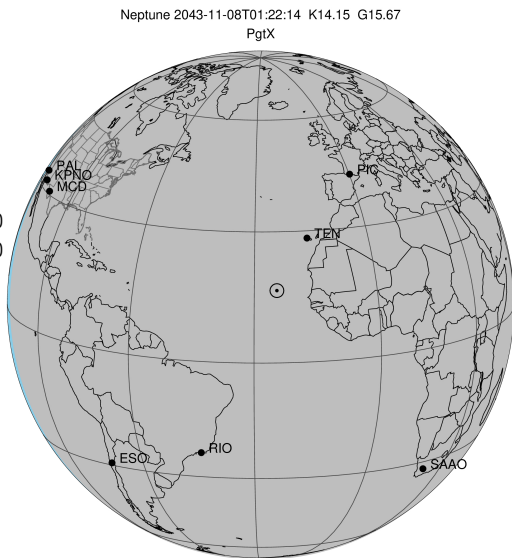


target : Neptune  
 target radius (km) : 24764.00  
 C/A epoch : 2043-11-08T01:22:14.600  
 Event type : PgtX  
 : Neptune occs: geocentric, topocentric  
 : No ring occs  
 Gaia source ID : 26822040699459072  
 2Mass ID (if available) : 02342904+1312584

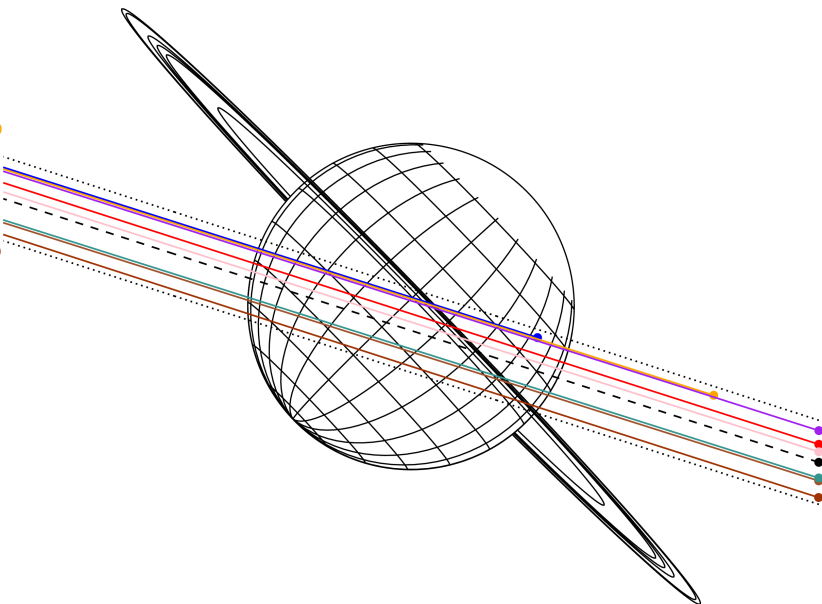
Neptune 2043-11-08T01:22:14 K14.15 G15.67 PgtX

ICRS Star Coord at Epoch: 02h 34m 29.04085s +13:12:58.15363s  
 RUWE (>1.4 is poor) : 0.96  
 K magnitude : 14.149  
 G magnitude : 15.675  
 RP magnitude : 15.149  
 BP magnitude : 16.016  
 DUPflag : 0  
 Distance (au) : 28.820  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -24.46  
 Sun-Target sep (deg) : 175.18  
 Sun-Moon sep (deg) : 107.41  
 B (ring opening deg) : -2.54  
 PA of pole (deg) : -46.32



2043-11-08T01:22:14.600000 ra: 02 34 29.04085 s: +13 12 58.154 C/A 0.166° PA 342.09 deg v\_sky -24.46 km/s D 28.82 AU  
 Credit: Styled after SORA/Lucky Star

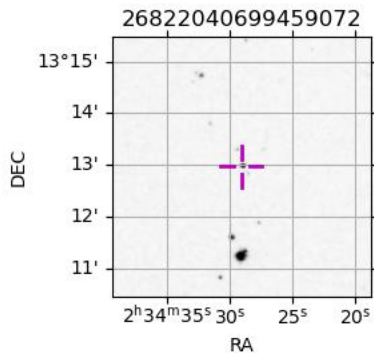
Earth  
 PIC  
 PAL  
 KPNO  
 MCD  
 TEN  
 RIO  
 ESO  
 SAAO



