

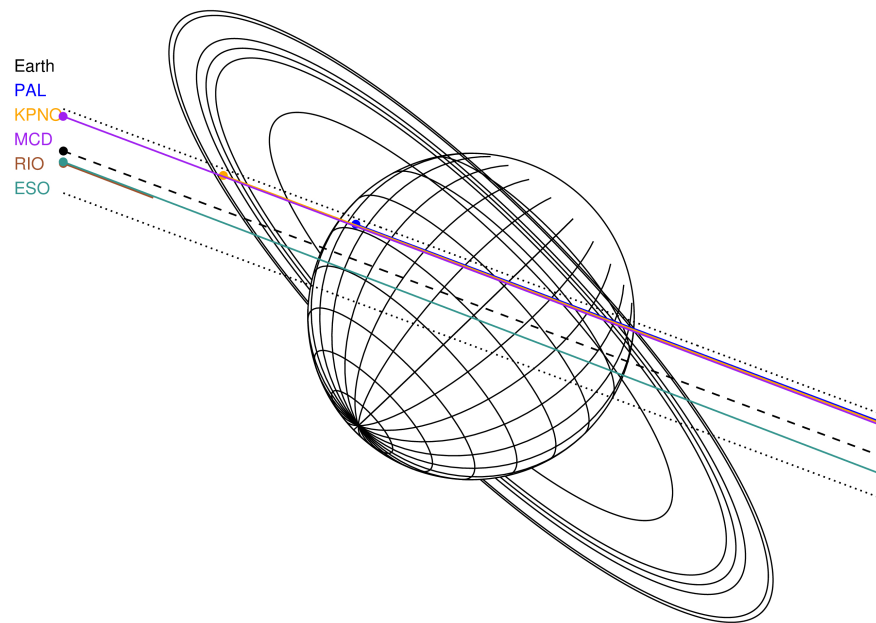
target : Neptune
 target radius (km) : 24764.00
 C/A epoch : 2029-06-08T10:01:54.030
 Event type : PgtRgt
 : Neptune occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 2550622128944749056
 2Mass ID (if available) : 00402853+0245567

Neptune 2029-06-08T10:01:54 K14.15 G17.47 PgtRgt

ICRS Star Coord at Epoch: 00h 40m 28.50742s +02:45:56.70127s
 RUWE (>1.4 is poor) : 1.09
 K magnitude : 14.151
 G magnitude : 17.469
 RP magnitude : 16.372
 BP magnitude : 18.510
 DUPflag : 0
 Distance (au) : 30.239
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 17.10
 Sun-Target sep (deg) : 67.12
 Sun-Moon sep (deg) : 25.64
 B (ring opening deg) : -16.00
 PA of pole (deg) : -45.89



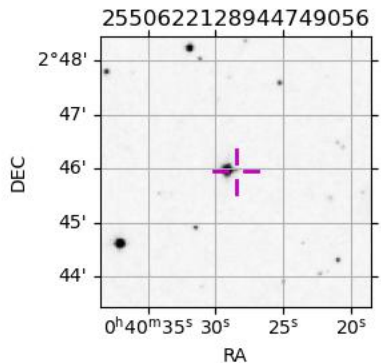
2029-06-08T10:01:54.0300 ex: 00 40 28.5074 s: +02 45 56.701 C/A 0.0877 PA 159.55 deg v_sky +17.10 km/s D 30.24 AU
 Credit: Styled after SORA/Lucky Star



