

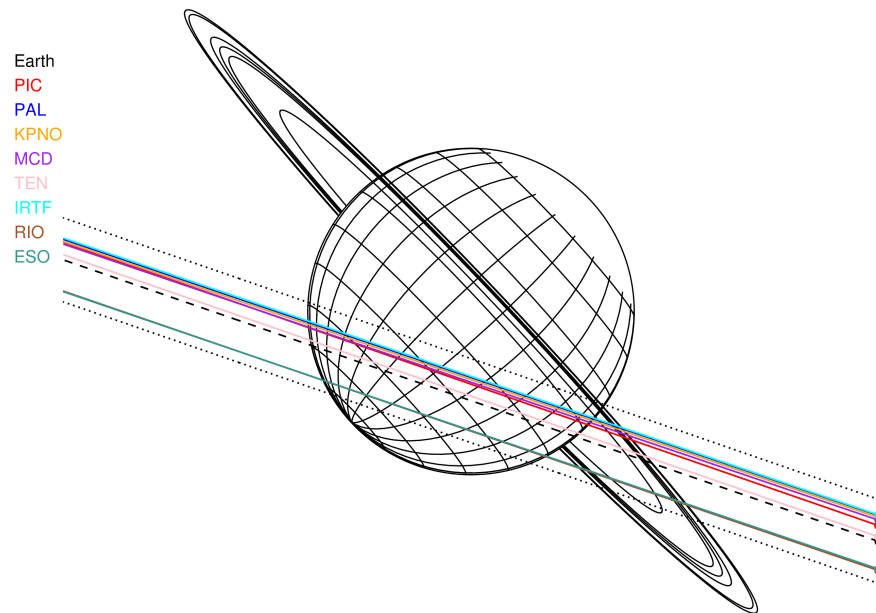
target : Neptune
 target radius (km) : 24764.00
 C/A epoch : 2041-11-02T05:03:15.040
 Event type : PgtRgt
 : Neptune occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 72927067217669248
 2Mass ID (if available) : 02171451+1148144

Neptune 2041-11-02T05:03:15 K14.48 G18.48 PgtRgt

ICRS Star Coord at Epoch: 02h 17m 14.51730s +11:48:13.00857s
 RUWE (>1.4 is poor) : 1.08
 K magnitude : 14.482
 G magnitude : 18.485
 RP magnitude : 17.173
 BP magnitude : 20.406
 DUPflag : 0
 Distance (au) : 28.817
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -24.45
 Sun-Target sep (deg) : 176.00
 Sun-Moon sep (deg) : 77.08
 B (ring opening deg) : -4.62
 PA of pole (deg) : -47.01
 # a(km) ring



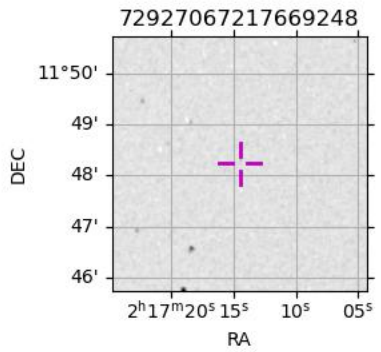
2041-11-02T05:03:15.0400 α: 02 17 14.5173 s: +11 48 13.009 C/A 0.612° PA 340.95 deg v_sky -24.45 km/s D 28.82 AU
 Credit: Styled after SORA/Lucky Star



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

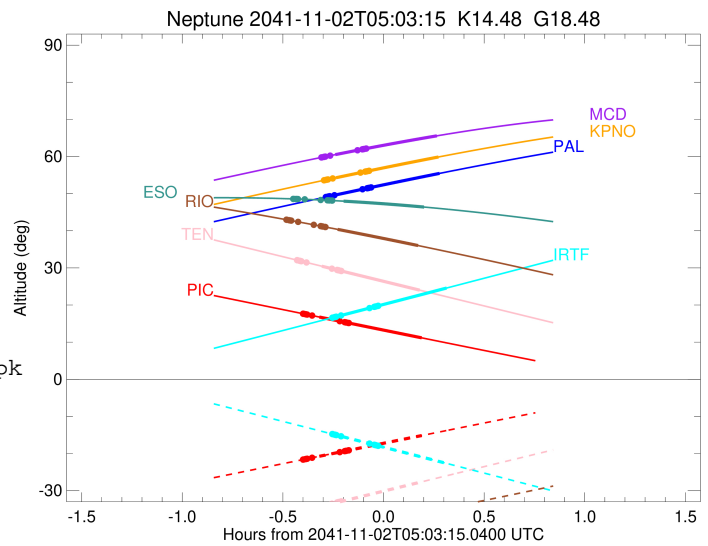
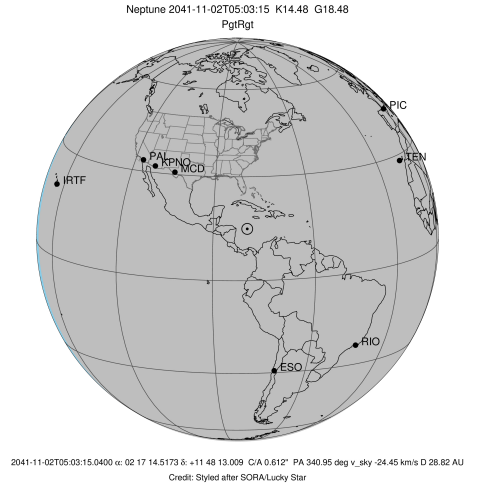
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+	+	+	NOV 02 04:39 - NOV 02 05:14	PieRin
PAL	Palomar Mt (200")	33.4	243.1	+	+	+	NOV 02 04:46 - NOV 02 05:19	PieRin
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	+	+	NOV 02 04:45 - NOV 02 05:19	PieRin
MCD	McDonald Obs. 2.7m	30.7	256.0	+	+	+	NOV 02 04:45 - NOV 02 05:19	PieRin
TEN	Teide Obs./Tenerife	28.3	343.5	+	+	+	NOV 02 04:37 - NOV 02 05:14	PieRin
IRTF	Mauna Kea/IRTF	19.8	204.5	+	+	+	NOV 02 04:48 - NOV 02 05:22	PieRin
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+	+	+	NOV 02 04:34 - NOV 02 05:13	PieRie
ESO	European Southern Obs	-29.3	289.3	+	+	+	NOV 02 04:36 - NOV 02 05:15	PieRie
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



