

target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-05T03:50:01.520
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116863184240436480
 2Mass ID (if available) : 17433509-2304449

Jupiter 2043-07-05T03:50:01 K9.49 G14.83 Pgt

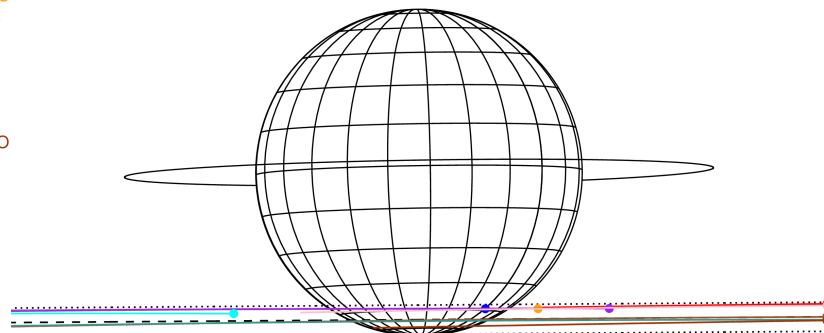
ICRS Star Coord at Epoch: 17h 43m 35.08050s -23:04:45.37823s

RUWE (>1.4 is poor) : 0.91
 K magnitude : 9.494
 G magnitude : 14.831
 RP magnitude : 13.519
 BP magnitude : 16.821
 DUPflag : 0
 Distance (au) : 4.278
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.29
 Sun-Target sep (deg) : 163.76
 Sun-Moon sep (deg) : 172.32
 B (ring opening deg) : -2.41
 PA of pole (deg) : 0.93
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 20.778
 C/A sky separation (km) : 64460.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-05T03:50:01 K9.49 G14.83
 Pgt



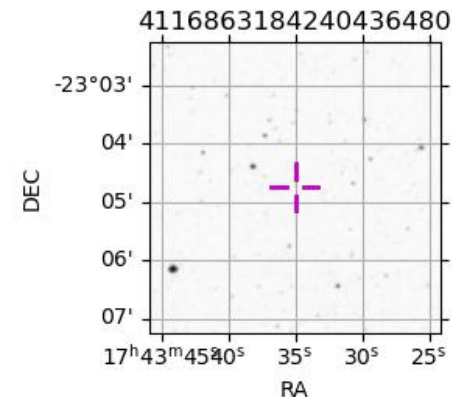
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 SAAO



2043-07-05T03:50:01.5200 α: 17 43 35.0805 δ: -23 04 45.378 C/A ***** PA 0.41 deg v_sky -15.29 km/s D 04.28 AU
 Credit: Styled after SORA/Lucky Star

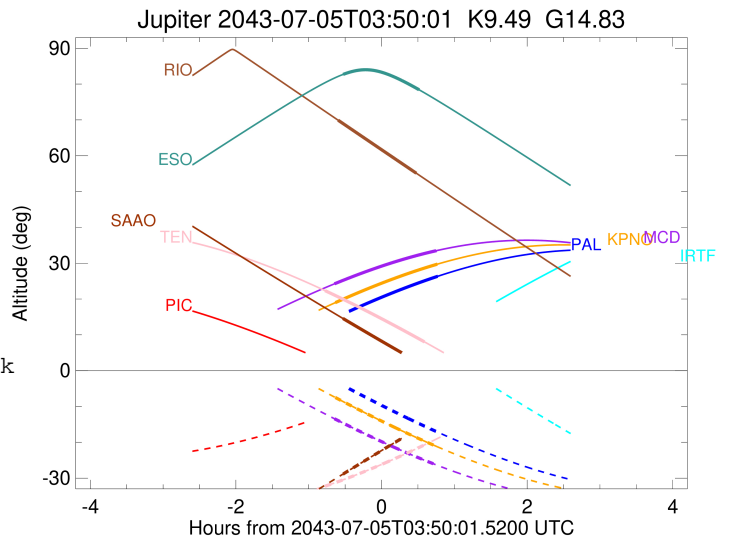
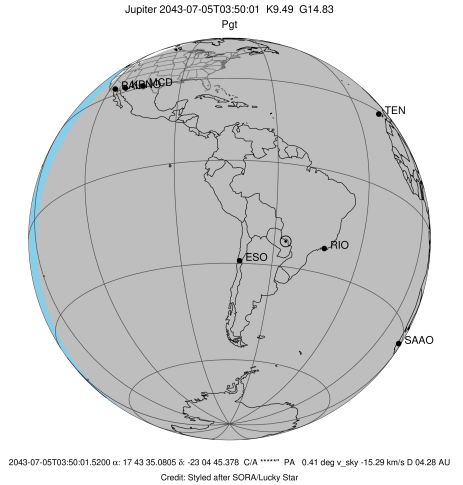
Observable events with sun below -5 deg and altitude above 5 deg