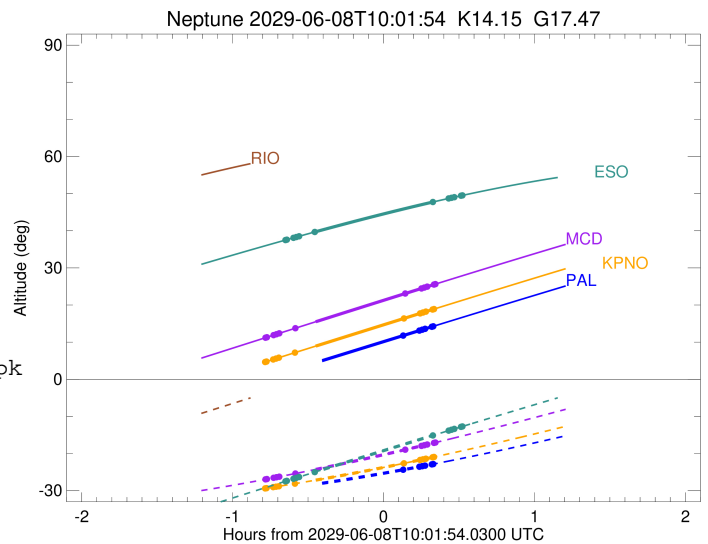
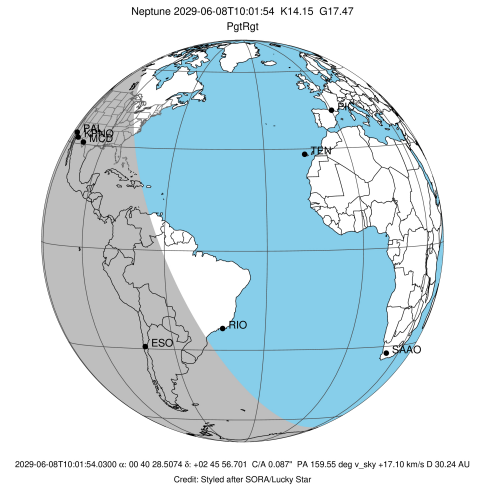
#	a(km)	ring
1	42000.0	Galle
2	53200.0	LeVerrier
3	55200.0	Lassell
4	57200.0	Arago
5	61953.0	Galatea
6	62933.0	Adams

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		+	+	JUN 08 10:21 - JUN 08 10:21	PneRne
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	+	+	JUN 08 09:18 - JUN 08 10:22	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+	+	+	JUN 08 09:15 - JUN 08 10:22	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
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					PnnRnn
ESO	European Southern Obs	-29.3	289.3	+	+	+	JUN 08 09:23 - JUN 08 10:33	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



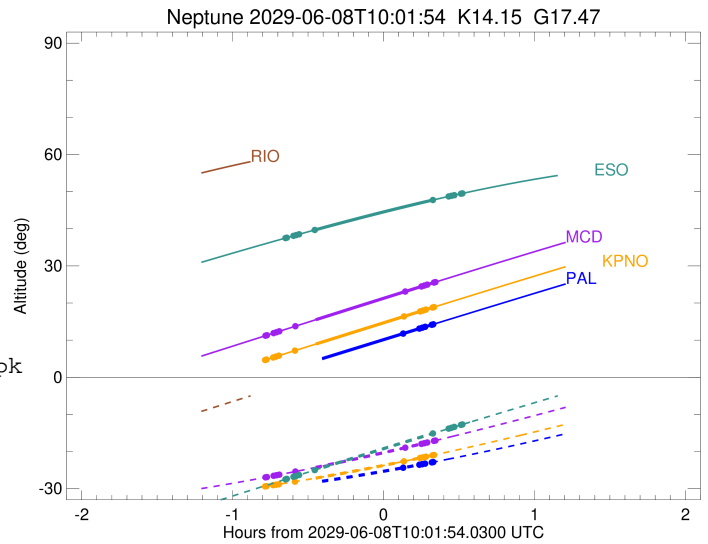
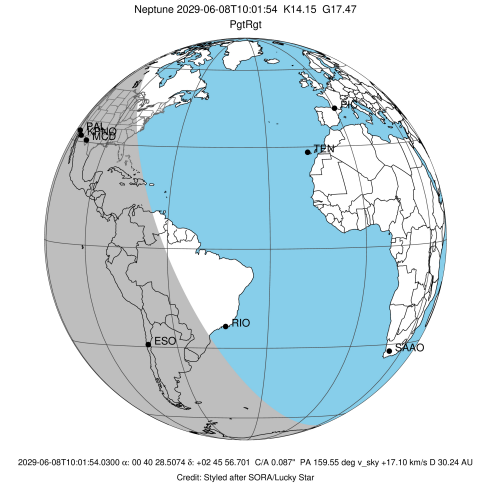
target : Neptune
target radius (km) : 24764.00
C/A epoch : 2029-06-08T09:58:16.700
Event type : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code : PAL
Location : Palomar Mt (200")
Latitude (deg) : 33.35622
E. Longitude (deg) : 243.13601
Altitude (km) : 1.706
Gaia source ID : 2550622128944749056
2Mass ID (if available) : 00402853+0245567
ICRS Star Coord at Epoch: 00h 40m 28.50742s +02:45:56.70127s
RUWE (>1.4 is poor) : 1.09
K magnitude : 14.151
G magnitude : 17.469
RP magnitude : 16.372
BP magnitude : 18.510
DUPflag : 0
Distance (au) : 30.239
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 17.10
Sun-Target sep (deg) : 67.12
Sun-Moon sep (deg) : 26.00
B (ring opening deg) : -16.00
PA of pole (deg) : -45.89
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.318
C/A sky separation (km) : 6964.5
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



