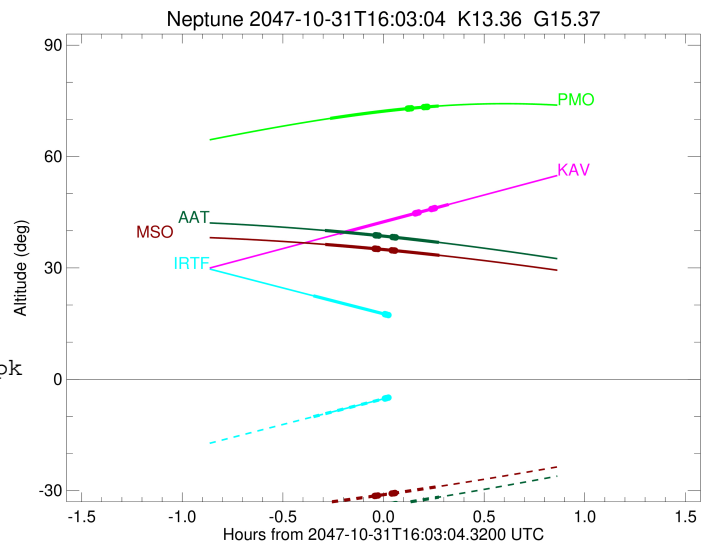
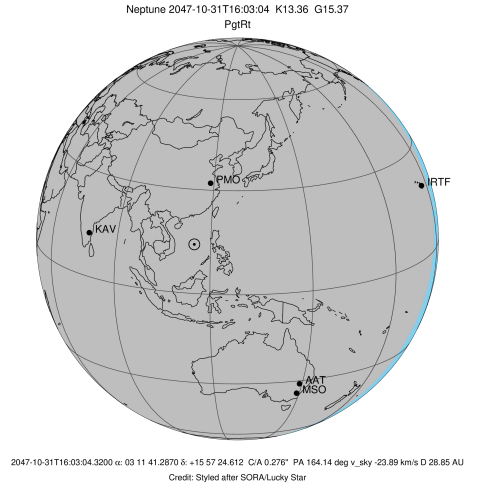



```

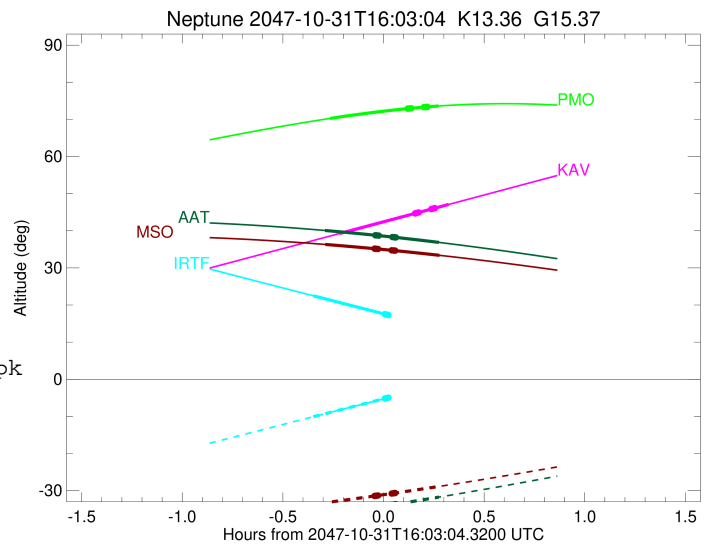
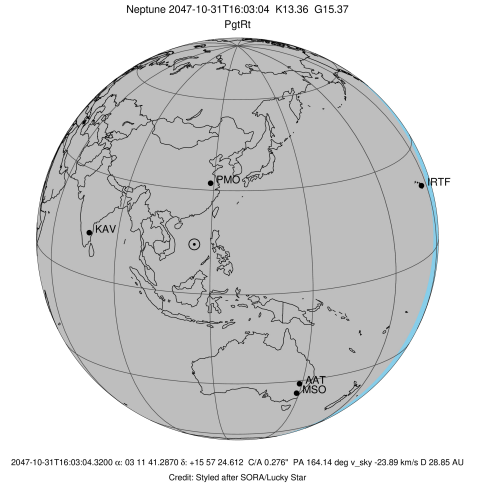
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2047-10-31T16:03:20.370
Event type           : PgtRt
: Neptune occs: geocentric, topocentric
: Ring occs: topocentric, not geocentric
Observer code        : PMO
Location              : Purple Mtn Obs. Nanking
Latitude (deg)       : 32.06667
E. Longitude (deg)   : 118.82089
Altitude (km)        : 0.364
Gaia source ID       : 31394733465015680
2Mass ID (if available) : 03114126+1557249
ICRS Star Coord at Epoch: 03h 11m 41.28699s +15:57:24.61237s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 13.360
G magnitude           : 15.375
RP magnitude         : 14.713
BP magnitude         : 15.880
DUPflag              : 0
Distance (au)        : 28.846
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -23.89
Sun-Target sep (deg) : 167.50
Sun-Moon sep (deg)   : 35.75
B (ring opening deg) : 1.91
PA of pole (deg)     : -44.02
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.367
C/A sky separation (km) : 7683.1
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.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	2047-10-31T16:10:08.865	b	72.90	-71.63	62933.00	-340.94		
Galatea	I	2047-10-31T16:10:11.741	b	72.90	-71.63	61953.00	-340.48		
Arago	I	2047-10-31T16:10:25.750	b	72.92	-71.62	57200.01	-337.99		
Lassell	I	2047-10-31T16:10:31.677	b	72.93	-71.61	55199.99	-336.77		
LeVerrier	I	2047-10-31T16:10:37.628	b	72.94	-71.60	53200.00	-335.43		
Galle	I	2047-10-31T16:11:11.518	b	72.99	-71.57	42000.00	-324.28		
Neptune	I	2047-10-31T15:47:10.018		70.27	-72.33	24763.76		46.49	47.47
Neptune	E	2047-10-31T16:19:30.428		73.61	-70.94	24763.99		-10.36	-10.71
Galle	E	2047-10-31T16:14:52.963	b	73.29	-71.31	41999.98	322.16		
LeVerrier	E	2047-10-31T16:15:27.123	b	73.33	-71.27	53200.00	332.39		
Lassell	E	2047-10-31T16:15:33.129	b	73.34	-71.26	55200.00	333.57		
Arago	E	2047-10-31T16:15:39.115	b	73.35	-71.25	57199.99	334.62		
