

target : Neptune
 target radius (km) : 24764.00
 C/A epoch : 2036-10-31T11:27:34.830
 Event type : PgtRgt
 : Neptune occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 2565881494913345920
 2Mass ID (if available) : 01333716+0753250

Neptune 2036-10-31T11:27:34 K14.02 G16.11 PgtRgt

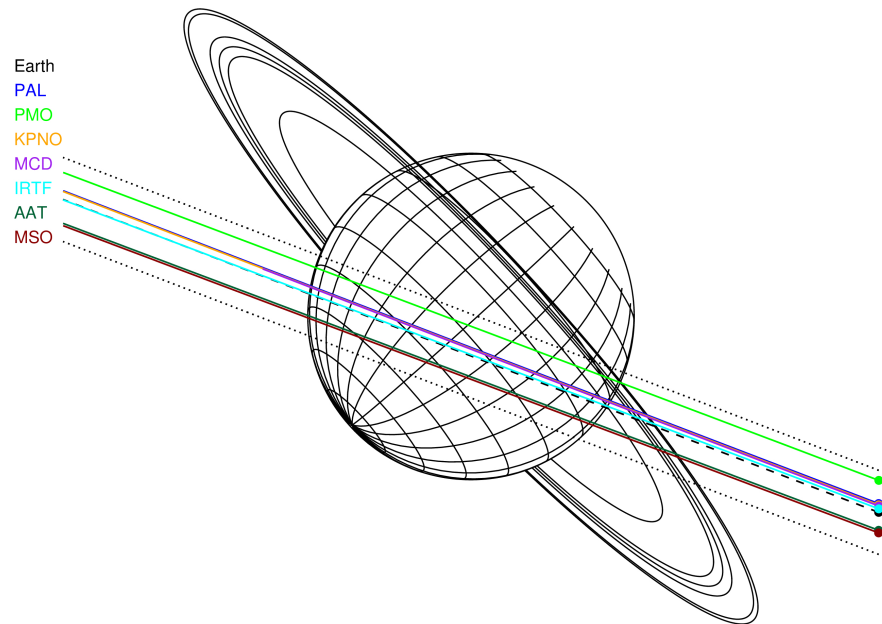
ICRS Star Coord at Epoch: 01h 33m 37.18353s +07:53:24.86569s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.015
 G magnitude : 16.106
 RP magnitude : 15.426
 BP magnitude : 16.632
 DUPflag : 0
 Distance (au) : 28.863
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.56
 Sun-Target sep (deg) : 166.34
 Sun-Moon sep (deg) : 28.17
 B (ring opening deg) : -9.87
 PA of pole (deg) : -47.59

Neptune 2036-10-31T11:27:34 K14.02 G16.11
 PgtRgt



2036-10-31T11:27:34.8300 α: 01 33 37.1835 α: +07 53 24.866 C/A 0.267 PA 339.01 deg v_sky -23.56 km/s D 28.86 AU
 Credit: Styled after SORA/Lucky Star

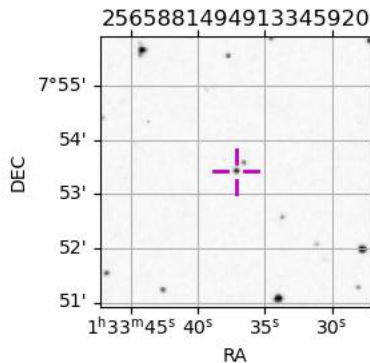
Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 AAT
 MSO



#	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

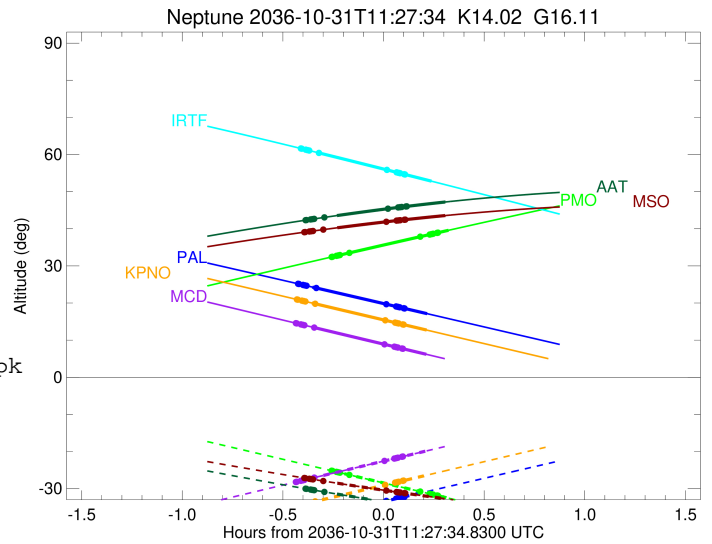
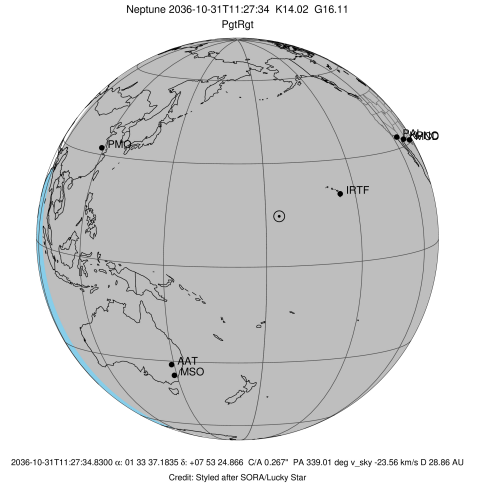
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1	+	+		OCT 31 11:02 - OCT 31 11:40	PieRin
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+			OCT 31 11:12 - OCT 31 11:47	PieRin
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	+		OCT 31 11:01 - OCT 31 11:40	PieRin
MCD	McDonald Obs. 2.7m	30.7	256.0	+	+		OCT 31 11:01 - OCT 31 11:40	PieRin
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	+		OCT 31 11:03 - OCT 31 11:41	PieRin
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 31 11:04 - OCT 31 11:46	PieRin
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+	+		OCT 31 11:04 - OCT 31 11:46	PieRin



```

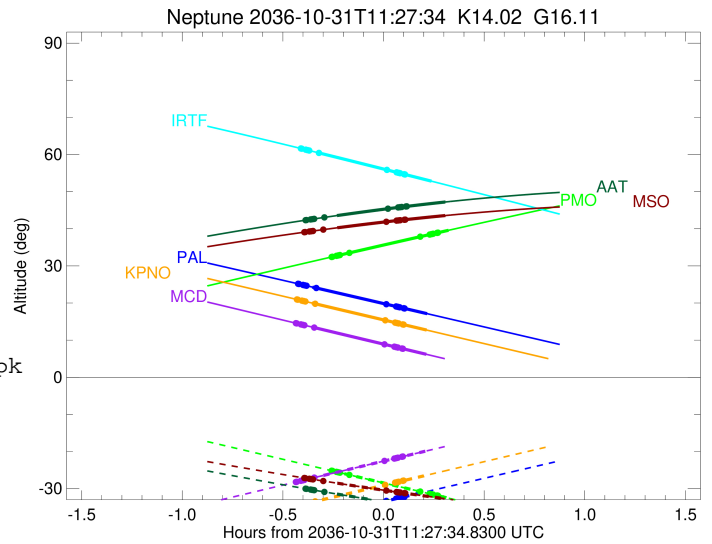
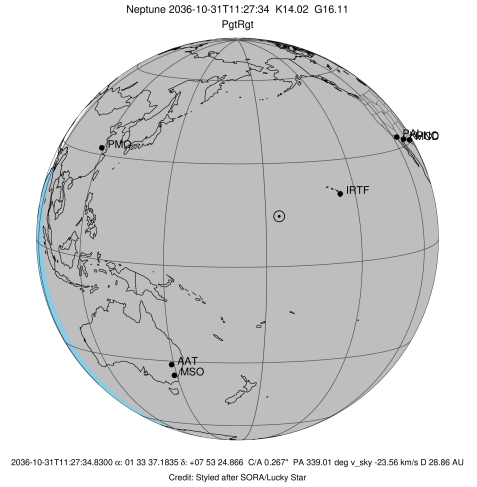
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2036-10-31T11:23:27.030
