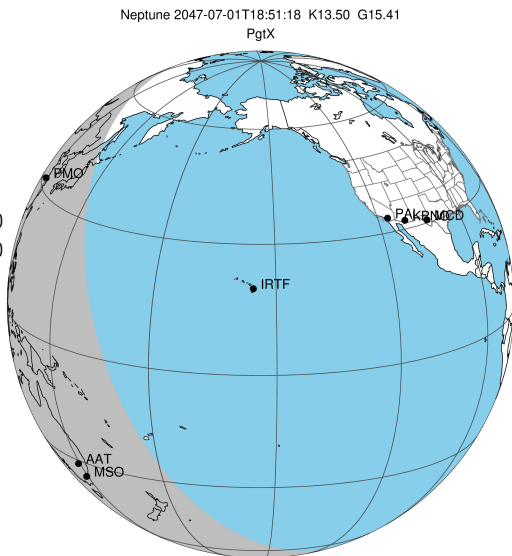


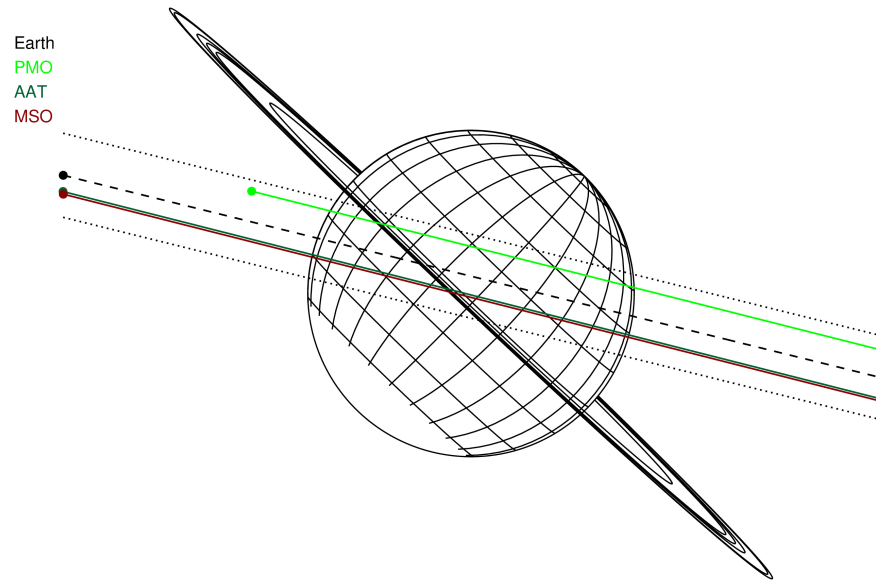
target : Neptune
 target radius (km) : 24764.00
 C/A epoch : 2047-07-01T18:51:18.100
 Event type : PgtX
 : Neptune occs: geocentric, topocentric
 : No ring occs
 Gaia source ID : 31422191191942784
 2Mass ID (if available) : 03125296+1607595

Neptune 2047-07-01T18:51:18 K13.50 G15.41 PgtX

ICRS Star Coord at Epoch: 03h 12m 52.98753s +16:07:59.05307s
 RUWE (>1.4 is poor) : 1.08
 K magnitude : 13.497
 G magnitude : 15.409
 RP magnitude : 14.761
 BP magnitude : 15.897
 DUPflag : 0
 Distance (au) : 30.471
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 24.72
 Sun-Target sep (deg) : 49.07
 Sun-Moon sep (deg) : 152.14
 B (ring opening deg) : 1.98
 PA of pole (deg) : -43.93
 # a(km) ring



