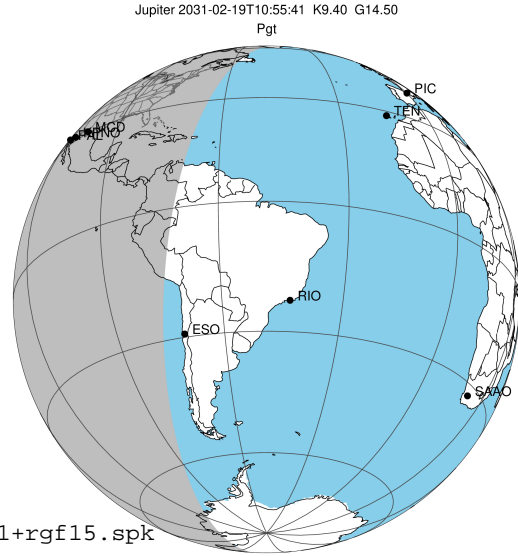


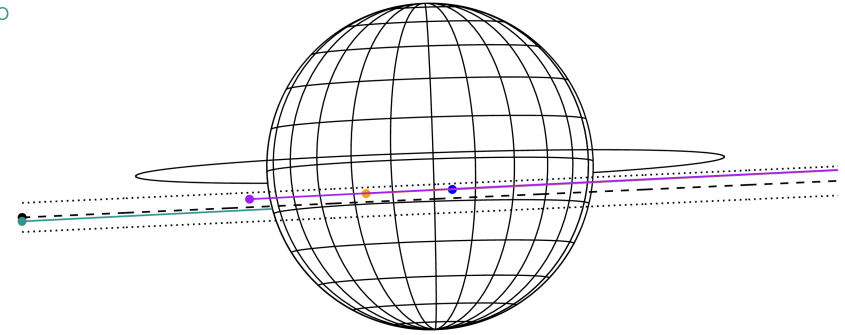
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-02-19T10:55:41.410  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4116710519542841600  
 2Mass ID (if available) : 17344171-2246147

Jupiter 2031-02-19T10:55:41 K9.40 G14.50 Pgt

ICRS Star Coord at Epoch: 17h 34m 41.69438s -22:46:14.83690s  
 RUWE (>1.4 is poor) : 1.00  
 K magnitude : 9.404  
 G magnitude : 14.500  
 RP magnitude : 13.162  
 BP magnitude : 16.575  
 DUPflag : 0  
 Distance (au) : 5.644  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 25.27  
 Sun-Target sep (deg) : 65.99  
 Sun-Moon sep (deg) : 36.27  
 B (ring opening deg) : -2.67  
 PA of pole (deg) : 1.89  
 Pole direction: RA (deg): 268.05702  
 Dec (deg): 64.49651  
 C/A sky separation (") : 3.491  
 C/A sky separation (km) : 14288.1  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk



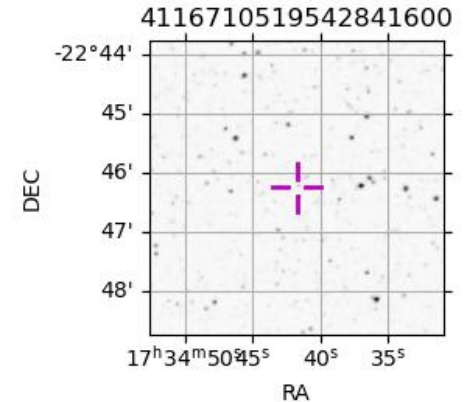
Earth  
 PAL  
 KPNO  
 MCD  
 ESO



2031-02-19T10:55:41.4100 @: 17 34 41.6944 & -22 46 14.837 C/A 3.501" PA 2.57 deg v\_sky +25.27 km/s D 05.64 AU  
 Credit: Styled after SORA/Lucky Star

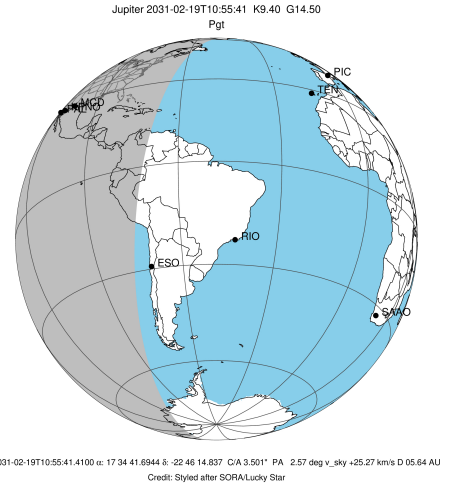
Observable events with sun below -5 deg and altitude above 5 deg