Event type           : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : PAL
Location              : Palomar Mt (200")
Latitude (deg)       : 33.35622
E. Longitude (deg)   : 243.13601
Altitude (km)        : 1.706
Gaia source ID       : 2565881494913345920
2Mass ID (if available) : 01333716+0753250
ICRS Star Coord at Epoch: 01h 33m 37.18353s +07:53:24.86569s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 14.015
G magnitude           : 16.106
RP magnitude         : 15.426
BP magnitude         : 16.632
DUPflag              : 0
Distance (au)        : 28.863
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -23.56
Sun-Target sep (deg) : 166.34
Sun-Moon sep (deg)   : 29.07
B (ring opening deg) : -9.87
PA of pole (deg)     : -47.59
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation ("): 0.210
C/A sky separation (km): 4394.6
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	2036-10-31T11:02:17.571		25.14	-38.74	62933.00	-64.86		
Galatea	I	2036-10-31T11:02:32.683		25.09	-38.69	61953.00	-64.83		
Arago	I	2036-10-31T11:03:46.070		24.84	-38.44	57200.00	-64.69		
Lassell	I	2036-10-31T11:04:17.001		24.73	-38.33	55200.00	-64.62		
LeVerrier	I	2036-10-31T11:04:47.967		24.62	-38.22	53200.00	-64.55		
Galle	I	2036-10-31T11:07:42.260	b	24.02	-37.62	42000.00	-63.90		
Neptune	I	2036-10-31T11:06:19.425		24.30	-37.91	24763.02		16.15	16.68
Neptune	E	2036-10-31T11:40:35.653		17.13	-30.77	24759.57		-36.18	-37.12
Galle	E	2036-10-31T11:28:18.412	b	19.71	-33.34	42000.00	61.19		
LeVerrier	E	2036-10-31T11:31:18.127	b	19.08	-32.71	53200.00	63.20		
Lassell	E	2036-10-31T11:31:49.718	b	18.97	-32.60	55200.00	63.41		
Arago	E	2036-10-31T11:32:21.210	b	18.86	-32.49	57200.00	63.60		
Galatea	E	2036-10-31T11:33:35.731	b	18.60	-32.23	61953.00	63.94		
Adams	E	2036-10-31T11:33:51.050	b	18.55	-32.18	62933.00	64.00		

```

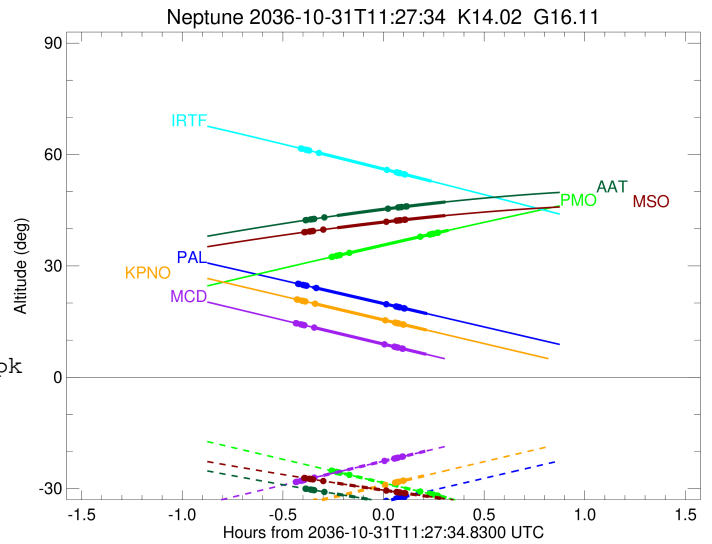
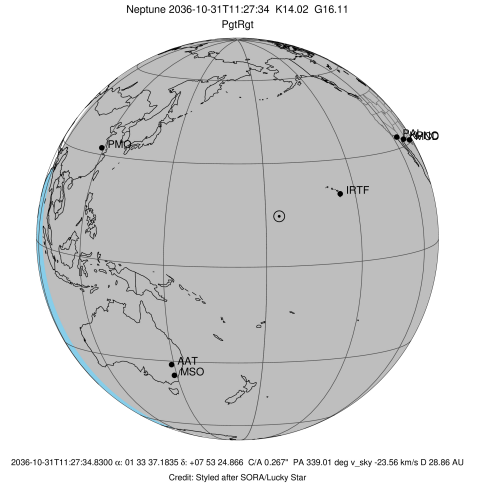
