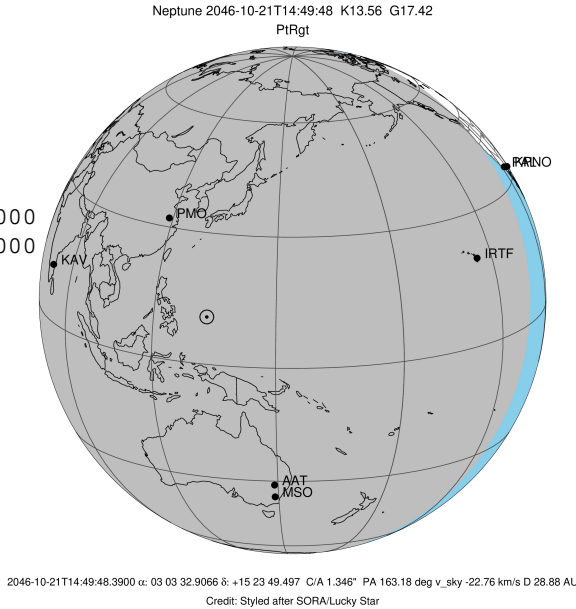


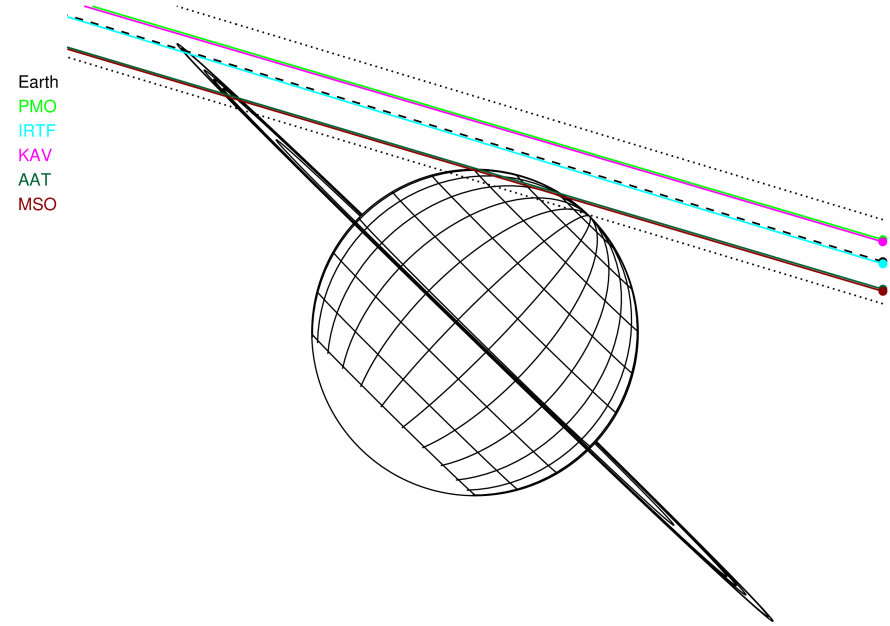
target : Neptune
 target radius (km) : 24764.00
 C/A epoch : 2046-10-21T14:49:48.390
 Event type : PtRgt
 : Neptune occs: topocentric, not geocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 33930177214654720
 2Mass ID (if available) : 03033287+1523518

ICRS Star Coord at Epoch: 03h 03m 32.90663s +15:23:49.49748s
 RUWE (>1.4 is poor) : 1.12
 K magnitude : 13.562
 G magnitude : 17.425
 RP magnitude : 16.237
 BP magnitude : 19.131
 DUPflag : 0
 Distance (au) : 28.878
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.76
 Sun-Target sep (deg) : 159.82
 Sun-Moon sep (deg) : 55.11
 B (ring opening deg) : 0.94
 PA of pole (deg) : -44.61
 # a(km) ring