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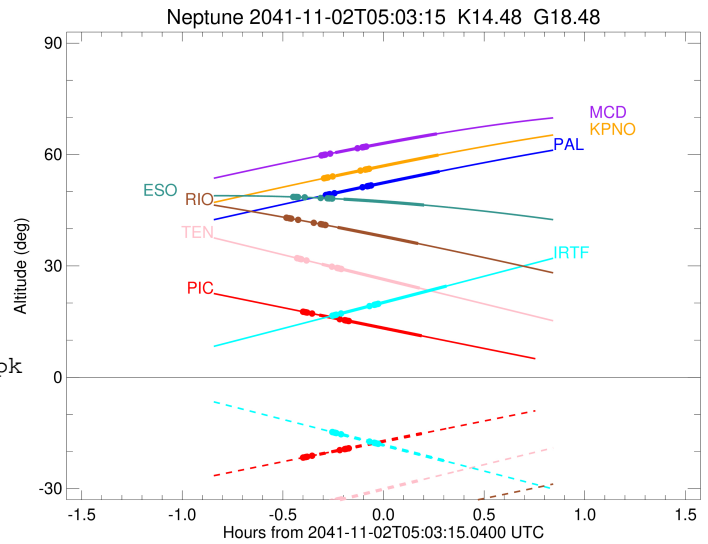
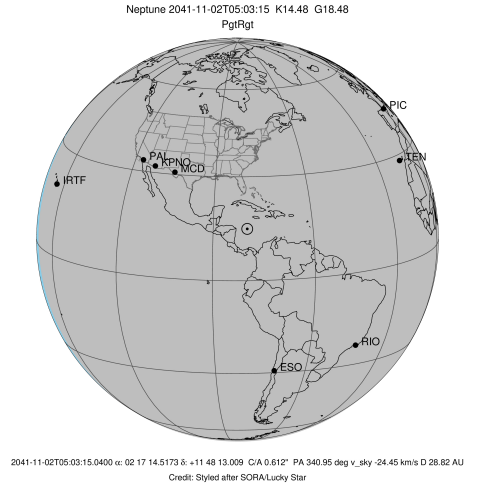
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2041-11-02T04:59:22.420
Event type           : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : PIC
Location             : Pic du Midi
Latitude (deg)       : 42.93656
E. Longitude (deg)  : 0.14231
Altitude (km)        : 2.890
Gaia source ID       : 72927067217669248
2Mass ID (if available) : 02171451+1148144
ICRS Star Coord at Epoch: 02h 17m 14.51730s +11:48:13.00857s
RUWE (>1.4 is poor) : 1.08
K magnitude          : 14.482
G magnitude          : 18.485
RP magnitude         : 17.173
BP magnitude         : 20.406
DUPflag             : 0
Distance (au)        : 28.817
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -24.45
Sun-Target sep (deg) : 176.00
Sun-Moon sep (deg)  : 77.50
B (ring opening deg) : -4.62
PA of pole (deg)    : -47.01
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.498
C/A sky separation (km) : 10417.3
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.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	2041-11-02T04:39:33.178		17.61	-21.58	62933.01	-134.92		
Galatea	I	2041-11-02T04:39:40.449		17.58	-21.56	61953.01	-134.62		
Arago	I	2041-11-02T04:40:15.972		17.48	-21.45	57200.00	-132.91		
Lassell	I	2041-11-02T04:40:31.068		17.43	-21.41	55200.00	-132.05		
LeVerrier	I	2041-11-02T04:40:46.268		17.38	-21.36	53200.00	-131.08		
Galle	I	2041-11-02T04:42:14.232		17.11	-21.09	42000.00	-122.55		
Neptune	I	2041-11-02T04:44:06.608		16.77	-20.75	24763.99		2.96	3.07
Neptune	E	2041-11-02T05:14:38.962		11.16	-15.16	24762.28		-52.47	-53.40
Galle	E	2041-11-02T04:50:28.773	b	15.60	-19.58	42000.01	123.29		
LeVerrier	E	2041-11-02T04:51:56.091	b	15.33	-19.31	53200.00	132.27		
Lassell	E	2041-11-02T04:52:11.150	b	15.28	-19.27	55200.00	133.33		
Arago	E	2041-11-02T04:52:26.097	b	15.24	-19.22	57200.00	134.28		
Galatea	E	2041-11-02T04:53:01.232	b	15.13	-19.11	61953.00	136.21		
Adams	E	2041-11-02T04:53:08.418	b	15.11	-19.09	62933.00	136.56		