#	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

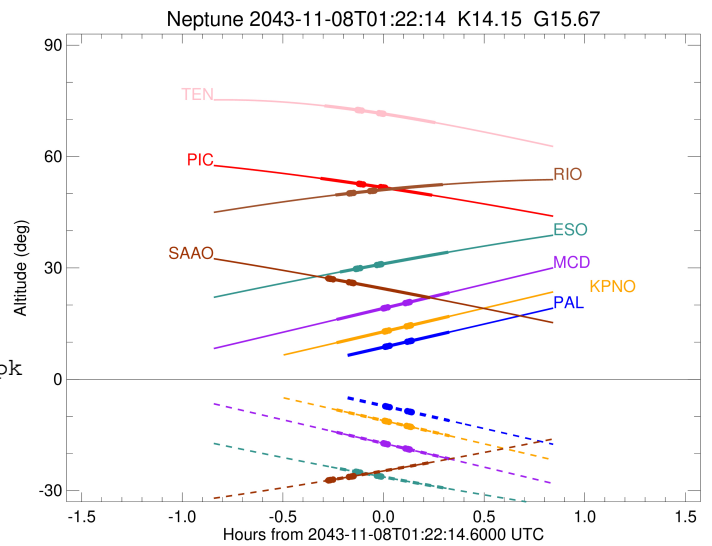
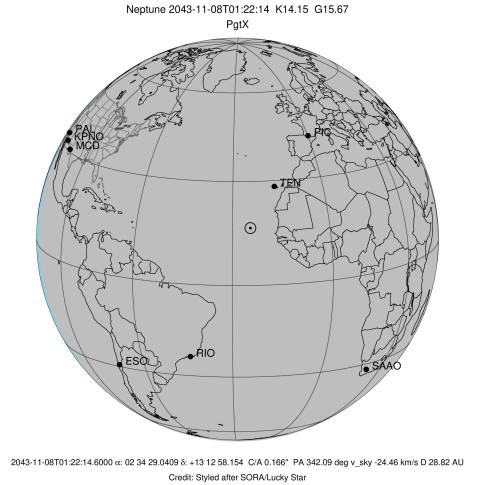
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1		+	+	NOV 08 01:03 - NOV 08 01:36	PieRnn
PAL	Palomar Mt (200")	33.4	243.1			+	NOV 08 01:41 - NOV 08 01:41	PneRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4		+	+	NOV 08 01:08 - NOV 08 01:41	PieRnn
MCD	McDonald Obs. 2.7m	30.7	256.0		+	+	NOV 08 01:08 - NOV 08 01:41	PieRnn
TEN	Teide Obs./Tenerife	28.3	343.5		+	+	NOV 08 01:04 - NOV 08 01:37	PieRnn
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		+	+	NOV 08 01:07 - NOV 08 01:39	PieRnn
ESO	European Southern Obs	-29.3	289.3		+	+	NOV 08 01:09 - NOV 08 01:41	PieRnn
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8		+	+	NOV 08 01:04 - NOV 08 01:36	PieRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



```

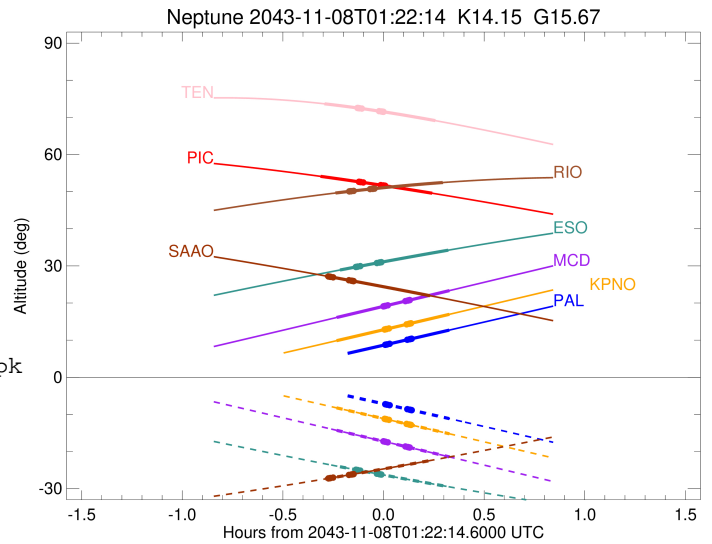
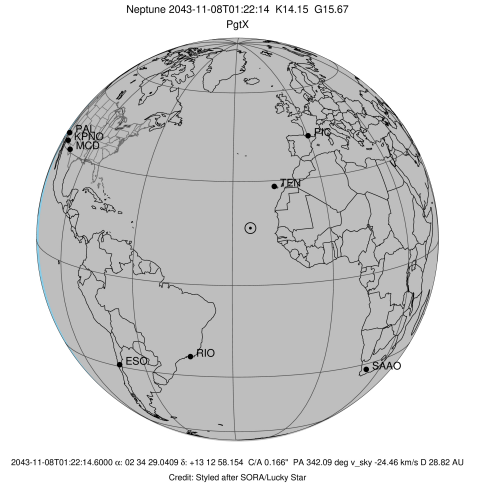
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2043-11-08T01:20:08.120
Event type           : PgtX
: Neptune occs: geocentric, topocentric
: No ring occs
Observer code        : PIC
Location             : Pic du Midi
Latitude (deg)       : 42.93656
E. Longitude (deg)   : 0.14231
Altitude (km)        : 2.890
Gaia source ID       : 26822040699459072
2Mass ID (if available) : 02342904+1312584
ICRS Star Coord at Epoch: 02h 34m 29.04085s +13:12:58.15363s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 14.149
G magnitude          : 15.675
RP magnitude         : 15.149
BP magnitude         : 16.016
DUPflag             : 0
Distance (au)        : 28.820
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -24.46
Sun-Target sep (deg) : 175.18
Sun-Moon sep (deg)   : 107.94
B (ring opening deg) : -2.54
PA of pole (deg)     : -46.32
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.050
C/A sky separation (km) : 1044.7
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.urall1.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	2043-11-08T01:15:02.056	b	52.64	-57.23	62933.00	-263.83		
Galatea	I	2043-11-08T01:15:05.771	b	52.63	-57.22	61952.99	-263.74		
Arago	I	2043-11-08T01:15:23.807	b	52.59	-57.18	57200.02	-263.30		
Lassell	I	2043-11-08T01:15:31.406	b	52.57	-57.17	55200.00	-263.10		
LeVerrier	I	2043-11-08T01:15:39.010	b	52.55	-57.15	53200.00	-262.88		
Galle	I	2043-11-08T01:16:21.727	b	52.46	-57.06	42000.00	-261.43		
Neptune	I	2043-11-08T01:03:28.815		54.12	-58.63	24763.84		26.11	26.89
Neptune	E	2043-11-08T01:36:47.833		49.57	-54.28	24763.78		-30.92	-31.79
Galle	E	2043-11-08T01:19:34.080	b	52.02	-56.64	27329.14	1441.90		
LeVerrier	E	2043-11-08T01:21:22.873	b	51.78	-56.40	53176.14	198.56		
Lassell	E	2043-11-08T01:21:34.108	b	51.75	-56.38	55194.93	165.56		
Arago	E	2043-11-08T01:21:46.363	b	51.72	-56.35	57204.38	164.29		
Galatea	E	2043-11-08T01:22:13.258	b	51.66	-56.29	61954.18	191.04		
Adams	E	2043-11-08T01:22:18.320	b	51.65	-56.28	62933.80	196.28		

