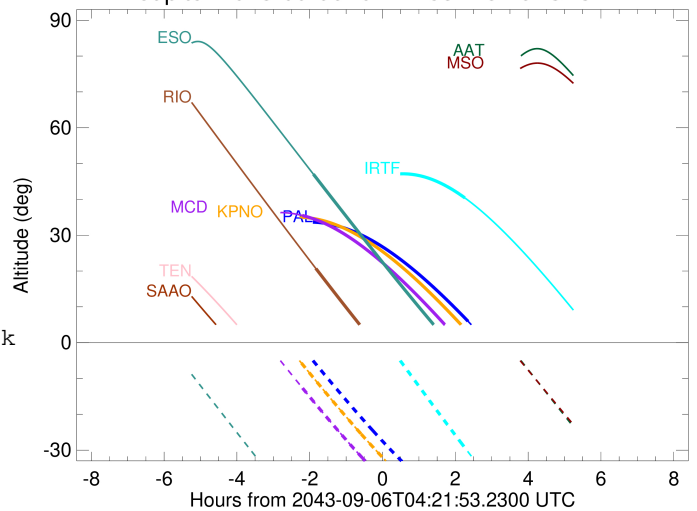
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-09-06T02:08:11.684	35.01	-5.68	71489.6	-35.81	-39.43
Jupiter	E	2043-09-06T06:43:07.784	2.84x	-50.49	71490.2	-30.13	-33.50

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-09-06T04:28:26.850
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        : 4117419640173117696
2Mass ID (if available) : 17315757-2308207
ICRS Star Coord at Epoch: 17h 31m 57.59579s -23:08:20.72565s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 8.764
G magnitude           : 13.706
RP magnitude          : 12.466
BP magnitude          : 15.398
DUPflag              : 0
Distance (au)         : 4.958
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 7.57
Sun-Target sep (deg)  : 100.66
Sun-Moon sep (deg)   : 70.29
B (ring opening deg) : -2.27
PA of pole (deg)     : 2.18
Pole direction: RA (deg): 268.05673
Dec (deg): 64.49731
C/A sky separation (") : 10.791
C/A sky separation (km) : 38805.3
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 2043-09-06T04:21:53 K8.76 G13.71

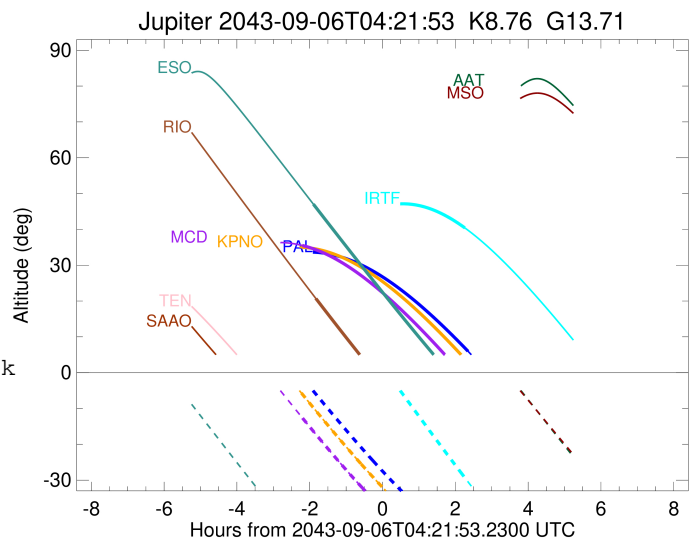
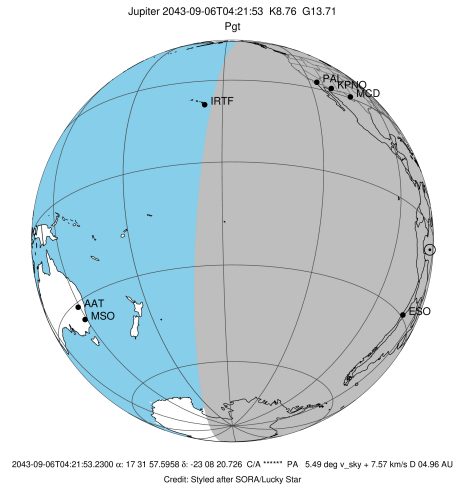


