# CHAPTER 9 LOCAL SITE DISPLACEMENT

## Ocean Loading

The three components (radial, East-West, North-South) of the site displacements are given by the loading mass convolution with the Green's function of the loading problems as the integration kernel (Farrell, 1972). For practical computations, the integral is replaced by a sum over a discrete ocean tide model grid (Scherneck, 1983). The resulting displacements computed according to Scherneck (1991) are given in Table 9.1.

Schwiderski's (1983) revised global ocean tide models were adopted (*cf.* Schwiderski and Szeto, 1981), which comprise the semidiurnal waves $M_2$, $S_2$, $N_2$, $K_2$, the diurnal waves $K_1$, $O_1$, $P_1$, $Q_1$, and the long-period waves $M_f$, $M_m$, and $S_{sa}$. They are given on a 1° by 1° grid.

In the case of European stations (Wettzell, Onsala, Madrid), regional tide models for the North-East Atlantic by Flather (1981) were included in the case of the tides $M_2$, $S_2$, $K_1$, and $O_1$. They are given on a ½° by ⅓° grid.

Loading Green's functions for an oceanic Earth structure were adopted from Farrell (1972) in the case of those stations where ocean loading within a zone of 300 km radius around the site is predominantly on ocean lithosphere. These Green's functions are valid for an elastic Earth model. In the case of inland stations or sites on a wide continental shelf, Green's functions for a visco-elastic structure according to PREM-C (Zschau, 1983) were used.

The discrete point mass convolution formulation is too crude if the distance between the loading mass and the site is less than ten times the mesh width. In this case, the grid cell was subdivided into 25 or 26 elements. The tide height was linearly interpolated on this regionally refined grid. Since Schwiderski's models specify observed tide elevation (as opposed to tide masses), refined coastlines in the region around the site were used to derive the actual tide mass in the water covered area. The coastlines were obtained using the ETOPO05 data set of the National Geophysical Data Center, Boulder CO.

Since the ocean tides imply cyclic redistribution of ocean water, the constraint of mass conservation applies. However, summing up all tide masses over the global grid leaves a small but significant mass imbalance. The loading effect of this imbalance was compensated assuming a uniform oceanic co-oscillating mass layer.

The average accuracy of the individual parameters presented is estimated to be better than ± five mm. The site displacements computed on the basis of Table 9.1 are estimated to be accurate on the ± three mm level.

A FORTRAN Subroutine "ARG" is included below to return the proper angular argument to be used with the Schwiderski phases.

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```
C     SUBROUTINE ARG(IYEAR,DAY,ANGLE)
C
C  COMPUTES THE ANGULAR ARGUMENT WHICH DEPENDS ON TIME FOR 11
C  TIDAL ARGUMENT CALCULATIONS
C
C
C     ORDER OF THE 11 ANGULAR QUANTITIES IN VECTOR ANGLE
C
C  01-M2
C  02-S2
C  03-N2
C  04-K2
C  05-K1
C  06-O1
C  07-P1
C  08-Q1
C  09-Mf
C  10-Mm
C  11-Ssa
C
C  TAKEN FROM 'TABLE 1 CONSTANTS OF MAJOR TIDAL MODES'
C       WHICH DR. SCHWIDERSKI SENDS ALONG WITH HIS TAPE OF TIDAL
C       AMPLITUDES AND PHASES
C
C
C  INPUT--
C
C     IYEAR - EX. 79 FOR 1979
C     DAY - DAY OF YEAR GREENWICH TIME
C                       EXAMPLE 32.5 FOR FEB 1   12 NOON
C                                1.25 FOR JAN 1    6 AM
C
C  OUTPUT--
C
C     ANGLE - ANGULAR ARGUMENT FOR SCHWIDERSKI COMPUTATION
C
C*************************************************************
C
C
C              C A U T I O N
C
C  OCEAN LOADING PHASES COMPUTED FROM SCHWIDERSKI'S MODELS
C  REFER TO THE PHASE OF THE ASSOCIATED SOLID EARTH TIDE
C  GENERATING POTENTIAL AT THE ZERO MERIDIAN ACCORDING TO
C
C      OL_DR = OL_AMP × COS (SE_PHASE" - OL_PHASE)
C
C  WHERE OL = OCEAN LOADING TIDE,
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```
C        SE = SOLID EARTH TIDE GENERATING POTENTIAL.
C
C  IF THE HARMONIC TIDE DEVELOPMENT OF CARTWRIGHT, ET AL.
C  ( = CTE) (1971, 1973) IS USED, MAKE SURE THAT SE_PHASE"
C  TAKES INTO ACCOUNT
C
C  (1) THE SIGN OF SE_AMP IN THE TABLES OF CARTWRIGHT ET AL.
C
C  (2) THAT CTE'S SE_PHASE REFERS TO A SINE RATHER THAN A
C      COSINE FUNCTION IF (N+M) = (DEGREE + ORDER) OF THE
C      TIDE SPHERICAL HARMONIC IS ODD.
C
C  I.E. SE_PHASE" = TAU(T) X N1 + S(T) X N2 + H(T) X N3
C                 + P(T) X N4 + N'(T) X N5 + PS(T) X N6
C                 + PI   IF CTE'S AMPLITUDE COEFFICIENT < 0
C                 - PI/2 IF (DEGREE + N1) IS ODD
C
C  WHERE TAU ... PS = ASTRONOMICAL ARGUMENTS,
C         N1 ... N6 = CTE'S ARGUMENT NUMBERS.
C
C  MOST TIDE GENERATING SOFTWARE COMPUTE SE_PHASE" (FOR
C  USE WITH COSINES).
C
C  THIS SUBROUTINE IS VALID ONLY AFTER 1973.
C
C**********************************************************************
      SUBROUTINE ARG(IYEAR,DAY,ANGLE)
      IMPLICIT DOUBLE PRECISION (A-H,O-Z)
      REAL ANGFAC(4,11)
      DIMENSION ANGLE(11),SPEED(11)
C
C  SPEED OF ALL TERMS IN RADIANS PER SEC
C
      EQUIVALENCE (SPEED(1),SIGM2),(SPEED(2),SIGS2),(SPEED(3),SIGN2)
      EQUIVALENCE (SPEED(4),SIGK2),(SPEED(5),SIGK1),(SPEED(6),SIGO1)
      EQUIVALENCE (SPEED(7),SIGP1),(SPEED(8),SIGQ1),(SPEED(9),SIGMF)
      EQUIVALENCE (SPEED(10),SIGMM),(SPEED(11),SIGSSA)
      DATA SIGM2/1.40519D-4/
      DATA SIGS2/1.45444D-4/
      DATA SIGN2/1.37880D-4/
      DATA SIGK2/1.45842D-4/
      DATA SIGK1/.72921D-4/
      DATA SIGO1/.67598D-4/
      DATA SIGP1/.72523D-4/
      DATA SIGQ1/.64959D-4/
      DATA SIGMF/.053234D-4/
      DATA SIGMM/.026392D-4/
      DATA SIGSSA/.003982D-4/
      DATA ANGFAC/2.E0,-2.E0,0.E0,0.E0,4*0.E0,
     .            2.E0,-3.E0,1.E0,0.E0,2.E0,3*0.E0,
     .            1.E0,2*0.E0,.25E0,1.E0,-2.E0,0.E0,-.25E0,
     .            -1.E0,2*0.E0,-.25E0,1.E0,-3.E0,1.E0,-.25E0,
     .            0.E0,2.E0,2*0.E0,0.E0,1.E0,-1.E0,0.E0,
     .            2.E0,3*0.E0/
      DATA TWOPI/6.28318530718D0/
      DATA DTR/.174532925199D-1/
C
C  DAY OF YEAR
C
      ID=DAY
C
C  FRACTIONAL PART OF DAY IN SECONDS
```

```
C
      FDAY=(DAY-ID)*86400.D0
      ICAPD=ID+365*(IYEAR-75)+((IYEAR-73)/4)
      CAPT=(27392.500528D0+1.000000035D0*ICAPD)/36525.D0
C
C MEAN LONGITUDE OF SUN AT BEGINNING OF DAY
C
      H0=(279.69668D0+(36000.768930485D0+3.03D-4*CAPT)*CAPT)*DTR
C
C MEAN LONGITUDE OF MOON AT BEGINNING OF DAY
C
      S0=(((1.9D-6*CAPT-.001133D0)*CAPT+481267.88314137D0)*CAPT
     .  +270.434358D0)*DTR
C
C MEAN LONGITUDE OF LUNAR PERIGEE AT BEGINNING OF DAY
C
      P0=(((-1.2D-5*CAPT-.010325D0)*CAPT+4069.0340329577D0)*CAPT
     .  +334.329653D0)*DTR
      DO 500 K=1,11
      ANGLE(K)=SPEED(K)*FDAY+ANGFAC(1,K)*H0+ANGFAC(2,K)*S0
     .  +ANGFAC(3,K)*P0+ANGFAC(4,K)*TWOPI
      ANGLE(K)=DMOD(ANGLE(K),TWOPI)
      IF(ANGLE(K).LT.0.D0)ANGLE(K)=ANGLE(K)+TWOPI
  500 CONTINUE
      RETURN
      END
```

## Table 9.1 Ocean Loading Parameters:

The table specifies (1) the Darwin tide symbols as the header of column j, (2) for each site, site name and geographic coordinates and (3) for each displacement component, amplitudes $A_{cj}$ (m) and phases $\Phi_{cj}$ (deg). Let $\Delta c$ denote the displacement component of a particular site at time t. Let the tidal frequency be given by $\omega_j$ and the astronomical argument at t= 0 by $\chi_j$ (given by subroutine ARG above). Then,

$$\Delta c = \sum_j f_j A_{cj} \cos(\omega_j t + \chi_j + u_j - \Phi_{cj}),$$

where $f_j$ and $u_j$ depend on the longitude of the lunar node according to Table 26 of Doodson (1928). Tangential displacements are to be taken positive in west and south directions..

ADEA4240

ADEA424042 lon/lat: 140°0014 -66°6617

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00508 | .00279 | .00108 | .00073 | .01141 | .01035 | .00276 | .00237 | .00127 | .00079 | .00112 |
| Tangential (EW) | .00173 | .00108 | .00052 | .00032 | .00124 | .00104 | .00035 | .00022 | .00007 | .00012 | .00020 |
| Tangential (NS) | .00227 | .00097 | .00052 | .00024 | .00232 | .00200 | .00063 | .00041 | .00017 | .00015 | .00027 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -102.9 | -79.6 | -121.6 | -75.4 | 43.6 | 29.4 | 40.7 | 18.3 | 17.2 | -9.3 | -12.1 |
| Tangential (EW) | 152.1 | -160.4 | 148.9 | -149.2 | -11.0 | -34.5 | -16.3 | -45.5 | 10.1 | 46.3 | 75.2 |
| Tangential (NS) | -126.6 | -75.4 | -143.5 | -68.4 | 63.6 | 43.1 | 62.0 | 34.3 | 16.4 | -4.8 | 0.4 |

ALASKANO

ALASKANO lon/lat: -147°4975 64°9775

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00779 | .00324 | .00112 | .00082 | .00501 | .00348 | .00161 | .00064 | .00072 | .00044 | .00012 |
| Tangential (EW) | .00063 | .00025 | .00017 | .00009 | .00095 | .00071 | .00030 | .00017 | .00004 | .00000 | .00017 |
| Tangential (NS) | .00332 | .00133 | .00058 | .00036 | .00202 | .00127 | .00064 | .00023 | .00013 | .00012 | .00021 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 101.4 | 139.7 | 87.1 | 135.6 | 96.5 | 88.2 | 95.9 | 81.7 | 17.8 | 20.6 | -117.6 |
| Tangential (EW) | 103.0 | -81.6 | 56.1 | -63.5 | -1.6 | -36.2 | -3.6 | -41.0 | -179.4 | 131.4 | 147.3 |
| Tangential (NS) | -90.1 | -49.3 | -104.5 | -50.5 | -101.1 | -112.1 | -101.3 | -116.6 | 147.0 | -136.7 | -132.0 |

ALGO 90

ALGO 9001 lon/lat: -78°0714 45°9545

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00562 | .00173 | .00098 | .00051 | .00273 | .00170 | .00091 | .00034 | .00032 | .00009 | .00063 |
| Tangential (EW) | .00303 | .00070 | .00064 | .00021 | .00035 | .00030 | .00012 | .00007 | .00005 | .00007 | .00025 |
| Tangential (NS) | .00045 | .00036 | .00013 | .00011 | .00005 | .00017 | .00002 | .00005 | .00005 | .00004 | .00007 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 150.2 | -175.3 | 125.6 | -175.9 | -0.9 | -2.5 | 1.9 | 2.1 | 13.4 | -40.3 | -66.7 |
| Tangential (EW) | -162.8 | -141.2 | 174.7 | -144.8 | -119.2 | -176.4 | -124.5 | 163.6 | -8.5 | -141.2 | -93.2 |
| Tangential (NS) | 11.1 | 52.9 | 28.9 | 47.7 | 114.7 | -98.1 | 74.5 | -150.1 | -119.7 | -163.8 | 42.5 |

ALGO PARK

ALGOPARK lon/lat: -78°0727 45°9555

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00570 | .00179 | .00098 | .00052 | .00281 | .00176 | .00093 | .00037 | .00025 | .00007 | .00027 |
| Tangential (EW) | .00278 | .00066 | .00060 | .00019 | .00032 | .00019 | .00010 | .00004 | .00005 | .00004 | .00014 |
| Tangential (NS) | .00052 | .00030 | .00013 | .00008 | .00012 | .00011 | .00003 | .00004 | .00009 | .00007 | .00005 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 150.4 | -175.1 | 127.4 | -176.0 | -0.5 | -3.1 | 1.1 | 1.8 | 13.1 | -1.5 | -174.1 |
| Tangential (EW) | -163.0 | -137.4 | 173.4 | -142.2 | -101.8 | -161.3 | -105.1 | 165.1 | -6.8 | -149.6 | -93.7 |
| Tangential (NS) | 1.0 | 49.7 | 14.0 | 46.0 | 123.5 | -132.0 | 118.4 | -170.2 | -147.6 | -158.3 | -32.3 |

AMSA8 40

AMSA8 4008 lon/lat: 77°5714 -37°7972

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .02082 | .01334 | .00472 | .00359 | .00562 | .00452 | .00189 | .00080 | .00016 | .00057 | .00204 |
| Tangential (EW) | .00059 | .00040 | .00007 | .00013 | .00151 | .00106 | .00047 | .00016 | .00002 | .00005 | .00018 |
| Tangential (NS) | .00278 | .00129 | .00066 | .00031 | .00080 | .00084 | .00028 | .00019 | .00007 | .00009 | .00007 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 56.4 | 92.7 | 37.3 | 93.0 | 7.4 | 25.2 | 6.5 | 19.2 | 33.1 | -95.7 | -46.6 |
| Tangential (EW) | 10.3 | 100.0 | 33.0 | 102.6 | 39.0 | 19.3 | 37.7 | -0.7 | -145.2 | -28.5 | 45.9 |
| Tangential (NS) | 96.5 | 108.0 | 92.3 | 107.3 | -96.8 | -104.2 | -91.6 | -126.5 | -142.5 | 174.0 | -121.9 |

AM-SOM70

AM-SOM7096 lon/lat: -170°7249 -14°3348

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .02596 | .00565 | .00687 | .00148 | .00361 | .00244 | .00137 | .00059 | .00099 | .00056 | .00113 |
| Tangential (EW) | .00253 | .00132 | .00067 | .00036 | .00162 | .00097 | .00048 | .00020 | .00003 | .00007 | .00002 |
| Tangential (NS) | .00423 | .00177 | .00053 | .00045 | .00087 | .00029 | .00022 | .00004 | .00005 | .00004 | .00012 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -6.4 | -13.4 | -19.5 | -19.0 | -133.6 | -138.4 | -135.7 | -153.3 | -162.7 | -156.2 | -121.8 |
| Tangential (EW) | 176.6 | 168.4 | 159.3 | 169.1 | 37.2 | 15.8 | 34.7 | -9.6 | -90.2 | -128.6 | 129.3 |
| Tangential (NS) | -91.7 | -39.9 | -122.0 | -42.8 | 35.9 | 42.5 | 26.9 | 80.9 | -143.2 | -164.3 | 117.4 |

AREA4640

AREA464046 lon/lat: -71°4931 -16°4651

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00404 | .00090 | .00149 | .00037 | .00516 | .00261 | .00404 | .00048 | .00044 | .00015 | .00025 |
| Tangential (EW) | .00213 | .00044 | .00042 | .00018 | .00153 | .00079 | .00069 | .00013 | .00005 | .00003 | .00019 |
| Tangential (NS) | .00311 | .00086 | .00064 | .00025 | .00101 | .00052 | .00104 | .00009 | .00004 | .00004 | .00027 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 132.8 | 101.7 | 98.8 | 111.4 | -140.8 | -163.0 | -147.8 | 178.9 | -177.6 | -174.9 | -29.7 |
| Tangential (EW) | 15.7 | 17.4 | -22.6 | -8.4 | 43.5 | -1.3 | 38.7 | -25.9 | 19.1 | -140.8 | -131.0 |
| Tangential (NS) | 45.6 | 97.3 | 13.2 | 96.1 | 84.7 | 67.0 | 42.8 | 39.2 | -103.8 | 130.3 | 148.0 |

AREQUI79

AREQUI7907 lon/lat: -71°4931 -16°4651

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00404 | .00090 | .00149 | .00037 | .00516 | .00261 | .00404 | .00048 | .00044 | .00015 | .00025 |
