

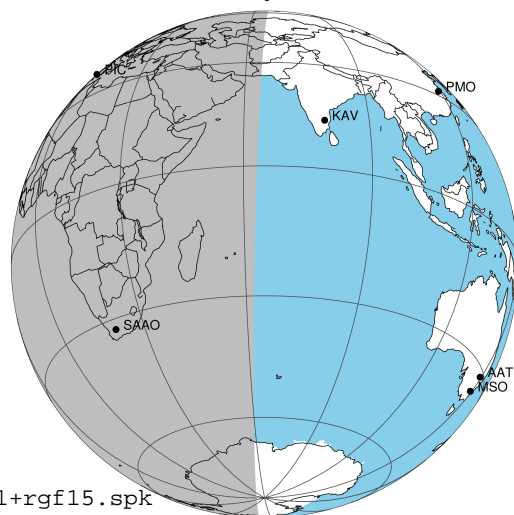
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-03-16T01:56:22.910  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068934441577417728  
 2Mass ID (if available) : 17473418-2251568

Jupiter 2031-03-16T01:56:22 K9.54 G14.81 Pgt

ICRS Star Coord at Epoch: 17h 47m 34.17876s -22:51:57.10903s

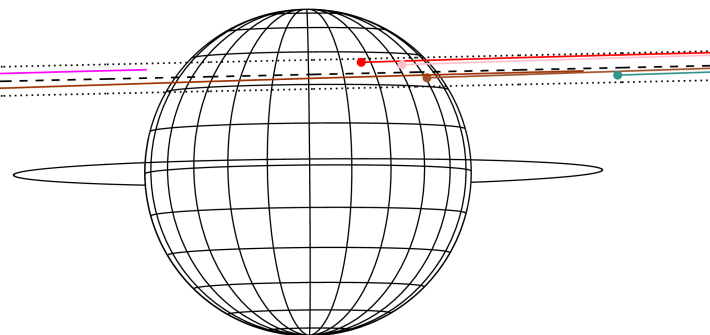
RUWE (>1.4 is poor) : 0.93  
 K magnitude : 9.545  
 G magnitude : 14.811  
 RP magnitude : 13.474  
 BP magnitude : 16.979  
 DUPflag : 0  
 Distance (au) : 5.257  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 14.34  
 Sun-Target sep (deg) : 87.71  
 Sun-Moon sep (deg) : 5.03  
 B (ring opening deg) : -2.63  
 PA of pole (deg) : 0.50  
 Pole direction: RA (deg): 268.05700  
 Dec (deg): 64.49651  
 C/A sky separation (") : 11.252  
 C/A sky separation (km) : 42896.4  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2031-03-16T01:56:22 K9.54 G14.81  
 Pgt



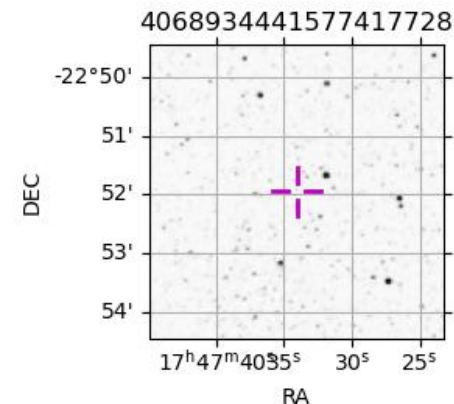
2031-03-16T01:56:22.9100 a: 17 47 34.1788 s: -22 51 57.109 C/A \*\*\*\*\* PA 181.26 deg v\_sky +14.34 km/s D 05.26 AU  
 Credit: Styled after SORA/Lucky Star