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

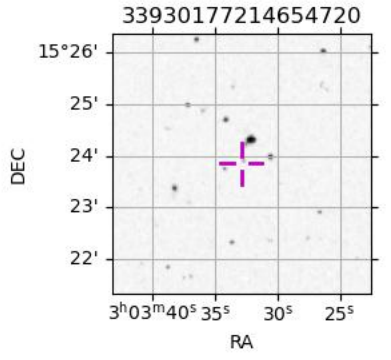


Neptune 2046-10-21T14:49:48 K13.56 G17.42 PtRgt



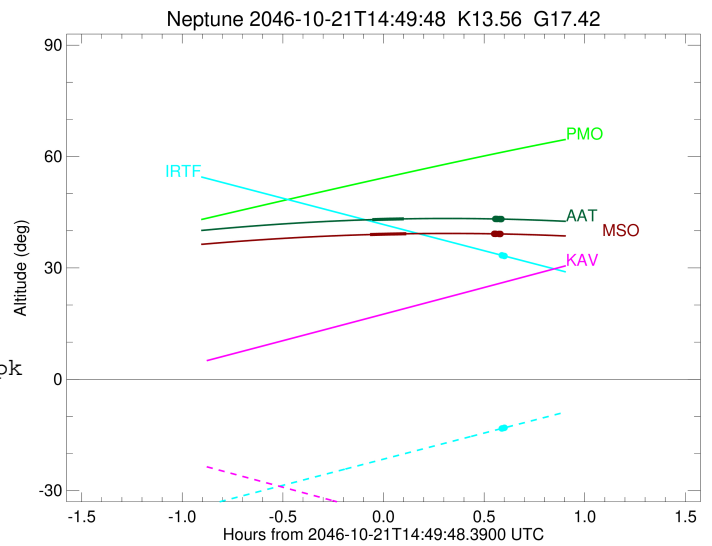
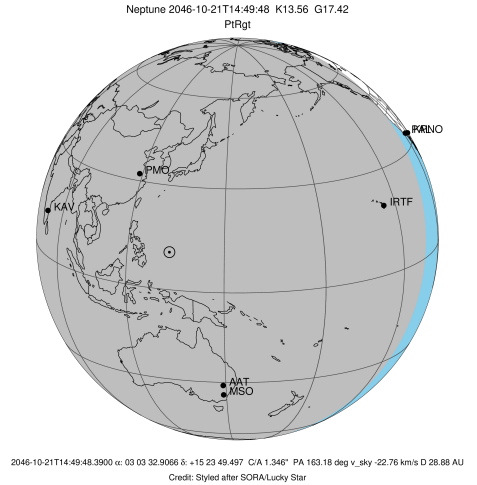
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEncode
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					PnnRnn
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	+		+	OCT 21 15:25 - OCT 21 15:25	PnnRie
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	+	+	+	OCT 21 14:46 - OCT 21 15:24	PieRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+	+	+	OCT 21 14:45 - OCT 21 15:24	PieRie



```

target                : Neptune
target radius (km)    : 24764.00
C/A epoch              : 2046-10-21T14:46:21.960
Event type             : PtRgt
: Neptune occs: topocentric, not geocentric
: Ring occs: geocentric, topocentric
Observer code         : IRTF
Location               : Mauna Kea/IRTF
Latitude (deg)        : 19.82622
E. Longitude (deg)    : 204.52800
Altitude (km)         : 4.168
Gaia source ID        : 33930177214654720
2Mass ID (if available) : 03033287+1523518
ICRS Star Coord at Epoch: 03h 03m 32.90663s +15:23:49.49748s
RUWE (>1.4 is poor)  : 1.12
K magnitude           : 13.562
G magnitude           : 17.425
RP magnitude          : 16.237
BP magnitude          : 19.131
DUPflag              : 0
Distance (au)         : 28.878
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -22.76
Sun-Target sep (deg)  : 159.82
Sun-Moon sep (deg)    : 55.22
B (ring opening deg)  : 0.94
PA of pole (deg)      : -44.61
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 1.331
C/A sky separation (km) : 27870.0
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
    
```