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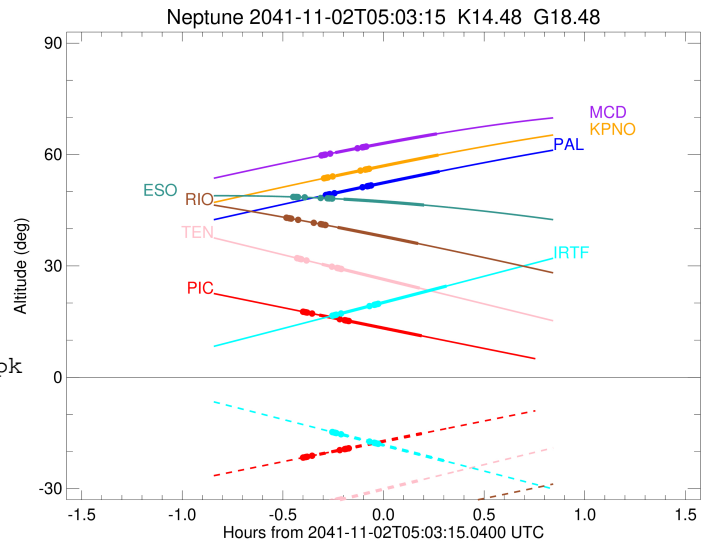
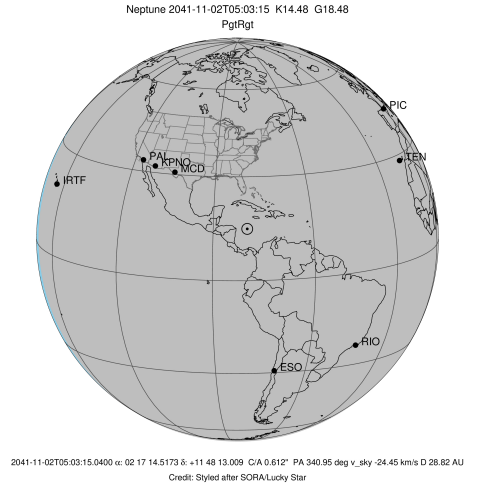
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2041-11-02T05:04:34.280
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code         : PAL
Location               : Palomar Mt (200")
Latitude (deg)        : 33.35622
E. Longitude (deg)    : 243.13601
Altitude (km)         : 1.706
Gaia source ID        : 72927067217669248
2Mass ID (if available) : 02171451+1148144
ICRS Star Coord at Epoch: 02h 17m 14.51730s +11:48:13.00857s
RUWE (>1.4 is poor) : 1.08
K magnitude           : 14.482
G magnitude           : 18.485
RP magnitude          : 17.173
BP magnitude          : 20.406
DUPflag              : 0
Distance (au)         : 28.817
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -24.45
Sun-Target sep (deg)  : 176.00
Sun-Moon sep (deg)    : 77.79
B (ring opening deg) : -4.62
PA of pole (deg)      : -47.01
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.453
C/A sky separation (km) : 9473.0
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.urall1.tpc.Neptune
naif0012.tls
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
earth_flat_IAU.spk
    
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Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2041-11-02T04:46:17.829		49.13	-48.54	62932.99	-139.67		
Galatea	I	2041-11-02T04:46:24.851		49.15	-48.56	61953.00	-139.43		
Arago	I	2041-11-02T04:46:59.101		49.26	-48.67	57200.00	-138.06		
Lassell	I	2041-11-02T04:47:13.623		49.31	-48.72	55200.00	-137.37		
LeVerrier	I	2041-11-02T04:47:28.222		49.36	-48.77	53200.00	-136.60		
Galle	I	2041-11-02T04:48:52.043		49.63	-49.05	42000.00	-129.82		
Neptune	I	2041-11-02T04:49:09.407		49.69	-49.11	24763.97		5.79	5.99
Neptune	E	2041-11-02T05:19:58.530		55.46	-55.17	24762.37		-50.57	-51.52
Galle	E	2041-11-02T04:57:13.105	b	51.23	-50.72	42000.00	131.16		
LeVerrier	E	2041-11-02T04:58:35.881	b	51.50	-50.99	53199.99	138.68		
Lassell	E	2041-11-02T04:58:50.255	b	51.54	-51.04	55200.00	139.59		
Arago	E	2041-11-02T04:59:04.539	b	51.59	-51.09	57200.00	140.43		
Galatea	E	2041-11-02T04:59:38.176	b	51.69	-51.20	61953.01	142.13		
Adams	E	2041-11-02T04:59:45.064	b	51.72	-51.22	62933.00	142.44		