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2036-10-31T11:29:40.780
Event type           : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : PMO
Location              : Purple Mtn Obs. Nanking
Latitude (deg)       : 32.06667
E. Longitude (deg)   : 118.82089
Altitude (km)        : 0.364
Gaia source ID       : 2565881494913345920
2Mass ID (if available) : 01333716+0753250
ICRS Star Coord at Epoch: 01h 33m 37.18353s +07:53:24.86569s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 14.015
G magnitude           : 16.106
RP magnitude         : 15.426
BP magnitude         : 16.632
DUPflag              : 0
Distance (au)        : 28.863
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -23.56
Sun-Target sep (deg) : 166.34
Sun-Moon sep (deg)   : 28.09
B (ring opening deg) : -9.87
PA of pole (deg)     : -47.59
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.066
C/A sky separation (km) : 1386.9
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	2036-10-31T11:12:13.532		32.43	-25.20	62933.00	-66.01		
Galatea	I	2036-10-31T11:12:28.380	b	32.48	-25.25	61953.00	-66.00		
Arago	I	2036-10-31T11:13:40.405	b	32.73	-25.51	57200.00	-65.98		
Lassell	I	2036-10-31T11:14:10.720	b	32.84	-25.61	55200.00	-65.97		
LeVerrier	I	2036-10-31T11:14:41.041	b	32.94	-25.72	53200.00	-65.95		
Galle	I	2036-10-31T11:17:30.982	b	33.53	-26.32	42000.00	-65.84		
Neptune	I	2036-10-31T11:12:20.327		32.45	-25.22	24762.01		23.33	24.05
Neptune	E	2036-10-31T11:47:00.236		39.60	-32.58	24760.89		-29.64	-30.49
Galle	E	2036-10-31T11:38:27.269	b	37.85	-30.77	42000.00	65.38		
LeVerrier	E	2036-10-31T11:41:17.906	b	38.44	-31.37	53200.00	65.83		
Lassell	E	2036-10-31T11:41:48.277	b	38.54	-31.48	55200.00	65.88		
Arago	E	2036-10-31T11:42:18.627	b	38.64	-31.59	57200.00	65.92		
Galatea	E	2036-10-31T11:43:30.686	b	38.89	-31.84	61953.01	66.00		
Adams	E	2036-10-31T11:43:45.533	b	38.94	-31.89	62933.00	66.01		

```

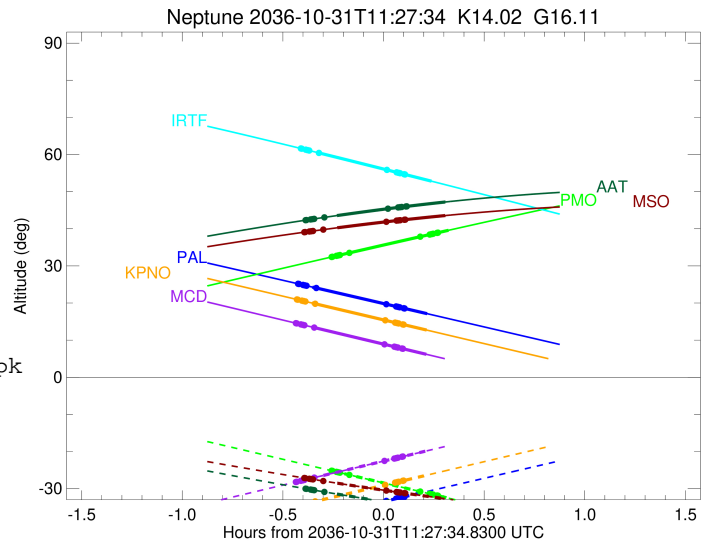