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

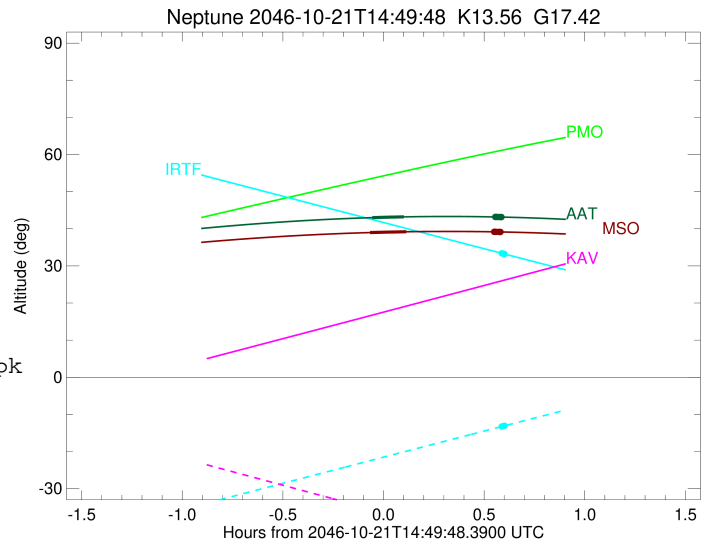
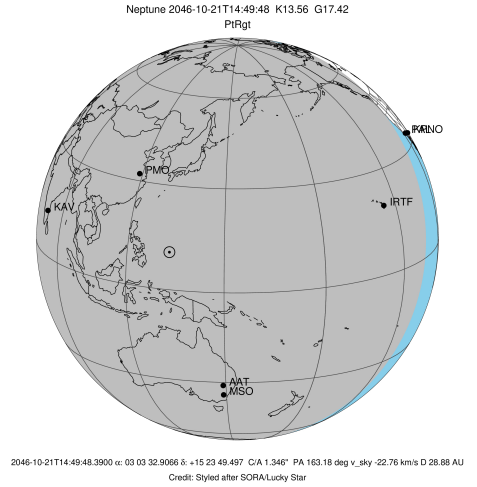
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2046-10-21T15:25:08.336		33.38	-13.25	62933.42	201.30		
Galatea	I	2046-10-21T15:25:03.026		33.40	-13.27	61955.69	168.27		

No planet occultations

Galatea	E	2046-10-21T15:25:03.076		33.40	-13.27	62235.99	178.54		
Adams	E	2046-10-21T15:25:08.359		33.38	-13.25	63179.82	208.59		

```

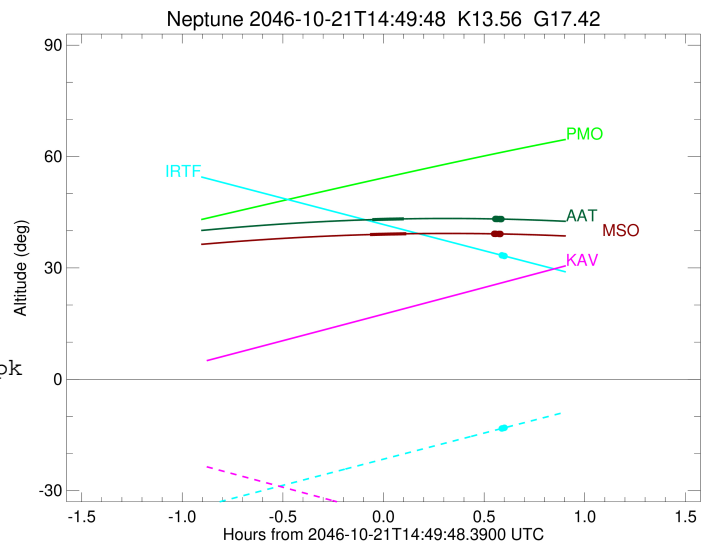
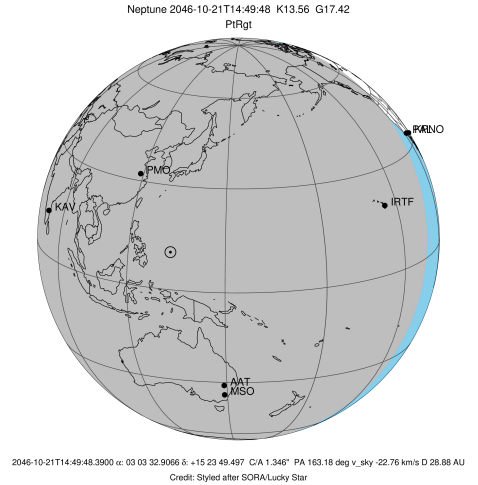
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2046-10-21T14:51:09.890
Event type            : PtRgt
: Neptune occs: topocentric, not geocentric
: Ring occs: geocentric, topocentric
Observer code        : AAT
Location              : Siding Spring (AAT)
Latitude (deg)       : -31.27703
E. Longitude (deg)   : 149.06608
Altitude (km)        : 1.164
Gaia source ID       : 33930177214654720
2Mass ID (if available) : 03033287+1523518
ICRS Star Coord at Epoch: 03h 03m 32.90663s +15:23:49.49748s
RUWE (>1.4 is poor) : 1.12
K magnitude           : 13.562
G magnitude           : 17.425
RP magnitude          : 16.237
BP magnitude          : 19.131
DUPflag              : 0
Distance (au)        : 28.878
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -22.76
Sun-Target sep (deg) : 159.82
Sun-Moon sep (deg)   : 55.81
B (ring opening deg) : 0.94
PA of pole (deg)     : -44.61
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 1.140
C/A sky separation (km) : 23876.4
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	2046-10-21T15:22:24.633		43.20	-42.30	65705.44	-420.90		
Galatea	I	2046-10-21T15:22:26.945		43.20	-42.29	65788.05	-421.68		
Arago	I	2046-10-21T15:24:03.650		43.17	-42.11	65170.91	416.09		
Lassell	I	2046-10-21T15:23:53.963		43.17	-42.13	55813.04	276.54		
LeVerrier	I	2046-10-21T15:23:45.236		43.18	-42.14	53200.08	199.86		
Neptune	I	2046-10-21T14:46:25.999		43.00	-45.74	24763.91		77.25	77.67
Neptune	E	2046-10-21T14:55:53.763		43.21	-44.97	24763.96		46.51	47.49
LeVerrier	E	2046-10-21T15:23:45.258		43.18	-42.14	53416.33	207.78		
Lassell	E	2046-10-21T15:23:53.904		43.17	-42.13	55348.71	265.25		
Arago	E	2046-10-21T15:24:00.943		43.17	-42.11	57303.50	308.38		
Galatea	E	2046-10-21T15:24:14.732		43.17	-42.09	62000.57	381.11		
Adams	E	2046-10-21T15:24:17.270		43.17	-42.08	62974.05	392.76		