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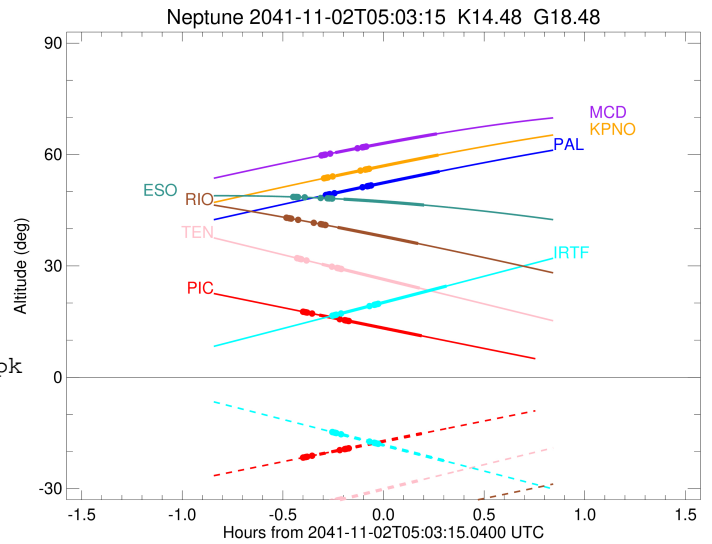
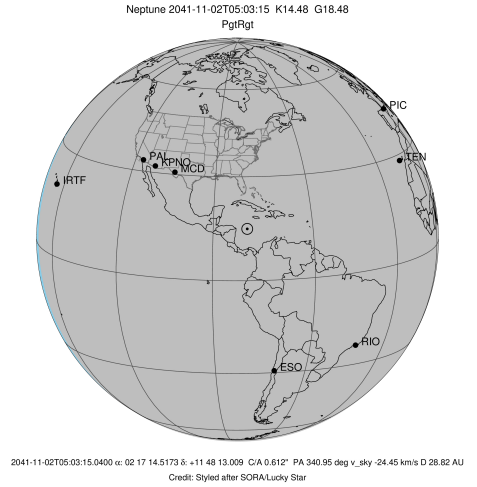
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2041-11-02T05:04:22.220
Event type          : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code       : KPNO
Location            : Kitt Peak Natl Obs
Latitude (deg)      : 31.96333
E. Longitude (deg)  : 248.40000
Altitude (km)       : 2.120
Gaia source ID      : 72927067217669248
2Mass ID (if available) : 02171451+1148144
ICRS Star Coord at Epoch: 02h 17m 14.51730s +11:48:13.00857s
RUWE (>1.4 is poor) : 1.08
K magnitude          : 14.482
G magnitude          : 18.485
RP magnitude         : 17.173
BP magnitude         : 20.406
DUPflag             : 0
Distance (au)       : 28.817
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -24.45
Sun-Target sep (deg) : 176.00
Sun-Moon sep (deg)  : 77.84
B (ring opening deg) : -4.62
PA of pole (deg)    : -47.01
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.468
C/A sky separation (km) : 9778.6
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	2041-11-02T04:45:46.273		53.65	-53.08	62933.00	-139.35		
Galatea	I	2041-11-02T04:45:53.312		53.67	-53.10	61953.00	-139.09		
Arago	I	2041-11-02T04:46:27.658		53.78	-53.22	57200.01	-137.62		
Lassell	I	2041-11-02T04:46:42.229		53.83	-53.27	55200.00	-136.88		
LeVerrier	I	2041-11-02T04:46:56.883		53.88	-53.32	53200.00	-136.05		
Galle	I	2041-11-02T04:48:21.189		54.15	-53.60	42000.00	-128.77		
Neptune	I	2041-11-02T04:49:03.489		54.28	-53.74	24763.98		5.03	5.21
Neptune	E	2041-11-02T05:19:40.404		59.89	-59.71	24762.33		-51.33	-52.28
Galle	E	2041-11-02T04:56:37.141	b	55.71	-55.25	42000.00	129.95		
LeVerrier	E	2041-11-02T04:58:00.516	b	55.97	-55.52	53200.00	137.89		
Lassell	E	2041-11-02T04:58:14.969	b	56.02	-55.57	55200.00	138.85		
Arago	E	2041-11-02T04:58:29.328	b	56.06	-55.62	57200.00	139.72		
Galatea	E	2041-11-02T04:59:03.126	b	56.17	-55.73	61953.00	141.49		
Adams	E	2041-11-02T04:59:10.045	b	56.19	-55.75	62933.01	141.81		

