

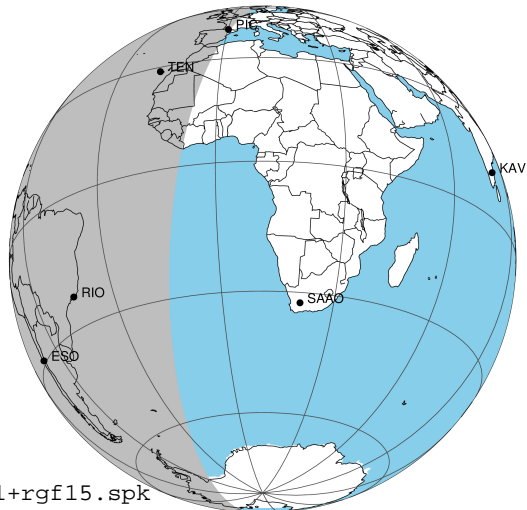
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-02-22T06:47:20.510  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4116786699458811904  
 2Mass ID (if available) : 17362851-2247297

Jupiter 2031-02-22T06:47:20 K9.42 G11.30 Pgt

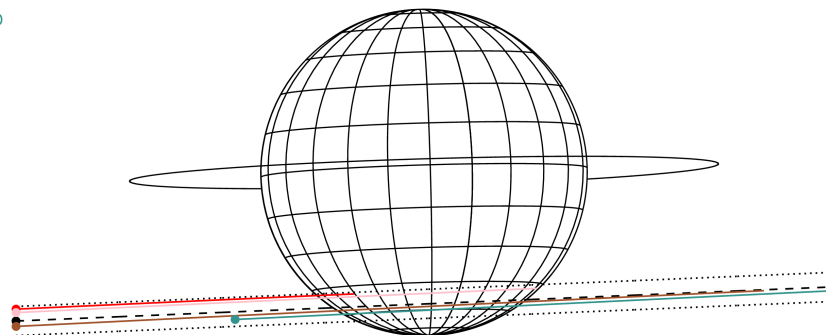
ICRS Star Coord at Epoch: 17h 36m 28.50067s -22:47:29.41482s

RUWE (>1.4 is poor) : 0.99  
 K magnitude : 9.422  
 G magnitude : 11.295  
 RP magnitude : 10.667  
 BP magnitude : 11.755  
 DUPflag : 0  
 Distance (au) : 5.601  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 24.09  
 Sun-Target sep (deg) : 68.43  
 Sun-Moon sep (deg) : 76.71  
 B (ring opening deg) : -2.66  
 PA of pole (deg) : 1.70  
 Pole direction: RA (deg): 268.05702  
 Dec (deg): 64.49651  
 C/A sky separation (") : 14.165  
 C/A sky separation (km) : 57544.6  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2031-02-22T06:47:20 K9.42 G11.30  
 Pgt



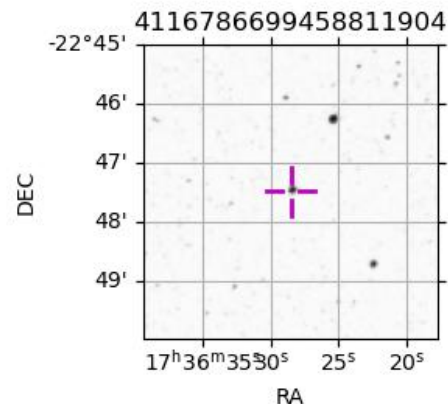
Earth  
 PIC  
 TEN  
 RIO  
 ESO



2031-02-22T06:47:20.5100 α: 17 36 28.5007 δ: -22 47 29.415 C/A \*\*\*\*\* PA 2.39 deg v\_sky +24.09 km/s D 05.60 AU  
 Credit: Styled after SORA/Lucky Star

