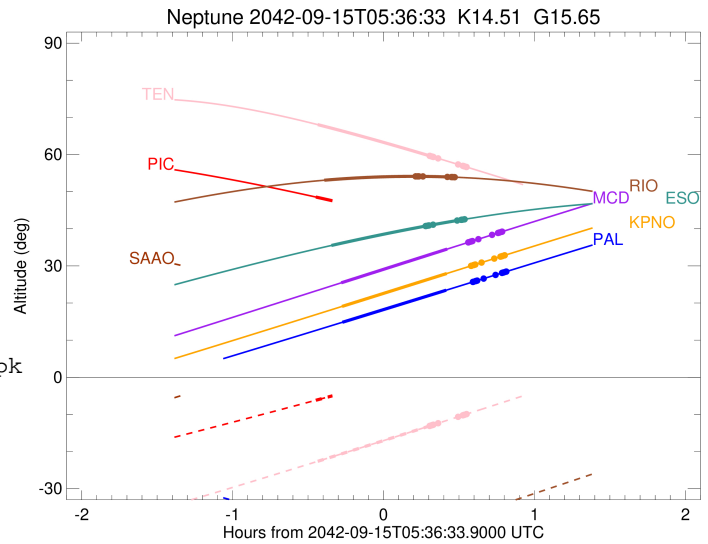
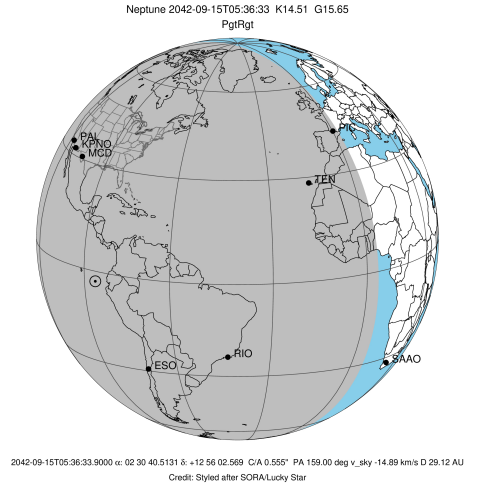



```

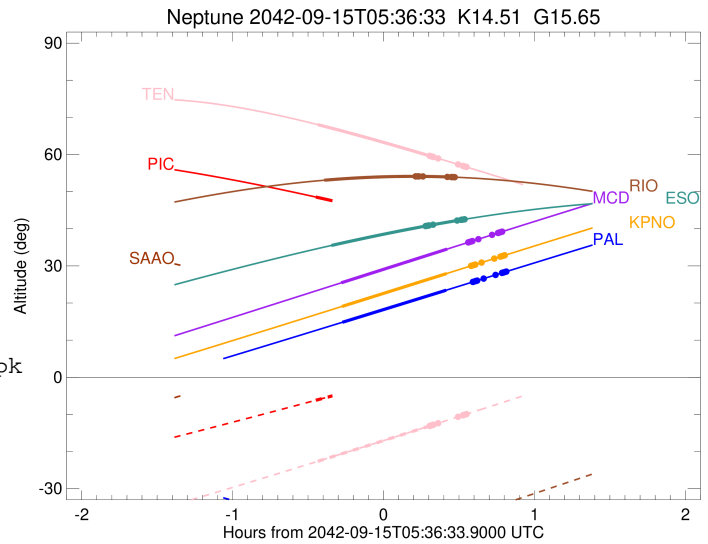
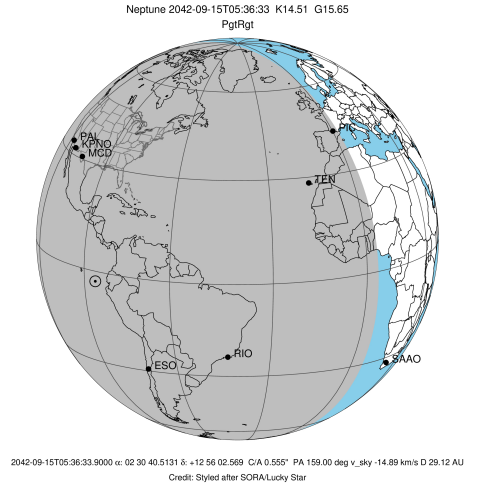
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2042-09-15T05:32:09.900
Event type          : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code       : PIC
Location            : Pic du Midi
Latitude (deg)      : 42.93656
E. Longitude (deg)  : 0.14231
Altitude (km)       : 2.890
Gaia source ID      : 26446660557710208
2Mass ID (if available) : 02304041+1256033
ICRS Star Coord at Epoch: 02h 30m 40.51313s +12:56:02.56938s
RUWE (>1.4 is poor) : 1.07
K magnitude          : 14.509
G magnitude          : 15.652
RP magnitude         : 15.247
BP magnitude         : 15.927
DUPflag             : 0
Distance (au)       : 29.119
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -14.89
Sun-Target sep (deg) : 132.44
Sun-Moon sep (deg)  : 142.79
B (ring opening deg) : -3.01
PA of pole (deg)    : -46.50
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.655
C/A sky separation (km) : 13828.8
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	2042-09-15T05:56:11.249		41.08	2.29x	62933.01	-108.53		
Galatea	I	2042-09-15T05:56:20.303		41.06	2.32x	61953.02	-107.93		
Arago	I	2042-09-15T05:57:05.022		40.93	2.45x	57200.04	-104.50		
Lassell	I	2042-09-15T05:57:24.319		40.88	2.51x	55200.06	-102.75		
LeVerrier	I	2042-09-15T05:57:43.970		40.82	2.57x	53200.08	-100.76		
Galle	I	2042-09-15T05:59:45.051		40.48	2.94x	42001.77	-82.04		
Neptune	I	2042-09-15T05:09:35.033		48.56	-6.21	24763.14		59.52	60.36
Neptune	E	2042-09-15T05:54:45.893		41.32	2.03x	24763.98		8.28	8.56
Galle	E	2042-09-15T06:07:02.371		39.23	4.28x	42000.28	81.90		