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	+	FEB 19 11:39	- FEB 19 11:39	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8				Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	FEB 19 11:39	- FEB 19 11:39	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	FEB 19 10:05	- FEB 19 11:39	Pie
TEN	Teide Obs./Tenerife	28.3	343.5				Pnn
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				Pnn
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				Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0				Pnn

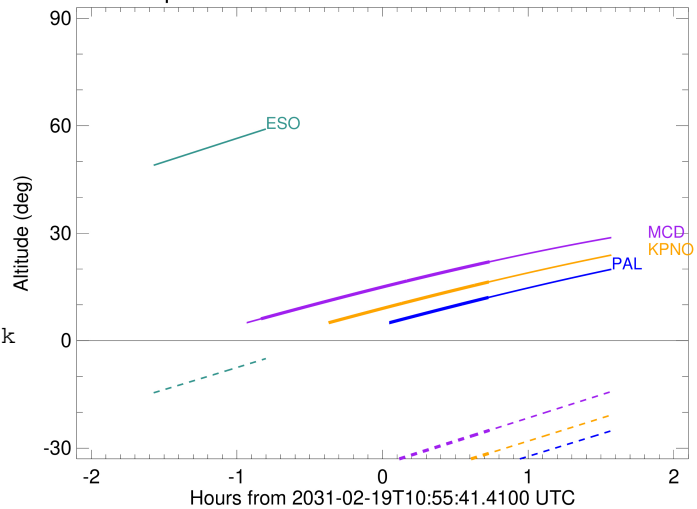


```

target           : Jupiter
target radius (km) : 71492.00
C/A epoch       : 2031-02-19T10:52:20.820
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  : 4116710519542841600
2Mass ID (if available) : 17344171-2246147
ICRS Star Coord at Epoch: 17h 34m 41.69438s -22:46:14.83690s
RUWE (>1.4 is poor) : 1.00
K magnitude     : 9.404
G magnitude     : 14.500
RP magnitude    : 13.162
BP magnitude    : 16.575
DUPflag        : 0
Distance (au)   : 5.644
f0 (km)         : 0.00
g0 (km)         : 0.00
skyplane vel. (km/s) : 25.27
Sun-Target sep (deg) : 65.99
Sun-Moon sep (deg) : 36.91
B (ring opening deg) : -2.67
PA of pole (deg) : 1.89
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 2.573
C/A sky separation (km) : 10532.6
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 2031-02-19T10:55:41 K9.40 G14.50

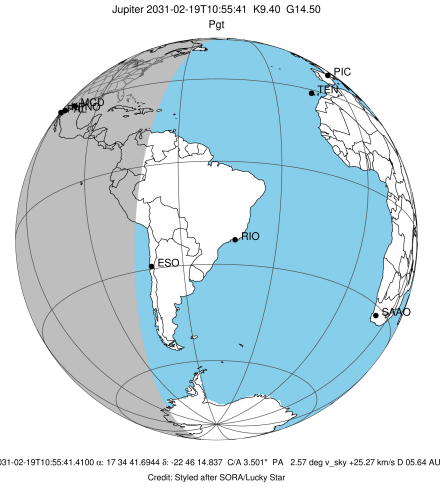


x: target alt < 5.0 deg or sun > -5.0 deg

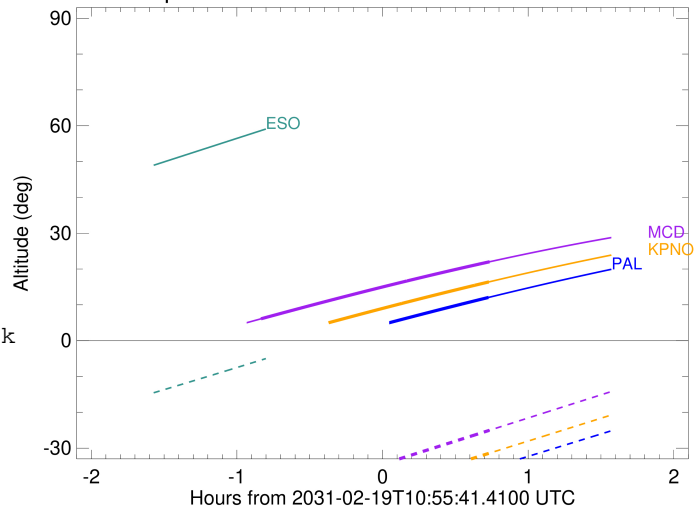
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-19T10:05:33.212	-4.81x	-54.10	71491.7	-9.48	-10.81
Jupiter	E	2031-02-19T11:39:18.460	12.05	-35.68	71491.8	-7.46	-8.52

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-02-19T10:52:25.580
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        : 4116710519542841600
2Mass ID (if available) : 17344171-2246147