| Tangential (EW) | .00213 | .00044 | .00042 | .00018 | .00153 | .00079 | .00068 | .00013 | .00005 | .00003 | .00019 |
| Tangential (NS) | .00311 | .00086 | .00064 | .00025 | .00101 | .00052 | .00104 | .00009 | .00004 | .00004 | .00027 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 132.8 | 101.7 | 98.8 | 111.4 | -140.8 | -163.0 | -147.8 | 178.9 | -177.6 | -174.9 | -29.7 |
| Tangential (EW) | 15.7 | 17.4 | -22.6 | -8.4 | 43.5 | -1.3 | 38.7 | -25.9 | 19.1 | -140.8 | -131.0 |
| Tangential (NS) | 45.6 | 97.3 | 13.2 | 96.1 | 84.7 | 67.0 | 42.8 | 39.2 | -103.8 | 130.3 | 148.0 |

ARLA3540

ARLA354035 lon/lat: 7°3773 18°7355

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00504 | .00159 | .00099 | .00043 | .00054 | .00030 | .00019 | .00013 | .00025 | .00015 | .00010 |
| Tangential (EW) | .00067 | .00023 | .00019 | .00006 | .00056 | .00045 | .00013 | .00010 | .00005 | .00009 | .00001 |
| Tangential (NS) | .00059 | .00009 | .00020 | .00005 | .00043 | .00046 | .00011 | .00015 | .00006 | .00003 | .00013 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -68.3 | -52.5 | -78.9 | -54.9 | -160.1 | 34.9 | -162.7 | 1.5 | -151.3 | -148.9 | 178.4 |
| Tangential (EW) | 34.9 | -8.6 | 7.0 | 18.4 | -120.1 | -138.8 | -116.7 | -174.2 | 28.5 | 34.8 | -78.6 |
| Tangential (NS) | -114.0 | -104.5 | -162.5 | -151.3 | 78.2 | 132.5 | 88.3 | 129.7 | -82.0 | 121.0 | 103.5 |

ASKITE75

ASKITE7510 lon/lat: 25°5662 40°9268

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00363 | .00101 | .00075 | .00024 | .00080 | .00051 | .00026 | .00006 | .00019 | .00021 | .00033 |
| Tangential (EW) | .00198 | .00042 | .00051 | .00011 | .00033 | .00015 | .00013 | .00004 | .00005 | .00002 | .00005 |
| Tangential (NS) | .00108 | .00020 | .00017 | .00005 | .00055 | .00025 | .00014 | .00005 | .00010 | .00006 | .00011 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -65.7 | -39.4 | -88.5 | -40.5 | -83.6 | -113.2 | -88.4 | -120.5 | 11.5 | 2.5 | 42.3 |
| Tangential (EW) | 31.0 | 52.2 | 10.8 | 58.5 | 129.8 | 64.2 | 111.6 | 82.3 | 174.4 | 34.3 | -126.7 |
| Tangential (NS) | -81.3 | -37.7 | -116.4 | -49.8 | 50.1 | 56.5 | 48.5 | 83.6 | -143.0 | 171.6 | 124.8 |

AUSTIN TX

AUSTIN TX lon/lat: -97°6957 30°3393

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00222 | .00129 | .00027 | .00032 | .00286 | .00187 | .00092 | .00039 | .00020 | .00013 | .00042 |
| Tangential (EW) | .00148 | .00034 | .00033 | .00011 | .00166 | .00118 | .00052 | .00023 | .00006 | .00003 | .00028 |
| Tangential (NS) | .00049 | .00016 | .00020 | .00005 | .00044 | .00018 | .00015 | .00003 | .00006 | .00003 | .00003 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 129.7 | -152.5 | 11.0 | -139.4 | 25.1 | 11.4 | 22.5 | 9.0 | 164.7 | -175.0 | -168.6 |
| Tangential (EW) | 157.6 | 169.1 | 129.7 | 157.2 | -146.9 | -164.4 | -148.7 | -175.5 | 116.2 | 175.5 | -129.8 |
| Tangential (NS) | 165.6 | 74.5 | 146.7 | 79.9 | 90.2 | 66.1 | 89.8 | 113.7 | -121.1 | -174.8 | 57.0 |

BARGI075

BARGI07530 lon/lat: 35°0885 31°7213

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00306 | .00092 | .00065 | .00024 | .00095 | .00058 | .00034 | .00011 | .00001 | .00015 | .00032 |
| Tangential (EW) | .00205 | .00048 | .00050 | .00011 | .00055 | .00022 | .00018 | .00007 | .00004 | .00001 | .00009 |
| Tangential (NS) | .00092 | .00005 | .00017 | .00001 | .00099 | .00059 | .00028 | .00011 | .00010 | .00007 | .00015 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -66.6 | -46.1 | -89.8 | -48.9 | -173.3 | -158.4 | -169.2 | -163.2 | 170.4 | 5.9 | 54.8 |
| Tangential (EW) | 9.2 | 25.1 | -6.3 | 28.3 | 154.6 | 144.4 | 146.0 | 137.6 | -161.9 | -30.7 | -89.8 |
| Tangential (NS) | -89.0 | -17.3 | -128.0 | -59.1 | 46.6 | 47.4 | 45.9 | 46.8 | -140.3 | 169.2 | 128.2 |

BARST072

BARST07265 lon/lat: -116°8913 35°3300

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00181 | .00140 | .00104 | .00052 | .00955 | .00606 | .00318 | .00112 | .00011 | .00009 | .00044 |
| Tangential (EW) | .00241 | .00081 | .00042 | .00020 | .00320 | .00206 | .00106 | .00036 | .00008 | .00004 | .00031 |
| Tangential (NS) | .00340 | .00135 | .00074 | .00042 | .00170 | .00100 | .00056 | .00021 | .00001 | .00003 | .00013 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -6.8 | -110.7 | -51.2 | -88.9 | 44.0 | 29.6 | 41.5 | 21.5 | -89.0 | -155.5 | 15.3 |
| Tangential (EW) | -137.2 | -86.6 | -164.4 | -91.1 | -133.5 | -148.1 | -135.7 | -153.5 | 134.4 | 142.3 | -147.8 |
| Tangential (NS) | 96.0 | 110.4 | 80.1 | 105.2 | 178.9 | 172.5 | 177.6 | 162.8 | -57.8 | 100.7 | -172.7 |

BASOVI75

BASOVI7550 lon/lat: 13°8756 45°6417

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00496 | .00144 | .00100 | .00033 | .00151 | .00060 | .00047 | .00003 | .00035 | .00021 | .00033 |
| Tangential (EW) | .00229 | .00056 | .00056 | .00016 | .00032 | .00025 | .00014 | .00004 | .00007 | .00005 | .00005 |
| Tangential (NS) | .00103 | .00030 | .00013 | .00007 | .00029 | .00005 | .00006 | .00005 | .00007 | .00003 | .00009 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -69.5 | -40.6 | -89.2 | -42.4 | -62.7 | -100.7 | -65.0 | -103.3 | 5.3 | -10.0 | 8.4 |
| Tangential (EW) | 56.0 | 85.2 | 30.4 | 84.3 | 102.0 | 29.5 | 85.4 | 31.1 | 156.5 | 51.7 | 171.9 |
| Tangential (NS) | -50.7 | -6.9 | -64.9 | -7.7 | 50.0 | 122.0 | 45.8 | 143.4 | -136.3 | 148.2 | 112.3 |

BEARLA70

BEARLA7082 lon/lat: -111°4206 41°9324

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00301 | .00131 | .00041 | .00027 | .00599 | .00385 | .00193 | .00073 | .00015 | .00004 | .00034 |
| Tangential (EW) | .00276 | .00098 | .00051 | .00026 | .00239 | .00162 | .00076 | .00029 | .00007 | .00004 | .00028 |
| Tangential (NS) | .00175 | .00074 | .00042 | .00023 | .00107 | .00058 | .00032 | .00014 | .00003 | .00003 | .00008 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 96.9 | 179.2 | 15.8 | -163.2 | 47.2 | 33.6 | 45.8 | 26.5 | 0.4 | 3.5 | -8.1 |
| Tangential (EW) | -127.1 | -82.8 | -150.8 | -86.1 | -128.8 | -144.7 | -130.8 | -150.9 | 138.4 | 171.2 | -144.1 |
| Tangential (NS) | 109.4 | 108.9 | 92.5 | 103.4 | 175.7 | 171.3 | 170.5 | 161.6 | -141.8 | 168.7 | -159.0 |

BERMUDA

BERMUDA lon/lat: -64°6695 32°3612

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01992 | .00458 | .00425 | .00139 | .00467 | .00349 | .00152 | .00083 | .00035 | .00055 | .00117 |
| Tangential (EW) | .00155 | .00043 | .00031 | .00015 | .00022 | .00026 | .00007 | .00006 | .00005 | .00018 | .00026 |
| Tangential (NS) | .00244 | .00057 | .00057 | .00014 | .00061 | .00067 | .00021 | .00015 | .00007 | .00006 | .00007 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 165.9 | -162.5 | 144.9 | -167.5 | -2.4 | 5.6 | -0.4 | 8.3 | -68.5 | -120.2 | -128.1 |
| Tangential (EW) | 169.6 | -171.1 | 137.8 | -167.4 | 114.9 | 98.2 | 116.1 | 87.9 | -59.9 | -130.1 | -75.9 |
| Tangential (NS) | -144.3 | -101.4 | -170.4 | -98.9 | -91.4 | -112.8 | -91.8 | -137.7 | -39.9 | 92.5 | 45.7 |

BLKBUTTE

BLACK BUTTE lon/lat: -115°7198 33°6638

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00276 | .00201 | .00133 | .00073 | .00979 | .00623 | .00306 | .00118 | .00013 | .00009 | .00044 |
| Tangential (EW) | .00210 | .00057 | .00037 | .00013 | .00339 | .00218 | .00106 | .00038 | .00008 | .00003 | .00032 |
| Tangential (NS) | .00361 | .00143 | .00079 | .00044 | .00170 | .00100 | .00054 | .00023 | .00001 | .00002 | .00014 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -44.9 | -96.6 | -64.1 | -82.4 | 41.3 | 26.4 | 40.1 | 17.9 | -109.2 | -176.4 | 43.6 |
| Tangential (EW) | -152.9 | -99.5 | 176.4 | -108.1 | -136.9 | -151.7 | -137.6 | -157.6 | 128.1 | 131.7 | -146.2 |
| Tangential (NS) | 95.1 | 109.8 | 79.1 | 106.0 | 177.5 | 171.0 | 176.1 | 163.7 | -94.8 | 166.6 | -123.2 |

BLOOMIND

BLOOMIND lon/lat: -86°4984 39°1793

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00459 | .00155 | .00063 | .00041 | .00268 | .00184 | .00089 | .00039 | .00007 | .00001 | .00034 |
| Tangential (EW) | .00267 | .00057 | .00059 | .00017 | .00055 | .00036 | .00017 | .00007 | .00002 | .00003 | .00015 |
| Tangential (NS) | .00031 | .00015 | .00012 | .00004 | .00018 | .00001 | .00006 | .00003 | .00008 | .00006 | .00004 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 140.3 | -175.2 | 110.0 | -175.0 | 11.1 | 5.9 | 11.6 | 7.5 | 44.5 | -163.9 | -176.0 |
| Tangential (EW) | -169.6 | -144.1 | 167.0 | -150.9 | -133.8 | -167.7 | -136.8 | 174.3 | 21.7 | -161.0 | -113.7 |
| Tangential (NS) | -164.3 | 57.5 | 146.3 | 57.8 | 101.5 | -112.9 | 96.9 | 178.4 | -138.4 | -164.3 | -14.2 |

BOLOGN75

BOLOGN7546 lon/lat: 11°6465 44°5188

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00541 | .00159 | .00108 | .00037 | .00155 | .00056 | .00048 | .00001 | .00034 | .00019 | .00031 |
| Tangential (EW) | .00243 | .00061 | .00058 | .00018 | .00029 | .00023 | .00014 | .00003 | .00007 | .00006 | .00005 |
| Tangential (NS) | .00117 | .00036 | .00016 | .00008 | .00026 | .00007 | .00005 | .00006 | .00006 | .00003 | .00009 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -71.2 | -42.9 | -90.5 | -45.6 | -63.1 | -100.2 | -65.4 | -72.1 | 2.0 | -16.9 | 0.6 |
| Tangential (EW) | 58.5 | 86.9 | 32.9 | 85.2 | 101.7 | 23.3 | 83.5 | 26.3 | 151.4 | 50.9 | 161.6 |
| Tangential (NS) | -49.6 | -7.8 | -63.6 | -8.6 | 49.4 | 151.6 | 45.1 | 146.3 | -130.9 | 148.6 | 115.3 |

BOROWC78

BOROWC7811 lon/lat: 17°0746 52°2757

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00400 | .00113 | .00079 | .00025 | .00170 | .00082 | .00053 | .00007 | .00050 | .00032 | .00044 |
| Tangential (EW) | .00189 | .00042 | .00047 | .00012 | .00044 | .00042 | .00018 | .00008 | .00010 | .00002 | .00007 |
| Tangential (NS) | .00048 | .00013 | .00004 | .00003 | .00028 | .00006 | .00006 | .00003 | .00004 | .00002 | .00013 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -64.7 | -31.5 | -84.9 | -28.5 | -57.8 | -101.8 | -60.1 | -129.9 | 13.1 | 1.8 | 15.7 |
| Tangential (EW) | 54.6 | 90.4 | 27.5 | 89.1 | 93.7 | 36.8 | 82.7 | 26.9 | 168.4 | 66.2 | 177.0 |
| Tangential (NS) | -36.8 | 24.7 | 7.6 | 36.7 | 47.4 | -33.3 | 37.8 | 162.0 | -158.3 | 101.1 | 94.4 |

BREST

BREST lon/lat: -4°5038 48°4079

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .03844 | .01290 | .00749 | .00336 | .00401 | .00141 | .00123 | .00046 | .00095 | .00049 | .00065 |
| Tangential (EW) | .00293 | .00101 | .00168 | .00077 | .00012 | .00004 | .00020 | .00011 | .00017 | .00020 | .00015 |
| Tangential (NS) | .00639 | .00278 | .00119 | .00070 | .00050 | .00033 | .00016 | .00008 | .00001 | .00007 | .00010 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -58.6 | -20.6 | -83.3 | -27.4 | -70.5 | -170.7 | -72.5 | 92.8 | -22.7 | -100.0 | -78.6 |
| Tangential (EW) | 44.3 | 83.1 | 71.0 | 122.8 | -30.0 | -79.6 | 82.2 | -72.2 | 135.3 | 47.3 | 107.7 |
| Tangential (NS) | 29.0 | 67.2 | 14.2 | 61.2 | 0.7 | -95.6 | -0.3 | -167.5 | 1.9 | 42.1 | 78.5 |

CABO S78

CABO S7882 lon/lat: -109°8644 22°9166

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01231 | .00787 | .00329 | .00244 | .01126 | .00758 | .00360 | .00152 | .00060 | .00045 | .00094 |
| Tangential (EW) | .00183 | .00046 | .00039 | .00016 | .00279 | .00170 | .00089 | .00029 | .00006 | .00002 | .00026 |
| Tangential (NS) | .00281 | .00113 | .00053 | .00032 | .00114 | .00073 | .00026 | .00018 | .00005 | .00004 | .00023 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -84.8 | -76.9 | -83.5 | -78.1 | 22.7 | 7.5 | 16.2 | -2.9 | -154.2 | -155.9 | 17.1 |
| Tangential (EW) | 103.3 | 150.3 | 68.4 | 130.4 | -143.0 | -160.6 | -145.2 | -170.6 | 102.1 | 127.2 | -147.5 |
| Tangential (NS) | 71.4 | 91.5 | 68.4 | 88.2 | 157.2 | 169.0 | 138.2 | 161.4 | 3.7 | 63.8 | 167.8 |

CAGLIA75

CAGLIA7545 lon/lat: 8°9730 39°1342

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00570 | .00171 | .00114 | .00041 | .00134 | .00037 | .00041 | .00004 | .00023 | .00013 | .00023 |
| Tangential (EW) | .00246 | .00065 | .00059 | .00020 | .00016 | .00011 | .00009 | .00000 | .00005 | .00007 | .00003 |
| Tangential (NS) | .00156 | .00048 | .00025 | .00011 | .00023 | .00018 | .00004 | .00009 | .00008 | .00004 | .00008 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -75.1 | -50.4 | -93.8 | -54.9 | -68.0 | -94.3 | -70.5 | 10.4 | -9.5 | -40.4 | -8.6 |
| Tangential (EW) | 54.0 | 76.2 | 29.5 | 75.5 | 118.9 | -7.4 | 83.7 | 57.9 | 134.5 | 45.6 | 156.3 |
| Tangential (NS) | -64.0 | -26.0 | -88.2 | -31.0 | 53.4 | 150.3 | 56.8 | 141.8 | -120.7 | 164.3 | 131.3 |

CANB 90

CANB 9002 lon/lat: 148°9818 -35°3999

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00952 | .00128 | .00207 | .00033 | .00273 | .00275 | .00118 | .00080 | .00011 | .00009 | .00069 |
| Tangential (EW) | .00507 | .00179 | .00091 | .00049 | .00123 | .00072 | .00040 | .00014 | .00003 | .00015 | .00009 |
| Tangential (NS) | .00113 | .00036 | .00018 | .00012 | .00142 | .00126 | .00048 | .00028 | .00005 | .00007 | .00025 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 126.0 | 172.4 | 95.8 | 162.7 | 119.5 | 67.8 | 110.9 | 55.9 | -24.4 | -101.6 | -82.8 |
| Tangential (EW) | 93.1 | 126.4 | 82.5 | 128.8 | -169.3 | 168.5 | -169.8 | 147.6 | -105.4 | 73.2 | 135.6 |
| Tangential (NS) | 9.1 | 72.1 | -36.6 | 78.5 | -117.6 | -143.7 | -117.8 | -160.5 | -139.9 | 83.6 | 118.4 |

CARNUSTY

CARNOUSTIE lon/lat: -2°7830 56°4785

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .02365 | .00873 | .00351 | .00164 | .00536 | .00324 | .00120 | .00061 | .00123 | .00095 | .00066 |