LeVerrier	E	2042-09-15T06:09:03.760		38.88	4.65x	53200.03	100.46		
Lassell	E	2042-09-15T06:09:23.474		38.83	4.71x	55200.02	102.42		
Arago	E	2042-09-15T06:09:42.837		38.77	4.77x	57200.01	104.14		
Galatea	E	2042-09-15T06:10:27.723		38.64	4.91x	61953.01	107.51		
Adams	E	2042-09-15T06:10:36.814		38.61	4.94x	62933.01	108.10		

```

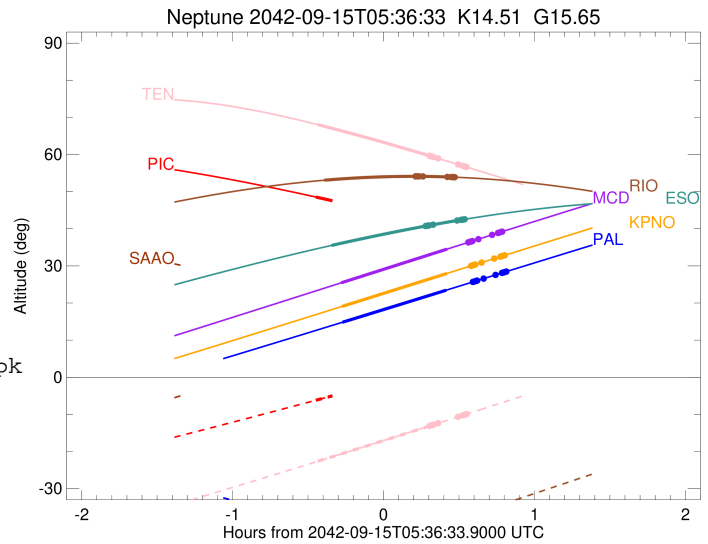
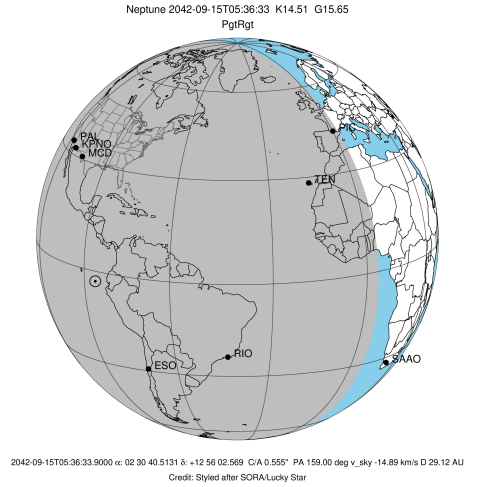
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2042-09-15T05:40:52.600
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code         : PAL
Location              : Palomar Mt (200")
Latitude (deg)        : 33.35622
E. Longitude (deg)    : 243.13601
Altitude (km)         : 1.706
Gaia source ID        : 26446660557710208
2Mass ID (if available) : 02304041+1256033
ICRS Star Coord at Epoch: 02h 30m 40.51313s +12:56:02.56938s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 14.509
G magnitude           : 15.652
RP magnitude          : 15.247
BP magnitude          : 15.927
DUPflag              : 0
Distance (au)         : 29.119
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -14.89
Sun-Target sep (deg)  : 132.44
Sun-Moon sep (deg)   : 141.70
B (ring opening deg)  : -3.01
PA of pole (deg)     : -46.50
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.779
C/A sky separation (km) : 16446.6
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	2042-09-15T06:11:13.035		25.49	-47.91	62933.10	-101.49		
Galatea	I	2042-09-15T06:11:22.733		25.53	-47.93	61953.12	-100.61		
Arago	I	2042-09-15T06:12:11.155		25.70	-48.02	57200.31	-95.50		
Lassell	I	2042-09-15T06:12:32.388		25.77	-48.07	55200.48	-92.83		
LeVerrier	I	2042-09-15T06:12:54.284		25.85	-48.11	53200.76	-89.78		