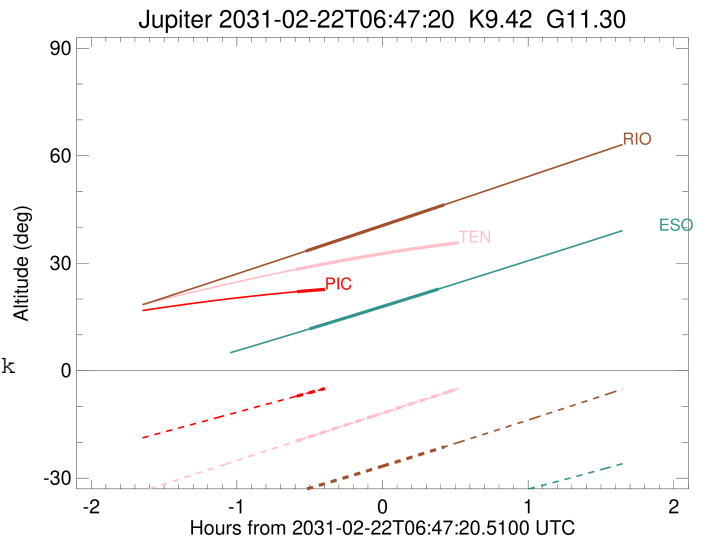
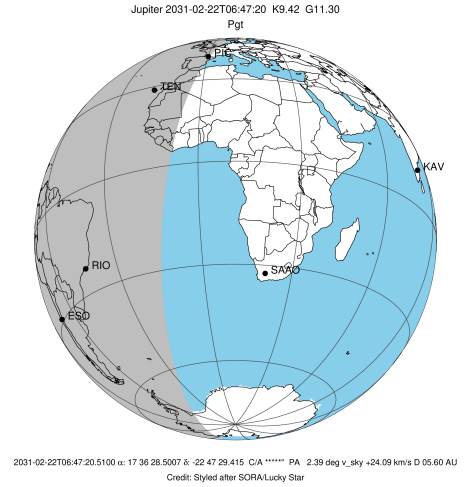
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	FEB 22 06:12 - FEB 22 06:12	Pin
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4			Pnn
MCD	McDonald Obs. 2.7m	30.7	256.0			Pnn
TEN	Teide Obs./Tenerife	28.3	343.5	+	FEB 22 06:11 - FEB 22 06:11	Pin
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	+ +	FEB 22 06:15 - FEB 22 07:12	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	FEB 22 06:17 - FEB 22 07:10	Pie
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            : 2031-02-22T06:46:38.360
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      : 4116786699458811904
2Mass ID (if available) : 17362851-2247297
ICRS Star Coord at Epoch: 17h 36m 28.50067s -22:47:29.41482s
RUWE (>1.4 is poor) : 0.99
K magnitude         : 9.422
G magnitude         : 11.295
RP magnitude        : 10.667
BP magnitude        : 11.755
DUPflag            : 0
Distance (au)       : 5.601
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 24.09
Sun-Target sep (deg) : 68.43
Sun-Moon sep (deg)  : 77.12
B (ring opening deg) : -2.66
PA of pole (deg)    : 1.70
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 12.755
C/A sky separation (km) : 51814.8
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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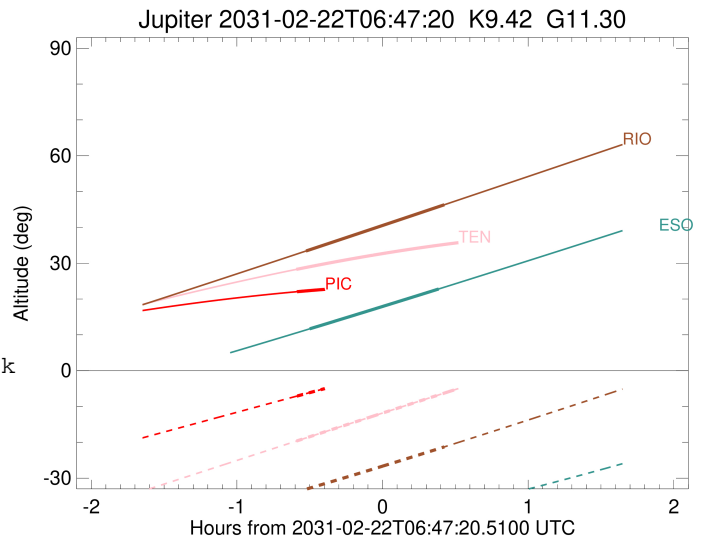
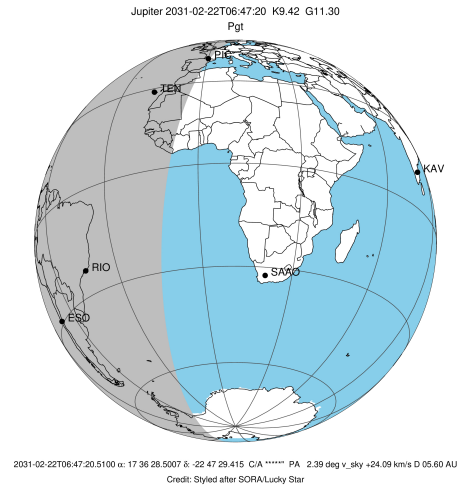