Earth  
 PIC  
 TEN  
 KAV  
 RIO  
 ESO  
 SAAO



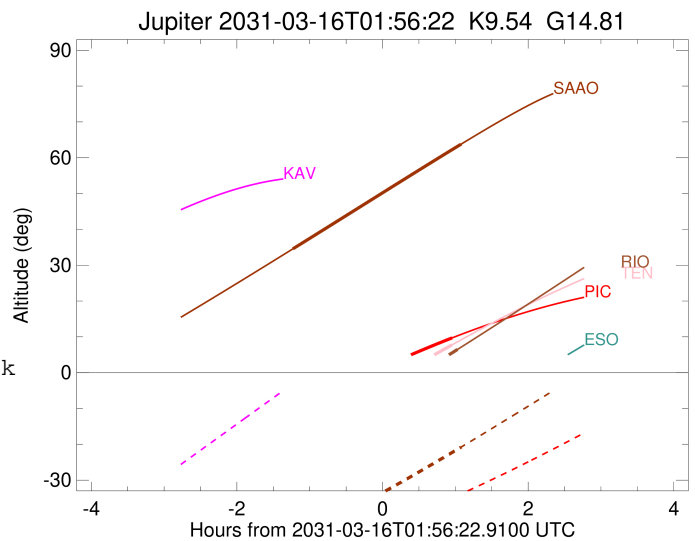
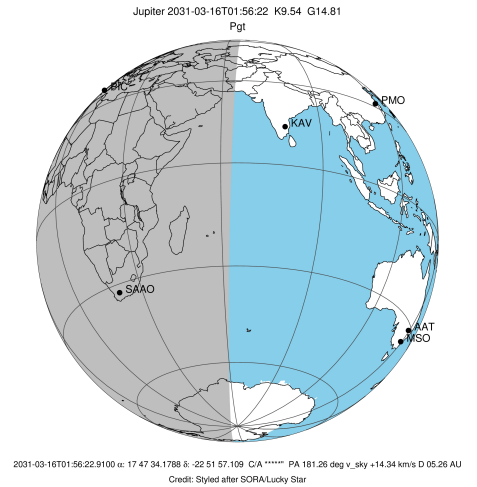
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	MAR 16 02:53 - MAR 16 02:53	Pne
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	+	MAR 16 02:53 - MAR 16 02:53	Pne
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	+	MAR 16 02:58 - MAR 16 02:58	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	MAR 16 00:42 - MAR 16 03:01	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-16T01:50:49.770
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       : 4068934441577417728
2Mass ID (if available) : 17473418-2251568
ICRS Star Coord at Epoch: 17h 47m 34.17876s -22:51:57.10903s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 9.545
G magnitude           : 14.811
RP magnitude          : 13.474
BP magnitude          : 16.979
DUPflag              : 0
Distance (au)        : 5.257
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 14.34
Sun-Target sep (deg) : 87.71
Sun-Moon sep (deg)  : 4.23
B (ring opening deg) : -2.63
PA of pole (deg)    : 0.50
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 12.470
C/A sky separation (km) : 47540.3
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
    