| Tangential (EW) | .00768 | .00296 | .00142 | .00066 | .00105 | .00069 | .00034 | .00015 | .00008 | .00020 | .00009 |
| Tangential (NS) | .00205 | .00076 | .00075 | .00030 | .00078 | .00036 | .00015 | .00010 | .00005 | .00013 | .00022 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -104.8 | -72.4 | -110.6 | -45.4 | -20.8 | -128.9 | -25.6 | -177.5 | 4.7 | 22.2 | -17.4 |
| Tangential (EW) | -83.2 | -51.3 | -177.5 | -115.3 | 3.1 | -148.6 | 80.2 | -126.4 | 102.2 | 41.3 | 17.4 |
| Tangential (NS) | 152.0 | -171.6 | 83.8 | 124.9 | 6.9 | -122.2 | 7.9 | 173.8 | 110.7 | 66.5 | 78.6 |

CARROLGA

CARROLLTON GA lon/lat: -85°1096 33°5726

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00507 | .00164 | .00072 | .00043 | .00228 | .00156 | .00076 | .00034 | .00011 | .00007 | .00047 |
| Tangential (EW) | .00297 | .00061 | .00066 | .00018 | .00028 | .00020 | .00008 | .00004 | .00002 | .00002 | .00015 |
| Tangential (NS) | .00075 | .00009 | .00022 | .00002 | .00025 | .00014 | .00008 | .00001 | .00008 | .00005 | .00008 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 142.7 | -173.1 | 111.8 | -175.1 | 5.2 | 2.7 | 6.2 | 7.5 | 138.3 | 170.2 | -169.9 |
| Tangential (EW) | -176.1 | -155.3 | 161.9 | -161.8 | -149.5 | 152.4 | -156.4 | 125.4 | 20.9 | -164.1 | -115.6 |
| Tangential (NS) | -149.3 | -12.5 | 174.2 | -25.3 | 49.9 | -13.4 | 46.5 | -97.4 | -120.7 | -164.0 | 40.1 |

CEBRER26

CEBREROS 26 lon/lat: -4.°3678 40.°4531

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01375 | .00459 | .00291 | .00121 | .00232 | .00031 | .00070 | .00021 | .00035 | .00022 | .00021 |
| Tangential (EW) | .00307 | .00114 | .00088 | .00039 | .00024 | .00012 | .00010 | .00006 | .00008 | .00007 | .00005 |
| Tangential (NS) | .00310 | .00114 | .00060 | .00030 | .00032 | .00026 | .00009 | .00009 | .00009 | .00005 | .00008 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -87.5 | -61.8 | -106.9 | -65.4 | -71.0 | -148.9 | -73.1 | 58.4 | -30.8 | -110.4 | -25.7 |
| Tangential (EW) | -51.1 | -20.5 | 41.7 | 85.8 | -87.5 | -171.8 | 64.9 | -102.4 | 128.4 | 49.4 | -36.0 |
| Tangential (NS) | -56.3 | -17.9 | -77.1 | -19.0 | -29.2 | -156.1 | -39.4 | 155.3 | -98.1 | -176.7 | 175.3 |

CER T074

CER T07401 lon/lat: -70.°8000 -30.°1714

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00597 | .00208 | .00165 | .00048 | .00660 | .00449 | .00218 | .00095 | .00012 | .00016 | .00065 |
| Tangential (EW) | .00364 | .00093 | .00079 | .00021 | .00188 | .00109 | .00063 | .00022 | .00002 | .00007 | .00033 |
| Tangential (NS) | .00035 | .00053 | .00021 | .00016 | .00126 | .00103 | .00042 | .00022 | .00006 | .00004 | .00025 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -138.2 | -74.8 | 176.9 | -76.8 | -134.0 | -156.2 | -134.5 | -173.2 | 98.5 | 10.8 | 22.4 |
| Tangential (EW) | 52.5 | 83.4 | 24.8 | 61.8 | 41.8 | -9.1 | 41.3 | -36.2 | -128.3 | 169.8 | -139.8 |
| Tangential (NS) | 88.8 | 119.6 | 65.2 | 124.3 | 121.2 | 91.5 | 124.3 | 67.7 | -154.9 | 161.3 | 130.6 |

CHAA3940

CHAA394039 lon/lat: -176.°5720 -43.°9559

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01911 | .00253 | .00406 | .00066 | .00100 | .00071 | .00026 | .00028 | .00061 | .00042 | .00040 |
| Tangential (EW) | .00225 | .00068 | .00044 | .00018 | .00077 | .00056 | .00027 | .00015 | .00004 | .00006 | .00010 |
| Tangential (NS) | .00452 | .00109 | .00089 | .00033 | .00101 | .00095 | .00036 | .00025 | .00009 | .00003 | .00013 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 0.9 | 132.8 | -27.0 | 143.7 | -174.1 | -8.0 | 165.7 | -0.9 | 21.1 | 36.3 | -39.4 |
| Tangential (EW) | 44.4 | 97.8 | 28.8 | 105.4 | -38.5 | -67.9 | -48.9 | -79.3 | -5.6 | -97.3 | 63.2 |
| Tangential (NS) | 50.8 | 88.5 | 20.3 | 93.5 | -169.0 | 178.3 | -172.1 | 164.5 | -148.8 | 176.0 | 126.0 |

CHICHI78

CHICHI7844 lon/lat: 142.°2168 27.°0907

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01284 | .00528 | .00273 | .00162 | .01332 | .00993 | .00415 | .00205 | .00036 | .00025 | .00053 |
| Tangential (EW) | .00327 | .00160 | .00046 | .00038 | .00119 | .00101 | .00040 | .00022 | .00001 | .00006 | .00022 |
| Tangential (NS) | .00175 | .00058 | .00021 | .00016 | .00155 | .00111 | .00046 | .00019 | .00004 | .00002 | .00015 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 86.0 | 100.2 | 85.4 | 104.9 | -126.7 | -146.1 | -126.6 | -155.1 | -125.9 | 47.8 | 114.0 |
| Tangential (EW) | -23.6 | 2.3 | -28.3 | 7.1 | 177.6 | 153.5 | -177.4 | 150.6 | -19.0 | -8.6 | 52.5 |
| Tangential (NS) | -6.6 | 52.5 | -22.5 | 40.8 | 118.0 | 101.4 | 120.1 | 85.6 | -57.2 | -175.8 | 110.2 |

CHLBOLTN

CHILBOLTN lon/lat: -1.°4384 51.°1450

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01122 | .00347 | .00193 | .00065 | .00328 | .00120 | .00099 | .00014 | .00080 | .00034 | .00039 |
| Tangential (EW) | .00530 | .00187 | .00130 | .00061 | .00034 | .00018 | .00020 | .00011 | .00015 | .00009 | .00002 |
| Tangential (NS) | .00097 | .00029 | .00023 | .00019 | .00051 | .00033 | .00015 | .00007 | .00006 | .00008 | .00017 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -39.7 | 2.0 | -53.4 | 7.7 | -57.7 | -122.9 | -61.6 | 136.3 | -3.7 | -23.3 | -69.8 |
| Tangential (EW) | -27.0 | 9.0 | 97.1 | 169.0 | -76.0 | 166.9 | 104.8 | -64.6 | 146.1 | 44.0 | 178.5 |
| Tangential (NS) | 99.1 | 107.3 | -29.1 | 18.9 | 41.9 | -67.6 | 49.4 | -120.1 | -176.7 | 89.9 | 88.2 |

CUBA 19

CUBA 1953 lon/lat: -75°7622 20°0111

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00637 | .00207 | .00109 | .00064 | .00271 | .00225 | .00088 | .00052 | .00066 | .00045 | .00182 |
| Tangential (EW) | .00205 | .00028 | .00051 | .00009 | .00056 | .00050 | .00019 | .00010 | .00002 | .00009 | .00018 |
| Tangential (NS) | .00348 | .00074 | .00088 | .00021 | .00025 | .00044 | .00009 | .00012 | .00005 | .00005 | .00012 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 137.0 | 167.1 | 102.1 | 162.8 | 20.6 | 24.8 | 28.0 | 29.2 | 171.8 | -157.6 | -109.7 |
| Tangential (EW) | 173.0 | 172.4 | 152.4 | 179.0 | 77.6 | 62.9 | 83.0 | 56.3 | -42.6 | -129.0 | -95.2 |
| Tangential (NS) | -152.1 | -93.1 | -175.7 | -90.7 | -82.4 | -110.4 | -70.6 | -138.1 | -59.8 | 111.1 | 156.6 |

DAKA1840

DAKA184018 lon/lat: -17°4334 14°7313

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .01686 | .00467 | .00402 | .00123 | .00197 | .00193 | .00093 | .00064 | .00101 | .00114 | .00121 |
| Tangential (EW) | .00472 | .00143 | .00107 | .00039 | .00069 | .00063 | .00022 | .00012 | .00014 | .00017 | .00010 |
| Tangential (NS) | .00663 | .00221 | .00155 | .00062 | .00035 | .00081 | .00014 | .00024 | .00014 | .00007 | .00018 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 62.4 | 105.6 | 44.7 | 108.6 | 177.8 | 52.7 | 179.2 | 15.5 | -161.8 | -149.2 | -113.9 |
| Tangential (EW) | -105.3 | -60.8 | -117.2 | -50.6 | -70.3 | -105.0 | -46.4 | -135.3 | 20.0 | 33.9 | 46.8 |
| Tangential (NS) | -143.5 | -117.9 | -159.4 | -123.5 | -106.9 | 178.9 | -96.3 | 153.9 | -23.2 | 48.2 | 86.1 |

DEADMANL

DEADMAN LAKE lon/lat: -116°2789 34°2550

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00257 | .00183 | .00129 | .00067 | .00996 | .00632 | .00311 | .00120 | .00012 | .00008 | .00045 |
| Tangential (EW) | .00224 | .00067 | .00039 | .00016 | .00338 | .00217 | .00105 | .00038 | .00008 | .00004 | .00032 |
| Tangential (NS) | .00367 | .00146 | .00081 | .00045 | .00178 | .00105 | .00057 | .00024 | .00001 | .00002 | .00014 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -34.5 | -99.1 | -60.6 | -82.7 | 42.1 | 27.3 | 41.1 | 18.9 | -98.2 | -179.1 | 45.1 |
| Tangential (EW) | -146.7 | -93.8 | -176.3 | -100.3 | -135.7 | -150.4 | -136.3 | -156.1 | 130.6 | 134.7 | -146.7 |
| Tangential (NS) | 96.7 | 110.5 | 80.3 | 106.8 | 179.0 | 171.9 | 177.8 | 164.1 | -107.7 | 165.4 | -121.5 |

DIOA4740

DIOA474047 lon/lat: 23°9329 38°0772

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00379 | .00107 | .00078 | .00026 | .00072 | .00043 | .00024 | .00005 | .00015 | .00017 | .00030 |
| Tangential (EW) | .00201 | .00044 | .00051 | .00011 | .00032 | .00010 | .00012 | .00004 | .00004 | .00003 | .00005 |
| Tangential (NS) | .00114 | .00022 | .00018 | .00005 | .00057 | .00028 | .00014 | .00006 | .00010 | .00006 | .00011 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -67.8 | -43.7 | -89.7 | -46.0 | -90.6 | -115.8 | -95.6 | -118.3 | 6.5 | 0.5 | 44.1 |
| Tangential (EW) | 31.3 | 49.0 | 11.2 | 55.7 | 143.7 | 90.8 | 122.5 | 109.7 | 171.2 | 34.0 | -122.7 |
| Tangential (NS) | -78.6 | -34.5 | -112.4 | -47.3 | 53.3 | 65.7 | 53.3 | 89.6 | -140.0 | 172.1 | 128.8 |

DIYARB75

DIYARB7575 lon/lat: 40°1949 37°9190

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00271 | .00078 | .00056 | .00020 | .00075 | .00062 | .00028 | .00012 | .00008 | .00020 | .00036 |
| Tangential (EW) | .00191 | .00042 | .00047 | .00009 | .00044 | .00019 | .00015 | .00005 | .00005 | .00001 | .00007 |
| Tangential (NS) | .00103 | .00011 | .00022 | .00004 | .00093 | .00056 | .00026 | .00010 | .00010 | .00007 | .00016 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -56.1 | -27.9 | -82.8 | -28.2 | -159.1 | -143.7 | -156.9 | -149.2 | 32.4 | 7.5 | 52.1 |
| Tangential (EW) | 4.9 | 28.4 | -10.6 | 30.7 | 128.4 | 83.2 | 119.5 | 94.9 | -161.0 | -60.1 | -90.2 |
| Tangential (NS) | -111.8 | -117.2 | -148.9 | -116.8 | 38.2 | 36.1 | 35.3 | 32.3 | -146.3 | 169.2 | 124.6 |

DJCB1041

DJCB104103 lon/lat: 42°.4453 11°.5344

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00521 | .00260 | .00109 | .00074 | .00566 | .00277 | .00165 | .00063 | .00047 | .00009 | .00031 |
| Tangential (EW) | .00304 | .00096 | .00074 | .00023 | .00221 | .00121 | .00060 | .00030 | .00012 | .00005 | .00027 |
| Tangential (NS) | .00195 | .00080 | .00037 | .00021 | .00146 | .00090 | .00045 | .00017 | .00006 | .00002 | .00019 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -91.9 | -71.9 | -95.3 | -73.1 | 167.3 | 172.1 | 169.9 | 170.2 | -169.1 | -125.7 | -29.2 |
| Tangential (EW) | -11.5 | 4.1 | -24.5 | 1.1 | 170.4 | 174.1 | 169.9 | 166.6 | -164.5 | -105.2 | -63.7 |
| Tangential (NS) | -1.7 | 54.5 | -20.3 | 53.1 | 68.1 | 62.1 | 78.0 | 53.1 | -101.0 | 126.3 | 114.3 |

DJIA2540

DJIA254025 lon/lat: 42°.8466 11°.5258

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00586 | .00290 | .00126 | .00083 | .00662 | .00324 | .00180 | .00074 | .00051 | .00011 | .00039 |
| Tangential (EW) | .00336 | .00109 | .00083 | .00027 | .00251 | .00134 | .00063 | .00033 | .00014 | .00006 | .00029 |
| Tangential (NS) | .00203 | .00081 | .00039 | .00021 | .00145 | .00090 | .00045 | .00017 | .00006 | .00002 | .00019 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -84.1 | -65.5 | -85.6 | -66.7 | 167.6 | 172.5 | 169.7 | 170.8 | -169.9 | -122.7 | -35.2 |
| Tangential (EW) | -14.2 | 1.4 | -26.7 | -1.8 | 170.0 | 174.0 | 169.5 | 167.2 | -165.8 | -105.3 | -62.8 |
| Tangential (NS) | -3.3 | 51.9 | -21.5 | 50.3 | 70.4 | 63.8 | 82.6 | 54.6 | -102.8 | 125.7 | 113.9 |

DJMB1041

DJMB104102 lon/lat: 42°.5559 11°.6168

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00535 | .00266 | .00113 | .00076 | .00589 | .00289 | .00171 | .00066 | .00048 | .00010 | .00033 |
| Tangential (EW) | .00313 | .00100 | .00077 | .00024 | .00229 | .00124 | .00062 | .00031 | .00013 | .00005 | .00027 |
| Tangential (NS) | .00193 | .00079 | .00036 | .00021 | .00146 | .00091 | .00045 | .00017 | .00006 | .00002 | .00019 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -89.5 | -69.9 | -92.3 | -71.1 | 167.4 | 172.2 | 169.8 | 170.4 | -169.3 | -124.4 | -30.7 |
| Tangential (EW) | -12.3 | 3.4 | -25.2 | 0.2 | 170.2 | 174.0 | 169.7 | 166.7 | -164.8 | -105.0 | -63.4 |
| Tangential (NS) | -1.6 | 55.1 | -20.1 | 53.7 | 67.1 | 61.3 | 78.9 | 52.3 | -100.4 | 125.7 | 114.4 |

EASA4140

EASA414041 lon/lat: -109°.3837 -27°.1468

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .02032 | .00130 | .00520 | .00103 | .00675 | .00359 | .00212 | .00074 | .00046 | .00010 | .00103 |
| Tangential (EW) | .00105 | .00096 | .00042 | .00023 | .00090 | .00062 | .00030 | .00012 | .00003 | .00001 | .00006 |
| Tangential (NS) | .00234 | .00056 | .00044 | .00016 | .00099 | .00074 | .00033 | .00016 | .00013 | .00007 | .00021 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -161.0 | 76.6 | 173.0 | 65.4 | -149.7 | -161.9 | -145.9 | -164.5 | 157.8 | -124.8 | 19.3 |
| Tangential (EW) | -28.8 | -66.9 | -23.6 | -66.0 | -161.8 | 157.4 | -162.3 | 128.7 | 35.4 | -32.1 | -127.6 |
| Tangential (NS) | -145.3 | 144.7 | 171.6 | 143.0 | 91.1 | 73.9 | 101.4 | 54.0 | -136.3 | 157.7 | 152.0 |

EASTER70

EASTER7061 lon/lat: -109°.3836 -27°.1468

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .02032 | .00130 | .00520 | .00103 | .00675 | .00359 | .00212 | .00074 | .00046 | .00010 | .00103 |
| Tangential (EW) | .00105 | .00096 | .00042 | .00023 | .00090 | .00062 | .00030 | .00012 | .00003 | .00001 | .00006 |
| Tangential (NS) | .00234 | .00056 | .00044 | .00016 | .00099 | .00074 | .00033 | .00016 | .00013 | .00007 | .00021 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -161.0 | 76.6 | 173.0 | 65.4 | -149.7 | -161.9 | -145.9 | -164.5 | 157.8 | -124.8 | 19.3 |
| Tangential (EW) | -28.8 | -66.9 | -23.6 | -66.0 | -161.8 | 157.4 | -162.3 | 128.7 | 35.4 | -32.1 | -127.6 |
| Tangential (NS) | -145.3 | 144.7 | 171.6 | 142.9 | 91.1 | 73.9 | 101.4 | 54.0 | -136.3 | 157.7 | 152.0 |

ENSENA78

ENSENA7883 lon/lat: -116°1607 31°2555