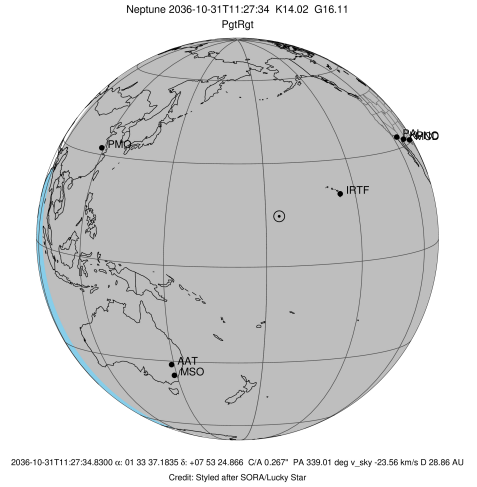
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2036-10-31T11:23:19.310
Event type          : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code       : KPNO
Location            : Kitt Peak Natl Obs
Latitude (deg)      : 31.96333
E. Longitude (deg)  : 248.40000
Altitude (km)       : 2.120
Gaia source ID      : 2565881494913345920
2Mass ID (if available) : 01333716+0753250
ICRS Star Coord at Epoch: 01h 33m 37.18353s +07:53:24.86569s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 14.015
G magnitude          : 16.106
RP magnitude         : 15.426
BP magnitude         : 16.632
DUPflag             : 0
Distance (au)       : 28.863
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -23.56
Sun-Target sep (deg) : 166.34
Sun-Moon sep (deg)  : 29.06
B (ring opening deg) : -9.87
PA of pole (deg)    : -47.59
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.217
C/A sky separation (km) : 4535.6
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	2036-10-31T11:01:57.359		20.92	-34.55	62933.00	-64.67		
Galatea	I	2036-10-31T11:02:12.515		20.86	-34.50	61953.00	-64.65		
Arago	I	2036-10-31T11:03:26.118		20.60	-34.24	57200.00	-64.50		
Lassell	I	2036-10-31T11:03:57.144		20.49	-34.13	55200.00	-64.42		
LeVerrier	I	2036-10-31T11:04:28.208		20.38	-34.02	53200.00	-64.34		
Galle	I	2036-10-31T11:07:23.107	b	19.76	-33.40	42000.00	-63.65		
Neptune	I	2036-10-31T11:06:11.541		20.02	-33.65	24763.06		15.79	16.31
Neptune	E	2036-10-31T11:40:28.145		12.71	-26.37	24759.51		-36.48	-37.42
Galle	E	2036-10-31T11:27:59.402	b	15.37	-29.03	42000.00	60.88		
LeVerrier	E	2036-10-31T11:30:59.970	b	14.73	-28.39	53200.00	62.94		
Lassell	E	2036-10-31T11:31:31.690	b	14.62	-28.27	55200.00	63.16		
Arago	E	2036-10-31T11:32:03.306	b	14.51	-28.16	57200.00	63.35		
Galatea	E	2036-10-31T11:33:18.102	b	14.24	-27.90	61953.00	63.72		
Adams	E	2036-10-31T11:33:33.474	b	14.19	-27.84	62933.00	63.78		