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	+	JUL 05 04:36 - JUL 05 04:36	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JUL 05 03:11 - JUL 05 04:35	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JUL 05 03:11 - JUL 05 04:35	Pie
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	JUL 05 03:03 - JUL 05 04:25	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	+ +	JUL 05 03:14 - JUL 05 04:18	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUL 05 03:18 - JUL 05 04:20	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	JUL 05 03:18 - JUL 05 03:18	Pin
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-05T03:54:20.330
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      : 4116863184240436480
2Mass ID (if available) : 17433509-2304449
ICRS Star Coord at Epoch: 17h 43m 35.08050s -23:04:45.37823s
RUWE (>1.4 is poor) : 0.91
K magnitude         : 9.494
G magnitude         : 14.831
RP magnitude        : 13.519
BP magnitude        : 16.821
DUPflag            : 0
Distance (au)       : 4.278
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.29
Sun-Target sep (deg) : 163.76
Sun-Moon sep (deg)  : 172.37
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.93
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 19.244
C/A sky separation (km) : 59701.3
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
    
```

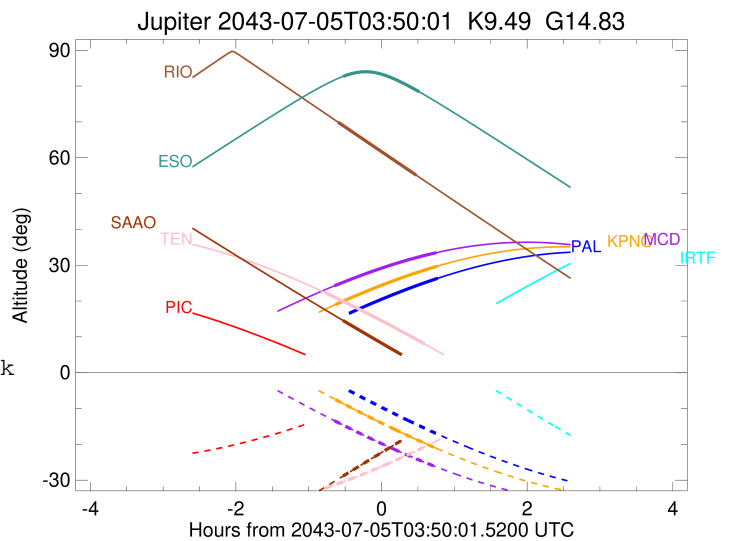
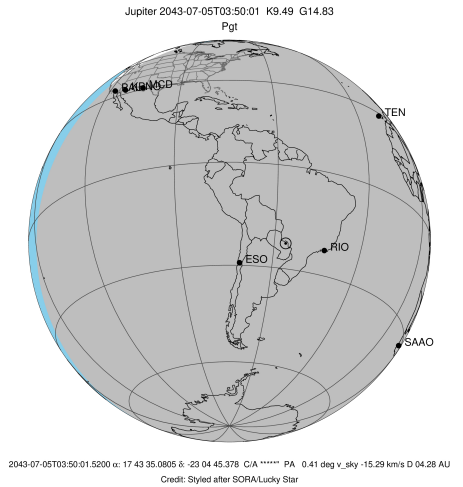


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-05T03:12:15.313	14.83	-3.03x	71486.3	-57.49	-60.71
Jupiter	E	2043-07-05T04:36:18.091	26.34	-17.16	71486.6	-55.70	-59.03

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-05T03:53:56.880
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      : 4116863184240436480
2Mass ID (if available) : 17433509-2304449
ICRS Star Coord at Epoch: 17h 43m 35.08050s -23:04:45.37823s
RUWE (>1.4 is poor) : 0.91
K magnitude          : 9.494
G magnitude          : 14.831
RP magnitude         : 13.519
BP magnitude         : 16.821
DUPflag             : 0
Distance (au)       : 4.278
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.29
Sun-Target sep (deg) : 163.76
Sun-Moon sep (deg)  : 172.42
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.93
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 19.235
C/A sky separation (km) : 59674.1
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
    
```