Galatea	E	2047-10-31T16:15:53.274	b	73.36	-71.23	61953.01	336.70		
Adams	E	2047-10-31T16:15:56.183	b	73.37	-71.23	62933.00	337.07		

```

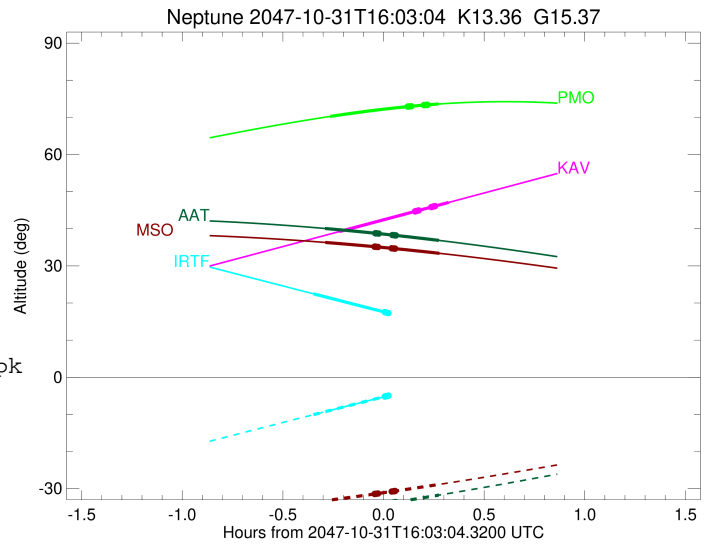
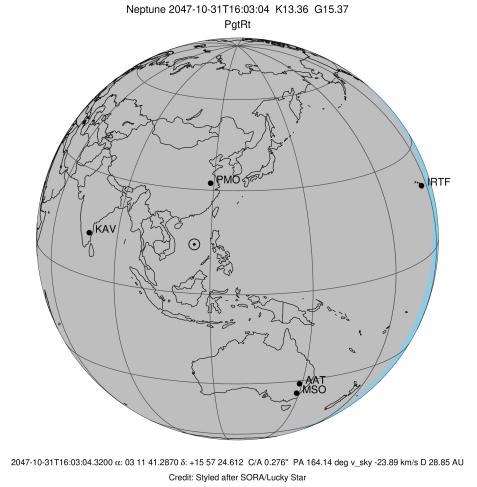
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2047-10-31T15:58:50.430
Event type           : PgtRt
: Neptune occs: geocentric, topocentric
: Ring occs: topocentric, not geocentric
Observer code        : IRTF
Location              : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)   : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 31394733465015680
2Mass ID (if available) : 03114126+1557249
ICRS Star Coord at Epoch: 03h 11m 41.28699s +15:57:24.61237s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 13.360
G magnitude           : 15.375
RP magnitude         : 14.713
BP magnitude         : 15.880
DUPflag              : 0
Distance (au)        : 28.846
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -23.89
Sun-Target sep (deg) : 167.50
Sun-Moon sep (deg)   : 36.17
B (ring opening deg) : 1.91
PA of pole (deg)     : -44.02
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.277
C/A sky separation (km) : 5789.4
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	2047-10-31T16:03:23.696	b	17.56	-5.21	62932.98	-343.45		
Galatea	I	2047-10-31T16:03:26.551	b	17.55	-5.20	61953.00	-343.01		
Arago	I	2047-10-31T16:03:40.452	b	17.50	-5.14	57200.00	-340.76		
Lassell	I	2047-10-31T16:03:46.330	b	17.47	-5.12	55200.00	-339.74		
LeVerrier	I	2047-10-31T16:03:52.226	b	17.45	-5.10	53200.00	-338.66		
Galle	I	2047-10-31T16:04:25.654	b	17.32	-4.97x	42000.00	-330.80		
Neptune	I	2047-10-31T15:42:09.085		22.49	-10.09	24763.80		41.46	42.44
Neptune	E	2047-10-31T16:15:32.951		14.75	-2.43x	24763.97		-14.42	-14.90
Galle	E	2047-10-31T16:08:19.886	b	16.42	-4.08x	42000.00	325.09		
LeVerrier	E	2047-10-31T16:08:54.014	b	16.29	-3.95x	53200.01	330.61		
Lassell	E	2047-10-31T16:09:00.057	b	16.26	-3.92x	55200.00	331.24		
Arago	E	2047-10-31T16:09:06.090	b	16.24	-3.90x	57200.01	331.80		