Galle	I	2042-09-15T06:15:22.486		26.37	-48.40	42039.12	-57.76		
Neptune	I	2042-09-15T05:20:12.372		14.81	-40.63	24763.02		67.35	68.03
Neptune	E	2042-09-15T06:01:29.742		23.45	-46.68	24763.92		15.63	16.15
Galle	E	2042-09-15T06:20:26.205		27.43	-48.98	42001.56	57.62		
LeVerrier	E	2042-09-15T06:22:54.312		27.95	-49.26	53200.16	89.87		
Lassell	E	2042-09-15T06:23:16.189		28.02	-49.30	55200.12	92.93		
Arago	E	2042-09-15T06:23:37.402		28.10	-49.33	57200.09	95.60		
Galatea	E	2042-09-15T06:24:25.775		28.27	-49.42	61953.04	100.72		
Adams	E	2042-09-15T06:24:35.462		28.30	-49.44	62933.03	101.61		

```

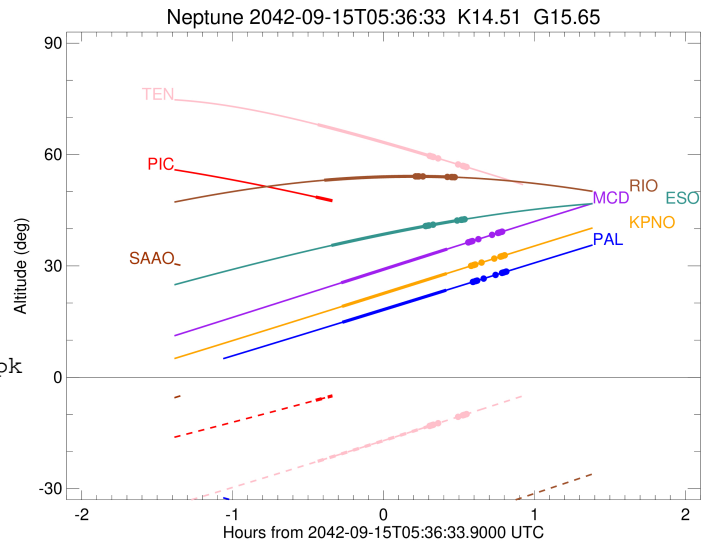
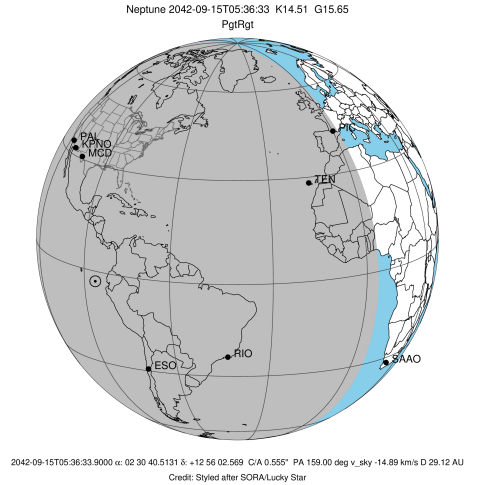
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2042-09-15T05:40:54.930
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : KPNO
Location              : Kitt Peak Natl Obs
Latitude (deg)       : 31.96333
E. Longitude (deg)   : 248.40000
Altitude (km)        : 2.120
Gaia source ID       : 26446660557710208
2Mass ID (if available) : 02304041+1256033
ICRS Star Coord at Epoch: 02h 30m 40.51313s +12:56:02.56938s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 14.509
G magnitude           : 15.652
RP magnitude          : 15.247
BP magnitude          : 15.927
DUPflag              : 0
Distance (au)        : 29.119
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -14.89
Sun-Target sep (deg) : 132.44
Sun-Moon sep (deg)   : 141.73
B (ring opening deg) : -3.01
PA of pole (deg)     : -46.50
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.767
C/A sky separation (km) : 16199.6
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	2042-09-15T06:10:31.106		29.83	-51.37	62933.08	-102.75		