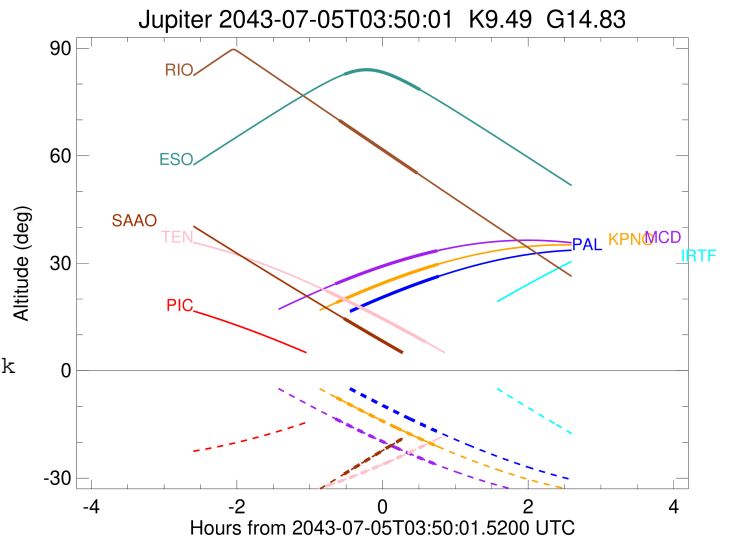
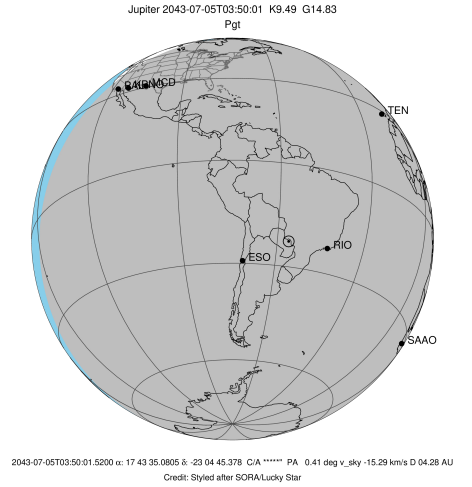


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-05T03:11:54.167	18.98	-7.48	71486.3	-57.42	-60.65
Jupiter	E	2043-07-05T04:35:53.072	29.71	-21.22	71486.6	-55.70	-59.03

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-05T03:53:16.810
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        : 4116863184240436480
2Mass ID (if available) : 17433509-2304449
ICRS Star Coord at Epoch: 17h 43m 35.08050s -23:04:45.37823s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 9.494
G magnitude           : 14.831
RP magnitude          : 13.519
BP magnitude          : 16.821
DUPflag              : 0
Distance (au)         : 4.278
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.29
Sun-Target sep (deg)  : 163.76
Sun-Moon sep (deg)   : 172.51
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.93
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 19.215
C/A sky separation (km) : 59610.3
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
    