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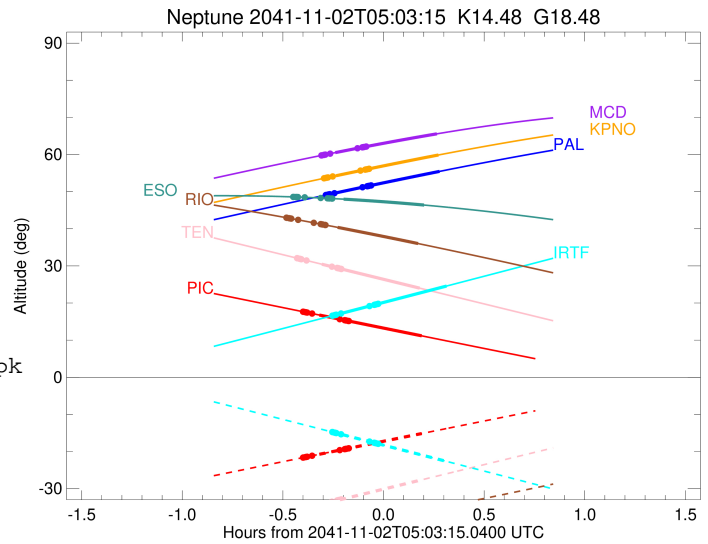
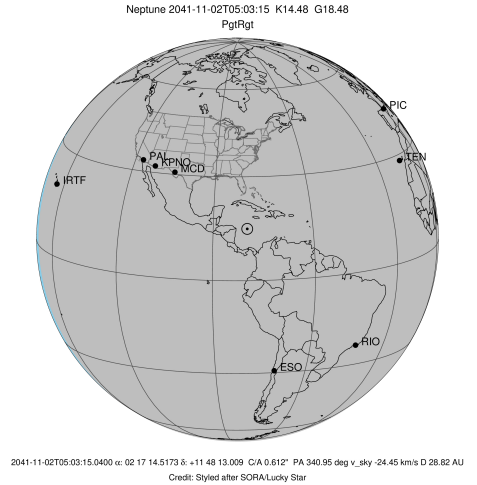
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2041-11-02T05:04:00.900
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code         : MCD
Location              : McDonald Obs. 2.7m
Latitude (deg)        : 30.67158
E. Longitude (deg)    : 255.97844
Altitude (km)         : 2.075
Gaia source ID        : 72927067217669248
2Mass ID (if available) : 02171451+1148144
ICRS Star Coord at Epoch: 02h 17m 14.51730s +11:48:13.00857s
RUWE (>1.4 is poor) : 1.08
K magnitude           : 14.482
G magnitude           : 18.485
RP magnitude          : 17.173
BP magnitude          : 20.406
DUPflag              : 0
Distance (au)         : 28.817
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -24.45
Sun-Target sep (deg)  : 176.00
Sun-Moon sep (deg)    : 77.91
B (ring opening deg) : -4.62
PA of pole (deg)      : -47.01
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.486
C/A sky separation (km) : 10163.6
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	2041-11-02T04:45:00.184		59.81	-59.43	62933.01	-138.88		
Galatea	I	2041-11-02T04:45:07.248		59.83	-59.46	61953.01	-138.59		
Arago	I	2041-11-02T04:45:41.732		59.94	-59.57	57200.00	-137.00		
Lassell	I	2041-11-02T04:45:56.373		59.98	-59.62	55200.00	-136.19		
LeVerrier	I	2041-11-02T04:46:11.105		60.03	-59.66	53200.00	-135.29		
Galle	I	2041-11-02T04:47:36.094		60.28	-59.94	41999.99	-127.33		
Neptune	I	2041-11-02T04:48:50.087		60.51	-60.18	24763.99		4.06	4.20
Neptune	E	2041-11-02T05:19:11.272		65.58	-65.82	24762.29		-52.29	-53.23
Galle	E	2041-11-02T04:55:45.420	b	61.74	-61.52	42000.01	128.32		
LeVerrier	E	2041-11-02T04:57:09.602	b	61.98	-61.78	53200.00	136.86		
Lassell	E	2041-11-02T04:57:24.161	b	62.02	-61.83	55199.99	137.87		
Arago	E	2041-11-02T04:57:38.618	b	62.07	-61.88	57199.99	138.79		
Galatea	E	2041-11-02T04:58:12.628	b	62.16	-61.98	61953.01	140.66		
Adams	E	2041-11-02T04:58:19.587	b	62.18	-62.01	62933.00	141.00		

```