```

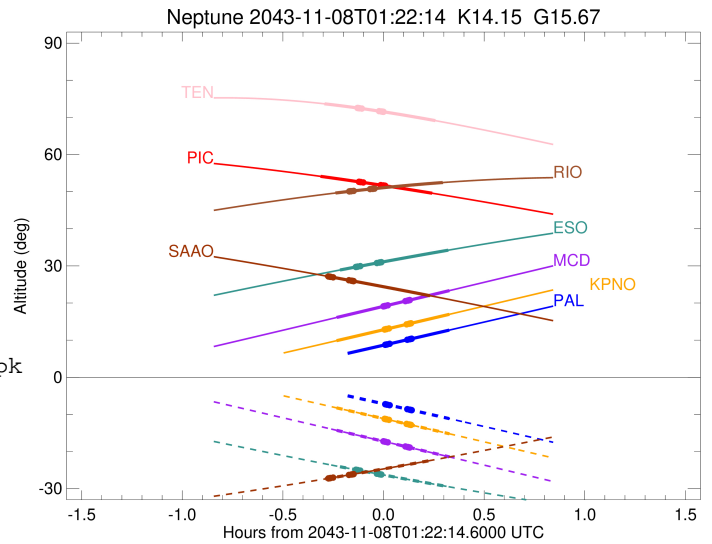
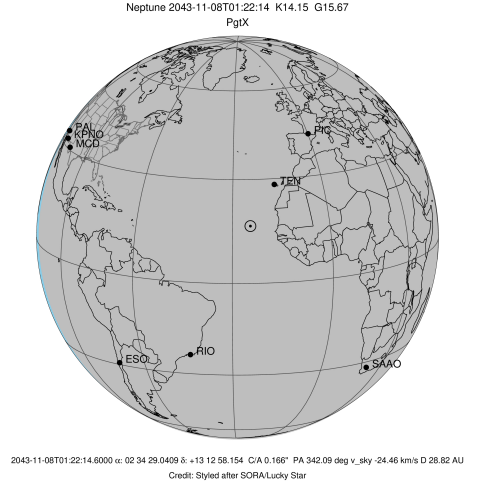
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2043-11-08T01:25:00.690
Event type          : PgtX
: Neptune occs: geocentric, topocentric
: No ring occs
Observer code       : PAL
Location            : Palomar Mt (200")
Latitude (deg)      : 33.35622
E. Longitude (deg)  : 243.13601
Altitude (km)       : 1.706
Gaia source ID      : 26822040699459072
2Mass ID (if available) : 02342904+1312584
ICRS Star Coord at Epoch: 02h 34m 29.04085s +13:12:58.15363s
RUWE (>1.4 is poor) : 0.96
K magnitude         : 14.149
G magnitude         : 15.675
RP magnitude        : 15.149
BP magnitude        : 16.016
DUPflag            : 0
Distance (au)       : 28.820
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : -24.46
Sun-Target sep (deg) : 175.18
Sun-Moon sep (deg)  : 107.69
B (ring opening deg) : -2.54
PA of pole (deg)    : -46.32
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.064
C/A sky separation (km) : 1341.8
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	2043-11-08T01:23:17.915	b	8.86	-7.37	62932.83	-198.45		
Galatea	I	2043-11-08T01:23:22.823	b	8.87	-7.38	61952.71	-201.28		
Arago	I	2043-11-08T01:23:44.312	b	8.95	-7.46	57182.03	-256.89		
Lassell	I	2043-11-08T01:23:51.522	b	8.97	-7.48	55077.64	-305.27		
LeVerrier	I	2043-11-08T01:23:57.642	b	8.99	-7.50	52831.74	-366.74		
Galle	I	2043-11-08T01:24:20.500	b	9.07	-7.58	42000.34	-610.11		
Neptune	I	2043-11-08T01:08:08.523		5.74	-4.32x	24763.77		31.68	32.57