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-22T06:12:07.518	22.04	-7.08	71486.8	-47.20	-50.86
Jupiter	E	2031-02-22T07:21:11.115	24.42	5.25x	71487.0	-45.63	-49.32

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-02-22T06:45:32.700
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        : 4116786699458811904
2Mass ID (if available) : 17362851-2247297
ICRS Star Coord at Epoch: 17h 36m 28.50067s -22:47:29.41482s
RUWE (>1.4 is poor)  : 0.99
K magnitude           : 9.422
G magnitude           : 11.295
RP magnitude          : 10.667
BP magnitude          : 11.755
DUPflag              : 0
Distance (au)         : 5.601
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 24.09
Sun-Target sep (deg)  : 68.43
Sun-Moon sep (deg)    : 77.31
B (ring opening deg) : -2.66
PA of pole (deg)      : 1.70
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 13.034
C/A sky separation (km) : 52948.2
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
    
```

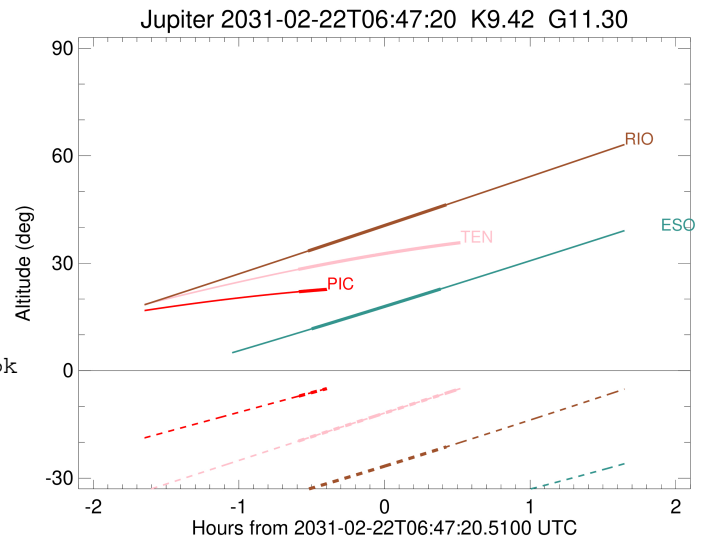
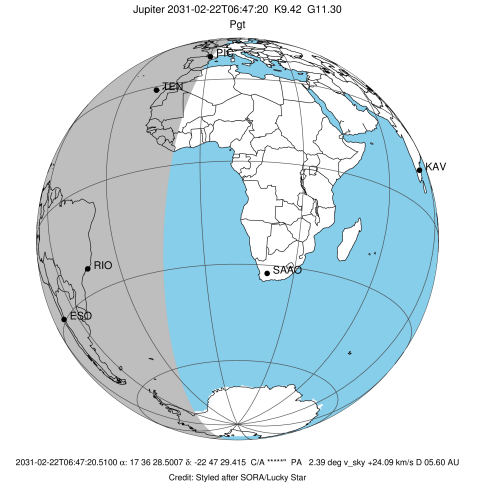


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-22T06:11:51.854	28.27	-19.65	71486.5	-48.65	-52.28
Jupiter	E	2031-02-22T07:19:16.938	35.78	-4.85x	71486.8	-46.84	-50.51

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-02-22T06:44:17.740
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        : 4116786699458811904
2Mass ID (if available) : 17362851-2247297
ICRS Star Coord at Epoch: 17h 36m 28.50067s -22:47:29.41482s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 9.422
G magnitude           : 11.295
RP magnitude          : 10.667
BP magnitude          : 11.755
DUPflag              : 0
Distance (au)         : 5.601
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 24.09
Sun-Target sep (deg) : 68.43
Sun-Moon sep (deg)   : 77.49
B (ring opening deg) : -2.66
PA of pole (deg)     : 1.70
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 14.447
C/A sky separation (km) : 58687.5
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
    
```