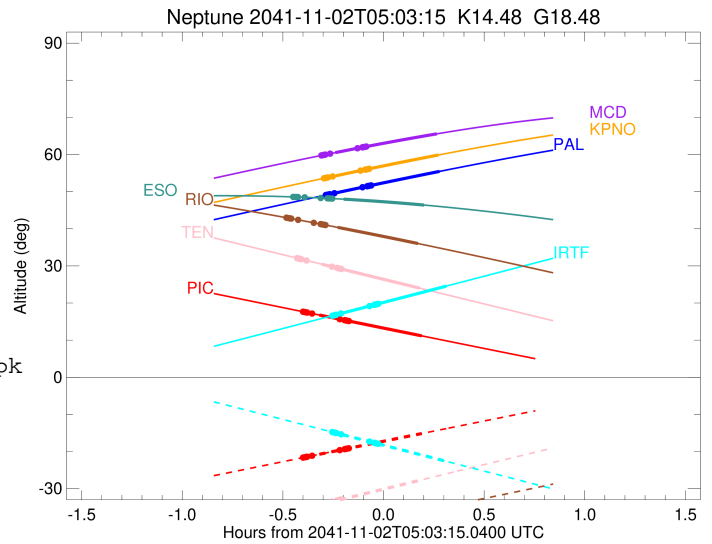
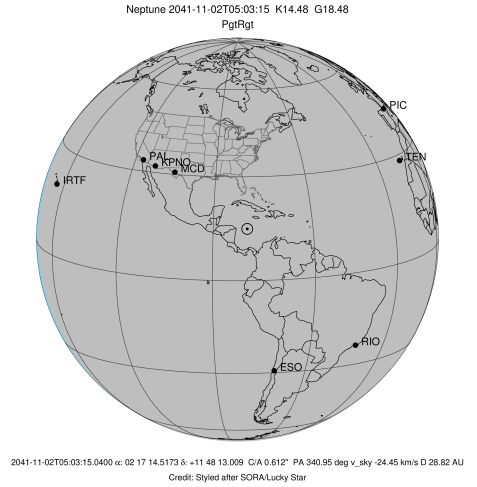
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2041-11-02T04:59:25.190
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code         : TEN
Location              : Teide Obs./Tenerife
Latitude (deg)        : 28.30050
E. Longitude (deg)    : 343.48909
Altitude (km)         : 2.395
Gaia source ID        : 72927067217669248
2Mass ID (if available) : 02171451+1148144
ICRS Star Coord at Epoch: 02h 17m 14.51730s +11:48:13.00857s
RUWE (>1.4 is poor) : 1.08
K magnitude           : 14.482
G magnitude           : 18.485
RP magnitude          : 17.173
BP magnitude          : 20.406
DUPflag              : 0
Distance (au)         : 28.817
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -24.45
Sun-Target sep (deg) : 176.00
Sun-Moon sep (deg)   : 77.70
B (ring opening deg) : -4.62
PA of pole (deg)     : -47.01
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.580
C/A sky separation (km) : 12124.5
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.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	2041-11-02T04:37:48.599		32.01	-35.74	62933.00	-132.62		
Galatea	I	2041-11-02T04:37:55.999		31.99	-35.72	61953.01	-132.20		
Arago	I	2041-11-02T04:38:32.265		31.85	-35.58	57200.00	-129.82		
Lassell	I	2041-11-02T04:38:47.742		31.80	-35.53	55200.00	-128.61		
LeVerrier	I	2041-11-02T04:39:03.373		31.74	-35.47	53199.99	-127.25		
Galle	I	2041-11-02T04:40:35.280		31.40	-35.13	42000.01	-115.03		
Neptune	I	2041-11-02T04:44:49.207		30.46	-34.20	24764.00		-1.38	-1.43
Neptune	E	2041-11-02T05:14:01.874		24.01	-27.76	24762.07		-56.94	-57.82
Galle	E	2041-11-02T04:48:12.855	b	29.71	-33.45	42000.02	115.38		
LeVerrier	E	2041-11-02T04:49:44.423	b	29.38	-33.11	53200.00	127.83		
Lassell	E	2041-11-02T04:49:59.982	b	29.32	-33.06	55199.99	129.24		
Arago	E	2041-11-02T04:50:15.381	b	29.26	-33.00	57200.00	130.50		
Galatea	E	2041-11-02T04:50:51.444	b	29.13	-32.87	61953.00	133.01		
Adams	E	2041-11-02T04:50:58.800	b	29.10	-32.84	62932.99	133.45		