Galatea	E	2047-10-31T16:09:20.390	b	16.19	-3.85x	61953.00	332.91		
Adams	E	2047-10-31T16:09:23.333	b	16.17	-3.84x	62933.00	333.11		

```

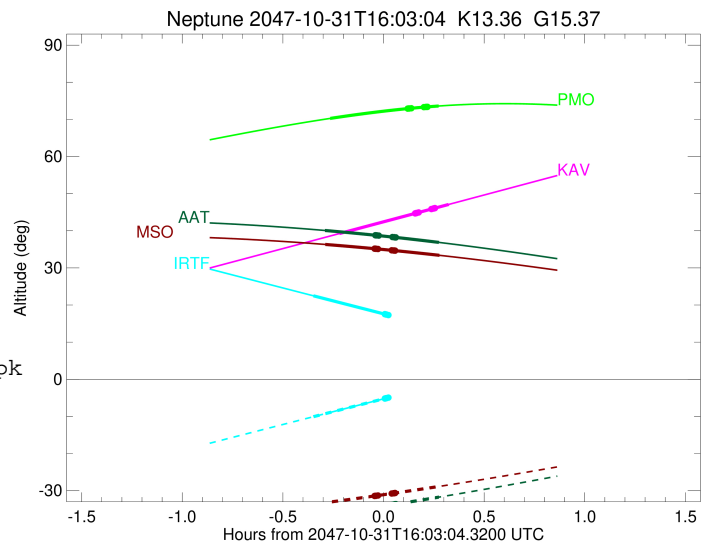
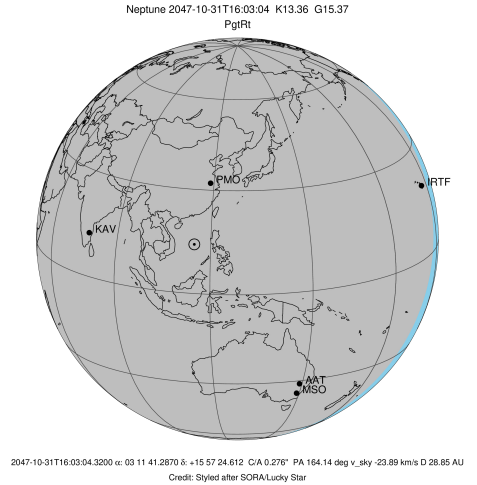
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2047-10-31T16:06:11.850
Event type          : PgtRt
: Neptune occs: geocentric, topocentric
: Ring occs: topocentric, not geocentric
Observer code       : KAV
Location            : Kavalur Observatory
Latitude (deg)      : 12.57556
E. Longitude (deg)  : 78.83167
Altitude (km)       : 0.722
Gaia source ID      : 31394733465015680
2Mass ID (if available) : 03114126+1557249
ICRS Star Coord at Epoch: 03h 11m 41.28699s +15:57:24.61237s
RUWE (>1.4 is poor) : 1.02
K magnitude          : 13.360
G magnitude          : 15.375
RP magnitude         : 14.713
BP magnitude         : 15.880
DUPflag             : 0
Distance (au)       : 28.846
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -23.89
Sun-Target sep (deg) : 167.50
Sun-Moon sep (deg)  : 35.14
B (ring opening deg) : 1.91
PA of pole (deg)    : -44.02
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.344
C/A sky separation (km) : 7191.7
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	2047-10-31T16:12:22.118	b	44.65	-56.96	62933.01	-343.59		
Galatea	I	2047-10-31T16:12:24.972	b	44.66	-56.97	61952.98	-343.17		
Arago	I	2047-10-31T16:12:38.868	b	44.72	-57.02	57199.99	-340.86		
Lassell	I	2047-10-31T16:12:44.744	b	44.74	-57.05	55200.00	-339.75		
LeVerrier	I	2047-10-31T16:12:50.641	b	44.77	-57.07	53200.03	-338.53		
Galle	I	2047-10-31T16:13:24.163	b	44.90	-57.21	42000.00	-328.64		
Neptune	I	2047-10-31T15:49:50.469		39.23	-51.50	24763.77		45.42	46.39
Neptune	E	2047-10-31T16:22:32.168		47.10	-59.42	24763.98		-11.68	-12.08
Galle	E	2047-10-31T16:17:07.824	b	45.80	-58.11	42000.00	326.00		
LeVerrier	E	2047-10-31T16:17:41.669	b	45.93	-58.25	53200.01	334.81		
Lassell	E	2047-10-31T16:17:47.633	b	45.96	-58.27	55200.01	335.82		
Arago	E	2047-10-31T16:17:53.581	b	45.98	-58.29	57200.00	336.73		
Galatea	E	2047-10-31T16:18:07.657	b	46.04	-58.35	61953.02	338.52		