Neptune	E	2043-11-08T01:41:51.736		12.70	-11.14	24763.85		-25.50	-26.27
Galle	E	2043-11-08T01:29:12.588	b	10.08	-8.56	41999.99	261.52		
LeVerrier	E	2043-11-08T01:29:55.377	b	10.23	-8.71	53200.02	262.00		
Lassell	E	2043-11-08T01:30:03.009	b	10.25	-8.74	55199.99	262.09		
Arago	E	2043-11-08T01:30:10.638	b	10.28	-8.76	57200.00	262.19		
Galatea	E	2043-11-08T01:30:28.760	b	10.34	-8.82	61952.99	262.40		
Adams	E	2043-11-08T01:30:32.494	b	10.35	-8.84	62933.02	262.44		

```

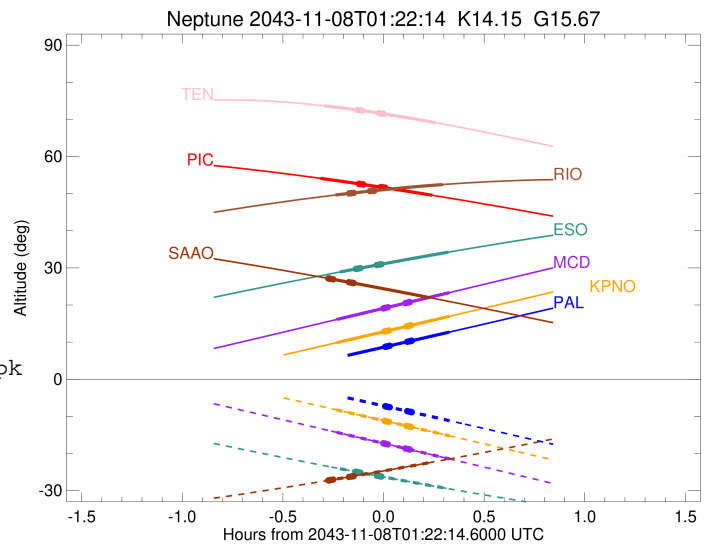
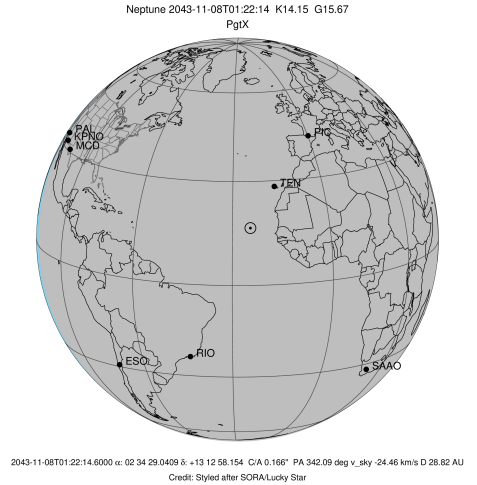
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2043-11-08T01:25:05.270
Event type           : PgtX
: Neptune occs: geocentric, topocentric
: No ring occs
Observer code        : KPNO
Location             : Kitt Peak Natl Obs
Latitude (deg)       : 31.96333
E. Longitude (deg)   : 248.40000
Altitude (km)        : 2.120
Gaia source ID       : 26822040699459072
2Mass ID (if available) : 02342904+1312584
ICRS Star Coord at Epoch: 02h 34m 29.04085s +13:12:58.15363s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 14.149
G magnitude          : 15.675
RP magnitude         : 15.149
BP magnitude         : 16.016
DUPflag             : 0
Distance (au)        : 28.820
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -24.46
Sun-Target sep (deg) : 175.18
Sun-Moon sep (deg)  : 107.76
B (ring opening deg) : -2.54
PA of pole (deg)    : -46.32
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.054
C/A sky separation (km) : 1123.0
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
    
```