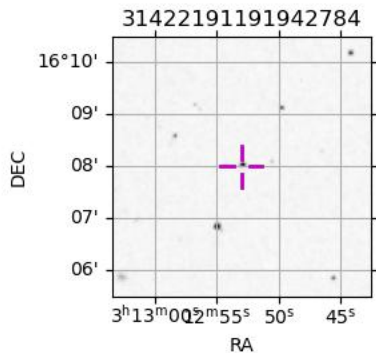
2047-07-01T18:51:18.1000 ex: 03 12 52.9875 s: +16 07 59.053 C/A 0.115° PA 166.10 deg v_sky +24.72 km/s D 30.47 AU
 Credit: Styled after SORA/Lucky Star



- 1 42000.0 Galle
- 2 53200.0 LeVerrier
- 3 55200.0 Lassell
- 4 57200.0 Arago
- 5 61953.0 Galatea
- 6 62933.0 Adams

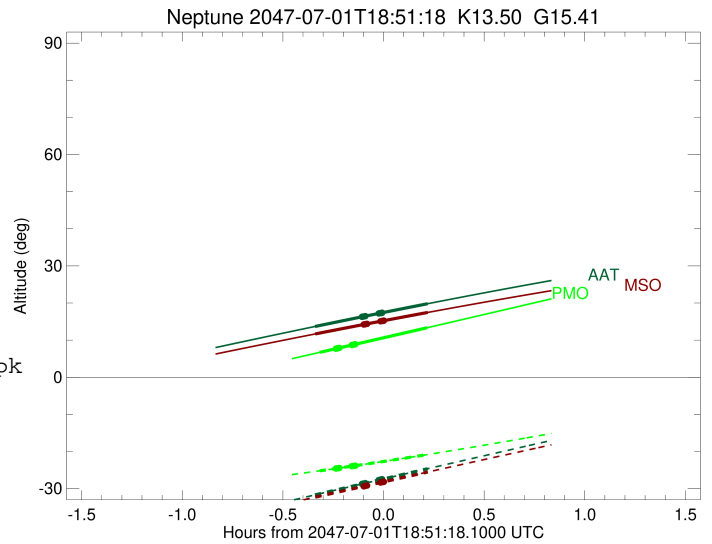
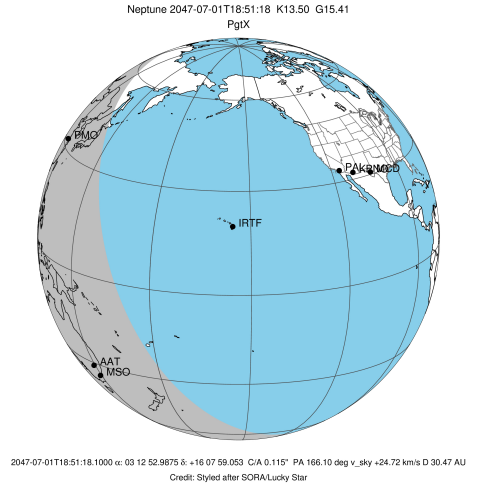
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8		+	+	JUL 01 18:32 - JUL 01 19:04	PieRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European Southern Obs	-29.3	289.3					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1		+	+	JUL 01 18:30 - JUL 01 19:04	PieRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0		+	+	JUL 01 18:30 - JUL 01 19:04	PieRnn



```

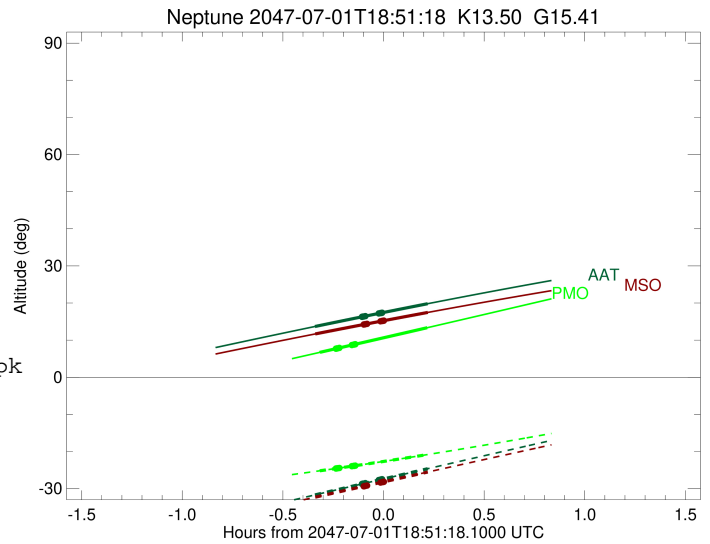
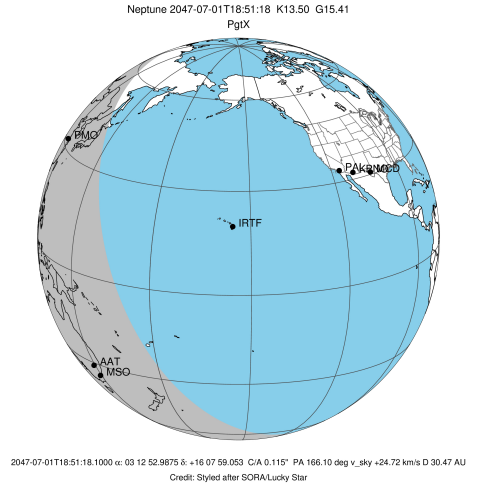
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2047-07-01T18:48:17.260
Event type          : PgtX
: Neptune occs: geocentric, topocentric
: No ring occs
Observer code       : PMO
Location            : Purple Mtn Obs. Nanking
Latitude (deg)      : 32.06667
E. Longitude (deg)  : 118.82089
Altitude (km)       : 0.364
Gaia source ID      : 31422191191942784
2Mass ID (if available) : 03125296+1607595
ICRS Star Coord at Epoch: 03h 12m 52.98753s +16:07:59.05307s
RUWE (>1.4 is poor) : 1.08
K magnitude          : 13.497
G magnitude          : 15.409
RP magnitude         : 14.761
BP magnitude         : 15.897
DUPflag             : 0
Distance (au)       : 30.472
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : 24.72
Sun-Target sep (deg) : 49.07
Sun-Moon sep (deg)   : 151.49
B (ring opening deg) : 1.98
PA of pole (deg)     : -43.93
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.313
C/A sky separation (km) : 6921.2
NAIF SPICE kernels  : RAJobs_U111+rgf16.spk
URKALLv1.spk
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
earthstns_itr93_040916.bsp
earth_200101_990628_predict.bpc
pck00010.tpc
pck.urall11.tpc.Neptune
naif0012.tls
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
earth_flat_IAU.spk
    
```