Adams	E	2047-10-31T16:18:10.551	b	46.05	-58.36	62933.01	338.84		

```

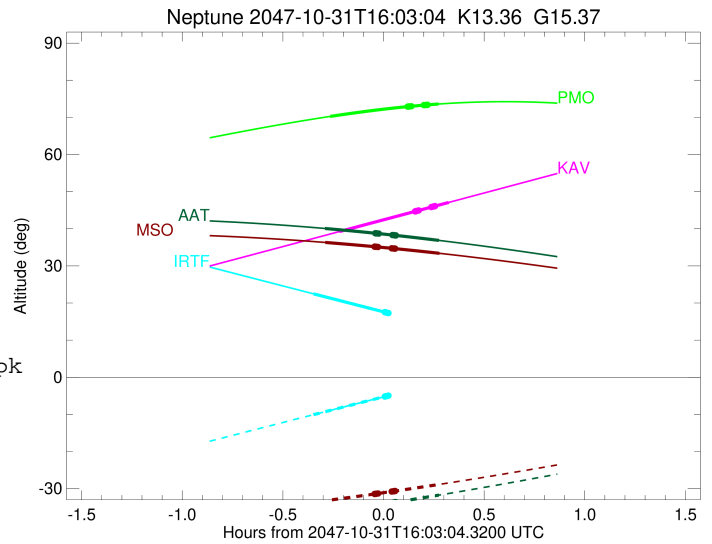
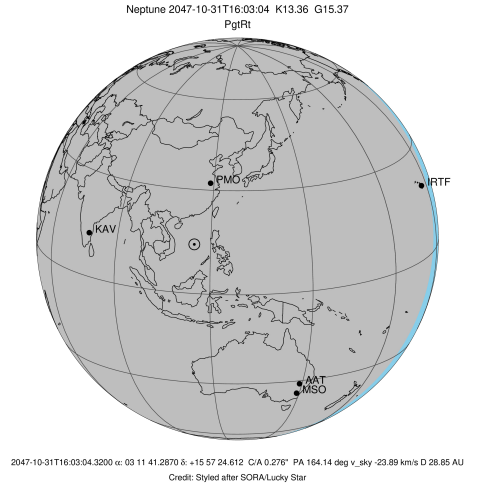
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2047-10-31T16:02:37.140
Event type           : PgtRt
: Neptune occs: geocentric, topocentric
: Ring occs: topocentric, not geocentric
Observer code        : AAT
Location             : Siding Spring (AAT)
Latitude (deg)       : -31.27703
E. Longitude (deg)   : 149.06608
Altitude (km)        : 1.164
Gaia source ID       : 31394733465015680
2Mass ID (if available) : 03114126+1557249
ICRS Star Coord at Epoch: 03h 11m 41.28699s +15:57:24.61237s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 13.360
G magnitude           : 15.375
RP magnitude          : 14.713
BP magnitude          : 15.880
DUPflag              : 0
Distance (au)        : 28.846
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -23.89
Sun-Target sep (deg) : 167.50
Sun-Moon sep (deg)   : 35.85
B (ring opening deg) : 1.91
PA of pole (deg)     : -44.02
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.040
C/A sky separation (km) : 832.7
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	2047-10-31T16:01:41.886	b	38.70	-34.35	60942.17	-660.56		
Galatea	I	2047-10-31T16:01:43.266	b	38.70	-34.34	61555.08	-603.53		
Arago	I	2047-10-31T16:02:16.845	b	38.64	-34.27	39730.89	-1962.94		
Lassell	I	2047-10-31T16:02:37.509	b	38.61	-34.22	54595.49	11894.84		
LeVerrier	I	2047-10-31T16:03:13.134	b	38.55	-34.14	57822.08	-4056.04		
Galle	I	2047-10-31T16:02:36.396	b	38.61	-34.22	46461.48	11847.37		
Neptune	I	2047-10-31T15:45:37.151		40.08	-36.50	24763.88		30.23	31.09
Neptune	E	2047-10-31T16:19:37.413		36.87	-31.75	24763.91		-26.35	-27.14
Galle	E	2047-10-31T16:05:31.370	b	38.33	-33.81	41999.98	328.88		
LeVerrier	E	2047-10-31T16:06:05.181	b	38.28	-33.73	53200.02	333.39		
Lassell	E	2047-10-31T16:06:11.174	b	38.27	-33.72	55200.00	334.03		
Arago	E	2047-10-31T16:06:17.156	b	38.26	-33.70	57200.00	334.63		
Galatea	E	2047-10-31T16:06:31.333	b	38.23	-33.67	61952.99	335.90		