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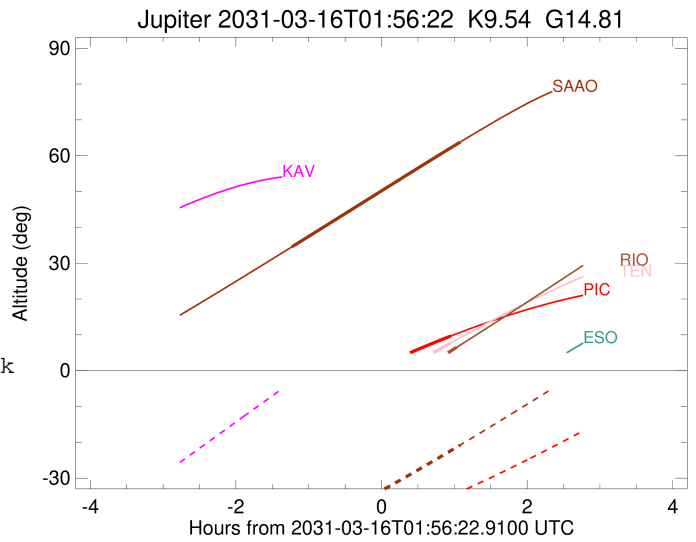
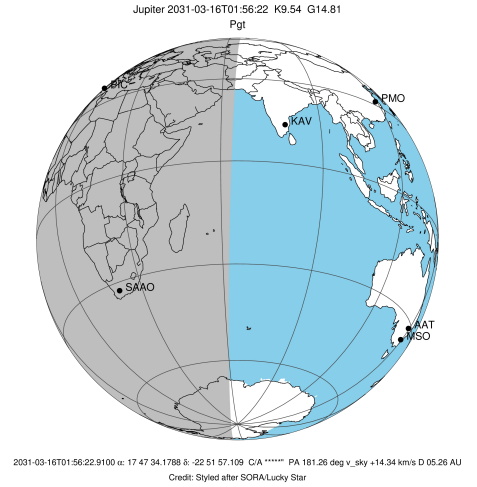


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-16T00:48:24.979	-9.56x	-48.17	71488.0	40.36	44.07
Jupiter	E	2031-03-16T02:53:43.741	9.70	-34.94	71487.6	42.85	46.57

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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-16T01:49:14.250
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       : 4068934441577417728
2Mass ID (if available) : 17473418-2251568
ICRS Star Coord at Epoch: 17h 47m 34.17876s -22:51:57.10903s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 9.545
G magnitude           : 14.811
RP magnitude         : 13.474
BP magnitude         : 16.979
DUPflag              : 0
Distance (au)        : 5.257
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 14.34
Sun-Target sep (deg) : 87.71
Sun-Moon sep (deg)   : 4.07
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.50
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation ("): 12.020
C/A sky separation (km): 45827.5
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
    
```

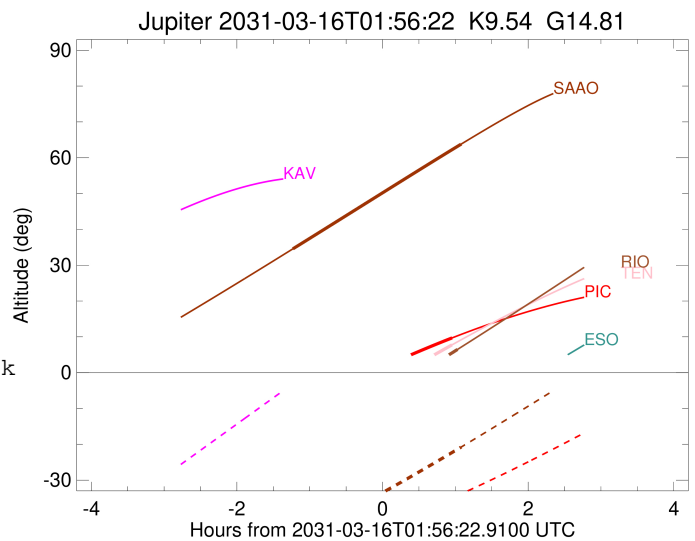
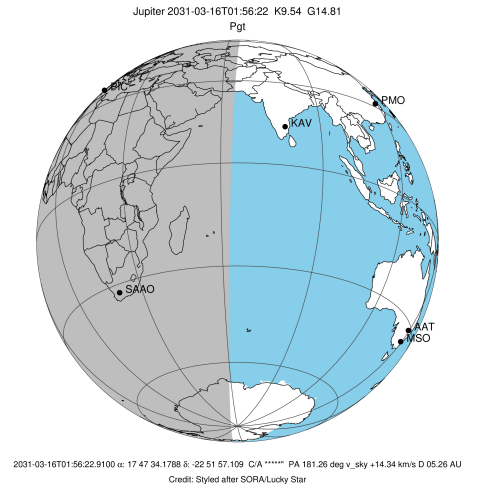


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-16T00:45:34.958	-18.11x	-62.85	71488.3	38.43	42.12
Jupiter	E	2031-03-16T02:53:30.959	7.73	-54.70	71487.9	41.20	44.92

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-16T01:49:31.610
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       : 4068934441577417728
2Mass ID (if available) : 17473418-2251568
ICRS Star Coord at Epoch: 17h 47m 34.17876s -22:51:57.10903s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 9.545
G magnitude          : 14.811
RP magnitude         : 13.474
BP magnitude         : 16.979
DUPflag             : 0
Distance (au)        : 5.257
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 14.34
Sun-Target sep (deg) : 87.71
Sun-Moon sep (deg)   : 4.39
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.50
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation ("): 10.427
C/A sky separation (km): 39752.2
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
    
```