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_1$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00698 | .00385 | .00223 | .00134 | .01201 | .00763 | .00432 | .00143 | .00023 | .00021 | .00059 |
| Tangential (EW) | .00209 | .00036 | .00041 | .00010 | .00379 | .00240 | .00125 | .00041 | .00008 | .00003 | .00034 |
| Tangential (NS) | .00411 | .00170 | .00085 | .00052 | .00178 | .00106 | .00049 | .00024 | .00003 | .00004 | .00017 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -55.8 | -75.2 | -68.7 | -72.2 | 37.3 | 22.3 | 33.5 | 14.1 | -128.3 | -155.2 | 24.7 |
| Tangential (EW) | -178.9 | -145.4 | 148.0 | -173.8 | -140.2 | -155.1 | -142.3 | -161.1 | 120.3 | 111.5 | -144.6 |
| Tangential (NS) | 91.3 | 110.3 | 76.8 | 105.0 | 177.5 | 171.4 | 168.4 | 163.4 | -3.7 | 76.9 | -176.5 |

EFLSBERG

EFFELSBERG lon/lat: 6°8836 50°5236

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_1$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00606 | .00182 | .00127 | .00042 | .00214 | .00088 | .00065 | .00003 | .00048 | .00024 | .00013 |
| Tangential (EW) | .00227 | .00065 | .00047 | .00017 | .00034 | .00025 | .00012 | .00003 | .00011 | .00003 | .00004 |
| Tangential (NS) | .00071 | .00031 | .00022 | .00011 | .00030 | .00015 | .00008 | .00003 | .00004 | .00005 | .00011 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -69.0 | -36.2 | -81.9 | -33.8 | -57.7 | -98.3 | -59.0 | -89.6 | 2.0 | -1.3 | -54.1 |
| Tangential (EW) | 80.9 | 116.3 | 57.7 | 110.0 | 100.0 | 26.9 | 88.9 | -7.1 | 162.6 | 116.0 | -129.4 |
| Tangential (NS) | 27.7 | 61.5 | 20.7 | 66.5 | 29.1 | -69.7 | 27.8 | -152.0 | -145.5 | 83.6 | 109.4 |

ELY

ELY lon/lat: -114°8429 39°2920

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_1$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00241 | .00123 | .00054 | .00026 | .00757 | .00481 | .00236 | .00091 | .00012 | .00003 | .00034 |
| Tangential (EW) | .00280 | .00105 | .00050 | .00028 | .00277 | .00183 | .00086 | .00032 | .00008 | .00004 | .00030 |
| Tangential (NS) | .00248 | .00099 | .00058 | .00031 | .00137 | .00077 | .00042 | .00018 | .00003 | .00003 | .00011 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 79.8 | -167.6 | -18.1 | -136.2 | 47.5 | 33.4 | 46.6 | 25.4 | -19.6 | 49.6 | 26.1 |
| Tangential (EW) | -125.4 | -80.3 | -148.9 | -83.3 | -129.4 | -144.5 | -130.3 | -150.0 | 139.2 | 163.1 | -147.3 |
| Tangential (NS) | 102.0 | 109.1 | 84.4 | 105.3 | 176.8 | 169.9 | 175.2 | 161.9 | -144.6 | -175.8 | -117.0 |

FAIR 90

FAIR 9003 lon/lat: -147°4992 64°9770

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_1$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00766 | .00314 | .00114 | .00081 | .00484 | .00340 | .00171 | .00061 | .00091 | .00052 | .00083 |
| Tangential (EW) | .00064 | .00040 | .00015 | .00014 | .00081 | .00068 | .00026 | .00017 | .00005 | .00003 | .00015 |
| Tangential (NS) | .00376 | .00146 | .00067 | .00041 | .00201 | .00124 | .00069 | .00022 | .00013 | .00011 | .00023 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 102.3 | 139.8 | 86.9 | 136.9 | 96.8 | 88.2 | 95.6 | 84.2 | 18.1 | 16.2 | 44.0 |
| Tangential (EW) | 129.3 | -85.2 | 84.9 | -72.6 | -13.1 | -57.0 | -17.1 | -61.7 | -176.9 | -151.0 | 165.0 |
| Tangential (NS) | -95.1 | -54.9 | -108.8 | -54.8 | -105.4 | -116.5 | -105.9 | -120.9 | 130.1 | -134.4 | -141.9 |

FLAGSTAF

FLAGSTAFF lon/lat: -111°6347 35°2136

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_1$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00016 | .00142 | .00062 | .00044 | .00695 | .00449 | .00217 | .00086 | .00006 | .00006 | .00027 |
| Tangential (EW) | .00186 | .00061 | .00032 | .00015 | .00273 | .00179 | .00085 | .00032 | .00007 | .00003 | .00030 |
| Tangential (NS) | .00249 | .00099 | .00056 | .00030 | .00118 | .00066 | .00037 | .00017 | .00002 | .00003 | .00010 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 116.4 | -129.9 | -59.1 | -106.8 | 41.9 | 27.2 | 40.6 | 19.0 | -114.1 | -176.1 | 8.4 |
| Tangential (EW) | -144.4 | -93.1 | -170.9 | -98.1 | -136.5 | -152.1 | -137.5 | -159.0 | 127.1 | 151.4 | -145.0 |
| Tangential (NS) | 95.8 | 106.2 | 81.5 | 102.5 | 170.1 | 168.1 | 168.2 | 162.0 | -121.3 | -177.8 | -123.8 |

FLOA5340

FLOA534053 lon/lat: -31°1279 39°4539

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .01960 | .00744 | .00393 | .00210 | .00357 | .00018 | .00111 | .00037 | .00099 | .00092 | .00186 |
| Tangential (EW) | .00349 | .00105 | .00085 | .00031 | .00018 | .00020 | .00002 | .00008 | .00003 | .00005 | .00014 |
| Tangential (NS) | .00313 | .00114 | .00057 | .00032 | .00064 | .00071 | .00021 | .00017 | .00010 | .00005 | .00006 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -127.3 | -102.2 | -148.6 | -109.4 | -61.2 | -0.6 | -67.9 | 59.3 | -17.7 | -123.1 | -94.3 |
| Tangential (EW) | -67.2 | -34.2 | -81.0 | -25.7 | -122.8 | 122.5 | -140.7 | 84.6 | -130.9 | -143.1 | -73.2 |
| Tangential (NS) | -51.7 | -7.4 | -78.7 | -6.5 | -65.8 | -126.1 | -68.0 | -162.5 | -32.7 | 42.2 | 86.5 |

FT ORD

FORT ORD lon/lat: -121°7722 36°6698

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00844 | .00047 | .00225 | .00049 | .01545 | .00961 | .00475 | .00180 | .00028 | .00007 | .00086 |
| Tangential (EW) | .00437 | .00142 | .00080 | .00038 | .00415 | .00266 | .00126 | .00047 | .00012 | .00003 | .00034 |
| Tangential (NS) | .00413 | .00161 | .00093 | .00050 | .00230 | .00135 | .00071 | .00028 | .00001 | .00002 | .00017 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 21.4 | -54.2 | -24.4 | -34.8 | 46.4 | 32.0 | 46.8 | 23.5 | -42.9 | 110.5 | 66.1 |
| Tangential (EW) | -128.9 | -84.5 | -155.9 | -91.7 | -129.1 | -142.8 | -128.4 | -147.6 | 143.8 | 156.7 | -146.7 |
| Tangential (NS) | 101.3 | 113.1 | 82.2 | 109.7 | -175.2 | 173.9 | -174.9 | 164.4 | -132.9 | 115.8 | -118.8 |

GLDS1970

GLDS197085 lon/lat: -116°8864 35°4233

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00176 | .00138 | .00102 | .00051 | .00949 | .00603 | .00316 | .00111 | .00011 | .00009 | .00044 |
| Tangential (EW) | .00243 | .00082 | .00042 | .00021 | .00318 | .00205 | .00105 | .00036 | .00008 | .00004 | .00030 |
| Tangential (NS) | .00338 | .00134 | .00073 | .00041 | .00169 | .00099 | .00056 | .00021 | .00001 | .00003 | .00013 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -3.9 | -112.3 | -50.5 | -89.7 | 44.1 | 29.7 | 41.7 | 21.6 | -87.5 | -155.5 | 15.0 |
| Tangential (EW) | -136.6 | -86.2 | -163.5 | -90.6 | -133.4 | -147.9 | -135.5 | -153.3 | 134.6 | 143.0 | -147.8 |
| Tangential (NS) | 96.0 | 110.3 | 80.0 | 105.1 | 178.8 | 172.4 | 177.5 | 162.7 | -60.4 | 101.4 | -172.7 |

GLDST071

GLDST07115 lon/lat: -116°7919 35°2471

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00179 | .00143 | .00105 | .00053 | .00951 | .00605 | .00317 | .00112 | .00011 | .00009 | .00044 |
| Tangential (EW) | .00238 | .00080 | .00041 | .00020 | .00320 | .00206 | .00106 | .00036 | .00008 | .00004 | .00031 |
| Tangential (NS) | .00340 | .00135 | .00074 | .00042 | .00169 | .00099 | .00056 | .00021 | .00001 | .00003 | .00013 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -9.4 | -110.0 | -52.0 | -88.8 | 43.9 | 29.4 | 41.4 | 21.3 | -91.0 | -155.5 | 14.9 |
| Tangential (EW) | -137.9 | -87.1 | -165.3 | -91.7 | -133.7 | -148.3 | -135.9 | -153.8 | 134.1 | 141.8 | -147.7 |
| Tangential (NS) | 95.9 | 110.3 | 80.0 | 105.1 | 178.8 | 172.4 | 177.3 | 162.8 | -57.1 | 100.6 | -173.0 |

GND-TU70

GND-TU7068 lon/lat: -71°1319 21°4596

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .01020 | .00209 | .00195 | .00066 | .00381 | .00333 | .00114 | .00075 | .00059 | .00048 | .00181 |
| Tangential (EW) | .00133 | .00028 | .00035 | .00008 | .00049 | .00040 | .00017 | .00007 | .00005 | .00013 | .00016 |
| Tangential (NS) | .00406 | .00086 | .00099 | .00024 | .00031 | .00041 | .00012 | .00009 | .00006 | .00004 | .00014 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 154.7 | 175.1 | 131.8 | 169.2 | 19.5 | 23.9 | 21.4 | 25.2 | 175.5 | -154.9 | -109.5 |
| Tangential (EW) | 149.7 | 133.0 | 123.3 | 152.5 | 88.5 | 69.4 | 87.7 | 59.6 | -73.2 | -126.6 | -75.6 |
| Tangential (NS) | -155.2 | -108.3 | -177.6 | -109.7 | -59.4 | -103.2 | -47.8 | -133.2 | -78.8 | 150.6 | 161.1 |

GOLA1040

GOLA104010 lon/lat: -116°8917 35°3303

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00181 | .00140 | .00104 | .00052 | .00955 | .00606 | .00318 | .00112 | .00011 | .00009 | .00045 |
| Tangential (EW) | .00241 | .00081 | .00042 | .00020 | .00320 | .00206 | .00106 | .00036 | .00008 | .00004 | .00031 |
| Tangential (NS) | .00340 | .00135 | .00074 | .00042 | .00170 | .00100 | .00056 | .00021 | .00001 | .00003 | .00013 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -6.8 | -110.7 | -51.2 | -88.9 | 44.0 | 29.6 | 41.5 | 21.5 | -89.0 | -155.5 | 15.3 |
| Tangential (EW) | -137.2 | -86.6 | -164.4 | -91.1 | -133.5 | -148.1 | -135.7 | -153.5 | 134.4 | 142.3 | -147.8 |
| Tangential (NS) | 96.0 | 110.4 | 80.1 | 105.2 | 178.9 | 172.5 | 177.6 | 162.8 | -57.8 | 100.7 | -172.7 |

GORF7102

GORF7102 lon/lat: -76°8280 39°0207

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00923 | .00246 | .00172 | .00070 | .00333 | .00226 | .00108 | .00049 | .00017 | .00008 | .00035 |
| Tangential (EW) | .00414 | .00091 | .00093 | .00027 | .00024 | .00014 | .00007 | .00004 | .00006 | .00003 | .00019 |
| Tangential (NS) | .00096 | .00031 | .00014 | .00008 | .00017 | .00025 | .00005 | .00008 | .00009 | .00007 | .00006 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 158.6 | -169.7 | 141.0 | -173.5 | -2.5 | -1.1 | -1.0 | 3.1 | 21.6 | 75.9 | -179.2 |
| Tangential (EW) | -175.2 | -149.1 | 164.7 | -154.1 | -29.7 | 41.9 | -34.9 | 51.4 | -2.5 | -174.1 | -85.8 |
| Tangential (NS) | -37.6 | 11.9 | -43.3 | 7.6 | -171.8 | -135.5 | -167.8 | -158.1 | -137.6 | -158.9 | 2.8 |

GORMAN

GORMAN lon/lat: -118°9047 34°9036

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00444 | .00176 | .00171 | .00071 | .01231 | .00774 | .00384 | .00145 | .00016 | .00007 | .00063 |
| Tangential (EW) | .00286 | .00095 | .00050 | .00024 | .00358 | .00229 | .00110 | .00039 | .00009 | .00004 | .00032 |
| Tangential (NS) | .00426 | .00169 | .00095 | .00052 | .00224 | .00134 | .00071 | .00028 | .00000 | .00002 | .00017 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -13.7 | -86.9 | -50.7 | -70.6 | 43.2 | 28.5 | 42.7 | 20.1 | -73.2 | 172.8 | 56.9 |
| Tangential (EW) | -135.2 | -85.7 | -162.6 | -91.0 | -132.6 | -146.8 | -132.5 | -152.0 | 136.6 | 136.4 | -148.3 |
| Tangential (NS) | 100.7 | 113.4 | 83.1 | 109.7 | -175.8 | 174.9 | -176.4 | 165.9 | -125.5 | 145.7 | -117.7 |

GRASSE78

GRASSE7835 lon/lat: 6°9211 43°7535

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00672 | .00205 | .00134 | .00049 | .00174 | .00049 | .00053 | .00003 | .00036 | .00017 | .00033 |
| Tangential (EW) | .00287 | .00079 | .00066 | .00023 | .00029 | .00024 | .00014 | .00003 | .00008 | .00008 | .00005 |
| Tangential (NS) | .00143 | .00049 | .00021 | .00011 | .00019 | .00013 | .00003 | .00008 | .00006 | .00003 | .00007 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -74.3 | -46.1 | -92.8 | -49.7 | -63.3 | -102.1 | -65.6 | 42.8 | -4.1 | -36.9 | -20.4 |
| Tangential (EW) | 65.6 | 94.2 | 39.9 | 90.6 | 94.5 | 9.1 | 76.8 | 0.8 | 142.6 | 50.5 | 133.6 |
| Tangential (NS) | -44.6 | -5.4 | -56.3 | -4.8 | 40.6 | -176.9 | 25.6 | 154.1 | -117.9 | 141.1 | 116.4 |

GRAZ 78

GRAZ 7839 lon/lat: 15°4934 47°0659

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00465 | .00133 | .00093 | .00031 | .00152 | .00065 | .00047 | .00004 | .00038 | .00024 | .00035 |
| Tangential (EW) | .00218 | .00051 | .00053 | .00015 | .00035 | .00029 | .00015 | .00005 | .00008 | .00004 | .00005 |
| Tangential (NS) | .00090 | .00025 | .00010 | .00006 | .00030 | .00003 | .00006 | .00004 | .00006 | .00003 | .00010 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -68.0 | -38.2 | -88.1 | -39.0 | -61.9 | -101.2 | -64.2 | -114.1 | 7.9 | -5.6 | 12.9 |
| Tangential (EW) | 54.5 | 85.0 | 28.9 | 84.5 | 100.5 | 33.1 | 85.6 | 31.6 | 160.6 | 53.4 | 177.0 |
| Tangential (NS) | -50.6 | -4.2 | -63.6 | -4.2 | 49.5 | 81.0 | 44.4 | 143.1 | -140.7 | 144.2 | 108.4 |

GOLD 90

GOLD 9004 lon/lat: -116°8892 35°4240

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00176 | .00138 | .00102 | .00051 | .00949 | .00603 | .00316 | .00111 | .00011 | .00009 | .00044 |
| Tangential (EW) | .00243 | .00082 | .00042 | .00021 | .00318 | .00205 | .00105 | .00036 | .00008 | .00004 | .00030 |
| Tangential (NS) | .00338 | .00134 | .00073 | .00041 | .00169 | .00099 | .00056 | .00021 | .00001 | .00003 | .00013 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -3.8 | -112.3 | -50.5 | -89.7 | 44.1 | 29.7 | 41.7 | 21.6 | -87.5 | -155.5 | 15.0 |
| Tangential (EW) | -136.5 | -86.2 | -163.5 | -90.6 | -133.4 | -147.9 | -135.5 | -153.3 | 134.6 | 143.0 | -147.8 |
| Tangential (NS) | 96.0 | 110.3 | 80.0 | 105.1 | 178.8 | 172.4 | 177.5 | 162.7 | -60.4 | 101.4 | -172.7 |

GRENWI78

GRENWI7840 lon/lat: 0°3361 50°8661

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00430 | .00142 | .00066 | .00054 | .00300 | .00092 | .00090 | .00013 | .00088 | .00050 | .00083 |
| Tangential (EW) | .00466 | .00118 | .00088 | .00031 | .00064 | .00056 | .00027 | .00012 | .00013 | .00010 | .00012 |
| Tangential (NS) | .00417 | .00133 | .00070 | .00041 | .00038 | .00029 | .00005 | .00005 | .00002 | .00011 | .00017 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -150.7 | -102.5 | 67.9 | -143.6 | -62.1 | -112.7 | -67.1 | -153.9 | 1.6 | -33.3 | -47.1 |