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2043-11-08T01:23:01.982	b	12.97	-11.30	62933.83	-190.68		
Galatea	I	2043-11-08T01:23:07.183	b	12.99	-11.32	61954.12	-186.17		
Arago	I	2043-11-08T01:23:33.852	b	13.08	-11.41	57197.96	-177.16		
Lassell	I	2043-11-08T01:23:44.640	b	13.12	-11.44	55194.51	-198.76		
LeVerrier	I	2043-11-08T01:23:53.727	b	13.15	-11.48	53194.03	-248.91		
Galle	I	2043-11-08T01:24:19.217	b	13.24	-11.56	43458.23	-679.70		
Neptune	I	2043-11-08T01:08:14.087		9.85	-8.24	24763.78		31.21	32.08
Neptune	E	2043-11-08T01:41:55.327		16.96	-15.23	24763.84		-26.03	-26.82
Galle	E	2043-11-08T01:28:59.462	b	14.23	-12.54	42000.01	260.29		
LeVerrier	E	2043-11-08T01:29:42.396	b	14.38	-12.68	53200.00	261.41		
Lassell	E	2043-11-08T01:29:50.045	b	14.40	-12.71	55199.99	261.58		
Arago	E	2043-11-08T01:29:57.688	b	14.43	-12.74	57199.99	261.75		
Galatea	E	2043-11-08T01:30:15.834	b	14.49	-12.80	61953.01	262.12		
Adams	E	2043-11-08T01:30:19.572	b	14.51	-12.81	62933.02	262.19		

```

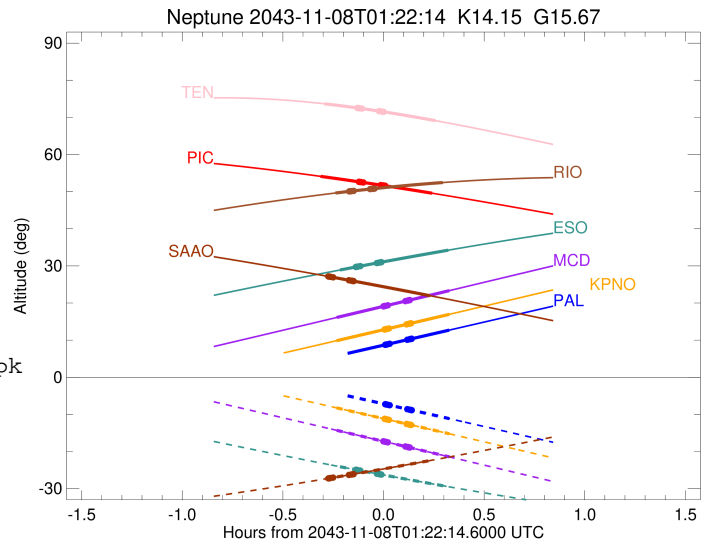
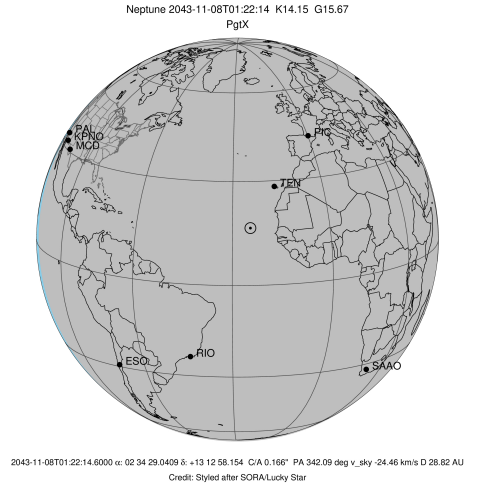
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2043-11-08T01:25:06.090
Event type          : PgtX
: Neptune occs: geocentric, topocentric
: No ring occs
Observer code       : MCD
Location            : McDonald Obs. 2.7m
Latitude (deg)      : 30.67158
E. Longitude (deg)  : 255.97844
Altitude (km)       : 2.075
Gaia source ID      : 26822040699459072
2Mass ID (if available) : 02342904+1312584
ICRS Star Coord at Epoch: 02h 34m 29.04085s +13:12:58.15363s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 14.149
G magnitude          : 15.675
RP magnitude         : 15.149
BP magnitude         : 16.016
DUPflag             : 0
Distance (au)       : 28.820
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -24.46
Sun-Target sep (deg) : 175.18
Sun-Moon sep (deg)  : 107.86
B (ring opening deg) : -2.54
PA of pole (deg)    : -46.32
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.040
C/A sky separation (km) : 829.1
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	2043-11-08T01:22:34.163	b	19.18	-17.33	62933.17	-210.89		
Galatea	I	2043-11-08T01:22:38.856	b	19.19	-17.34	61953.26	-206.54		
Arago	I	2043-11-08T01:23:03.573	b	19.28	-17.43	57203.50	-175.40		
Lassell	I	2043-11-08T01:23:15.687	b	19.32	-17.47	55211.70	-154.11		
LeVerrier	I	2043-11-08T01:23:30.014	b	19.38	-17.52	53240.49	-125.38		
Galle	I	2043-11-08T01:25:06.232	b	19.72	-17.86	60018.74	8798.66		
Neptune	I	2043-11-08T01:08:16.522		16.10	-14.29	24763.79		30.56	31.43
Neptune	E	2043-11-08T01:41:54.541		23.35	-21.45	24763.83		-26.75	-27.55
Galle	E	2043-11-08T01:28:36.049	b	20.47	-18.61	41999.98	256.75		
LeVerrier	E	2043-11-08T01:29:19.400	b	20.63	-18.76	53200.00	259.72		
Lassell	E	2043-11-08T01:29:27.095	b	20.66	-18.79	55200.00	260.11		
Arago	E	2043-11-08T01:29:34.779	b	20.69	-18.82	57200.02	260.47		
Galatea	E	2043-11-08T01:29:53.000	b	20.75	-18.88	61953.01	261.21		
Adams	E	2043-11-08T01:29:56.751	b	20.76	-18.90	62933.02	261.35		