Galatea	I	2042-09-15T06:10:40.683		29.86	-51.39	61953.09	-101.90		
Arago	I	2042-09-15T06:11:28.427		30.03	-51.47	57200.25	-96.99		
Lassell	I	2042-09-15T06:11:49.316		30.10	-51.51	55200.39	-94.44		
LeVerrier	I	2042-09-15T06:12:10.820		30.18	-51.55	53200.60	-91.51		
Galle	I	2042-09-15T06:14:34.111		30.69	-51.79	42025.67	-61.35		
Neptune	I	2042-09-15T05:20:03.111		19.08	-44.83	24763.03		66.64	67.34
Neptune	E	2042-09-15T06:01:43.624		27.95	-50.42	24763.93		14.83	15.33
Galle	E	2042-09-15T06:19:54.941		31.82	-52.30	42001.30	61.29		
LeVerrier	E	2042-09-15T06:22:18.152		32.33	-52.52	53200.14	91.59		
Lassell	E	2042-09-15T06:22:39.639		32.41	-52.55	55200.09	94.53		
Arago	E	2042-09-15T06:23:00.512		32.48	-52.58	57200.07	97.08		
Galatea	E	2042-09-15T06:23:48.216		32.65	-52.65	61953.03	102.00		
Adams	E	2042-09-15T06:23:57.783		32.68	-52.66	62933.03	102.86		

```

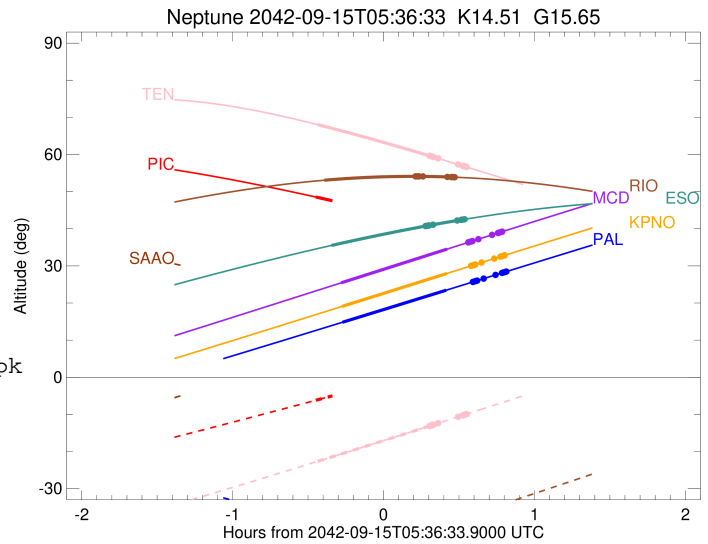
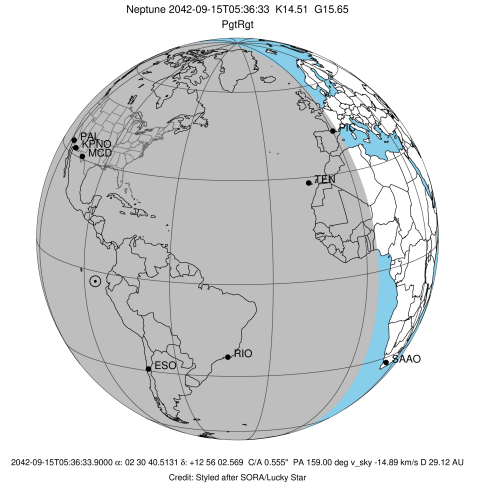
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2042-09-15T05:40:48.620
Event type          : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code       : MCD
Location            : McDonald Obs. 2.7m
Latitude (deg)      : 30.67158
E. Longitude (deg)  : 255.97844
Altitude (km)       : 2.075
Gaia source ID      : 26446660557710208
2Mass ID (if available) : 02304041+1256033
ICRS Star Coord at Epoch: 02h 30m 40.51313s +12:56:02.56938s
RUWE (>1.4 is poor) : 1.07
K magnitude          : 14.509
G magnitude          : 15.652
RP magnitude         : 15.247
BP magnitude         : 15.927
DUPflag             : 0
Distance (au)       : 29.119
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -14.89
Sun-Target sep (deg) : 132.44
Sun-Moon sep (deg)  : 141.80
B (ring opening deg) : -3.01