| Tangential (EW) | 126.9 | 165.6 | 85.2 | 168.5 | 102.2 | 9.7 | 86.8 | -27.5 | 149.7 | 54.9 | 118.8 |
| Tangential (NS) | -11.3 | 30.1 | -51.0 | 27.0 | 76.1 | -62.2 | 38.5 | -145.1 | -157.4 | 71.9 | 73.9 |

HALEAKAL

HALEAKAL lon/lat: -156°2560 20°7076

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .01203 | .00462 | .00278 | .00147 | .01237 | .00702 | .00368 | .00112 | .00059 | .00032 | .00072 |
| Tangential (EW) | .00263 | .00128 | .00066 | .00033 | .00198 | .00127 | .00058 | .00028 | .00002 | .00005 | .00013 |
| Tangential (NS) | .00395 | .00139 | .00063 | .00038 | .00176 | .00112 | .00056 | .00023 | .00011 | .00001 | .00021 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -116.0 | -131.9 | -136.9 | -132.2 | 57.7 | 49.0 | 57.5 | 46.0 | -141.0 | -174.5 | 113.6 |
| Tangential (EW) | 175.1 | -165.1 | 170.6 | -144.0 | 40.4 | 17.3 | 40.7 | -1.9 | -100.0 | -174.9 | 113.7 |
| Tangential (NS) | 93.8 | 131.7 | 79.1 | 122.4 | 116.5 | 95.7 | 118.7 | 87.5 | -28.2 | -2.7 | 74.1 |

HART 90

HART 9005 lon/lat: 27°7078 -25°8861

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .01585 | .00716 | .00316 | .00202 | .00091 | .00143 | .00027 | .00036 | .00024 | .00023 | .00030 |
| Tangential (EW) | .00129 | .00059 | .00039 | .00011 | .00111 | .00093 | .00033 | .00023 | .00004 | .00004 | .00013 |
| Tangential (NS) | .00172 | .00054 | .00042 | .00015 | .00081 | .00017 | .00024 | .00002 | .00003 | .00001 | .00018 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -128.8 | -102.6 | -137.3 | -103.1 | 131.0 | 115.9 | 139.9 | 109.8 | -172.3 | 138.0 | -173.9 |
| Tangential (EW) | 17.3 | -20.3 | 9.2 | -31.7 | -134.7 | -159.7 | -132.2 | 175.7 | 75.2 | 31.2 | -12.3 |
| Tangential (NS) | 73.6 | 91.4 | 65.5 | 79.5 | 129.3 | 127.9 | 129.4 | 176.9 | -49.7 | -92.5 | 112.0 |

HARTRAO

HARTRAO lon/lat: 27°6855 -25°8888

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .01634 | .00740 | .00332 | .00207 | .00090 | .00142 | .00029 | .00035 | .00015 | .00021 | .00024 |
| Tangential (EW) | .00071 | .00045 | .00028 | .00010 | .00069 | .00063 | .00022 | .00016 | .00003 | .00003 | .00007 |
| Tangential (NS) | .00132 | .00046 | .00038 | .00013 | .00059 | .00005 | .00018 | .00004 | .00004 | .00003 | .00004 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -128.0 | -102.5 | -136.2 | -102.4 | 130.1 | 116.8 | 133.5 | 104.8 | -178.6 | 120.0 | 102.3 |
| Tangential (EW) | 30.4 | -38.4 | 17.0 | -58.4 | -130.5 | -158.9 | -128.5 | 172.9 | 87.1 | 49.8 | -10.4 |
| Tangential (NS) | 70.1 | 81.1 | 64.7 | 73.3 | 137.2 | 179.0 | 143.8 | -130.0 | -14.4 | -80.7 | 63.5 |

HATCREEK

HAT CREEK lon/lat: -121°4705 40°8163

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_1$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00751 | .00166 | .00143 | .00022 | .01142 | .00713 | .00351 | .00133 | .00026 | .00013 | .00029 |
| Tangential (EW) | .00404 | .00139 | .00074 | .00037 | .00333 | .00215 | .00099 | .00037 | .00010 | .00004 | .00027 |
| Tangential (NS) | .00286 | .00112 | .00065 | .00035 | .00163 | .00096 | .00048 | .00020 | .00007 | .00004 | .00014 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 60.8 | 139.2 | 8.6 | 121.7 | 52.8 | 39.1 | 52.2 | 30.8 | -21.3 | 44.8 | 100.8 |
| Tangential (EW) | -116.2 | -73.5 | -142.0 | -77.4 | -119.6 | -132.4 | -119.7 | -135.8 | 149.7 | 147.7 | -170.2 |
| Tangential (NS) | 101.1 | 111.5 | 81.7 | 109.3 | -178.0 | 168.8 | -179.6 | 158.8 | -165.5 | 178.1 | -118.7 |

HBKA1940

HBKA194019 lon/lat: 27°7075 -25°8861

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_1$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01585 | .00716 | .00316 | .00202 | .00091 | .00143 | .00027 | .00036 | .00024 | .00023 | .00030 |
| Tangential (EW) | .00129 | .00059 | .00039 | .00011 | .00111 | .00093 | .00033 | .00023 | .00004 | .00004 | .00013 |
| Tangential (NS) | .00172 | .00054 | .00042 | .00015 | .00081 | .00017 | .00024 | .00002 | .00003 | .00001 | .00018 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -128.8 | -102.6 | -137.3 | -103.1 | 131.0 | 115.9 | 139.9 | 109.8 | -172.3 | 138.0 | -173.9 |
| Tangential (EW) | 17.3 | -20.3 | 9.2 | -31.7 | -134.7 | -159.7 | -132.2 | 175.7 | 75.2 | 31.2 | -12.3 |
| Tangential (NS) | 73.6 | 91.4 | 65.5 | 79.5 | 129.3 | 127.9 | 129.4 | 176.9 | -49.7 | -92.5 | 112.0 |

HELA4340

HELA434043 lon/lat: -5°6674 -15°9415

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_1$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01977 | .00678 | .00362 | .00209 | .00250 | .00156 | .00072 | .00042 | .00131 | .00105 | .00195 |
| Tangential (EW) | .00496 | .00188 | .00098 | .00047 | .00148 | .00079 | .00041 | .00012 | .00004 | .00006 | .00006 |
| Tangential (NS) | .00341 | .00121 | .00079 | .00034 | .00115 | .00061 | .00036 | .00009 | .00004 | .00007 | .00016 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -93.2 | -67.5 | -103.8 | -59.0 | 150.1 | 28.8 | 148.7 | -28.2 | -163.5 | -177.7 | -145.5 |
| Tangential (EW) | -135.8 | -113.4 | -140.7 | -118.8 | -117.3 | -147.7 | -116.3 | -172.8 | 9.9 | 32.9 | -100.6 |
| Tangential (NS) | 22.7 | 52.1 | 7.9 | 52.2 | 125.4 | 97.4 | 126.8 | 67.1 | -158.3 | -128.3 | 81.7 |

HELWAN78

HELWAN7831 lon/lat: 31°3427 29°8579

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_1$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00333 | .00102 | .00070 | .00027 | .00087 | .00049 | .00031 | .00009 | .00003 | .00013 | .00030 |
| Tangential (EW) | .00202 | .00047 | .00050 | .00010 | .00055 | .00025 | .00018 | .00008 | .00004 | .00002 | .00008 |
| Tangential (NS) | .00091 | .00010 | .00016 | .00002 | .00094 | .00054 | .00026 | .00010 | .00010 | .00007 | .00014 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -71.3 | -53.0 | -93.0 | -56.3 | -170.8 | -159.4 | -166.8 | -164.1 | -152.0 | 5.3 | 57.7 |
| Tangential (EW) | 14.0 | 25.2 | -2.0 | 30.2 | 164.3 | 161.0 | 154.7 | 146.7 | -165.3 | -2.6 | -92.7 |
| Tangential (NS) | -78.2 | 3.9 | -117.1 | -19.4 | 52.0 | 55.5 | 52.3 | 58.9 | -137.8 | 169.6 | 128.7 |

HOBART26

HOBART 26 lon/lat: 147°4406 -42°8035

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_1$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01016 | .00161 | .00199 | .00044 | .00646 | .00609 | .00236 | .00158 | .00052 | .00043 | .00077 |
| Tangential (EW) | .00473 | .00189 | .00073 | .00050 | .00109 | .00069 | .00036 | .00010 | .00003 | .00020 | .00022 |
| Tangential (NS) | .00133 | .00061 | .00024 | .00019 | .00135 | .00123 | .00045 | .00030 | .00006 | .00006 | .00014 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 154.1 | -114.5 | 121.3 | -114.4 | 86.9 | 58.0 | 85.2 | 47.5 | 9.6 | -62.7 | -49.1 |
| Tangential (EW) | 103.4 | 135.8 | 98.5 | 139.6 | -154.3 | -171.8 | -163.3 | +160.4 | -63.6 | 72.0 | 127.3 |
| Tangential (NS) | 125.2 | 111.0 | 84.4 | 106.6 | -139.1 | -155.2 | -143.5 | -178.2 | -152.7 | 101.0 | 115.8 |

HOHENFRG

HOHENFRG lon/lat: 10°.4764 53°.0506

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00443 | .00138 | .00098 | .00031 | .00210 | .00091 | .00064 | .00004 | .00050 | .00028 | .00010 |
| Tangential (EW) | .00174 | .00050 | .00038 | .00012 | .00036 | .00027 | .00012 | .00003 | .00012 | .00003 | .00007 |
| Tangential (NS) | .00030 | .00011 | .00015 | .00007 | .00032 | .00010 | .00008 | .00002 | .00004 | .00006 | .00014 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -72.4 | -39.5 | -80.5 | -27.3 | -55.4 | -101.0 | -56.9 | -113.3 | 7.2 | 14.0 | -67.7 |
| Tangential (EW) | 72.9 | 110.7 | 55.4 | 111.1 | 101.7 | 32.5 | 90.5 | 10.0 | 168.7 | -151.6 | -142.2 |
| Tangential (NS) | 76.3 | 84.3 | 51.7 | 83.0 | 24.3 | -74.3 | 23.8 | -173.0 | -162.1 | 92.8 | 103.6 |

HONE 90

HONE 9006 lon/lat: 10°.2491 60°.1424

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00185 | .00035 | .00030 | .00008 | .00241 | .00129 | .00075 | .00018 | .00091 | .00052 | .00077 |
| Tangential (EW) | .00100 | .00012 | .00028 | .00004 | .00060 | .00070 | .00024 | .00014 | .00019 | .00004 | .00017 |
| Tangential (NS) | .00117 | .00041 | .00034 | .00012 | .00027 | .00015 | .00007 | .00005 | .00005 | .00005 | .00024 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -66.3 | -13.1 | -73.1 | 40.1 | -47.0 | -110.6 | -50.4 | -177.5 | 17.6 | 13.8 | 12.2 |
| Tangential (EW) | 42.3 | 58.7 | 9.4 | 55.2 | 101.2 | 39.3 | 88.9 | 10.1 | -179.7 | -143.6 | -175.6 |
| Tangential (NS) | 102.2 | 136.9 | 85.9 | 129.8 | 45.2 | -70.8 | 30.9 | -156.9 | 115.2 | 24.1 | 85.2 |

HRAS 085

HRAS085 lon/lat: -103°.9472 30°.6356

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00105 | .00153 | .00045 | .00044 | .00473 | .00320 | .00149 | .00064 | .00015 | .00011 | .00025 |
| Tangential (EW) | .00117 | .00027 | .00026 | .00010 | .00200 | .00132 | .00062 | .00023 | .00005 | .00002 | .00024 |
| Tangential (NS) | .00114 | .00050 | .00028 | .00015 | .00058 | .00032 | .00019 | .00009 | .00005 | .00004 | .00006 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -177.9 | -128.1 | -63.7 | -111.9 | 32.7 | 18.2 | 30.6 | 11.1 | -171.6 | -173.1 | 166.3 |
| Tangential (EW) | 149.9 | 159.8 | 119.8 | 141.1 | -141.7 | -158.4 | -143.5 | -168.1 | 114.2 | 127.9 | -147.4 |
| Tangential (NS) | 96.8 | 96.3 | 93.3 | 95.6 | 140.3 | 147.9 | 136.8 | 151.3 | -146.4 | -175.9 | -136.4 |

HUAA2740

HUAA274027 lon/lat: -151°.0412 -16°.7328

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00449 | .00222 | .00081 | .00074 | .00043 | .00087 | .00018 | .00033 | .00089 | .00054 | .00078 |
| Tangential (EW) | .00623 | .00087 | .00157 | .00021 | .00071 | .00056 | .00021 | .00014 | .00001 | .00005 | .00009 |
| Tangential (NS) | .00409 | .00122 | .00070 | .00036 | .00148 | .00071 | .00042 | .00011 | .00009 | .00005 | .00014 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -111.4 | 167.4 | -126.7 | 174.8 | 148.3 | -82.9 | -157.5 | -111.5 | -158.1 | -144.3 | -97.9 |
| Tangential (EW) | -161.5 | -155.9 | 176.7 | -153.0 | 54.9 | 38.7 | 58.7 | 7.8 | -35.8 | -153.6 | 110.0 |
| Tangential (NS) | -106.2 | -68.1 | -130.3 | -76.3 | 46.7 | 39.7 | 46.6 | 39.5 | -153.6 | 166.4 | 135.5 |

HUAHIN71

HUAHIN7121 lon/lat: -151°.0411 -16°.7328

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00449 | .00222 | .00081 | .00074 | .00043 | .00087 | .00018 | .00033 | .00089 | .00054 | .00078 |
| Tangential (EW) | .00623 | .00087 | .00157 | .00021 | .00071 | .00056 | .00021 | .00014 | .00001 | .00005 | .00009 |
| Tangential (NS) | .00409 | .00122 | .00070 | .00036 | .00148 | .00071 | .00042 | .00011 | .00009 | .00005 | .00014 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -111.4 | 167.4 | -126.7 | 174.8 | 148.3 | -82.9 | -157.5 | -111.5 | -158.1 | -144.3 | -97.9 |
| Tangential (EW) | -161.5 | -155.9 | 176.7 | -153.0 | 54.9 | 38.7 | 58.7 | 7.8 | -35.8 | -153.6 | 110.0 |
| Tangential (NS) | -106.2 | -68.1 | -130.3 | -76.3 | 46.7 | 39.7 | 46.6 | 39.5 | -153.6 | 166.4 | 135.5 |

ISHIGA73

ISHIGA7307 lon/lat: 124°1746 24°3548

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .02088 | .00791 | .00441 | .00224 | .01098 | .00906 | .00346 | .00188 | .00031 | .00062 | .00062 |
| Tangential (EW) | .00452 | .00191 | .00088 | .00057 | .00242 | .00171 | .00078 | .00033 | .00004 | .00012 | .00029 |
| Tangential (NS) | .00093 | .00029 | .00010 | .00005 | .00098 | .00089 | .00031 | .00016 | .00001 | .00004 | .00022 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 132.1 | 151.9 | 121.7 | 150.2 | -88.9 | -107.9 | -89.1 | -116.6 | 172.9 | 106.0 | 147.4 |
| Tangential (EW) | 100.6 | 123.6 | 97.2 | 126.2 | -126.9 | -155.0 | -127.1 | -162.9 | 0.9 | 25.1 | 54.5 |
| Tangential (NS) | -70.0 | -59.8 | -89.2 | -74.8 | 145.8 | 120.7 | 150.0 | 100.8 | 81.8 | 162.3 | 124.1 |

JODRELLB

JODRELL BANK lon/lat: -2°3039 53°2327

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00932 | .00301 | .00287 | .00115 | .00342 | .00154 | .00092 | .00012 | .00083 | .00035 | .00036 |
| Tangential (EW) | .00427 | .00158 | .00067 | .00032 | .00030 | .00020 | .00022 | .00010 | .00012 | .00009 | .00002 |
| Tangential (NS) | .00207 | .00049 | .00036 | .00017 | .00061 | .00035 | .00015 | .00009 | .00003 | .00013 | .00016 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -51.5 | -10.9 | -67.9 | -7.8 | -46.1 | -118.2 | -52.2 | 159.9 | -1.6 | -7.5 | -50.3 |
| Tangential (EW) | -24.8 | 9.5 | 83.8 | 151.5 | -30.7 | -161.0 | 106.5 | -60.4 | 144.7 | 46.9 | -123.6 |
| Tangential (NS) | 124.6 | 157.5 | 45.5 | 78.7 | 24.0 | -90.6 | 34.3 | -147.0 | 142.6 | 56.0 | 83.4 |

JPLM 90

JPLM 9007 lon/lat: -118°1732 34°2036

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00480 | .00222 | .00180 | .00086 | .01213 | .00768 | .00447 | .00141 | .00015 | .00013 | .00056 |
| Tangential (EW) | .00257 | .00074 | .00045 | .00018 | .00361 | .00231 | .00123 | .00040 | .00009 | .00004 | .00032 |
| Tangential (NS) | .00424 | .00172 | .00092 | .00053 | .00221 | .00134 | .00061 | .00027 | .00001 | .00004 | .00016 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -27.1 | -80.2 | -54.8 | -71.4 | 41.7 | 27.1 | 38.1 | 19.0 | -95.3 | -152.5 | 28.0 |
| Tangential (EW) | -145.1 | -93.7 | -175.2 | -100.6 | -134.8 | -149.1 | -136.9 | -154.6 | 133.3 | 130.1 | -146.9 |
| Tangential (NS) | 100.0 | 113.8 | 83.9 | 108.8 | -175.6 | 176.3 | 177.6 | 166.4 | -0.3 | 84.3 | -165.5 |

JPL MV* (This set can be used for JPL MV1 JPL MV2 JPL MV3)

JPL lon/lat: -118°1740 34°2040