```

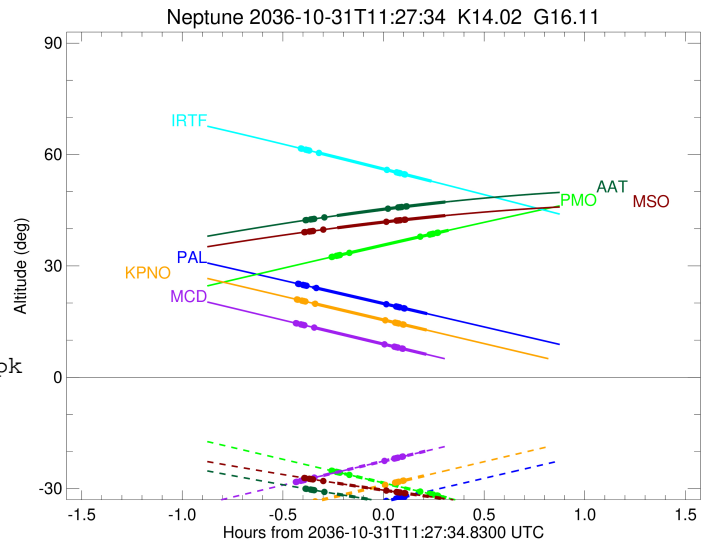
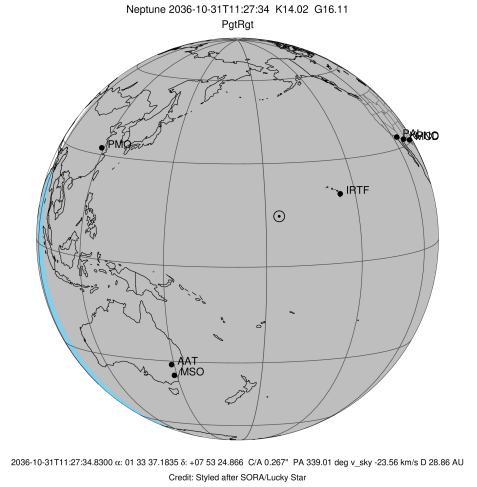
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2036-10-31T11:23:11.750
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code         : MCD
Location              : McDonald Obs. 2.7m
Latitude (deg)        : 30.67158
E. Longitude (deg)    : 255.97844
Altitude (km)         : 2.075
Gaia source ID        : 2565881494913345920
2Mass ID (if available) : 01333716+0753250
ICRS Star Coord at Epoch: 01h 33m 37.18353s +07:53:24.86569s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 14.015
G magnitude           : 16.106
RP magnitude          : 15.426
BP magnitude          : 16.632
DUPflag              : 0
Distance (au)         : 28.863
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -23.56
Sun-Target sep (deg) : 166.34
Sun-Moon sep (deg)   : 29.03
B (ring opening deg) : -9.87
PA of pole (deg)     : -47.59
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.221
C/A sky separation (km) : 4630.8
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.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	2036-10-31T11:01:38.879		14.53	-28.17	62933.00	-64.43		
Galatea	I	2036-10-31T11:01:54.094		14.47	-28.12	61953.00	-64.40		
Arago	I	2036-10-31T11:03:07.987		14.21	-27.85	57200.00	-64.24		
Lassell	I	2036-10-31T11:03:39.137		14.10	-27.74	55200.00	-64.16		
LeVerrier	I	2036-10-31T11:04:10.327		13.98	-27.63	53200.00	-64.08		
Galle	I	2036-10-31T11:07:05.980	b	13.35	-27.00	42000.00	-63.36		
Neptune	I	2036-10-31T11:06:02.747		13.58	-27.23	24763.09		15.52	16.04
Neptune	E	2036-10-31T11:40:21.869		6.18	-19.85	24759.48		-36.65	-37.59
Galle	E	2036-10-31T11:27:44.640	b	8.90	-22.56	42000.00	60.56		
LeVerrier	E	2036-10-31T11:30:46.139	b	8.25	-21.91	53200.00	62.64		
Lassell	E	2036-10-31T11:31:18.009	b	8.13	-21.79	55200.00	62.87		
Arago	E	2036-10-31T11:31:49.771	b	8.02	-21.68	57200.00	63.07		
Galatea	E	2036-10-31T11:33:04.899	b	7.75	-21.41	61953.00	63.44		