PA of pole (deg)    : -46.50
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.751
C/A sky separation (km) : 15864.5
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	2042-09-15T06:09:25.888		36.16	-55.09	62933.05	-104.41		
Galatea	I	2042-09-15T06:09:35.311		36.19	-55.10	61953.07	-103.60		
Arago	I	2042-09-15T06:10:22.201		36.36	-55.15	57200.19	-98.94		
Lassell	I	2042-09-15T06:10:42.658		36.43	-55.17	55200.28	-96.53		
LeVerrier	I	2042-09-15T06:11:03.671		36.51	-55.20	53200.44	-93.77		
Galle	I	2042-09-15T06:13:21.201		37.00	-55.34	42015.41	-65.86		
Neptune	I	2042-09-15T05:19:41.930		25.43	-50.03	24763.04		65.69	66.41
Neptune	E	2042-09-15T06:01:52.183		34.53	-54.53	24763.94		13.77	14.23
Galle	E	2042-09-15T06:19:02.873		38.22	-55.68	42001.03	65.85		
LeVerrier	E	2042-09-15T06:21:20.349		38.71	-55.79	53200.11	93.83		
Lassell	E	2042-09-15T06:21:41.351		38.79	-55.81	55200.08	96.59		
Arago	E	2042-09-15T06:22:01.798		38.86	-55.83	57200.05	99.01		
Galatea	E	2042-09-15T06:22:48.661		39.03	-55.87	61953.02	103.67		
Adams	E	2042-09-15T06:22:58.078		39.06	-55.87	62933.02	104.48		


```

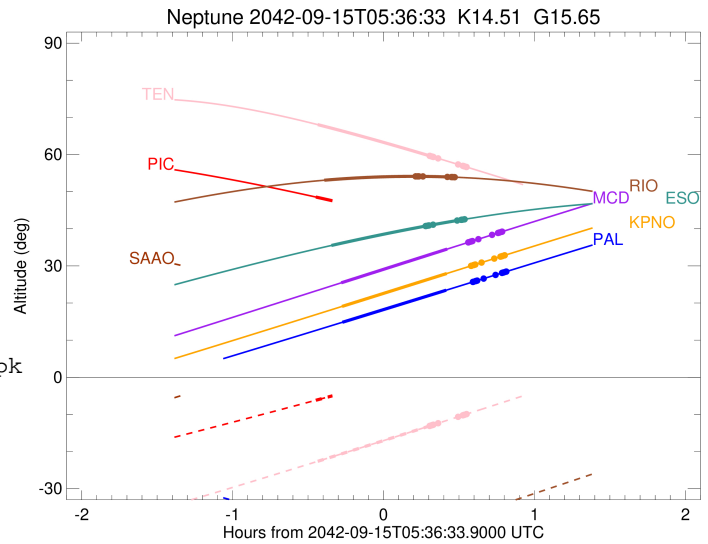
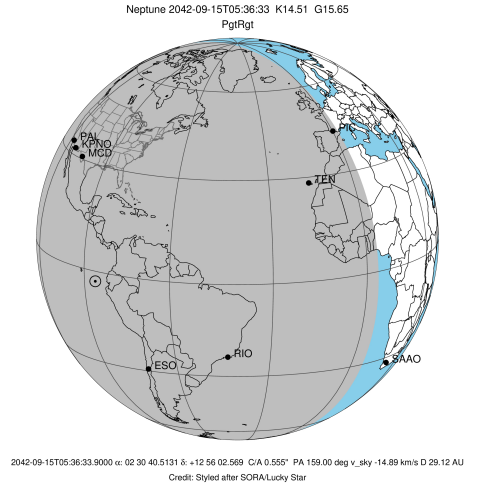
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2042-09-15T05:33:39.570
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code         : TEN
Location              : Teide Obs./Tenerife
Latitude (deg)        : 28.30050
E. Longitude (deg)    : 343.48909
Altitude (km)         : 2.395
Gaia source ID        : 26446660557710208
2Mass ID (if available) : 02304041+1256033
ICRS Star Coord at Epoch: 02h 30m 40.51313s +12:56:02.56938s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 14.509
G magnitude           : 15.652