```

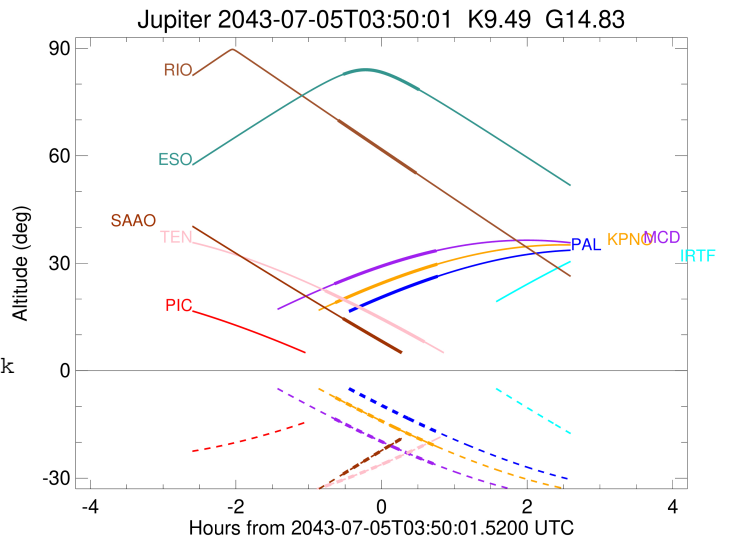
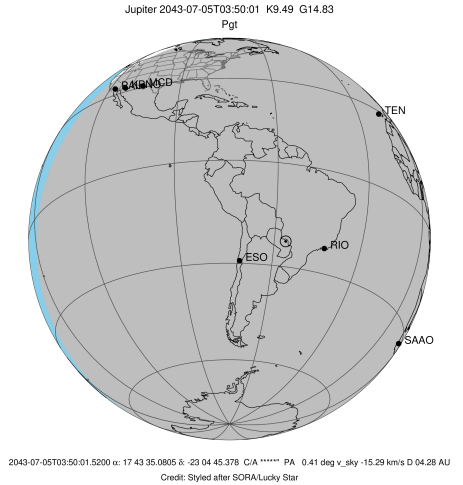


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-05T03:11:14.021	24.23	-13.41	71486.4	-57.27	-60.51
Jupiter	E	2043-07-05T04:35:14.327	33.49	-26.31	71486.6	-55.67	-59.00

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-05T03:44:23.070
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       : 4116863184240436480
2Mass ID (if available) : 17433509-2304449
ICRS Star Coord at Epoch: 17h 43m 35.08050s -23:04:45.37823s
RUWE (>1.4 is poor) : 0.91
K magnitude          : 9.494
G magnitude          : 14.831
RP magnitude         : 13.519
BP magnitude         : 16.821
DUPflag             : 0
Distance (au)        : 4.277
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.29
Sun-Target sep (deg) : 163.76
Sun-Moon sep (deg)  : 173.31
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.93
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 19.487
C/A sky separation (km) : 60455.4
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
    
```

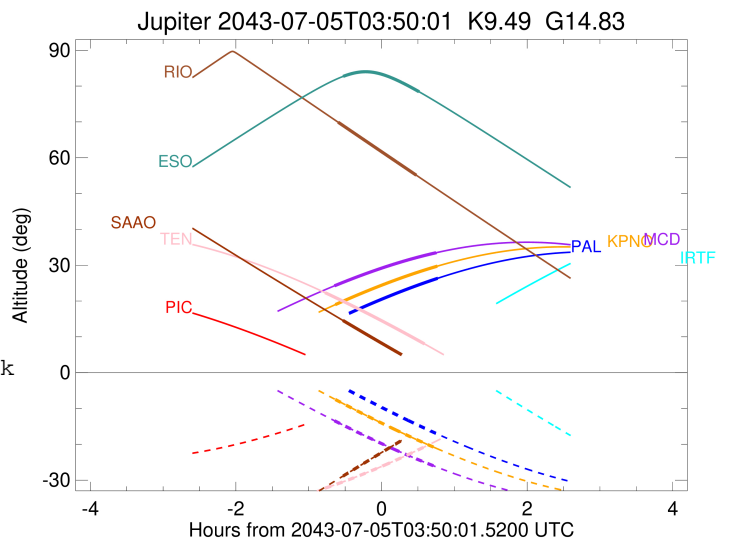
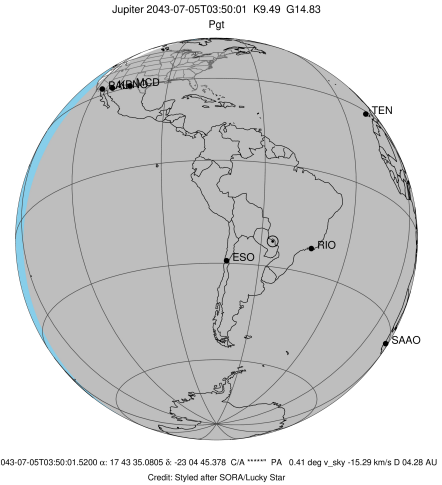