Adams	E	2036-10-31T11:33:20.338	b	7.69	-21.36	62933.00	63.51		

```

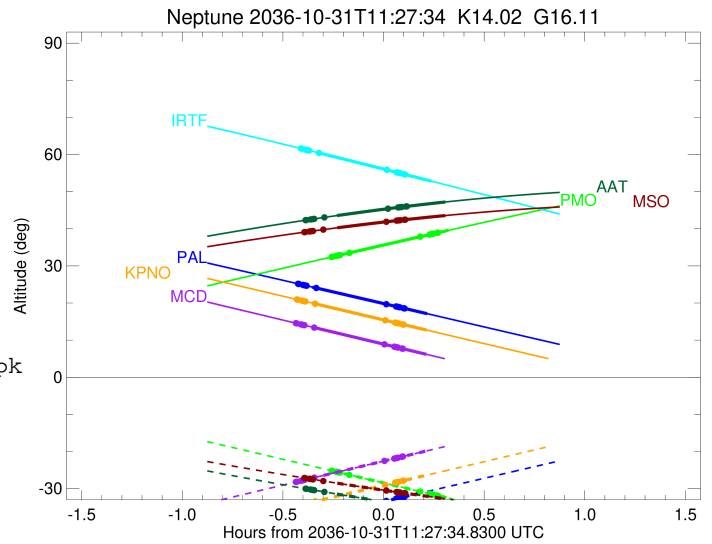
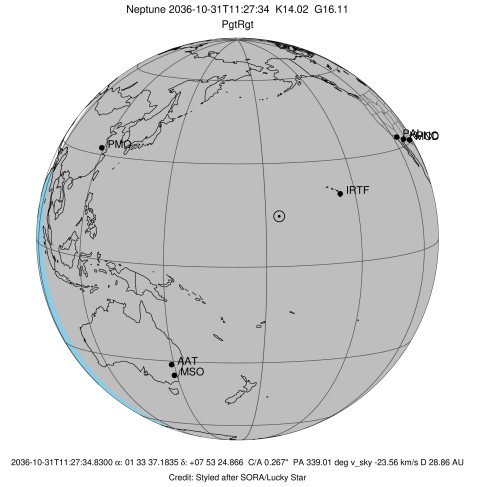
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2036-10-31T11:25:05.260
Event type           : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : IRTF
Location              : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)   : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 2565881494913345920
2Mass ID (if available) : 01333716+0753250
ICRS Star Coord at Epoch: 01h 33m 37.18353s +07:53:24.86569s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 14.015
G magnitude           : 16.106
RP magnitude          : 15.426
BP magnitude          : 16.632
DUPflag              : 0
Distance (au)        : 28.863
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -23.56
Sun-Target sep (deg) : 166.34
Sun-Moon sep (deg)   : 28.99
B (ring opening deg) : -9.87
PA of pole (deg)     : -47.59
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.259
C/A sky separation (km) : 5414.3
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	2036-10-31T11:03:08.393		61.59	-75.22	62933.00	-65.55		
Galatea	I	2036-10-31T11:03:23.348		61.53	-75.17	61953.00	-65.51		
Arago	I	2036-10-31T11:04:36.011		61.27	-74.90	57199.99	-65.31		
Lassell	I	2036-10-31T11:05:06.659		61.15	-74.78	55200.00	-65.20		
LeVerrier	I	2036-10-31T11:05:37.359		61.04	-74.67	53200.00	-65.09		
Galle	I	2036-10-31T11:08:30.564	b	60.40	-74.02	42000.00	-64.12		
Neptune	I	2036-10-31T11:08:15.380		60.45	-74.08	24763.26		14.02	14.49
Neptune	E	2036-10-31T11:41:55.651		52.81	-66.36	24759.02		-38.78	-39.74
Galle	E	2036-10-31T11:28:27.906	b	55.90	-69.47	42000.00	61.47		
LeVerrier	E	2036-10-31T11:31:27.324	b	55.21	-68.78	53200.00	63.39		
Lassell	E	2036-10-31T11:31:58.805	b	55.09	-68.66	55200.00	63.67		
Arago	E	2036-10-31T11:32:30.152	b	54.97	-68.54	57200.00	63.93		