ICRS Star Coord at Epoch: 17h 34m 41.69438s -22:46:14.83690s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 9.404
G magnitude           : 14.500
RP magnitude          : 13.162
BP magnitude          : 16.575
DUPflag              : 0
Distance (au)         : 5.644
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 25.27
Sun-Target sep (deg)  : 65.99
Sun-Moon sep (deg)    : 36.94
B (ring opening deg) : -2.67
PA of pole (deg)      : 1.89
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 2.555
C/A sky separation (km) : 10458.6
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 2031-02-19T10:55:41 K9.40 G14.50

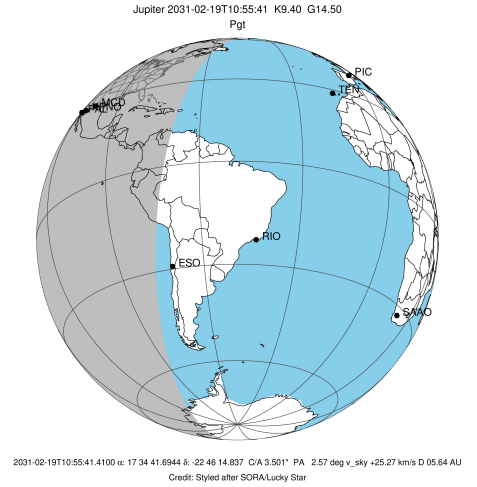


x: target alt < 5.0 deg or sun > -5.0 deg

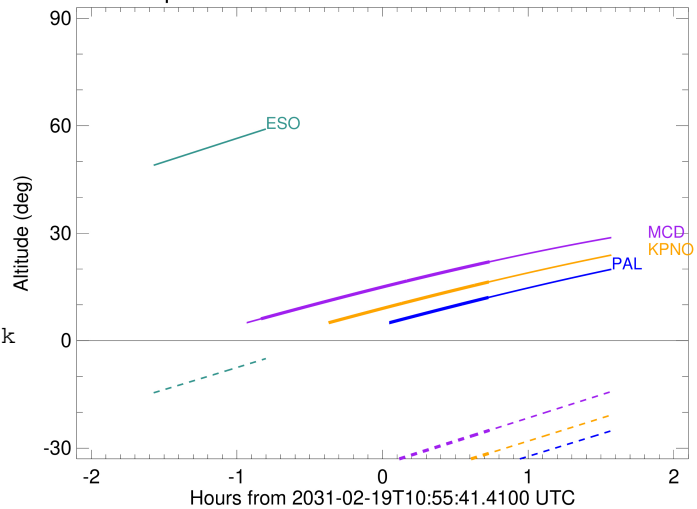
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-19T10:05:33.519	-0.21x	-50.76	71491.7	-9.42	-10.74
Jupiter	E	2031-02-19T11:39:27.528	16.39	-31.46	71491.8	-7.41	-8.46

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-02-19T10:52:37.180
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        : 4116710519542841600
2Mass ID (if available) : 17344171-2246147
ICRS Star Coord at Epoch: 17h 34m 41.69438s -22:46:14.83690s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 9.404
G magnitude           : 14.500
RP magnitude          : 13.162
BP magnitude          : 16.575
DUPflag              : 0
Distance (au)         : 5.644
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 25.27
Sun-Target sep (deg)  : 65.99
Sun-Moon sep (deg)    : 36.96
B (ring opening deg) : -2.67
PA of pole (deg)      : 1.89
Pole direction: RA (deg): 268.05702
Dec (deg): 64.49651
C/A sky separation (") : 2.517
C/A sky separation (km) : 10301.9
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 2031-02-19T10:55:41 K9.40 G14.50



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	2031-02-19T10:05:38.573	6.10	-45.05	71491.7	-9.29	-10.59
Jupiter	E	2031-02-19T11:39:45.244	22.01	-25.02	71491.8	-7.30	-8.34