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-09-06T02:09:58.229	35.49	-12.65	71489.6	-35.85	-39.48
Jupiter	E	2043-09-06T06:43:15.875	-2.33x	-52.95	71490.2	-30.47	-33.86

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-09-06T04:19:46.160
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       : 4117419640173117696
2Mass ID (if available) : 17315757-2308207
ICRS Star Coord at Epoch: 17h 31m 57.59579s -23:08:20.72565s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 8.764
G magnitude           : 13.706
RP magnitude         : 12.466
BP magnitude         : 15.398
DUPflag              : 0
Distance (au)        : 4.958
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 7.57
Sun-Target sep (deg) : 100.66
Sun-Moon sep (deg)   : 70.36
B (ring opening deg) : -2.27
PA of pole (deg)     : 2.18
Pole direction: RA (deg): 268.05673
Dec (deg): 64.49731
C/A sky separation ("): 10.968
C/A sky separation (km): 39441.7
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
    
```

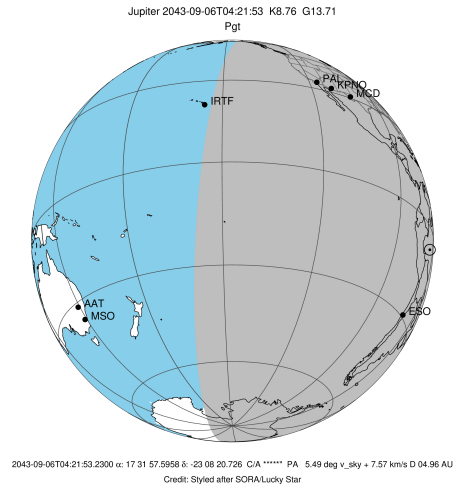


x: target alt < 5.0 deg or sun > -5.0 deg

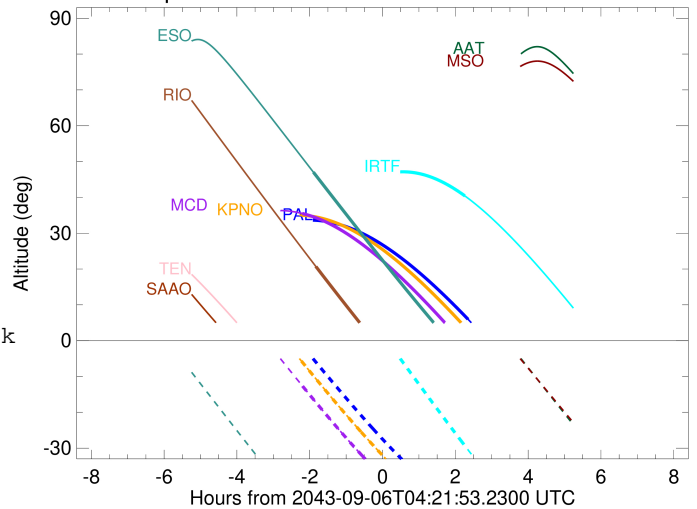
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-09-06T02:01:46.918	29.63	34.75x	71489.3	-37.65	-41.32
Jupiter	E	2043-09-06T06:37:42.043	40.40	-29.34	71490.2	-30.04	-33.41

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-09-06T04:32:33.180
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      : 4117419640173117696
2Mass ID (if available) : 17315757-2308207
ICRS Star Coord at Epoch: 17h 31m 57.59579s -23:08:20.72565s
RUWE (>1.4 is poor) : 0.92
K magnitude          : 8.764
G magnitude          : 13.706
RP magnitude         : 12.466
BP magnitude         : 15.398
DUPflag             : 0
Distance (au)       : 4.958