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2047-07-01T18:37:19.239	b	7.74	-24.55	62932.99	-348.38		
Galatea	I	2047-07-01T18:37:22.054	b	7.75	-24.54	61953.01	-348.11		
Arago	I	2047-07-01T18:37:35.737	b	7.80	-24.51	57200.01	-346.55		
Lassell	I	2047-07-01T18:37:41.514	b	7.82	-24.50	55200.01	-345.76		
LeVerrier	I	2047-07-01T18:37:47.305	b	7.84	-24.49	53200.00	-344.89		
Galle	I	2047-07-01T18:38:20.099	b	7.95	-24.42	42000.01	-337.23		
Neptune	I	2047-07-01T18:32:16.396		6.70	-25.20	24763.97		-13.54	-14.00
Neptune	E	2047-07-01T19:04:19.310		13.34	-20.84	24763.74		45.96	46.94
Galle	E	2047-07-01T18:42:00.527	b	8.71	-23.93	41999.99	340.96		
LeVerrier	E	2047-07-01T18:42:32.904	b	8.82	-23.86	53199.99	350.05		
Lassell	E	2047-07-01T18:42:38.608	b	8.84	-23.85	55200.00	351.20		
Arago	E	2047-07-01T18:42:44.294	b	8.86	-23.84	57200.00	352.26		
Galatea	E	2047-07-01T18:42:57.743	b	8.91	-23.81	61953.01	354.50		
Adams	E	2047-07-01T18:43:00.506	b	8.91	-23.80	62932.99	354.92		

```

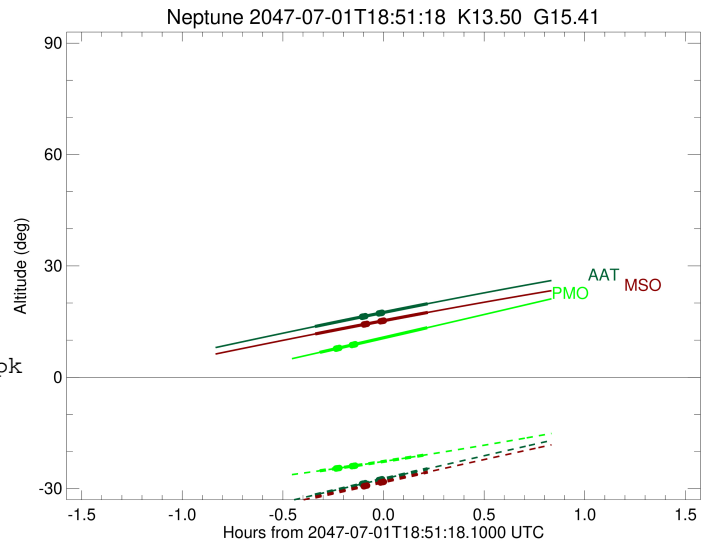
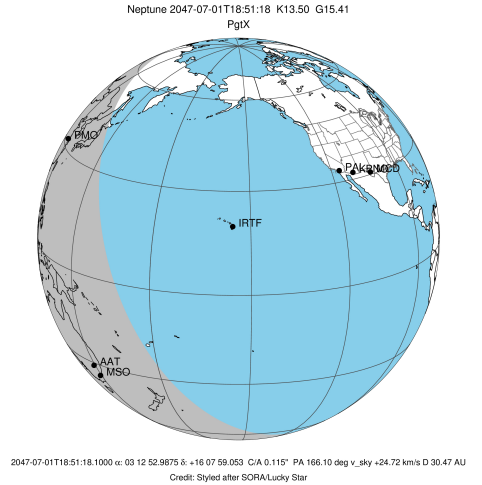
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2047-07-01T18:47:37.860
Event type          : PgtX
: Neptune occs: geocentric, topocentric
: No ring occs
Observer code       : AAT
Location            : Siding Spring (AAT)
Latitude (deg)      : -31.27703
E. Longitude (deg)  : 149.06608
Altitude (km)       : 1.164
Gaia source ID      : 31422191191942784
2Mass ID (if available) : 03125296+1607595
ICRS Star Coord at Epoch: 03h 12m 52.98753s +16:07:59.05307s
RUWE (>1.4 is poor) : 1.08
K magnitude          : 13.497
G magnitude          : 15.409
RP magnitude         : 14.761
BP magnitude         : 15.897
DUPflag             : 0
Distance (au)        : 30.472
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : 24.72
Sun-Target sep (deg) : 49.07
Sun-Moon sep (deg)   : 151.64
B (ring opening deg) : 1.98
PA of pole (deg)     : -43.93
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.010
C/A sky separation (km) : 213.5
NAIF SPICE kernels  : RAJobs_U111+rgf16.spk
URKALLv1.spk
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
earthstns_itr93_040916.bsp
earth_200101_990628_predict.bpc
pck00010.tpc
pck.urall11.tpc.Neptune
naif0012.tls
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
earth_flat_IAU.spk
    
```