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00515 | .00230 | .00192 | .00089 | .01247 | .00787 | .00390 | .00147 | .00016 | .00008 | .00064 |
| Tangential (EW) | .00262 | .00078 | .00046 | .00019 | .00367 | .00235 | .00114 | .00040 | .00009 | .00004 | .00033 |
| Tangential (NS) | .00441 | .00177 | .00098 | .00054 | .00230 | .00139 | .00074 | .00030 | .00000 | .00002 | .00018 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -27.6 | -80.5 | -56.5 | -69.7 | 41.5 | 26.7 | 40.7 | 18.4 | -85.0 | -179.4 | 57.6 |
| Tangential (EW) | -143.8 | -92.2 | -173.6 | -98.9 | -134.7 | -149.0 | -134.8 | -154.5 | 133.3 | 130.3 | -147.1 |
| Tangential (NS) | 101.3 | 113.9 | 84.2 | 110.3 | -175.4 | 175.5 | -176.2 | 167.0 | -147.6 | 147.2 | -116.8 |

KARITS75

KARITS7520 lon/lat: 20°6648 39°7330

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00409 | .00116 | .00084 | .00028 | .00091 | .00045 | .00029 | .00004 | .00019 | .00018 | .00029 |
| Tangential (EW) | .00207 | .00046 | .00052 | .00013 | .00028 | .00010 | .00011 | .00003 | .00004 | .00004 | .00005 |
| Tangential (NS) | .00117 | .00027 | .00018 | .00006 | .00047 | .00020 | .00011 | .00006 | .00009 | .00005 | .00010 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -68.6 | -43.5 | -89.9 | -45.9 | -77.5 | -107.6 | -81.5 | -103.1 | 5.2 | -3.1 | 35.9 |
| Tangential (EW) | 38.1 | 58.6 | 16.5 | 63.8 | 135.1 | 59.9 | 111.0 | 92.3 | 163.3 | 40.0 | -137.4 |
| Tangential (NS) | -73.8 | -31.0 | -105.0 | -41.2 | 54.2 | 75.3 | 54.5 | 106.3 | -138.6 | 170.7 | 127.6 |

KASHIMA

| KASHIMA | lon/lat: | 140°6627 | 35°9529 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00948 | .00486 | .00137 | .00136 | .01180 | .00926 | .00364 | .00188 | .00020 | .00054 | .00108 |
| Tangential (EW) | .00289 | .00146 | .00036 | .00038 | .00215 | .00176 | .00070 | .00038 | .00006 | .00010 | .00033 |
| Tangential (NS) | .00167 | .00068 | .00030 | .00022 | .00188 | .00141 | .00057 | .00026 | .00004 | .00013 | .00010 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 50.7 | 75.1 | 63.1 | 77.9 | -138.7 | -157.9 | -138.9 | -163.2 | -11.2 | 42.5 | 103.5 |
| Tangential (EW) | 5.6 | 41.0 | 5.8 | 46.9 | -166.5 | 172.3 | -165.3 | 169.5 | -7.1 | 10.3 | 48.6 |
| Tangential (NS) | -70.4 | -56.5 | -74.4 | -51.2 | 93.6 | 70.4 | 95.5 | 54.9 | 169.6 | -158.8 | -117.9 |

KATAVI75

| KATAVI7512 | lon/lat: | 27°7808 | 35°9503 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00350 | .00100 | .00073 | .00025 | .00059 | .00043 | .00021 | .00006 | .00009 | .00017 | .00031 |
| Tangential (EW) | .00199 | .00043 | .00050 | .00011 | .00039 | .00012 | .00013 | .00005 | .00004 | .00002 | .00006 |
| Tangential (NS) | .00108 | .00017 | .00018 | .00004 | .00071 | .00038 | .00019 | .00007 | .00010 | .00006 | .00012 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -67.1 | -44.4 | -89.8 | -46.8 | -118.9 | -129.7 | -122.5 | -136.6 | 8.3 | 3.7 | 50.7 |
| Tangential (EW) | 23.3 | 38.6 | 5.1 | 45.4 | 150.4 | 122.2 | 134.0 | 123.6 | -178.1 | 22.5 | -109.1 |
| Tangential (NS) | -83.1 | -35.9 | -119.0 | -52.6 | 51.5 | 57.7 | 51.1 | 71.3 | -140.9 | 172.2 | 129.3 |

KAUAI

| KAUAI | lon/lat: | -159°6651 | 22°1255 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00970 | .00386 | .00227 | .00119 | .01163 | .00668 | .00347 | .00108 | .00055 | .00028 | .00086 |
| Tangential (EW) | .00268 | .00128 | .00060 | .00030 | .00215 | .00137 | .00065 | .00030 | .00002 | .00004 | .00012 |
| Tangential (NS) | .00404 | .00161 | .00065 | .00044 | .00188 | .00120 | .00060 | .00024 | .00011 | .00000 | .00020 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -109.9 | -129.4 | -131.3 | -138.3 | 61.5 | 55.6 | 61.4 | 56.2 | -137.3 | -177.7 | 114.4 |
| Tangential (EW) | 162.9 | -173.5 | 160.7 | -152.3 | 40.8 | 16.9 | 41.4 | -1.9 | -57.8 | -173.4 | 115.5 |
| Tangential (NS) | 101.9 | 137.6 | 92.6 | 128.0 | 119.7 | 98.0 | 121.8 | 89.7 | -30.0 | -3.1 | 72.7 |

KERA9 40

| KERA9 4009 | lon/lat: | 70°2627 | -49°3508 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .01442 | .00777 | .00348 | .00242 | .00580 | .00578 | .00186 | .00120 | .00077 | .00050 | .00179 |
| Tangential (EW) | .00369 | .00213 | .00073 | .00062 | .00148 | .00109 | .00046 | .00016 | .00000 | .00007 | .00020 |
| Tangential (NS) | .00190 | .00100 | .00053 | .00019 | .00118 | .00104 | .00039 | .00022 | .00004 | .00006 | .00006 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 32.3 | 88.2 | -0.3 | 88.2 | 49.6 | 64.4 | 48.9 | 59.6 | 21.3 | -45.0 | -37.5 |
| Tangential (EW) | 43.4 | 86.6 | 30.4 | 89.2 | 42.8 | 28.7 | 41.2 | 12.0 | 136.6 | -36.5 | 21.5 |
| Tangential (NS) | 99.0 | 99.0 | 86.7 | 101.0 | -96.9 | -106.7 | -94.4 | -122.4 | -176.6 | -172.5 | -125.7 |

KODIAK

| KODIAK | lon/lat: | -152°4972 | 57°7389 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .02725 | .01033 | .00500 | .00267 | .01530 | .01012 | .00500 | .00183 | .00122 | .00101 | .00155 |
| Tangential (EW) | .00526 | .00122 | .00111 | .00026 | .00238 | .00132 | .00077 | .00029 | .00002 | .00006 | .00015 |
| Tangential (NS) | .00490 | .00209 | .00089 | .00058 | .00349 | .00216 | .00108 | .00039 | .00018 | .00018 | .00037 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 112.9 | 146.7 | 94.5 | 144.0 | 97.8 | 86.4 | 97.1 | 80.6 | 0.5 | 39.5 | 57.3 |
| Tangential (EW) | 98.8 | 149.0 | 71.7 | 145.2 | 53.6 | 21.1 | 50.6 | 5.1 | -140.3 | 14.2 | 114.8 |
| Tangential (NS) | -79.4 | -41.9 | -91.9 | -42.7 | -104.5 | -116.6 | -104.5 | -123.2 | 155.4 | -158.6 | -126.9 |

KOKB 90

KOKB 9008 lon/lat: -159°6649 22°1254

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00894 | .00348 | .00195 | .00113 | .01064 | .00623 | .00316 | .00096 | .00057 | .00039 | .00011 |
| Tangential (EW) | .00256 | .00122 | .00058 | .00029 | .00205 | .00132 | .00063 | .00029 | .00002 | .00004 | .00012 |
| Tangential (NS) | .00392 | .00155 | .00062 | .00042 | .00179 | .00112 | .00058 | .00023 | .00011 | .00002 | .00025 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -111.3 | -127.8 | -132.7 | -137.4 | 62.5 | 57.0 | 60.5 | 61.3 | -141.5 | -156.0 | 55.8 |
| Tangential (EW) | 162.3 | -173.5 | 160.2 | -151.8 | 40.6 | 16.4 | 41.9 | -2.7 | -52.0 | -174.3 | 116.5 |
| Tangential (NS) | 100.0 | 136.1 | 91.1 | 125.6 | 122.3 | 100.0 | 116.6 | 89.0 | -26.3 | 42.6 | 85.6 |

KOOTWI78

KOOTWI7833 lon/lat: 5°8098 52°1772

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00590 | .00173 | .00124 | .00034 | .00203 | .00088 | .00065 | .00008 | .00072 | .00039 | .00065 |
| Tangential (EW) | .00226 | .00059 | .00049 | .00016 | .00044 | .00039 | .00020 | .00008 | .00015 | .00006 | .00012 |
| Tangential (NS) | .00187 | .00058 | .00035 | .00016 | .00024 | .00017 | .00005 | .00004 | .00002 | .00010 | .00012 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -47.9 | -20.7 | -67.4 | -19.3 | -60.0 | -84.0 | -61.4 | -76.0 | 4.0 | -0.7 | -22.7 |
| Tangential (EW) | 91.9 | 129.4 | 61.3 | 117.5 | 83.8 | 41.5 | 75.6 | 36.4 | 162.7 | 102.1 | 137.0 |
| Tangential (NS) | 28.7 | 64.8 | 17.6 | 70.1 | 61.4 | -61.9 | 53.5 | -149.4 | -21.1 | 56.7 | 61.2 |

KOOTWJ88

KOOTWJ8833 lon/lat: 5°8102 52°1769

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00590 | .00173 | .00124 | .00034 | .00203 | .00088 | .00065 | .00008 | .00072 | .00039 | .00065 |
| Tangential (EW) | .00226 | .00059 | .00049 | .00016 | .00044 | .00039 | .00020 | .00008 | .00015 | .00006 | .00012 |
| Tangential (NS) | .00187 | .00058 | .00035 | .00016 | .00024 | .00017 | .00005 | .00004 | .00002 | .00010 | .00012 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -47.9 | -20.7 | -67.4 | -19.3 | -60.0 | -84.0 | -61.4 | -76.0 | 4.0 | -0.7 | -22.7 |
| Tangential (EW) | 91.9 | 129.4 | 61.3 | 117.5 | 83.8 | 41.5 | 75.6 | 36.4 | 162.7 | 102.1 | 137.0 |
| Tangential (NS) | 28.7 | 64.8 | 17.6 | 70.1 | 61.4 | -61.9 | 53.5 | -149.4 | -21.1 | 56.7 | 61.3 |

KOSG 90

KOSG 9009 lon/lat: 5°8096 52°1772

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00590 | .00173 | .00124 | .00034 | .00203 | .00088 | .00065 | .00008 | .00072 | .00039 | .00065 |
| Tangential (EW) | .00226 | .00059 | .00049 | .00016 | .00044 | .00039 | .00020 | .00008 | .00015 | .00006 | .00012 |
| Tangential (NS) | .00187 | .00058 | .00035 | .00016 | .00024 | .00017 | .00005 | .00004 | .00002 | .00010 | .00012 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -47.9 | -20.7 | -67.4 | -19.2 | -60.0 | -84.0 | -61.4 | -76.0 | 4.0 | -0.7 | -22.7 |
| Tangential (EW) | 91.9 | 129.4 | 61.3 | 117.5 | 83.8 | 41.5 | 75.6 | 36.4 | 162.7 | 102.1 | 137.0 |
| Tangential (NS) | 28.7 | 64.8 | 17.6 | 70.1 | 61.4 | -61.9 | 53.5 | -149.4 | -21.1 | 56.7 | 61.2 |

KRUA1640

KRUA164016 lon/lat: -52°6450 5°1137

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .02918 | .00832 | .00657 | .00230 | .00217 | .00268 | .00046 | .00056 | .00090 | .00080 | .00126 |
| Tangential (EW) | .00542 | .00177 | .00125 | .00046 | .00086 | .00074 | .00026 | .00015 | .00013 | .00020 | .00029 |
| Tangential (NS) | .00231 | .00058 | .00050 | .00019 | .00056 | .00048 | .00015 | .00011 | .00014 | .00014 | .00019 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 53.0 | 69.5 | 38.6 | 74.6 | 72.9 | 41.7 | 78.2 | 31.2 | -168.6 | -152.0 | -112.0 |
| Tangential (EW) | 54.3 | 68.3 | 40.5 | 67.0 | 66.8 | 26.8 | 66.8 | 6.0 | -170.2 | -147.7 | -97.3 |
| Tangential (NS) | 78.4 | 106.9 | 69.9 | 123.1 | 115.6 | 114.4 | 144.5 | 110.8 | -152.7 | -161.6 | -155.6 |

KWAJAL26

KWAJALEIN (m) lon/lat: 167°4822 9°3983

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .03042 | .01642 | .00503 | .00409 | .00965 | .00673 | .00315 | .00134 | .00101 | .00046 | .00126 |
| Tangential (EW) | .00253 | .00060 | .00051 | .00015 | .00191 | .00116 | .00054 | .00019 | .00002 | .00003 | .00005 |
| Tangential (NS) | .00180 | .00098 | .00059 | .00035 | .00124 | .00081 | .00037 | .00014 | .00008 | .00003 | .00016 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -46.5 | -28.2 | -45.9 | -30.1 | -125.7 | -150.7 | -127.1 | -164.4 | -160.7 | 175.3 | -172.2 |
| Tangential (EW) | -13.4 | -2.9 | -21.4 | -9.3 | 52.3 | 38.6 | 50.8 | 27.6 | -110.7 | -113.2 | 69.6 |
| Tangential (NS) | -177.3 | 161.3 | 164.2 | 154.7 | 87.6 | 81.3 | 88.1 | 74.8 | -48.4 | -113.0 | 77.5 |

LAJOLLA

LA JOLLA lon/lat: -117°2505 32°8656

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00746 | .00350 | .00246 | .00126 | .01337 | .00846 | .00422 | .00160 | .00019 | .00012 | .00071 |
| Tangential (EW) | .00257 | .00050 | .00050 | .00012 | .00406 | .00259 | .00127 | .00044 | .00009 | .00004 | .00035 |
| Tangential (NS) | .00435 | .00175 | .00095 | .00054 | .00208 | .00125 | .00067 | .00028 | .00001 | .00001 | .00017 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -41.7 | -72.5 | -62.7 | -67.2 | 38.6 | 23.6 | 37.4 | 15.5 | -101.6 | -173.3 | 60.4 |
| Tangential (EW) | -166.5 | -124.1 | 160.8 | -142.9 | -138.5 | -153.1 | -139.0 | -158.9 | 126.9 | 116.3 | -144.0 |
| Tangential (NS) | 96.8 | 111.7 | 80.4 | 108.1 | -178.7 | 173.0 | -179.8 | 165.6 | -16.5 | 150.3 | -121.1 |

LEONRDOK

LEONARD OK lon/lat: -95°7950 35°9090

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00291 | .00131 | .00025 | .00032 | .00318 | .00217 | .00103 | .00044 | .00006 | .00005 | .00034 |
| Tangential (EW) | .00186 | .00038 | .00040 | .00011 | .00124 | .00083 | .00039 | .00016 | .00003 | .00003 | .00020 |
| Tangential (NS) | .00061 | .00023 | .00020 | .00007 | .00035 | .00011 | .00011 | .00004 | .00008 | .00005 | .00002 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 130.6 | -165.2 | 60.5 | -157.1 | 26.0 | 14.8 | 24.8 | 11.7 | 141.5 | -174.3 | -175.8 |
| Tangential (EW) | -173.2 | -147.1 | 159.9 | -160.3 | -140.1 | -160.4 | -142.0 | -171.5 | 110.3 | -178.4 | -126.7 |
| Tangential (NS) | 149.1 | 92.2 | 131.2 | 93.0 | 113.6 | 105.5 | 110.2 | 141.5 | -138.6 | -167.9 | -53.5 |

LIBA1340

LIBA134013 lon/lat: 9°6721 0°3540

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01597 | .00549 | .00318 | .00157 | .00294 | .00079 | .00095 | .00018 | .00082 | .00054 | .00074 |
| Tangential (EW) | .00295 | .00071 | .00060 | .00026 | .00098 | .00086 | .00029 | .00020 | .00020 | .00019 | .00016 |
| Tangential (NS) | .00213 | .00087 | .00037 | .00023 | .00081 | .00056 | .00023 | .00014 | .00007 | .00004 | .00023 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -85.0 | -61.8 | -91.3 | -60.1 | 166.2 | 79.5 | 165.5 | -13.4 | -164.4 | -162.1 | -149.6 |
| Tangential (EW) | 108.3 | 151.4 | 100.4 | 150.8 | -88.3 | -142.1 | -83.3 | 177.3 | 13.3 | 30.3 | 49.2 |
| Tangential (NS) | 57.8 | 85.6 | 51.4 | 91.9 | 96.0 | 118.8 | 98.0 | 119.5 | -19.1 | 29.0 | 81.3 |

LMPADU75

LMPADU7544 lon/lat: 12°5674 35°5166

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00491 | .00145 | .00099 | .00035 | .00097 | .00029 | .00030 | .00004 | .00014 | .00010 | .00019 |
| Tangential (EW) | .00214 | .00053 | .00053 | .00016 | .00018 | .00003 | .00006 | .00002 | .00003 | .00006 | .00003 |
| Tangential (NS) | .00144 | .00040 | .00024 | .00009 | .00034 | .00022 | .00007 | .00009 | .00009 | .00005 | .00009 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -73.3 | -51.0 | -92.2 | -55.5 | -76.1 | -93.2 | -79.6 | -8.7 | -15.8 | -31.6 | 18.1 |
| Tangential (EW) | 45.0 | 61.7 | 22.0 | 64.9 | 163.9 | -93.8 | 112.6 | 154.5 | 130.3 | 41.6 | -158.9 |
| Tangential (NS) | -72.8 | -34.9 | -102.6 | -44.4 | 61.3 | 122.8 | 67.6 | 129.2 | -125.5 | 168.7 | 133.5 |

MADR 90

MADR 9010 lon/lat: -4°2497 40°4279