Adams	E	2047-10-31T16:06:34.249	b	38.23	-33.66	62933.01	336.13		

```

target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2047-10-31T16:02:44.120
Event type           : PgtRt
: Neptune occs: geocentric, topocentric
: Ring occs: topocentric, not geocentric
Observer code        : MSO
Location             : Mt. Stromlo Observatory
Latitude (deg)       : -35.32000
E. Longitude (deg)   : 149.00833
Altitude (km)        : 0.770
Gaia source ID       : 31394733465015680
2Mass ID (if available) : 03114126+1557249
ICRS Star Coord at Epoch: 03h 11m 41.28699s +15:57:24.61237s
RUWE (>1.4 is poor) : 1.02
K magnitude          : 13.360
G magnitude          : 15.375
RP magnitude         : 14.713
BP magnitude         : 15.880
DUPflag             : 0
Distance (au)        : 28.846
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -23.89
Sun-Target sep (deg) : 167.50
Sun-Moon sep (deg)   : 35.81
B (ring opening deg) : 1.91
PA of pole (deg)     : -44.02
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.027
C/A sky separation (km) : 571.7
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	2047-10-31T15:35:09.372		37.01	-34.43	63857.20	0.59		
Galatea	I	2047-10-31T16:01:14.681	b	35.11	-31.33	65007.01	148.68		
Arago	I	2047-10-31T16:01:39.132	b	35.08	-31.28	67763.32	-196.08		
Lassell	I	2047-10-31T16:01:11.246	b	35.12	-31.34	99051.39	-320.59		
LeVerrier	I	2047-10-31T16:02:08.767	b	35.03	-31.22	50334.47	-3407.02		
Galle	I	2047-10-31T15:59:19.074	b	35.27	-31.58	65399.69	168.80		
Neptune	I	2047-10-31T15:45:43.117		36.32	-33.24	24763.89		29.62	30.47
Neptune	E	2047-10-31T16:19:45.387		33.39	-28.85	24763.91		-26.95	-27.75
Galle	E	2047-10-31T16:05:14.498	b	34.76	-30.82	41999.99	307.75		
LeVerrier	E	2047-10-31T16:05:49.925	b	34.71	-30.74	53200.01	322.79		
Lassell	E	2047-10-31T16:05:56.105	b	34.70	-30.73	55199.99	324.50		
Arago	E	2047-10-31T16:06:02.254	b	34.69	-30.71	57200.00	326.02		
Galatea	E	2047-10-31T16:06:16.763	b	34.67	-30.68	61953.00	329.04		
Adams	E	2047-10-31T16:06:19.739	b	34.67	-30.67	62933.01	329.57		