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2047-07-01T18:45:18.735	b	16.36	-28.65	62934.87	-256.46		
Galatea	I	2047-07-01T18:45:22.618	b	16.37	-28.63	61956.03	-247.94		
Arago	I	2047-07-01T18:45:44.773	b	16.44	-28.55	57253.20	-172.51		
Lassell	I	2047-07-01T18:46:01.071	b	16.49	-28.50	55494.92	-85.98		
LeVerrier	I	2047-07-01T18:46:11.109	b	16.52	-28.46	57853.80	365.46		
Galle	I	2047-07-01T18:47:52.340	b	16.83	-28.11	277069.08	*****		
Neptune	I	2047-07-01T18:30:49.204		13.67	-31.70	24763.87		-30.17	-31.03
Neptune	E	2047-07-01T19:04:27.729		19.81	-24.64	24763.88		29.19	30.03
Galle	E	2047-07-01T18:49:15.011	b	17.08	-27.82	42159.51	123.54		
LeVerrier	E	2047-07-01T18:50:04.755	b	17.23	-27.65	53200.32	286.43		
Lassell	E	2047-07-01T18:50:11.637	b	17.25	-27.62	55200.16	294.66		
Arago	E	2047-07-01T18:50:18.347	b	17.27	-27.60	57200.10	301.31		
Galatea	E	2047-07-01T18:50:33.807	b	17.32	-27.54	61953.00	312.91		
Adams	E	2047-07-01T18:50:36.930	b	17.33	-27.53	62933.02	314.77		

```

target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2047-07-01T18:47:42.850
Event type          : PgtX
: Neptune occs: geocentric, topocentric
: No ring occs
Observer code       : MSO
Location            : Mt. Stromlo Observatory
Latitude (deg)      : -35.32000
E. Longitude (deg)  : 149.00833
Altitude (km)       : 0.770
Gaia source ID      : 31422191191942784
2Mass ID (if available) : 03125296+1607595
ICRS Star Coord at Epoch: 03h 12m 52.98753s +16:07:59.05307s
RUWE (>1.4 is poor) : 1.08
K magnitude          : 13.497
G magnitude          : 15.409
RP magnitude         : 14.761
BP magnitude         : 15.897
DUPflag             : 0
Distance (au)       : 30.472
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : 24.72
Sun-Target sep (deg) : 49.07
Sun-Moon sep (deg)  : 151.65
B (ring opening deg) : 1.98
PA of pole (deg)    : -43.93
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.026
C/A sky separation (km) : 574.4
NAIF SPICE kernels  : RAJobs_U111+rgf16.spk
URKALLv1.spk
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
earthstns_itr93_040916.bsp
earth_200101_990628_predict.bpc
pck00010.tpc
pck.urall11.tpc.Neptune
naif0012.tls
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
earth_flat_IAU.spk
    
```