```

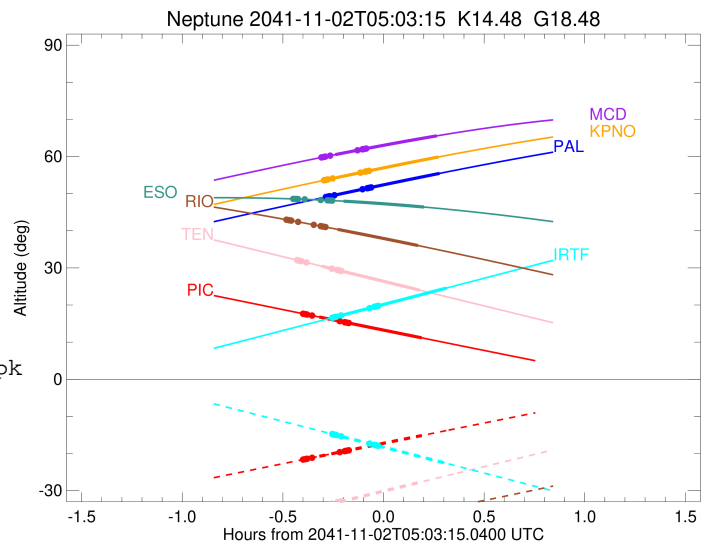
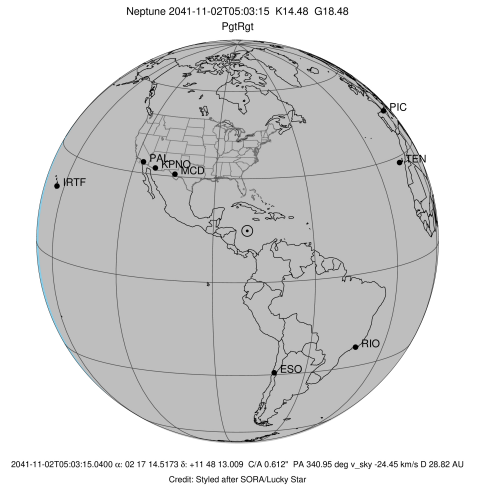
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2041-11-02T05:06:31.120
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code         : IRTF
Location              : Mauna Kea/IRTF
Latitude (deg)        : 19.82622
E. Longitude (deg)    : 204.52800
Altitude (km)         : 4.168
Gaia source ID        : 72927067217669248
2Mass ID (if available) : 02171451+1148144
ICRS Star Coord at Epoch: 02h 17m 14.51730s +11:48:13.00857s
RUWE (>1.4 is poor) : 1.08
K magnitude           : 14.482
G magnitude           : 18.485
RP magnitude          : 17.173
BP magnitude          : 20.406
DUPflag              : 0
Distance (au)         : 28.817
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -24.45
Sun-Target sep (deg)  : 176.00
Sun-Moon sep (deg)    : 77.26
B (ring opening deg) : -4.62
PA of pole (deg)      : -47.01
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.446
C/A sky separation (km) : 9315.4
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	2041-11-02T04:48:14.569		16.63	-14.81	62933.00	-138.46		
Galatea	I	2041-11-02T04:48:21.653		16.66	-14.84	61953.00	-138.22		
Arago	I	2041-11-02T04:48:56.195		16.80	-14.97	57200.00	-136.92		
Lassell	I	2041-11-02T04:49:10.837		16.85	-15.03	55200.01	-136.26		
LeVerrier	I	2041-11-02T04:49:25.553		16.91	-15.09	53199.99	-135.52		
Galle	I	2041-11-02T04:50:49.969		17.24	-15.41	42000.00	-129.05		
Neptune	I	2041-11-02T04:50:56.258		17.27	-15.44	24763.97		6.13	6.34
Neptune	E	2041-11-02T05:22:04.878		24.58	-22.67	24762.39		-50.14	-51.09
Galle	E	2041-11-02T04:59:18.078	b	19.23	-17.37	41999.99	130.53		
LeVerrier	E	2041-11-02T05:00:41.326	b	19.55	-17.70	53199.99	137.81		
Lassell	E	2041-11-02T05:00:55.791	b	19.61	-17.75	55200.00	138.70		
Arago	E	2041-11-02T05:01:10.168	b	19.67	-17.81	57200.00	139.51		
Galatea	E	2041-11-02T05:01:44.029	b	19.80	-17.94	61953.00	141.18		
Adams	E	2041-11-02T05:01:50.963	b	19.83	-17.96	62933.00	141.48		

```

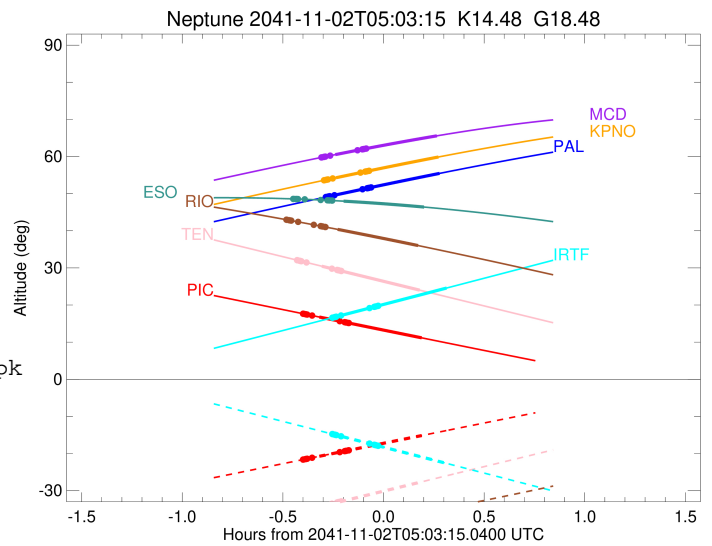
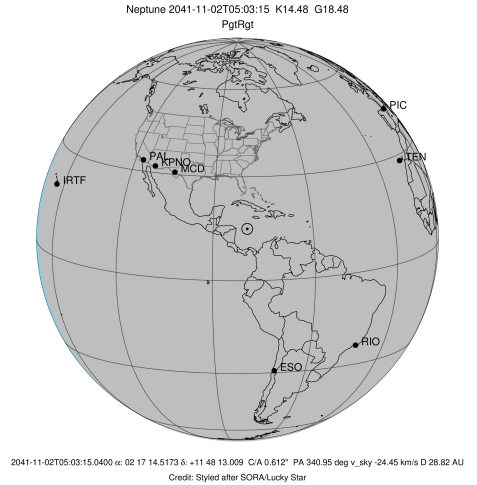
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2041-11-02T05:01:34.410
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : RIO
Location              : Rio de Janeiro
Latitude (deg)       : -22.89506
E. Longitude (deg)   : 316.77708
Altitude (km)        : 0.033
Gaia source ID       : 72927067217669248
2Mass ID (if available) : 02171451+1148144
ICRS Star Coord at Epoch: 02h 17m 14.51730s +11:48:13.00857s
RUWE (>1.4 is poor) : 1.08
K magnitude           : 14.482
G magnitude           : 18.485
RP magnitude         : 17.173
BP magnitude         : 20.406
DUPflag              : 0
Distance (au)        : 28.817
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -24.45
Sun-Target sep (deg) : 176.00
Sun-Moon sep (deg)   : 77.74
B (ring opening deg) : -4.62
PA of pole (deg)     : -47.01
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.822
C/A sky separation (km) : 17170.0
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	2041-11-02T04:34:43.446		42.91	-42.53	62933.01	-120.31		
Galatea	I	2041-11-02T04:34:51.623		42.89	-42.51	61953.01	-119.37		
Arago	I	2041-11-02T04:35:32.328		42.78	-42.41	57200.00	-113.94		
Lassell	I	2041-11-02T04:35:50.096		42.73	-42.36	55200.01	-111.12		
LeVerrier	I	2041-11-02T04:36:08.352		42.68	-42.32	53200.01	-107.90		
Galle	I	2041-11-02T04:38:08.184		42.34	-42.02	42000.14	-75.15		
Neptune	I	2041-11-02T04:49:34.570		40.38	-40.23	24763.78		-15.75	-16.27
Neptune	E	2041-11-02T05:13:34.497		36.02	-36.20	24761.55		-71.41	-71.99
Galle	E	2041-11-02T04:43:00.940		41.52	-41.27	42002.76	75.23		
LeVerrier	E	2041-11-02T04:45:00.705		41.17	-40.95	53200.08	108.00		
Lassell	E	2041-11-02T04:45:18.947		41.12	-40.90	55200.05	111.23		
Arago	E	2041-11-02T04:45:36.699		41.07	-40.86	57200.03	114.05		
Galatea	E	2041-11-02T04:46:17.364		40.95	-40.75	61953.02	119.50		
Adams	E	2041-11-02T04:46:25.533		40.93	-40.73	62933.02	120.45		