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

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2029-06-08T09:15:05.927		0.31x	-30.10	62933.00	-30.01		
Galatea	I	2029-06-08T09:15:38.598		0.43x	-30.05	61953.00	-29.98		
Arago	I	2029-06-08T09:18:17.528		0.98x	-29.83	57200.00	-29.83		
Lassell	I	2029-06-08T09:19:24.669		1.22x	-29.73	55200.00	-29.75		
LeVerrier	I	2029-06-08T09:20:31.994		1.45x	-29.63	53200.00	-29.66		
Galle	I	2029-06-08T09:26:53.671		2.79x	-29.05	42000.00	-28.94		
Neptune	I	2029-06-08T09:35:04.464		4.50x	-28.26	24763.22		-8.64	-8.93
Neptune	E	2029-06-08T10:21:31.720		14.23	-22.87	24749.92		39.68	40.64
Galle	E	2029-06-08T10:09:44.173	b	11.77	-24.37	42000.00	28.30		
LeVerrier	E	2029-06-08T10:16:12.910	b	13.12	-23.56	53200.00	29.21		
Lassell	E	2029-06-08T10:17:21.273	b	13.36	-23.41	55200.00	29.30		
Arago	E	2029-06-08T10:18:29.421	b	13.60	-23.26	57200.00	29.39		
Galatea	E	2029-06-08T10:21:10.663	b	14.16	-22.91	61953.00	29.56		
Adams	E	2029-06-08T10:21:43.804	b	14.28	-22.84	62933.00	29.59		

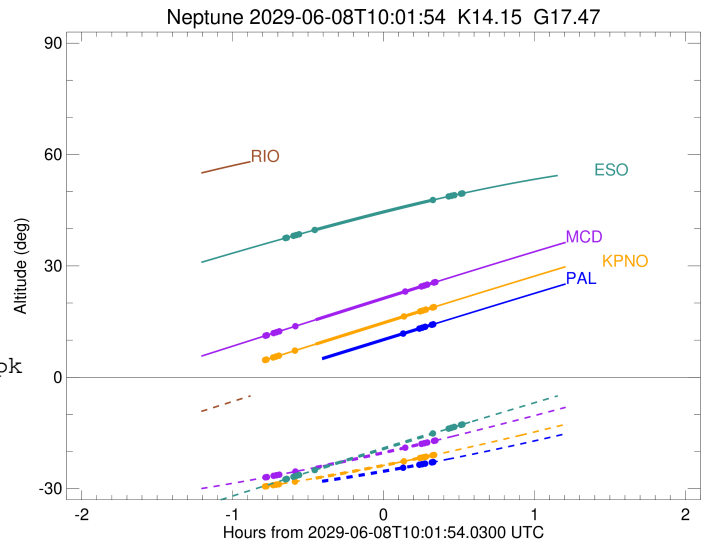
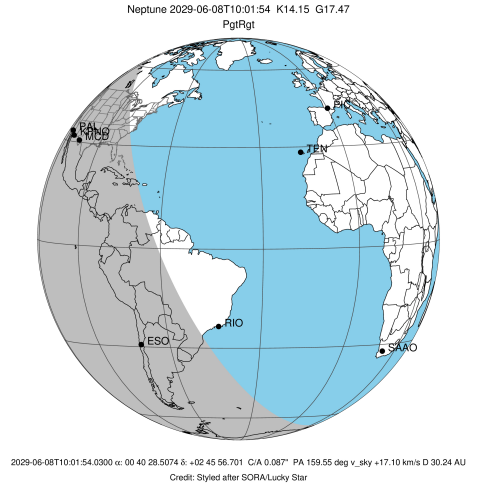
target : Neptune
target radius (km) : 24764.00
C/A epoch : 2029-06-08T09:58:14.900
Event type : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code : KPNO
Location : Kitt Peak Natl Obs
Latitude (deg) : 31.96333
E. Longitude (deg) : 248.40000
Altitude (km) : 2.120
Gaia source ID : 2550622128944749056
2Mass ID (if available) : 00402853+0245567
ICRS Star Coord at Epoch: 00h 40m 28.50742s +02:45:56.70127s
RUWE (>1.4 is poor) : 1.09
K magnitude : 14.151
G magnitude : 17.469
RP magnitude : 16.372
BP magnitude : 18.510
DUPflag : 0
Distance (au) : 30.239
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 17.10
Sun-Target sep (deg) : 67.12
Sun-Moon sep (deg) : 26.04
B (ring opening deg) : -16.00
PA of pole (deg) : -45.89
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.311
C/A sky separation (km) : 6812.1
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	2029-06-08T09:15:07.067		4.71x	-29.37	62933.00	-29.95		
Galatea	I	2029-06-08T09:15:39.803		4.83x	-29.31	61953.00	-29.92		
Arago	I	2029-06-08T09:18:19.028		5.39	-29.03	57200.00	-29.77		
Lassell	I	2029-06-08T09:19:26.285		5.63	-28.91	55200.00	-29.70		
LeVerrier	I	2029-06-08T09:20:33.718		5.87	-28.79	53200.00	-29.62		
Galle	I	2029-06-08T09:26:55.810		7.23	-28.09	42000.00	-28.93		
Neptune	I	2029-06-08T09:34:57.302		8.94	-27.17	24763.16		-8.95	-9.26
Neptune	E	2029-06-08T10:21:35.329		18.83	-20.99	24750.14		39.30	40.26
Galle	E	2029-06-08T10:10:01.374	b	16.38	-22.64	42000.00	28.30		
LeVerrier	E	2029-06-08T10:16:30.406	b	17.75	-21.73	53200.00	29.17		
Lassell	E	2029-06-08T10:17:38.865	b	17.99	-21.56	55200.00	29.26		
Arago	E	2029-06-08T10:18:47.119	b	18.23	-21.40	57200.00	29.34		
Galatea	E	2029-06-08T10:21:28.643	b	18.80	-21.01	61953.00	29.50		
Adams	E	2029-06-08T10:22:01.846		18.92	-20.93	62933.00	29.53		