Galatea	E	2036-10-31T11:33:44.206	b	54.69	-68.26	61953.00	64.42		
Adams	E	2036-10-31T11:33:59.409	b	54.63	-68.20	62933.00	64.50		


```

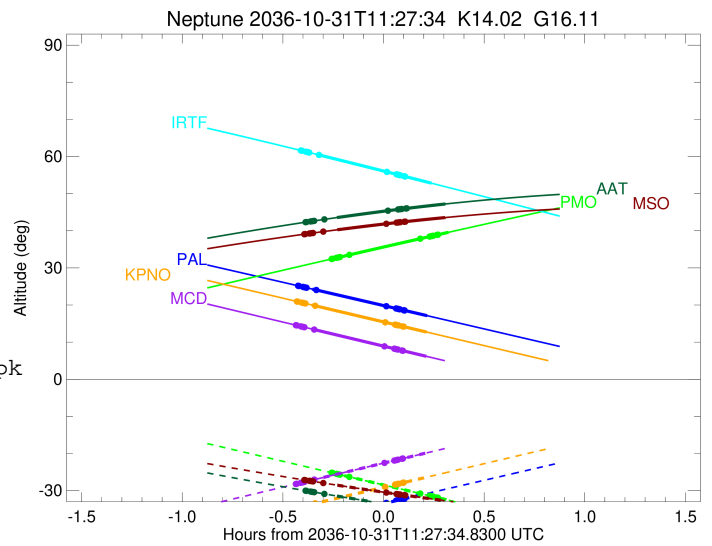
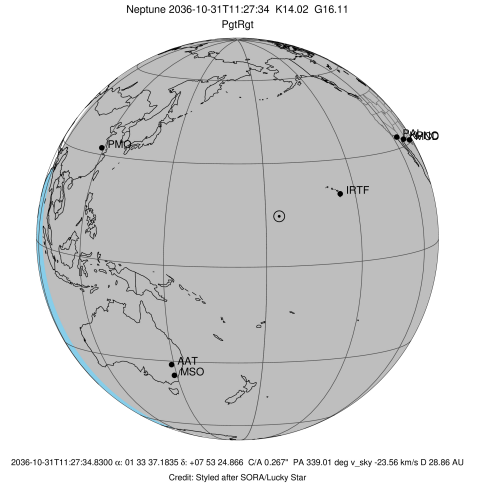
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2036-10-31T11:29:53.640
Event type           : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : AAT
Location              : Siding Spring (AAT)
Latitude (deg)       : -31.27703
E. Longitude (deg)   : 149.06608
Altitude (km)        : 1.164
Gaia source ID       : 2565881494913345920
2Mass ID (if available) : 01333716+0753250
ICRS Star Coord at Epoch: 01h 33m 37.18353s +07:53:24.86569s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 14.015
G magnitude           : 16.106
RP magnitude          : 15.426
BP magnitude          : 16.632
DUPflag              : 0
Distance (au)        : 28.863
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -23.56
Sun-Target sep (deg) : 166.34
Sun-Moon sep (deg)   : 28.02
B (ring opening deg) : -9.87
PA of pole (deg)     : -47.59
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.410
C/A sky separation (km) : 8574.4
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	2036-10-31T11:04:35.636		42.35	-30.06	62933.00	-63.92		
Galatea	I	2036-10-31T11:04:50.979		42.38	-30.10	61953.00	-63.83		
Arago	I	2036-10-31T11:06:05.728		42.55	-30.29	57200.00	-63.32		
Lassell	I	2036-10-31T11:06:37.374		42.62	-30.37	55200.00	-63.07		
LeVerrier	I	2036-10-31T11:07:09.155		42.70	-30.45	53200.00	-62.78		
Galle	I	2036-10-31T11:10:10.698		43.10	-30.92	42000.00	-60.31		
Neptune	I	2036-10-31T11:13:41.401		43.56	-31.45	24763.83		6.61	6.84
Neptune	E	2036-10-31T11:46:05.205		47.22	-36.00	24757.36		-46.33	-47.30
Galle	E	2036-10-31T11:28:56.083	b	45.41	-33.68	42000.00	61.63		
LeVerrier	E	2036-10-31T11:31:56.453	b	45.75	-34.10	53200.00	62.29		
Lassell	E	2036-10-31T11:32:28.546	b	45.81	-34.18	55200.00	62.35		
Arago	E	2036-10-31T11:33:00.599	b	45.87	-34.25	57200.00	62.45		