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01328 | .00447 | .00271 | .00115 | .00222 | .00026 | .00066 | .00019 | .00038 | .00030 | .00059 |
| Tangential (EW) | .00398 | .00134 | .00091 | .00040 | .00027 | .00028 | .00015 | .00004 | .00009 | .00012 | .00009 |
| Tangential (NS) | .00339 | .00127 | .00062 | .00032 | .00020 | .00037 | .00007 | .00013 | .00009 | .00003 | .00004 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -88.4 | -61.9 | -106.9 | -66.2 | -71.4 | -168.0 | -74.7 | 65.2 | -28.4 | -106.9 | -66.2 |
| Tangential (EW) | 62.2 | 84.9 | 38.2 | 81.0 | 68.4 | -23.0 | 56.1 | -69.2 | 120.9 | 48.1 | 93.1 |
| Tangential (NS) | -56.9 | -20.3 | -74.7 | -20.3 | -57.0 | -168.8 | -75.0 | 158.9 | -74.7 | -178.2 | 163.6 |

MADRID64

MADRID64 lon/lat: -4°2480 40°4300

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01357 | .00452 | .00288 | .00120 | .00230 | .00031 | .00070 | .00021 | .00034 | .00021 | .00021 |
| Tangential (EW) | .00311 | .00114 | .00083 | .00039 | .00023 | .00012 | .00013 | .00007 | .00007 | .00012 | .00016 |
| Tangential (NS) | .00307 | .00113 | .00060 | .00030 | .00031 | .00026 | .00009 | .00009 | .00009 | .00005 | .00008 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -87.4 | -61.7 | -106.8 | -65.3 | -70.9 | -147.4 | -72.9 | 58.0 | -30.6 | -110.0 | -24.5 |
| Tangential (EW) | -50.2 | -20.0 | 38.6 | 82.9 | -85.3 | -165.1 | 59.6 | -78.3 | 114.7 | 53.5 | 118.7 |
| Tangential (NS) | -56.5 | -18.1 | -77.4 | -19.2 | -28.9 | -156.3 | -39.2 | 155.1 | -98.6 | -177.0 | 174.9 |

MALIBU

MALIBU lon/lat: -118°6458 34°0593

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00671 | .00273 | .00229 | .00104 | .01377 | .00867 | .00432 | .00162 | .00018 | .00009 | .00073 |
| Tangential (EW) | .00270 | .00081 | .00047 | .00020 | .00373 | .00238 | .00115 | .00041 | .00009 | .00004 | .00033 |
| Tangential (NS) | .00471 | .00190 | .00106 | .00058 | .00251 | .00152 | .00080 | .00032 | .00000 | .00002 | .00020 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -27.5 | -72.7 | -55.7 | -64.8 | 40.8 | 26.0 | 40.1 | 17.1 | -82.6 | -177.7 | 61.7 |
| Tangential (EW) | -142.4 | -91.0 | -172.0 | -97.7 | -134.3 | -148.6 | -134.3 | -154.0 | 133.9 | 129.0 | -147.4 |
| Tangential (NS) | 103.0 | 115.1 | 85.7 | 111.5 | -173.6 | 176.8 | -174.4 | 168.0 | 106.8 | 139.0 | -115.3 |

MAMMOTHL

MAMMOTH LAKES lon/lat: -118°9451 37°6416

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00324 | .00097 | .00099 | .00026 | .01022 | .00642 | .00316 | .00120 | .00016 | .00004 | .00050 |
| Tangential (EW) | .00329 | .00122 | .00058 | .00032 | .00328 | .00213 | .00101 | .00037 | .00009 | .00004 | .00031 |
| Tangential (NS) | .00334 | .00130 | .00075 | .00040 | .00182 | .00105 | .00056 | .00023 | .00002 | .00002 | .00014 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 43.4 | -154.0 | -27.7 | -100.2 | 47.8 | 33.5 | 47.3 | 25.2 | -38.7 | 87.5 | 48.3 |
| Tangential (EW) | -124.6 | -79.5 | -149.1 | -83.4 | -128.8 | -142.9 | -129.0 | -147.6 | 142.0 | 157.6 | -149.1 |
| Tangential (NS) | 99.6 | 111.0 | 81.3 | 107.3 | -179.2 | 171.7 | 180.0 | 162.8 | -142.8 | 164.0 | -119.6 |

MARA2 40

MARA2 4022 lon/lat: 37°8570 -46°8776

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01604 | .00797 | .00404 | .00224 | .00163 | .00384 | .00063 | .00103 | .00064 | .00036 | .00091 |
| Tangential (EW) | .00497 | .00225 | .00110 | .00061 | .00032 | .00012 | .00006 | .00006 | .00001 | .00005 | .00019 |
| Tangential (NS) | .00226 | .00112 | .00039 | .00031 | .00084 | .00061 | .00027 | .00010 | .00003 | .00007 | .00013 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -113.4 | -94.0 | -113.9 | -101.2 | 70.3 | 107.7 | 82.3 | 99.6 | 17.0 | 34.7 | -51.1 |
| Tangential (EW) | 26.9 | 62.2 | 12.2 | 64.2 | -149.6 | 165.7 | -131.3 | 164.0 | 93.1 | -29.1 | -4.5 |
| Tangential (NS) | -152.8 | -103.8 | -174.1 | -94.2 | -93.9 | -91.1 | -85.8 | -91.9 | 161.7 | 158.4 | 175.6 |

MARPOINT

MARYLAND POINT lon/lat: -77°2306 38°3730

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00919 | .00244 | .00169 | .00069 | .00330 | .00226 | .00108 | .00049 | .00015 | .00008 | .00037 |
| Tangential (EW) | .00414 | .00090 | .00093 | .00026 | .00022 | .00015 | .00006 | .00004 | .00006 | .00003 | .00019 |
| Tangential (NS) | .00085 | .00028 | .00011 | .00008 | .00016 | .00024 | .00005 | .00008 | .00008 | .00006 | .00006 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 158.0 | -170.1 | 140.1 | -173.8 | -2.0 | -0.6 | -0.5 | 3.6 | 24.8 | 81.2 | -179.1 |
| Tangential (EW) | -176.0 | -150.1 | 163.9 | -155.0 | -27.0 | 43.8 | -31.9 | 51.8 | -2.6 | -170.9 | -87.3 |
| Tangential (NS) | -42.7 | 9.4 | -52.6 | 5.0 | -168.8 | -132.9 | -164.0 | -156.8 | -135.5 | -161.0 | 6.0 |

MATE 90

MATE 9011 lon/lat: 16°7046 40°6478

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00455 | .00130 | .00092 | .00031 | .00111 | .00046 | .00035 | .00003 | .00022 | .00017 | .00027 |
| Tangential (EW) | .00218 | .00051 | .00054 | .00015 | .00025 | .00012 | .00011 | .00002 | .00005 | .00005 | .00004 |
| Tangential (NS) | .00123 | .00032 | .00018 | .00007 | .00038 | .00015 | .00008 | .00006 | .00009 | .00005 | .00009 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -70.2 | -44.6 | -90.6 | -47.4 | -70.6 | -102.0 | -73.7 | -79.6 | 2.2 | -9.6 | 24.1 |
| Tangential (EW) | 45.4 | 68.1 | 22.2 | 70.9 | 126.6 | 37.4 | 100.3 | 75.3 | 154.8 | 44.1 | -157.2 |
| Tangential (NS) | -67.7 | -26.2 | -95.2 | -33.8 | 55.0 | 95.9 | 55.9 | 123.4 | -135.1 | 167.8 | 126.8 |

MATERA79

MATERA7939 lon/lat: 16°7047 40°6476

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00455 | .00130 | .00092 | .00031 | .00111 | .00046 | .00035 | .00003 | .00022 | .00017 | .00027 |
| Tangential (EW) | .00218 | .00051 | .00054 | .00015 | .00025 | .00012 | .00011 | .00002 | .00005 | .00005 | .00004 |
| Tangential (NS) | .00123 | .00032 | .00018 | .00007 | .00038 | .00015 | .00008 | .00006 | .00009 | .00005 | .00009 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -70.2 | -44.6 | -90.6 | -47.4 | -70.6 | -102.0 | -73.7 | -79.6 | 2.2 | -9.6 | 24.1 |
| Tangential (EW) | 45.4 | 68.1 | 22.2 | 70.9 | 126.6 | 37.4 | 100.3 | 75.3 | 154.8 | 44.1 | -157.2 |
| Tangential (NS) | -67.7 | -26.2 | -95.2 | -33.8 | 55.0 | 95.9 | 55.9 | 123.4 | -135.1 | 167.8 | 126.8 |

MAZATL71

MAZATL7122 lon/lat: -106°4591 23°3419

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00618 | .00465 | .00183 | .00143 | .00741 | .00519 | .00304 | .00105 | .00050 | .00037 | .00059 |
| Tangential (EW) | .00275 | .00112 | .00061 | .00036 | .00315 | .00204 | .00104 | .00038 | .00008 | .00002 | .00040 |
| Tangential (NS) | .00201 | .00099 | .00042 | .00028 | .00113 | .00075 | .00015 | .00019 | .00004 | .00004 | .00023 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -94.1 | -89.9 | -81.1 | -87.2 | 21.2 | 7.0 | 9.3 | -1.7 | -160.1 | -158.3 | -4.9 |
| Tangential (EW) | 105.4 | 123.3 | 84.6 | 116.3 | -153.7 | -170.3 | -158.6 | 178.7 | 87.0 | 89.2 | -140.8 |
| Tangential (NS) | 77.6 | 89.1 | 85.4 | 86.5 | 155.8 | 170.1 | 106.3 | 164.5 | 5.9 | 69.5 | 175.1 |

MC-DON70

MC-DON7080 lon/lat: -104°0152 30°6792

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00112 | .00148 | .00041 | .00044 | .00460 | .00313 | .00147 | .00061 | .00020 | .00017 | .00040 |
| Tangential (EW) | .00131 | .00030 | .00025 | .00009 | .00228 | .00153 | .00073 | .00028 | .00006 | .00003 | .00032 |
| Tangential (NS) | .00122 | .00053 | .00029 | .00016 | .00067 | .00034 | .00021 | .00010 | .00003 | .00003 | .00011 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 179.1 | -128.4 | -61.4 | -113.3 | 32.8 | 18.5 | 30.1 | 11.6 | -170.0 | -160.0 | -59.2 |
| Tangential (EW) | 169.8 | -159.0 | 139.6 | -179.0 | -146.0 | -163.0 | -148.3 | -172.7 | 111.2 | 164.7 | -137.9 |
| Tangential (NS) | 96.4 | 95.0 | 97.0 | 89.5 | 149.5 | 171.6 | 142.0 | 166.5 | -78.9 | 122.8 | 150.2 |

MC-DON70

MC-DON7086 lon/lat: -104°0159 30°6760

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00112 | .00148 | .00041 | .00044 | .00460 | .00313 | .00147 | .00061 | .00020 | .00017 | .00040 |
| Tangential (EW) | .00131 | .00030 | .00025 | .00009 | .00228 | .00153 | .00073 | .00028 | .00006 | .00003 | .00032 |
| Tangential (NS) | .00121 | .00053 | .00029 | .00016 | .00067 | .00034 | .00021 | .00010 | .00003 | .00003 | .00011 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 179.1 | -128.4 | -61.5 | -113.3 | 32.8 | 18.5 | 30.1 | 11.6 | -170.0 | -160.0 | -59.2 |
| Tangential (EW) | 169.8 | -159.0 | 139.6 | -179.0 | -146.0 | -163.0 | -148.3 | -172.7 | 111.2 | 164.7 | -137.9 |
| Tangential (NS) | 96.4 | 95.0 | 97.0 | 89.5 | 149.5 | 171.6 | 142.0 | 166.5 | -78.9 | 122.8 | 150.2 |

MEDICINA

MEDICINA lon/lat: 11°6469 44°5192

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00546 | .00160 | .00114 | .00039 | .00162 | .00061 | .00050 | .00002 | .00026 | .00014 | .00010 |
| Tangential (EW) | .00208 | .00059 | .00049 | .00017 | .00026 | .00015 | .00009 | .00001 | .00006 | .00002 | .00006 |
| Tangential (NS) | .00081 | .00026 | .00012 | .00007 | .00030 | .00002 | .00008 | .00004 | .00009 | .00005 | .00011 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -71.5 | -43.6 | -90.8 | -45.1 | -62.3 | -100.1 | -63.6 | -45.9 | -0.3 | -10.2 | 8.2 |
| Tangential (EW) | 67.3 | 95.8 | 42.6 | 94.2 | 110.8 | 10.9 | 95.7 | -61.1 | 156.5 | 57.6 | -107.7 |
| Tangential (NS) | -49.9 | -3.8 | -63.9 | 2.3 | 24.0 | -120.3 | 22.4 | 144.8 | -143.6 | 156.7 | 135.5 |

META6 40

META6 4006 lon/lat: 24°3845 60°2409

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00234 | .00061 | .00044 | .00014 | .00168 | .00102 | .00053 | .00014 | .00065 | .00045 | .00056 |
| Tangential (EW) | .00154 | .00031 | .00040 | .00008 | .00054 | .00060 | .00021 | .00012 | .00012 | .00001 | .00009 |
| Tangential (NS) | .00016 | .00007 | .00010 | .00002 | .00023 | .00012 | .00004 | .00002 | .00003 | .00003 | .00020 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -65.0 | -25.9 | -88.6 | -7.9 | -53.9 | -104.8 | -56.5 | -137.4 | 22.1 | 7.7 | 32.7 |
| Tangential (EW) | 32.9 | 71.1 | 7.3 | 74.0 | 89.8 | 39.0 | 81.6 | 22.9 | -179.8 | 167.7 | -167.5 |
| Tangential (NS) | -146.8 | 168.9 | 132.8 | 151.0 | 52.6 | -43.7 | 35.7 | -131.9 | 133.7 | 32.0 | 87.4 |

METSHOVI

METSAHOVI lon/lat: 24°3841 60°2420

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00231 | .00058 | .00048 | .00015 | .00179 | .00106 | .00054 | .00014 | .00048 | .00035 | .00024 |
| Tangential (EW) | .00124 | .00029 | .00029 | .00007 | .00040 | .00039 | .00013 | .00007 | .00010 | .00003 | .00010 |
| Tangential (NS) | .00023 | .00008 | .00010 | .00002 | .00026 | .00012 | .00006 | .00002 | .00005 | .00002 | .00020 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -71.1 | -35.3 | -89.6 | -7.9 | -52.0 | -104.7 | -54.1 | -135.1 | 22.6 | 12.3 | -154.5 |
| Tangential (EW) | 40.6 | 74.5 | 16.5 | 82.1 | 110.6 | 38.0 | 99.3 | 11.7 | -176.0 | -141.8 | -127.8 |
| Tangential (NS) | -165.1 | -164.7 | 130.5 | 145.2 | 35.6 | -51.4 | 35.8 | -122.6 | 167.2 | 63.2 | 103.4 |

MILESMON

MILES CITY MT lon/lat: -105°8608 46°3965

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00373 | .00147 | .00044 | .00031 | .00461 | .00297 | .00147 | .00058 | .00018 | .00009 | .00024 |
| Tangential (EW) | .00234 | .00071 | .00043 | .00019 | .00171 | .00114 | .00054 | .00021 | .00004 | .00004 | .00018 |
| Tangential (NS) | .00102 | .00044 | .00027 | .00014 | .00068 | .00038 | .00021 | .00009 | .00009 | .00007 | .00009 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 107.2 | 169.6 | 52.8 | 176.3 | 44.6 | 31.9 | 43.6 | 25.6 | 12.7 | 15.9 | -168.7 |
| Tangential (EW) | -132.6 | -84.6 | -160.9 | -91.0 | -121.1 | -138.1 | -122.2 | -145.5 | 144.3 | -176.7 | -131.7 |
| Tangential (NS) | 127.5 | 109.7 | 105.0 | 107.4 | 172.1 | 163.3 | 168.6 | 155.0 | -159.2 | -162.6 | -100.9 |

MLNGIC75

MLNGIC7580 lon/lat: 33°1912 37°3765

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00310 | .00088 | .00065 | .00022 | .00061 | .00052 | .00023 | .00009 | .00010 | .00019 | .00034 |
| Tangential (EW) | .00196 | .00043 | .00049 | .00010 | .00042 | .00016 | .00015 | .00005 | .00004 | .00001 | .00007 |
| Tangential (NS) | .00103 | .00011 | .00019 | .00003 | .00079 | .00045 | .00022 | .00008 | .00011 | .00007 | .00014 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -62.9 | -38.0 | -87.4 | -39.2 | -135.2 | -135.4 | -136.6 | -143.4 | 18.9 | 6.4 | 51.6 |
| Tangential (EW) | 15.6 | 34.1 | -1.3 | 39.3 | 139.7 | 99.3 | 127.2 | 108.6 | -169.2 | -4.1 | -101.9 |
| Tangential (NS) | -94.1 | -57.9 | -131.9 | -73.9 | 45.4 | 45.8 | 43.6 | 50.6 | -144.1 | 171.6 | 126.8 |

MOJAVE

MOJAVE lon/lat: -116°8876 35°3305 continental, Farrel

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00196 | .00146 | .00111 | .00053 | .00984 | .00623 | .00306 | .00117 | .00011 | .00006 | .00045 |
| Tangential (EW) | .00186 | .00051 | .00032 | .00011 | .00306 | .00193 | .00094 | .00033 | .00008 | .00003 | .00029 |
| Tangential (NS) | .00354 | .00142 | .00078 | .00044 | .00164 | .00101 | .00052 | .00022 | .00005 | .00002 | .00011 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -9.3 | -111.4 | -53.7 | -87.5 | 44.0 | 29.4 | 43.1 | 21.0 | -78.3 | 171.8 | 44.5 |
| Tangential (EW) | -143.1 | -81.9 | -178.5 | -90.2 | -130.3 | -144.2 | -130.3 | -149.2 | 135.2 | 161.5 | -138.7 |
| Tangential (NS) | 96.1 | 110.8 | 78.9 | 107.7 | 178.5 | 166.8 | 176.8 | 158.0 | 10.6 | 32.4 | -118.4 |