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-05T03:03:32.198	22.33	-32.24	71486.3	-57.73	-60.94
Jupiter	E	2043-07-05T04:25:24.494	8.04	-20.72	71486.3	-57.66	-60.88

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-05T03:46:27.410
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       : 4116863184240436480
2Mass ID (if available) : 17433509-2304449
ICRS Star Coord at Epoch: 17h 43m 35.08050s -23:04:45.37823s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 9.494
G magnitude           : 14.831
RP magnitude          : 13.519
BP magnitude          : 16.821
DUPflag              : 0
Distance (au)         : 4.277
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.29
Sun-Target sep (deg)  : 163.76
Sun-Moon sep (deg)   : 172.74
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.93
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 20.863
C/A sky separation (km) : 64722.8
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
    
```

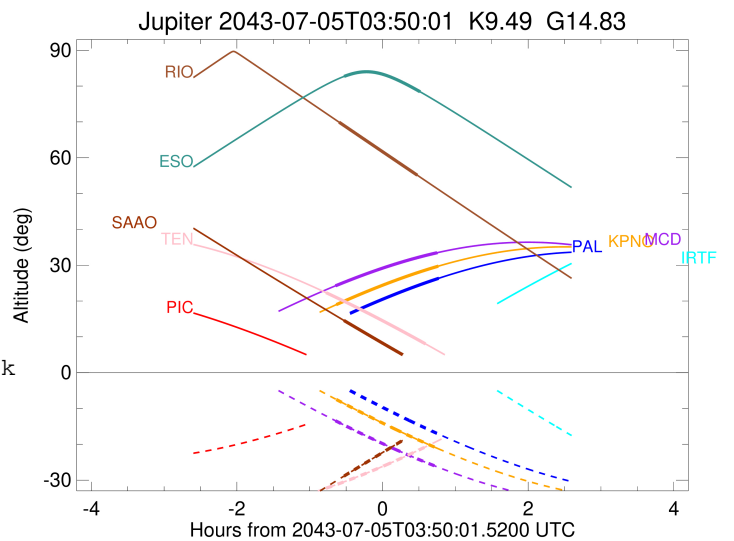
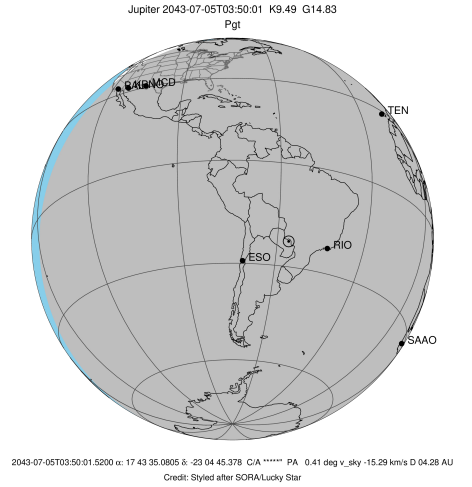


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-05T03:14:14.394	69.92	-86.12	71485.5	-65.03	-67.70
Jupiter	E	2043-07-05T04:18:44.640	55.10	-71.27	71485.5	-64.59	-67.30

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-05T03:49:38.980
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        : 4116863184240436480
2Mass ID (if available) : 17433509-2304449
ICRS Star Coord at Epoch: 17h 43m 35.08050s -23:04:45.37823s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 9.494
G magnitude           : 14.831
RP magnitude          : 13.519
BP magnitude          : 16.821
DUPflag              : 0
Distance (au)         : 4.278
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.29
Sun-Target sep (deg)  : 163.76
Sun-Moon sep (deg)    : 172.42
B (ring opening deg) : -2.41
PA of pole (deg)      : 0.93
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 20.993
C/A sky separation (km) : 65129.2
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
    
```