```

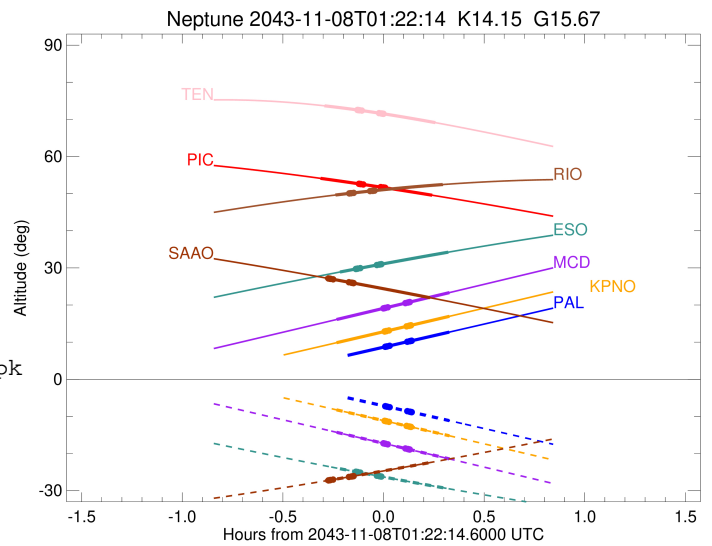
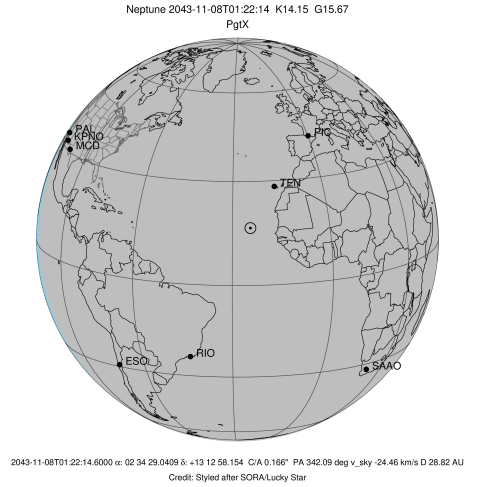
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2043-11-08T01:21:09.150
Event type          : PgtX
: Neptune occs: geocentric, topocentric
: No ring occs
Observer code       : TEN
Location            : Teide Obs./Tenerife
Latitude (deg)      : 28.30050
E. Longitude (deg)  : 343.48909
Altitude (km)       : 2.395
Gaia source ID      : 26822040699459072
2Mass ID (if available) : 02342904+1312584
ICRS Star Coord at Epoch: 02h 34m 29.04085s +13:12:58.15363s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 14.149
G magnitude          : 15.675
RP magnitude         : 15.149
BP magnitude         : 16.016
DUPflag             : 0
Distance (au)       : 28.820
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -24.46
Sun-Target sep (deg) : 175.18
Sun-Moon sep (deg)  : 108.15
B (ring opening deg) : -2.54
PA of pole (deg)    : -46.32
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.107
C/A sky separation (km) : 2246.6
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	2043-11-08T01:14:35.809	b	72.53	-77.00	62932.99	-268.43		
Galatea	I	2043-11-08T01:14:39.460	b	72.53	-77.00	61952.99	-268.42		
Arago	I	2043-11-08T01:14:57.168	b	72.49	-76.97	57200.01	-268.38		
Lassell	I	2043-11-08T01:15:04.621	b	72.47	-76.95	55200.00	-268.36		
LeVerrier	I	2043-11-08T01:15:12.074	b	72.46	-76.94	53200.02	-268.34		
Galle	I	2043-11-08T01:15:53.819	b	72.37	-76.87	42000.00	-268.24		
Neptune	I	2043-11-08T01:04:36.571		73.67	-77.85	24763.87		23.43	24.16
Neptune	E	2043-11-08T01:37:41.892		69.13	-73.92	24763.74		-33.81	-34.72
Galle	E	2043-11-08T01:20:21.464	b	71.77	-76.36	42056.20	413.85		
LeVerrier	E	2043-11-08T01:20:55.386	b	71.70	-76.29	52955.51	223.42		
Lassell	E	2043-11-08T01:21:06.237	b	71.67	-76.27	55161.51	159.82		
Arago	E	2043-11-08T01:21:19.725	b	71.64	-76.25	57264.49	150.12		
Galatea	E	2043-11-08T01:21:44.695	b	71.58	-76.19	61954.64	237.46		
Adams	E	2043-11-08T01:21:48.718	b	71.57	-76.19	62933.28	249.56		

```