RP magnitude          : 15.247
BP magnitude          : 15.927
DUPflag              : 0
Distance (au)         : 29.119
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -14.89
Sun-Target sep (deg)  : 132.44
Sun-Moon sep (deg)   : 142.76
B (ring opening deg) : -3.01
PA of pole (deg)     : -46.50
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.595
C/A sky separation (km) : 12571.7
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.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	2042-09-15T05:54:17.690	b	59.77	-13.24	62933.01	-113.65		
Galatea	I	2042-09-15T05:54:26.332	b	59.74	-13.21	61953.00	-113.16		
Arago	I	2042-09-15T05:55:08.831	b	59.60	-13.06	57200.01	-110.40		
Lassell	I	2042-09-15T05:55:27.059	b	59.54	-12.99	55200.01	-109.00		
LeVerrier	I	2042-09-15T05:55:45.538	b	59.48	-12.93	53200.02	-107.42		
Galle	I	2042-09-15T05:57:36.348		59.10	-12.53	42000.39	-93.04		
Neptune	I	2042-09-15T05:10:21.516		68.06	-22.65	24763.20		56.29	57.19
Neptune	E	2042-09-15T05:56:58.238		59.23	-12.66	24764.00		4.65	4.81
Galle	E	2042-09-15T06:05:37.701		57.46	-10.78	42000.10	92.82		
LeVerrier	E	2042-09-15T06:07:28.862		57.07	-10.38	53200.01	107.03		
Lassell	E	2042-09-15T06:07:47.414		57.01	-10.31	55200.01	108.57		
Arago	E	2042-09-15T06:08:05.718		56.95	-10.25	57200.01	109.94		
Galatea	E	2042-09-15T06:08:48.409		56.80	-10.09	61953.01	112.62		
Adams	E	2042-09-15T06:08:57.093		56.77	-10.06	62933.00	113.10		

```

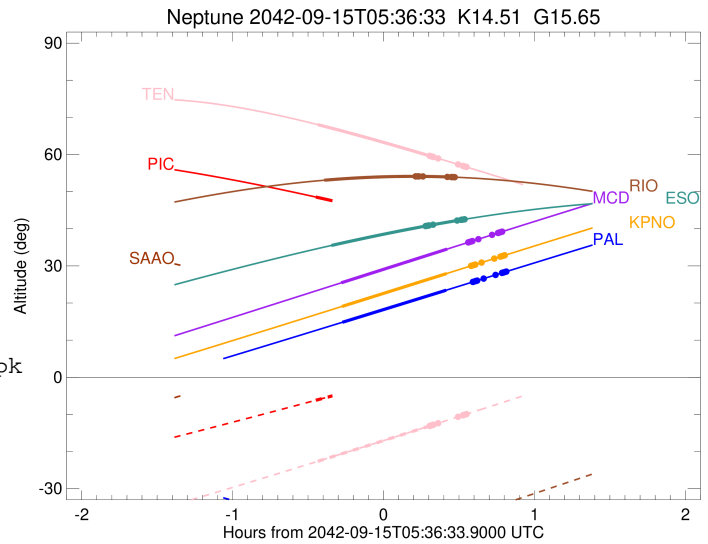
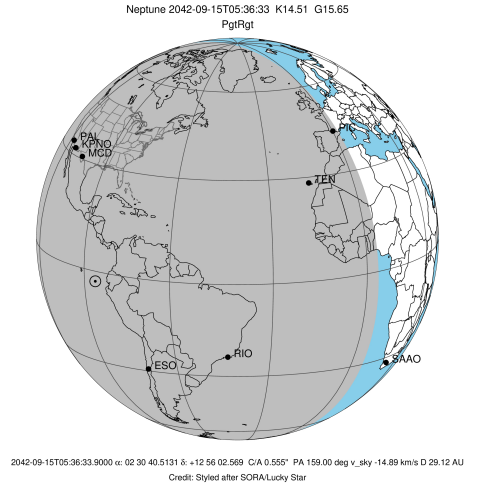
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2042-09-15T05:38:25.120
Event type          : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code       : RIO
Location            : Rio de Janeiro