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2047-07-01T18:46:35.765	b	14.42	-29.13	63586.91	-34.51		
Galatea	I	2047-07-01T18:46:03.372	b	14.33	-29.24	63803.01	70.64		
Arago	I	2047-07-01T18:46:25.834	b	14.39	-29.16	71803.69	-248.81		
Lassell	I	2047-07-01T18:45:59.113	b	14.31	-29.25	160214.00	-346.41		
LeVerrier	I	2047-07-01T18:47:05.804	b	14.51	-29.03	52574.24	-2571.66		
Galle	I	2047-07-01T18:41:35.746	b	13.55	-30.14	63834.51	74.20		
Neptune	I	2047-07-01T18:30:54.755		11.67	-32.31	24763.87		-31.02	-31.90
Neptune	E	2047-07-01T19:04:32.124		17.47	-25.52	24763.89		28.36	29.19
Galle	E	2047-07-01T18:50:06.823	b	15.03	-28.42	42000.04	306.61		
LeVerrier	E	2047-07-01T18:50:42.133	b	15.13	-28.30	53200.03	325.46		
Lassell	E	2047-07-01T18:50:48.258	b	15.15	-28.28	55199.98	327.54		
Arago	E	2047-07-01T18:50:54.347	b	15.16	-28.26	57200.01	329.38		
Galatea	E	2047-07-01T18:51:08.696	b	15.20	-28.21	61953.02	332.98		
Adams	E	2047-07-01T18:51:11.637	b	15.21	-28.20	62933.02	333.61		