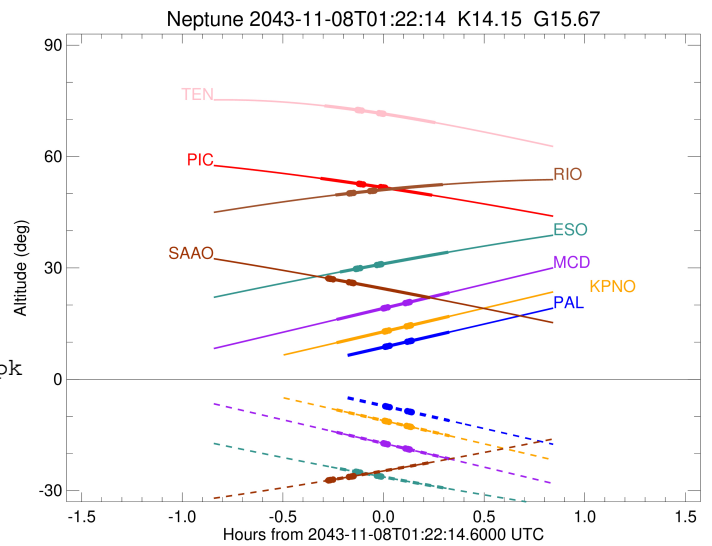
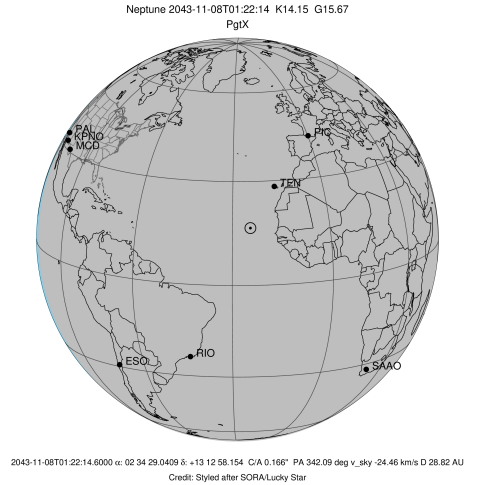
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2043-11-08T01:23:55.890
Event type            : PgtX
: Neptune occs: geocentric, topocentric
: No ring occs
Observer code         : RIO
Location              : Rio de Janeiro
Latitude (deg)        : -22.89506
E. Longitude (deg)    : 316.77708
Altitude (km)         : 0.033
Gaia source ID        : 26822040699459072
2Mass ID (if available) : 02342904+1312584
ICRS Star Coord at Epoch: 02h 34m 29.04085s +13:12:58.15363s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 14.149
G magnitude           : 15.675
RP magnitude          : 15.149
BP magnitude          : 16.016
DUPflag              : 0
Distance (au)         : 28.820
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -24.46
Sun-Target sep (deg) : 175.18
Sun-Moon sep (deg)   : 108.21
B (ring opening deg) : -2.54
PA of pole (deg)     : -46.32
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.314
C/A sky separation (km) : 6567.1
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	2043-11-08T01:12:12.200	b	50.09	-45.67	62932.99	-264.62		
Galatea	I	2043-11-08T01:12:15.905	b	50.10	-45.68	61953.00	-264.42		
Arago	I	2043-11-08T01:12:33.916	b	50.13	-45.71	57200.01	-263.30		
Lassell	I	2043-11-08T01:12:41.520	b	50.14	-45.73	55199.99	-262.74		
LeVerrier	I	2043-11-08T01:12:49.141	b	50.15	-45.74	53199.99	-262.10		
Galle	I	2043-11-08T01:13:32.270	b	50.23	-45.82	42000.01	-256.59		
Neptune	I	2043-11-08T01:07:54.635		49.63	-45.18	24763.96		13.37	13.82
Neptune	E	2043-11-08T01:39:56.806		52.46	-48.39	24763.60		-44.08	-45.06
Galle	E	2043-11-08T01:18:23.089	b	50.71	-46.35	42000.01	260.89		
LeVerrier	E	2043-11-08T01:19:05.375	b	50.77	-46.43	53199.99	268.26		
Lassell	E	2043-11-08T01:19:12.816	b	50.79	-46.44	55200.01	269.26		
Arago	E	2043-11-08T01:19:20.231	b	50.80	-46.46	57200.00	270.19		
Galatea	E	2043-11-08T01:19:37.756	b	50.83	-46.49	61953.00	272.22		
Adams	E	2043-11-08T01:19:41.353	b	50.83	-46.49	62933.00	272.61		