Latitude (deg)      : -22.89506
E. Longitude (deg)  : 316.77708
Altitude (km)       : 0.033
Gaia source ID      : 26446660557710208
2Mass ID (if available) : 02304041+1256033
ICRS Star Coord at Epoch: 02h 30m 40.51313s +12:56:02.56938s
RUWE (>1.4 is poor) : 1.07
K magnitude          : 14.509
G magnitude          : 15.652
RP magnitude         : 15.247
BP magnitude         : 15.927
DUPflag             : 0
Distance (au)       : 29.119
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -14.89
Sun-Target sep (deg) : 132.44
Sun-Moon sep (deg)  : 142.25
B (ring opening deg) : -3.01
PA of pole (deg)    : -46.50
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.394
C/A sky separation (km) : 8317.7
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	2042-09-15T05:48:58.386	b	54.12	-41.96	62933.00	-124.72		
Galatea	I	2042-09-15T05:49:06.251	b	54.12	-41.93	61953.00	-124.48		
Arago	I	2042-09-15T05:49:44.631	b	54.12	-41.79	57199.99	-123.16		
Lassell	I	2042-09-15T05:50:00.911	b	54.12	-41.73	55199.99	-122.52		
LeVerrier	I	2042-09-15T05:50:17.280	b	54.12	-41.67	53200.01	-121.82		
Galle	I	2042-09-15T05:51:51.213	b	54.11	-41.33	42000.00	-116.03		
Neptune	I	2042-09-15T05:12:58.950		53.08	-49.73	24763.41		45.65	46.63
Neptune	E	2042-09-15T06:03:50.067		53.92	-38.67	24763.99		-6.43	-6.66
Galle	E	2042-09-15T06:01:31.707	b	53.98	-39.19	42000.01	115.11		
LeVerrier	E	2042-09-15T06:03:06.562	b	53.94	-38.84	53200.01	120.42		
Lassell	E	2042-09-15T06:03:23.128	b	53.93	-38.77	55200.01	121.03		
Arago	E	2042-09-15T06:03:39.617	b	53.93	-38.71	57200.00	121.57		
Galatea	E	2042-09-15T06:04:18.536		53.91	-38.57	61953.00	122.64		
Adams	E	2042-09-15T06:04:26.520		53.91	-38.54	62933.00	122.83		

```