```

target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2041-11-02T05:03:21.900
Event type          : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
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      : 72927067217669248
2Mass ID (if available) : 02171451+1148144
ICRS Star Coord at Epoch: 02h 17m 14.51730s +11:48:13.00857s
RUWE (>1.4 is poor) : 1.08
K magnitude          : 14.482
G magnitude          : 18.485
RP magnitude         : 17.173
BP magnitude         : 20.406
DUPflag             : 0
Distance (au)       : 28.817
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -24.45
Sun-Target sep (deg) : 176.00
Sun-Moon sep (deg)  : 77.77
B (ring opening deg) : -4.62
PA of pole (deg)    : -47.01
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.819
C/A sky separation (km) : 17106.9
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	2041-11-02T04:36:44.516		48.57	-45.98	62933.01	-121.35		
Galatea	I	2041-11-02T04:36:52.623		48.57	-45.98	61953.00	-120.42		
Arago	I	2041-11-02T04:37:32.950		48.55	-45.97	57200.01	-115.07		
Lassell	I	2041-11-02T04:37:50.537		48.54	-45.96	55200.00	-112.31		
LeVerrier	I	2041-11-02T04:38:08.594		48.53	-45.96	53200.02	-109.14		
Galle	I	2041-11-02T04:40:06.446		48.46	-45.92	42000.13	-77.14		
Neptune	I	2041-11-02T04:51:20.941		47.98	-45.64	24763.79		-15.42	-15.93
Neptune	E	2041-11-02T05:15:22.833		46.39	-44.48	24761.54		-71.35	-71.93
Galle	E	2041-11-02T04:45:03.887		48.27	-45.82	42002.35	77.23		
LeVerrier	E	2041-11-02T04:47:01.630		48.18	-45.77	53200.09	109.29		
Lassell	E	2041-11-02T04:47:19.664		48.17	-45.76	55200.05	112.47		
Arago	E	2041-11-02T04:47:37.226		48.16	-45.75	57200.04	115.25		
Galatea	E	2041-11-02T04:48:17.491		48.13	-45.73	61953.01	120.63		
Adams	E	2041-11-02T04:48:25.583		48.12	-45.73	62933.02	121.57		