```

target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2043-11-08T01:25:26.280
Event type            : PgtX
: Neptune occs: geocentric, topocentric
: No ring occs
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        : 26822040699459072
2Mass ID (if available) : 02342904+1312584
ICRS Star Coord at Epoch: 02h 34m 29.04085s +13:12:58.15363s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 14.149
G magnitude           : 15.675
RP magnitude          : 15.149
BP magnitude          : 16.016
DUPflag              : 0
Distance (au)         : 28.820
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -24.46
Sun-Target sep (deg) : 175.18
Sun-Moon sep (deg)   : 108.08
B (ring opening deg) : -2.54
PA of pole (deg)     : -46.32
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.294
C/A sky separation (km) : 6137.8
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
    
```

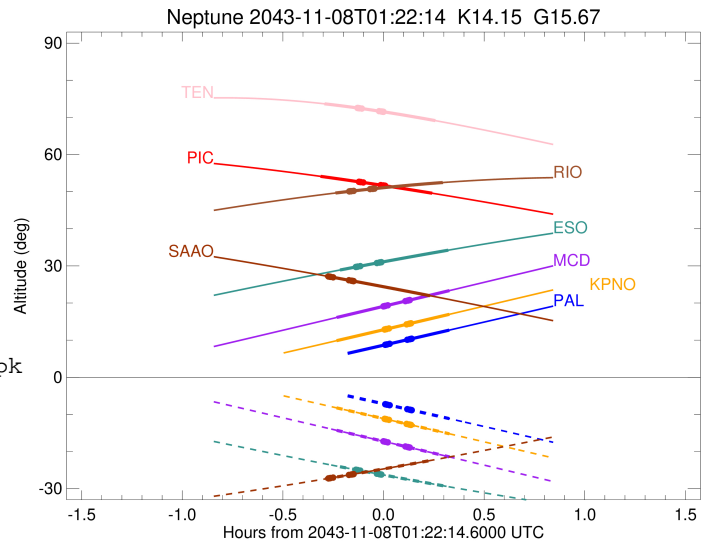
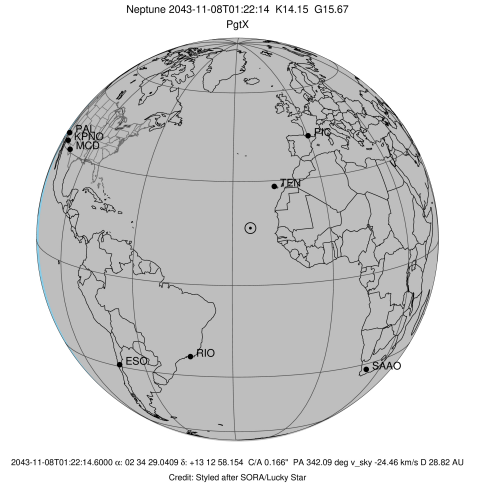


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2043-11-08T01:14:09.996	b	29.74	-24.94	62933.00	-264.11		
Galatea	I	2043-11-08T01:14:13.708	b	29.75	-24.95	61953.00	-263.94		
Arago	I	2043-11-08T01:14:31.746	b	29.80	-25.01	57200.00	-262.99		
Lassell	I	2043-11-08T01:14:39.358	b	29.82	-25.03	55200.01	-262.51		
LeVerrier	I	2043-11-08T01:14:46.984	b	29.85	-25.05	53200.02	-261.97		
Galle	I	2043-11-08T01:15:30.077	b	29.97	-25.17	41999.99	-257.26		
Neptune	I	2043-11-08T01:09:15.686		28.89	-24.10	24763.95		14.40	14.88
Neptune	E	2043-11-08T01:41:36.115		34.24	-29.48	24763.62		-43.06	-44.04
Galle	E	2043-11-08T01:20:24.033	b	30.80	-26.01	41999.99	262.78		
LeVerrier	E	2043-11-08T01:21:06.045	b	30.92	-26.12	53200.02	269.91		
Lassell	E	2043-11-08T01:21:13.442	b	30.94	-26.14	55200.00	270.91		
Arago	E	2043-11-08T01:21:20.811	b	30.96	-26.17	57200.02	271.87		
Galatea	E	2043-11-08T01:21:38.226	b	31.01	-26.21	61952.99	273.98		
Adams	E	2043-11-08T01:21:41.800	b	31.02	-26.22	62933.02	274.39		



```

target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2043-11-08T01:20:27.690
Event type          : PgtX
: Neptune occs: geocentric, topocentric
: No ring occs
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      : 26822040699459072
2Mass ID (if available) : 02342904+1312584
ICRS Star Coord at Epoch: 02h 34m 29.04085s +13:12:58.15363s
RUWE (>1.4 is poor) : 0.96
K magnitude         : 14.149
G magnitude         : 15.675
RP magnitude        : 15.149
BP magnitude        : 16.016
DUPflag            : 0
Distance (au)       : 28.820
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -24.46
Sun-Target sep (deg) : 175.18
Sun-Moon sep (deg)  : 107.67
B (ring opening deg) : -2.54
PA of pole (deg)    : -46.32
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.413
C/A sky separation (km) : 8636.2
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	2043-11-08T01:06:03.501	b	27.12	-27.20	62933.01	-256.07		
Galatea	I	2043-11-08T01:06:07.331	b	27.11	-27.19	61953.00	-255.70		
Arago	I	2043-11-08T01:06:25.990	b	27.05	-27.15	57200.01	-253.64		
Lassell	I	2043-11-08T01:06:33.891	b	27.03	-27.13	55200.01	-252.61		
LeVerrier	I	2043-11-08T01:06:41.826	b	27.01	-27.11	53200.02	-251.44		
Galle	I	2043-11-08T01:07:27.172	b	26.89	-26.99	42000.01	-241.31		
Neptune	I	2043-11-08T01:04:49.213		27.32	-27.39	24763.99		8.04	8.31
Neptune	E	2043-11-08T01:36:06.847		21.97	-22.44	24763.53		-48.78	-49.74
Galle	E	2043-11-08T01:12:09.682	b	26.10	-26.27	42000.01	242.75		
LeVerrier	E	2043-11-08T01:12:54.714	b	25.98	-26.16	53200.00	253.51		
Lassell	E	2043-11-08T01:13:02.583	b	25.95	-26.14	55200.00	254.80		
Arago	E	2043-11-08T01:13:10.414	b	25.93	-26.12	57200.00	255.96		
Galatea	E	2043-11-08T01:13:28.896	b	25.88	-26.07	61953.01	258.32		
Adams	E	2043-11-08T01:13:32.687	b	25.87	-26.06	62932.99	258.75		