target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2042-09-15T05:41:10.310
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        : 26446660557710208
2Mass ID (if available) : 02304041+1256033
ICRS Star Coord at Epoch: 02h 30m 40.51313s +12:56:02.56938s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 14.509
G magnitude           : 15.652
RP magnitude          : 15.247
BP magnitude          : 15.927
DUPflag              : 0
Distance (au)         : 29.119
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -14.89
Sun-Target sep (deg) : 132.44
Sun-Moon sep (deg)   : 141.87
B (ring opening deg) : -3.01
PA of pole (deg)     : -46.50
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.418
C/A sky separation (km) : 8835.7
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	2042-09-15T05:52:55.821	b	40.69	-58.39	62933.01	-123.26		
Galatea	I	2042-09-15T05:53:03.780	b	40.70	-58.37	61953.00	-123.00		
Arago	I	2042-09-15T05:53:42.635	b	40.78	-58.29	57200.00	-121.60		
Lassell	I	2042-09-15T05:53:59.127	b	40.82	-58.25	55200.01	-120.92		
LeVerrier	I	2042-09-15T05:54:15.719	b	40.85	-58.21	53199.99	-120.16		
Galle	I	2042-09-15T05:55:51.195	b	41.05	-58.00	41999.99	-113.75		
Neptune	I	2042-09-15T05:15:47.353		35.50	-62.38	24763.38		46.95	47.93
Neptune	E	2042-09-15T06:06:30.247		42.30	-56.47	24763.99		-5.22	-5.40
Galle	E	2042-09-15T06:05:24.056	b	42.17	-56.63	42000.01	113.11		
LeVerrier	E	2042-09-15T06:07:00.194		42.36	-56.40	53200.00	119.17		
Lassell	E	2042-09-15T06:07:16.927		42.39	-56.36	55200.01	119.87		
Arago	E	2042-09-15T06:07:33.569		42.42	-56.31	57200.00	120.48		
Galatea	E	2042-09-15T06:08:12.812		42.49	-56.22	61953.00	121.71		
Adams	E	2042-09-15T06:08:20.857		42.51	-56.20	62933.01	121.92		