Galatea	E	2036-10-31T11:34:16.529	b	46.01	-34.42	61953.00	62.77		
Adams	E	2036-10-31T11:34:32.131	b	46.04	-34.46	62933.00	62.85		

```

target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2036-10-31T11:29:55.290
Event type           : PgtRgt
: Neptune occs: geocentric, topocentric
: 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       : 2565881494913345920
2Mass ID (if available) : 01333716+0753250
ICRS Star Coord at Epoch: 01h 33m 37.18353s +07:53:24.86569s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 14.015
G magnitude           : 16.106
RP magnitude          : 15.426
BP magnitude          : 16.632
DUPflag              : 0
Distance (au)         : 28.863
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -23.56
Sun-Target sep (deg) : 166.34
Sun-Moon sep (deg)   : 28.00
B (ring opening deg) : -9.87
PA of pole (deg)     : -47.59
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.426
C/A sky separation (km) : 8922.0
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	2036-10-31T11:04:13.915		39.11	-27.17	62933.00	-63.61		
Galatea	I	2036-10-31T11:04:29.333		39.15	-27.21	61953.00	-63.51		
Arago	I	2036-10-31T11:05:44.478		39.30	-27.39	57200.00	-62.97		
Lassell	I	2036-10-31T11:06:16.310		39.37	-27.47	55200.00	-62.69		
LeVerrier	I	2036-10-31T11:06:48.291		39.43	-27.54	53200.00	-62.38		
Galle	I	2036-10-31T11:09:51.332		39.80	-27.98	42000.00	-59.68		
Neptune	I	2036-10-31T11:13:47.929		40.27	-28.54	24763.87		5.75	5.95
Neptune	E	2036-10-31T11:46:01.987		43.57	-32.72	24757.18		-47.14	-48.12
Galle	E	2036-10-31T11:28:28.387	b	41.89	-30.52	42000.00	61.08		
LeVerrier	E	2036-10-31T11:31:29.486	b	42.20	-30.92	53200.00	62.18		
Lassell	E	2036-10-31T11:32:01.634	b	42.25	-30.99	55200.00	62.24		
Arago	E	2036-10-31T11:32:33.747	b	42.31	-31.05	57200.00	62.32		
Galatea	E	2036-10-31T11:33:49.863	b	42.43	-31.22	61953.00	62.59		
Adams	E	2036-10-31T11:34:05.512	b	42.46	-31.25	62933.00	62.66		