```

target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2046-10-21T14:51:12.660
Event type           : PtRgt
: Neptune occs: topocentric, not geocentric
: Ring occs: geocentric, topocentric
Observer code        : MSO
Location              : Mt. Stromlo Observatory
Latitude (deg)       : -35.32000
E. Longitude (deg)   : 149.00833
Altitude (km)        : 0.770
Gaia source ID       : 33930177214654720
2Mass ID (if available) : 03033287+1523518
ICRS Star Coord at Epoch: 03h 03m 32.90663s +15:23:49.49748s
RUWE (>1.4 is poor) : 1.12
K magnitude           : 13.562
G magnitude           : 17.425
RP magnitude          : 16.237
BP magnitude          : 19.131
DUPflag              : 0
Distance (au)        : 28.878
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -22.76
Sun-Target sep (deg) : 159.82
Sun-Moon sep (deg)   : 55.77
B (ring opening deg) : 0.94
PA of pole (deg)     : -44.61
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 1.126
C/A sky separation (km) : 23589.8
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	2046-10-21T15:22:05.480		39.19	-38.90	65122.43	-422.14		
Galatea	I	2046-10-21T15:22:07.834		39.19	-38.90	64925.21	-420.27		
Arago	I	2046-10-21T15:23:49.418		39.16	-38.72	70609.28	466.09		
Lassell	I	2046-10-21T15:23:38.276		39.16	-38.74	56894.67	313.00		
LeVerrier	I	2046-10-21T15:23:29.927		39.17	-38.76	53212.55	221.89		
Neptune	I	2046-10-21T14:45:46.844		38.98	-42.01	24763.91		79.59	79.93
Neptune	E	2046-10-21T14:56:38.459		39.20	-41.22	24763.97		44.20	45.18
LeVerrier	E	2046-10-21T15:23:29.940		39.17	-38.76	53390.58	227.66		
Lassell	E	2046-10-21T15:23:37.949		39.16	-38.74	55330.48	280.11		
Arago	E	2046-10-21T15:23:44.659		39.16	-38.73	57291.02	320.41		
Galatea	E	2046-10-21T15:23:58.048		39.16	-38.71	61995.13	389.41		
Adams	E	2046-10-21T15:24:00.533		39.16	-38.70	62969.43	400.54		