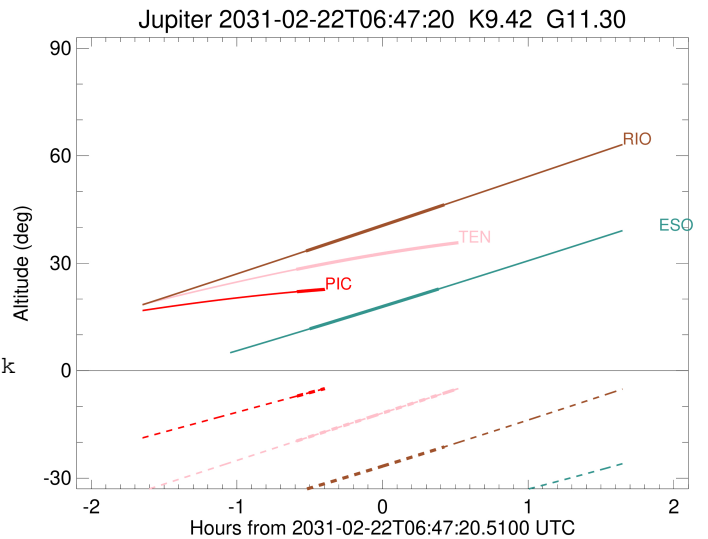
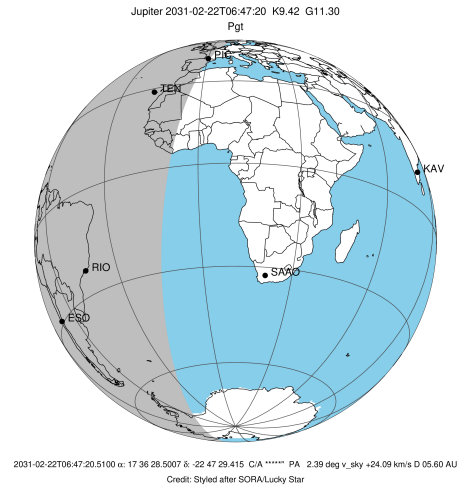


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-22T06:15:49.090	33.40	-33.09	71485.3	-56.14	-59.45
Jupiter	E	2031-02-22T07:12:50.190	46.31	-21.27	71485.6	-54.07	-57.48

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-22T06:43:52.060
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       : 4116786699458811904
2Mass ID (if available) : 17362851-2247297
ICRS Star Coord at Epoch: 17h 36m 28.50067s -22:47:29.41482s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 9.422
G magnitude           : 11.295
RP magnitude         : 10.667
BP magnitude         : 11.755
DUPflag              : 0
Distance (au)        : 5.601
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 24.09
Sun-Target sep (deg) : 68.43
Sun-Moon sep (deg)   : 77.20
B (ring opening deg) : -2.66
PA of pole (deg)     : 1.70
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 14.850
C/A sky separation (km) : 60327.2
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	2031-02-22T06:17:19.170	11.67	-46.08	71484.9	-58.53	-61.69
Jupiter	E	2031-02-22T07:10:28.616	22.79	-39.09	71485.3	-56.39	-59.69