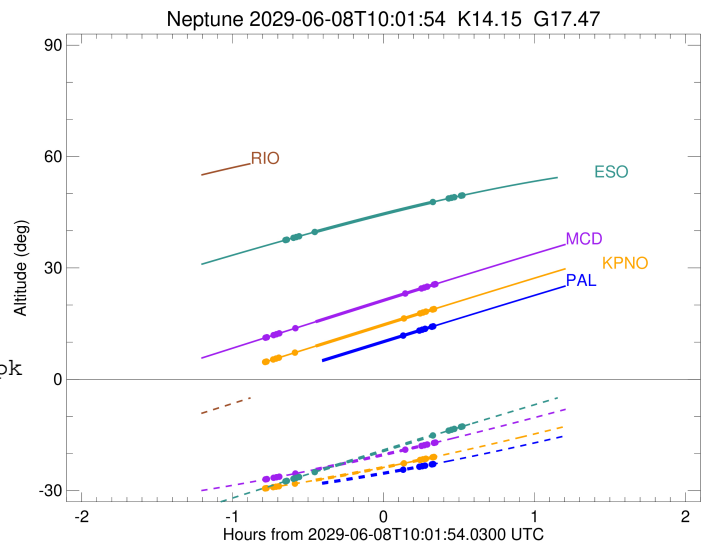
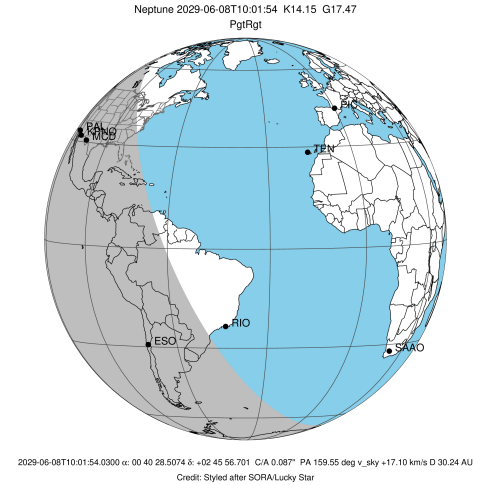
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target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2029-06-08T09:58:20.640
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code         : MCD
Location              : McDonald Obs. 2.7m
Latitude (deg)       : 30.67158
E. Longitude (deg)   : 255.97844
Altitude (km)        : 2.075
Gaia source ID       : 2550622128944749056
2Mass ID (if available) : 00402853+0245567
ICRS Star Coord at Epoch: 00h 40m 28.50742s +02:45:56.70127s
RUWE (>1.4 is poor) : 1.09
K magnitude           : 14.151
G magnitude           : 17.469
RP magnitude         : 16.372
BP magnitude         : 18.510
DUPflag              : 0
Distance (au)        : 30.239
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : 17.10
Sun-Target sep (deg) : 67.12
Sun-Moon sep (deg)  : 26.08
B (ring opening deg) : -16.00
PA of pole (deg)    : -45.89
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.301
C/A sky separation (km) : 6608.8
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	2029-06-08T09:15:16.029		11.26	-26.92	62933.00	-29.86		
Galatea	I	2029-06-08T09:15:48.866		11.37	-26.85	61953.00	-29.83		
Arago	I	2029-06-08T09:18:28.558		11.95	-26.51	57200.00	-29.69		
Lassell	I	2029-06-08T09:19:35.997		12.19	-26.36	55200.00	-29.62		
LeVerrier	I	2029-06-08T09:20:43.604		12.43	-26.21	53200.00	-29.54		
Galle	I	2029-06-08T09:27:06.425		13.81	-25.36	42000.00	-28.90		
Neptune	I	2029-06-08T09:34:55.654		15.49	-24.29	24763.09		-9.36	-9.68
Neptune	E	2029-06-08T10:21:48.440		25.48	-17.16	24750.44		38.78	39.74
Galle	E	2029-06-08T10:10:32.685	b	23.10	-18.97	42000.00	28.29		
LeVerrier	E	2029-06-08T10:17:02.217	b	24.47	-17.94	53200.00	29.11		
Lassell	E	2029-06-08T10:18:10.822	b	24.72	-17.75	55200.00	29.20		
Arago	E	2029-06-08T10:19:19.233	b	24.96	-17.57	57200.00	29.27		
Galatea	E	2029-06-08T10:22:01.170		25.53	-17.13	61953.00	29.42		
Adams	E	2029-06-08T10:22:34.463		25.64	-17.04	62933.00	29.45		