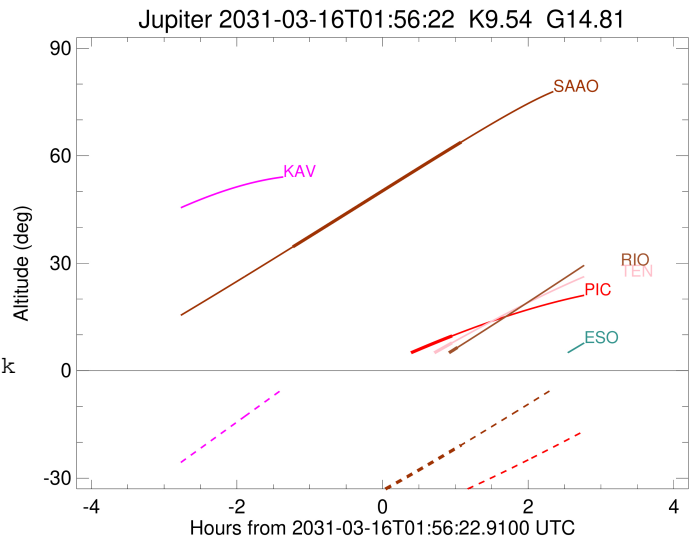
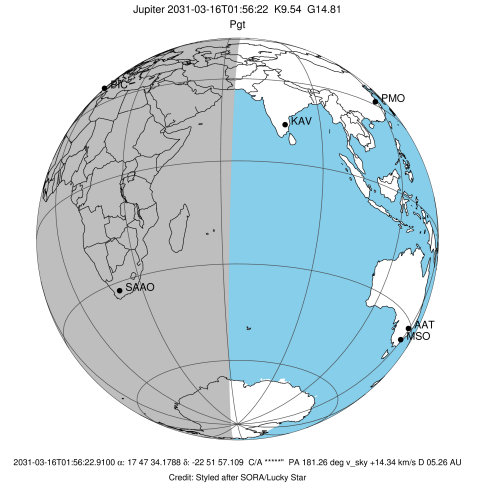


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-16T00:41:32.951	-20.99x	-47.89	71489.3	32.43	35.92
Jupiter	E	2031-03-16T02:58:11.666	6.48	-65.37	71488.9	35.14	38.74

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-16T01:51:35.110
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       : 4068934441577417728
2Mass ID (if available) : 17473418-2251568
ICRS Star Coord at Epoch: 17h 47m 34.17876s -22:51:57.10903s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 9.545
G magnitude           : 14.811
RP magnitude         : 13.474
BP magnitude         : 16.979
DUPflag              : 0
Distance (au)        : 5.257
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 14.34
Sun-Target sep (deg) : 87.71
Sun-Moon sep (deg)   : 4.64
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.50
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 10.800
C/A sky separation (km) : 41174.3
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	2031-03-16T00:42:35.039	34.57	-46.07	71489.1	33.85	37.41
Jupiter	E	2031-03-16T03:01:08.229	63.78	-20.78	71488.7	36.27	39.91