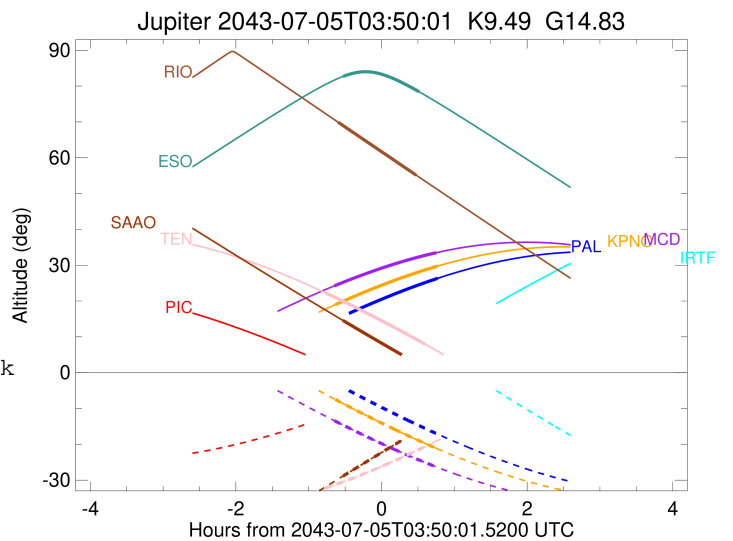
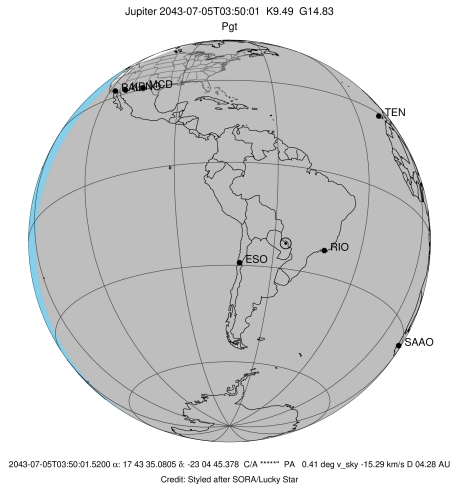


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-05T03:18:24.688	82.69	-69.06	71485.3	-66.07	-68.66
Jupiter	E	2043-07-05T04:20:54.019	78.42	-81.32	71485.4	-65.09	-67.76


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-05T03:43:24.130
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        : 4116863184240436480
2Mass ID (if available) : 17433509-2304449
ICRS Star Coord at Epoch: 17h 43m 35.08050s -23:04:45.37823s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 9.494
G magnitude           : 14.831
RP magnitude          : 13.519
BP magnitude          : 16.821
DUPflag              : 0
Distance (au)         : 4.277
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.29
Sun-Target sep (deg)  : 163.76
Sun-Moon sep (deg)    : 172.56
B (ring opening deg) : -2.41
PA of pole (deg)      : 0.93
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 21.820
C/A sky separation (km) : 67691.6
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	2043-07-05T03:18:21.760	14.55	-28.86	71484.9	-71.05	-73.17
Jupiter	E	2043-07-05T04:08:31.155	4.64x	-18.52	71484.9	-71.16	-73.26