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 7.57
Sun-Target sep (deg) : 100.66
Sun-Moon sep (deg)  : 70.02
B (ring opening deg) : -2.27
PA of pole (deg)    : 2.18
Pole direction: RA (deg): 268.05673
Dec (deg): 64.49731
C/A sky separation ("): 12.807
C/A sky separation (km): 46056.3
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 2043-09-06T04:21:53 K8.76 G13.71

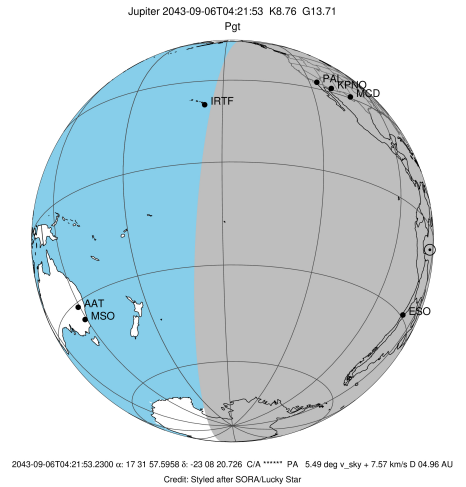


x: target alt < 5.0 deg or sun > -5.0 deg

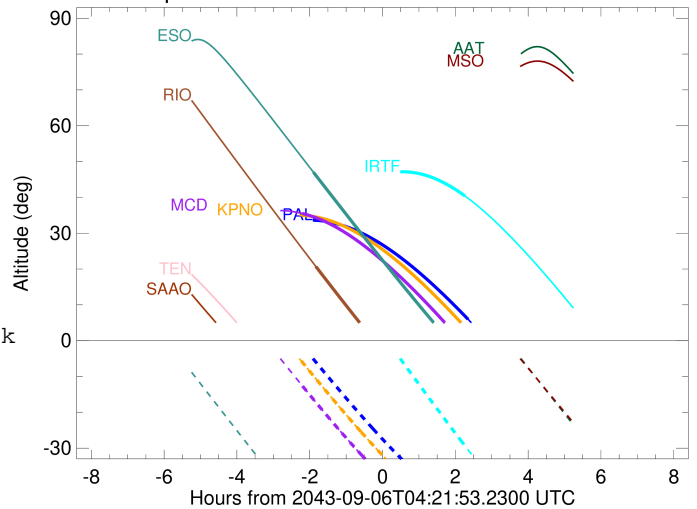
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-09-06T02:31:57.182	20.73	-73.10	71488.8	-42.12	-45.84
Jupiter	E	2043-09-06T06:29:27.791	-27.08x	-35.10	71489.3	-37.96	-41.64

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-09-06T04:32:21.120
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        : 4117419640173117696
2Mass ID (if available) : 17315757-2308207
ICRS Star Coord at Epoch: 17h 31m 57.59579s -23:08:20.72565s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 8.764
G magnitude           : 13.706
RP magnitude          : 12.466
BP magnitude          : 15.398
DUPflag              : 0
Distance (au)         : 4.958
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 7.57
Sun-Target sep (deg)  : 100.66
Sun-Moon sep (deg)    : 70.38
B (ring opening deg) : -2.27
PA of pole (deg)      : 2.18
Pole direction: RA (deg): 268.05673
Dec (deg): 64.49731
C/A sky separation (") : 12.674
C/A sky separation (km) : 45577.2
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
    
```



Jupiter 2043-09-06T04:21:53 K8.76 G13.71



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	2043-09-06T02:28:02.710	47.01	-51.30	71488.8	-41.92	-45.64
Jupiter	E	2043-09-06T06:32:48.342	-4.10x	-55.31	71489.4	-37.47	-41.14