target : Neptune
 target radius (km) : 24764.00
 C/A epoch : 2029-06-08T09:57:52.260
 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 : 2550622128944749056
 2Mass ID (if available) : 00402853+0245567
 ICRS Star Coord at Epoch: 00h 40m 28.50742s +02:45:56.70127s
 RUWE (>1.4 is poor) : 1.09
 K magnitude : 14.151
 G magnitude : 17.469
 RP magnitude : 16.372
 BP magnitude : 18.510
 DUPflag : 0
 Distance (au) : 30.239
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 17.10
 Sun-Target sep (deg) : 67.12
 Sun-Moon sep (deg) : 26.49
 B (ring opening deg) : -16.00
 PA of pole (deg) : -45.89
 Pole direction: RA (deg): 299.33374
 Dec (deg): 42.95036
 C/A sky separation (") : 0.005
 C/A sky separation (km) : 114.4
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk
 URKALLv1.spk
 nep097.bsp
 nep101.bsp
 sat4401.bsp
 de440.bsp
 earth_720101_070426.bpc
 earthstns_itrfr93_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	2029-06-08T09:23:03.717		37.52	-27.46	62933.00	-29.99		
Galatea	I	2029-06-08T09:23:36.401		37.63	-27.34	61953.00	-29.98		
Arago	I	2029-06-08T09:26:14.970		38.13	-26.78	57200.00	-29.97		
Lassell	I	2029-06-08T09:27:21.720		38.33	-26.54	55200.00	-29.96		
LeVerrier	I	2029-06-08T09:28:28.485		38.54	-26.30	53200.00	-29.95		
Galle	I	2029-06-08T09:34:42.718	b	39.70	-24.98	42000.00	-29.90		
Neptune	I	2029-06-08T09:33:19.332		39.45	-25.27	24758.18		-24.22	-24.97
Neptune	E	2029-06-08T10:22:27.990		47.89	-14.94	24758.41		23.71	24.45
Galle	E	2029-06-08T10:21:24.526	b	47.73	-15.16	42000.00	29.76		
LeVerrier	E	2029-06-08T10:27:40.720		48.70	-13.86	53200.00	29.78		
Lassell	E	2029-06-08T10:28:47.886		48.86	-13.63	55200.00	29.78		
Arago	E	2029-06-08T10:29:55.052		49.03	-13.40	57200.00	29.78		
Galatea	E	2029-06-08T10:32:34.673		49.43	-12.85	61953.00	29.78		
Adams	E	2029-06-08T10:33:07.585		49.51	-12.74	62933.00	29.78		