MOJAVE

MOJAVE lon/lat: 116°8876 35°3305 Earth structure: continental

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00202 | .00146 | .00112 | .00054 | .00986 | .00623 | .00307 | .00117 | .00011 | .00006 | .00045 |
| Tangential (EW) | .00181 | .00050 | .00031 | .00011 | .00297 | .00187 | .00091 | .00032 | .00008 | .00003 | .00027 |
| Tangential (NS) | .00341 | .00138 | .00075 | .00043 | .00159 | .00097 | .00050 | .00021 | .00005 | .00002 | .00011 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 8.7 | -110.7 | -53.3 | -86.9 | 44.0 | 29.3 | 43.1 | 20.9 | -78.0 | 171.0 | 45.4 |
| Tangential (EW) | -141.7 | -81.5 | -176.7 | -90.1 | -130.1 | -144.0 | -130.1 | -149.3 | 135.8 | 157.3 | -138.7 |
| Tangential (NS) | 97.1 | 111.5 | 80.0 | 108.4 | 179.5 | 168.0 | 177.8 | 159.2 | 12.3 | 36.3 | -177.5 |

MOJAVE12

MOJAVE lon/lat: -116°8876 35°3305 Earth structure: oceanic

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00200 | .00145 | .00112 | .00053 | .00980 | .00620 | .00305 | .00117 | .00011 | .00006 | .00045 |
| Tangential (EW) | .00247 | .00084 | .00043 | .00021 | .00326 | .00211 | .00101 | .00037 | .00008 | .00004 | .00031 |
| Tangential (NS) | .00356 | .00140 | .00079 | .00043 | .00178 | .00105 | .00056 | .00023 | .00001 | .00002 | .00014 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -9.3 | -110.8 | -53.5 | -87.0 | 43.9 | 29.2 | 43.0 | 20.8 | -78.2 | 171.8 | 44.4 |
| Tangential (EW) | -136.7 | -86.1 | -163.6 | -90.6 | -133.5 | -148.0 | -133.9 | -153.5 | 134.4 | 142.2 | -147.8 |
| Tangential (NS) | 97.7 | 110.7 | 80.8 | 107.0 | 179.6 | 171.9 | 178.5 | 163.7 | -123.5 | 165.9 | -120.5 |

MON PK

MNP MONUMENT PEA lon/lat: -116°4228 32°8917

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00467 | .00265 | .00179 | .00096 | .01123 | .00711 | .00352 | .00135 | .00013 | .00009 | .00041 |
| Tangential (EW) | .00192 | .00022 | .00041 | .00009 | .00347 | .00216 | .00109 | .00038 | .00008 | .00002 | .00028 |
| Tangential (NS) | .00385 | .00157 | .00083 | .00049 | .00165 | .00102 | .00053 | .00023 | .00004 | .00003 | .00016 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -46.4 | -84.1 | -65.2 | -75.0 | 39.9 | 24.9 | 38.7 | 16.5 | -104.2 | -178.1 | 94.5 |
| Tangential (EW) | -179.1 | -156.8 | 141.4 | 170.0 | -135.8 | -150.4 | -136.1 | -156.6 | 136.2 | 153.4 | -126.0 |
| Tangential (NS) | 94.6 | 111.2 | 78.2 | 108.0 | 178.6 | 167.4 | 176.7 | 159.7 | -165.4 | 176.2 | -121.3 |

MORA5540

MORA554055 lon/lat: 147°.1858 -9°.4357

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00648 | .00327 | .00210 | .00082 | .01122 | .00564 | .00407 | .00086 | .00080 | .00042 | .00107 |
| Tangential (EW) | .00397 | .00178 | .00088 | .00041 | .00107 | .00072 | .00055 | .00016 | .00004 | .00004 | .00008 |
| Tangential (NS) | .00274 | .00174 | .00071 | .00042 | .00072 | .00048 | .00025 | .00013 | .00001 | .00003 | .00012 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 159.3 | 122.6 | 121.8 | 116.4 | -126.1 | -147.2 | -132.0 | -167.3 | -158.3 | -178.6 | -128.6 |
| Tangential (EW) | 17.5 | 5.0 | 10.9 | 9.1 | -151.1 | -175.6 | -147.0 | 179.9 | -145.1 | 10.5 | 105.0 |
| Tangential (NS) | -21.9 | -37.9 | -30.3 | -42.6 | -26.0 | -80.7 | -32.0 | -103.6 | -77.9 | -165.3 | 117.6 |

MT1ATH75

MT1ATH7515 lon/lat: 23°.9325 38°.0774

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00379 | .00107 | .00078 | .00026 | .00072 | .00043 | .00024 | .00005 | .00015 | .00017 | .00030 |
| Tangential (EW) | .00201 | .00044 | .00051 | .00011 | .00032 | .00010 | .00012 | .00004 | .00004 | .00003 | .00005 |
| Tangential (NS) | .00114 | .00022 | .00018 | .00005 | .00057 | .00028 | .00014 | .00006 | .00010 | .00006 | .00011 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -67.8 | -43.7 | -89.7 | -46.0 | -90.6 | -115.8 | -95.6 | -118.3 | 6.5 | 0.5 | 44.1 |
| Tangential (EW) | 31.3 | 49.0 | 11.2 | 55.7 | 143.7 | 90.8 | 122.5 | 109.7 | 171.2 | 34.0 | -122.7 |
| Tangential (NS) | -78.6 | -34.5 | -112.4 | -47.3 | 53.3 | 65.7 | 53.3 | 89.6 | -140.0 | 172.1 | 128.8 |

MT2MAT75

MT2MAT7541 lon/lat: 16°.7043 40°.6473

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00455 | .00130 | .00092 | .00031 | .00111 | .00046 | .00035 | .00003 | .00022 | .00017 | .00027 |
| Tangential (EW) | .00218 | .00051 | .00054 | .00015 | .00025 | .00012 | .00011 | .00002 | .00005 | .00005 | .00004 |
| Tangential (NS) | .00123 | .00032 | .00018 | .00007 | .00038 | .00015 | .00008 | .00006 | .00009 | .00005 | .00009 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -70.2 | -44.6 | -90.6 | -47.4 | -70.6 | -102.0 | -73.7 | -79.6 | 2.2 | -9.6 | 24.1 |
| Tangential (EW) | 45.4 | 68.1 | 22.2 | 70.9 | 126.6 | 37.4 | 100.3 | 75.3 | 154.8 | 44.1 | -157.2 |
| Tangential (NS) | -67.7 | -26.2 | -95.2 | -33.8 | 55.0 | 95.9 | 55.9 | 123.4 | -135.1 | 167.8 | 126.8 |

MTGNRO75

MTGNRO7590 lon/lat: 9°.0178 45°.9263

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00604 | .00180 | .00120 | .00042 | .00176 | .00059 | .00054 | .00000 | .00040 | .00020 | .00035 |
| Tangential (EW) | .00263 | .00069 | .00061 | .00020 | .00033 | .00028 | .00015 | .00004 | .00008 | .00007 | .00006 |
| Tangential (NS) | .00114 | .00038 | .00016 | .00009 | .00023 | .00008 | .00004 | .00006 | .00005 | .00003 | .00008 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -71.5 | -42.1 | -90.0 | -44.8 | -61.5 | -101.5 | -63.7 | -59.6 | 1.1 | -21.7 | -10.6 |
| Tangential (EW) | 65.3 | 95.8 | 38.9 | 92.1 | 95.2 | 20.2 | 79.6 | 14.7 | 150.2 | 53.8 | 145.1 |
| Tangential (NS) | -35.6 | 5.3 | -39.2 | 8.3 | 44.8 | -165.8 | 34.8 | 156.4 | -126.5 | 124.4 | 107.7 |

MT-HOP79

MT-HOP7921 lon/lat: -110°.8781 31°.6832

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00162 | .00189 | .00086 | .00063 | .00693 | .00453 | .00222 | .00087 | .00017 | .00015 | .00036 |
| Tangential (EW) | .00136 | .00033 | .00024 | .00007 | .00279 | .00180 | .00090 | .00032 | .00006 | .00003 | .00031 |
| Tangential (NS) | .00249 | .00099 | .00052 | .00030 | .00108 | .00062 | .00034 | .00015 | .00002 | .00003 | .00013 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -97.7 | -108.3 | -74.3 | -95.6 | 38.3 | 23.4 | 35.7 | 15.0 | -150.4 | -159.2 | -17.6 |
| Tangential (EW) | -172.4 | -121.4 | 154.5 | -140.5 | -140.6 | -156.5 | -142.7 | -164.2 | 118.0 | 139.2 | -144.4 |
| Tangential (NS) | 87.7 | 103.7 | 76.8 | 98.3 | 165.2 | 168.6 | 159.8 | 161.1 | -58.9 | 108.9 | 168.0 |

NALL 90

NALL 9012 lon/lat: 11°8651 78°9291

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_1$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00775 | .00284 | .00154 | .00042 | .00133 | .00149 | .00040 | .00036 | .00178 | .00124 | .00156 |
| Tangential (EW) | .00283 | .00083 | .00062 | .00016 | .00067 | .00079 | .00024 | .00016 | .00017 | .00004 | .00019 |
| Tangential (NS) | .00172 | .00059 | .00027 | .00016 | .00052 | .00040 | .00015 | .00012 | .00004 | .00004 | .00024 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -158.5 | -116.3 | 175.4 | -113.8 | -25.3 | -122.3 | -25.2 | -156.4 | 32.0 | 5.5 | 47.1 |
| Tangential (EW) | -6.1 | 40.3 | -30.6 | 43.8 | 90.7 | 47.2 | 83.5 | 34.8 | -177.2 | 171.2 | -149.8 |
| Tangential (NS) | 17.6 | 53.5 | -13.6 | 70.9 | 136.0 | 42.2 | 137.7 | -2.0 | -32.8 | -43.8 | 70.3 |

NATAL 79

NATAL 7929 lon/lat: -35°1646 -5°9275

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_1$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .03481 | .01178 | .00801 | .00317 | .00208 | .00220 | .00068 | .00057 | .00115 | .00098 | .00124 |
| Tangential (EW) | .00334 | .00150 | .00085 | .00045 | .00007 | .00057 | .00003 | .00017 | .00018 | .00020 | .00033 |
| Tangential (NS) | .00391 | .00131 | .00093 | .00040 | .00100 | .00089 | .00033 | .00017 | .00008 | .00009 | .00011 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 33.9 | 48.9 | 22.4 | 48.8 | 104.8 | 15.0 | 104.1 | -17.3 | -167.9 | -152.2 | -127.1 |
| Tangential (EW) | 20.1 | 38.2 | 5.0 | 32.8 | -134.6 | -26.9 | 60.8 | -41.3 | -174.7 | -150.6 | -109.6 |
| Tangential (NS) | 70.3 | 110.5 | 46.8 | 119.8 | 137.6 | 118.3 | 147.0 | 95.8 | -147.6 | -144.1 | 118.1 |

NAT-MA78

NAT-MA7843 lon/lat: 148°9393 -35°6351

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_1$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00961 | .00129 | .00209 | .00033 | .00281 | .00283 | .00122 | .00082 | .00012 | .00010 | .00070 |
| Tangential (EW) | .00508 | .00180 | .00091 | .00049 | .00123 | .00072 | .00039 | .00014 | .00003 | .00015 | .00010 |
| Tangential (NS) | .00115 | .00036 | .00018 | .00013 | .00142 | .00127 | .00048 | .00028 | .00005 | .00007 | .00025 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 126.9 | 173.2 | 96.3 | 164.0 | 117.8 | 67.4 | 109.8 | 55.8 | -20.8 | -99.4 | -81.5 |
| Tangential (EW) | 93.4 | 126.8 | 82.9 | 129.2 | -169.2 | 168.7 | -169.3 | 147.7 | -104.8 | 73.5 | 135.3 |
| Tangential (NS) | 11.8 | 74.9 | -34.0 | 80.4 | -118.0 | -144.0 | -117.5 | -160.6 | -139.9 | 83.8 | 118.6 |

NOME

NOME lon/lat: -165°3712 64°5618

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_1$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00464 | .00277 | .00067 | .00073 | .00473 | .00421 | .00149 | .00075 | .00134 | .00064 | .00127 |
| Tangential (EW) | .00264 | .00043 | .00061 | .00007 | .00157 | .00093 | .00047 | .00022 | .00008 | .00005 | .00012 |
| Tangential (NS) | .00211 | .00124 | .00023 | .00037 | .00132 | .00116 | .00042 | .00022 | .00024 | .00017 | .00030 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 86.4 | 136.5 | 156.1 | 132.8 | 131.6 | 122.6 | 133.4 | 125.9 | 15.6 | 51.7 | 73.9 |
| Tangential (EW) | 112.8 | 163.0 | 78.9 | 166.5 | 29.0 | -9.2 | 29.2 | -20.0 | -158.9 | -58.9 | 133.2 |
| Tangential (NS) | -110.0 | -60.2 | -81.8 | -57.3 | -69.1 | -73.5 | -67.7 | -66.5 | 146.5 | -100.1 | -129.8 |

NOUA3640

NOUA364036 lon/lat: 166°4104 -22°2686

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_1$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .01871 | .00351 | .00400 | .00098 | .00890 | .00420 | .00289 | .00074 | .00063 | .00034 | .00103 |
| Tangential (EW) | .00572 | .00089 | .00133 | .00020 | .00075 | .00039 | .00018 | .00009 | .00001 | .00005 | .00004 |
| Tangential (NS) | .00500 | .00229 | .00084 | .00059 | .00117 | .00095 | .00036 | .00020 | .00007 | .00004 | .00012 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 48.7 | 61.4 | 23.1 | 63.3 | -147.6 | -170.7 | -154.7 | 158.8 | -164.2 | -161.8 | -131.8 |
| Tangential (EW) | 10.1 | 18.1 | -9.1 | 11.9 | 11.8 | -18.1 | -7.4 | -51.7 | -164.2 | -150.5 | 149.0 |
| Tangential (NS) | -49.8 | -17.8 | -52.4 | -17.8 | -103.7 | -139.2 | -94.3 | -161.5 | -146.4 | -151.1 | 110.0 |

NRAO 140

NRAO GREENBANK lon/lat: -79°8358 38°4366

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00720 | .00205 | .00124 | .00057 | .00293 | .00200 | .00096 | .00043 | .00010 | .00003 | .00036 |
| Tangential (EW) | .00354 | .00077 | .00079 | .00023 | .00014 | .00008 | .00004 | .00003 | .00004 | .00004 | .00017 |
| Tangential (NS) | .00050 | .00022 | .00004 | .00006 | .00009 | .00017 | .00002 | .00006 | .00008 | .00006 | .00005 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 153.0 | -172.4 | 132.4 | -175.4 | 0.2 | 0.4 | 1.7 | 4.5 | 29.0 | 96.5 | -178.3 |
| Tangential (EW) | -174.2 | -149.0 | 164.5 | -154.1 | -80.9 | 108.7 | -90.8 | 90.5 | -5.0 | -154.7 | -92.4 |
| Tangential (NS) | -58.8 | 14.5 | -94.9 | 9.5 | 164.5 | -125.1 | 169.3 | -156.9 | -135.4 | -163.0 | 5.2 |

OCOTILLO

OCOTILLO lon/lat: -115°7962 32°7901

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00404 | .00251 | .00162 | .00090 | .01048 | .00666 | .00328 | .00127 | .00015 | .00011 | .00049 |
| Tangential (EW) | .00209 | .00047 | .00039 | .00011 | .00358 | .00229 | .00112 | .00040 | .00008 | .00003 | .00033 |
| Tangential (NS) | .00381 | .00152 | .00083 | .00047 | .00174 | .00103 | .00056 | .00024 | .00001 | .00002 | .00015 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -50.9 | -87.7 | -66.9 | -77.8 | 39.9 | 24.8 | 38.6 | 16.4 | -116.3 | -174.1 | 47.8 |
| Tangential (EW) | -163.1 | -113.0 | 164.6 | -128.7 | -138.3 | -153.2 | -139.0 | -159.2 | 125.3 | 124.0 | -145.3 |
| Tangential (NS) | 94.1 | 109.8 | 78.3 | 106.0 | 177.4 | 170.9 | 175.9 | 163.8 | -64.0 | 162.7 | -124.3 |

ONSALA60

ONSALA lon/lat: 11°9263 57°3947

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00384 | .00091 | .00084 | .00019 | .00224 | .00120 | .00071 | .00003 | .00084 | .00063 | .00017 |
| Tangential (EW) | .00124 | .00034 | .00031 | .00009 | .00042 | .00041 | .00015 | .00006 | .00018 | .00010 | .00018 |
| Tangential (NS) | .00058 | .00027 | .00021 | .00008 | .00032 | .00017 | .00009 | .00004 | .00007 | .00001 | .00018 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -56.0 | -46.1 | -90.7 | -34.4 | -44.5 | -123.2 | -49.6 | 178.4 | 14.9 | 37.3 | 3.4 |
| Tangential (EW) | 75.4 | 97.6 | 40.8 | 94.8 | 119.0 | 25.4 | 98.7 | -14.1 | -177.0 | -126.7 | -177.0 |
| Tangential (NS) | 84.2 | 131.3 | 77.7 | 103.9 | 17.2 | -55.0 | 25.2 | -165.0 | 173.3 | 121.8 | 106.4 |

ORRORA79

ORRORA7943 lon/lat: 148°9548 -35°6238

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00964 | .00129 | .00209 | .00033 | .00281 | .00283 | .00122 | .00082 | .00012 | .00010 | .00070 |
| Tangential (EW) | .00509 | .00180 | .00091 | .00049 | .00123 | .00072 | .00039 | .00014 | .00003 | .00015 | .00010 |
| Tangential (NS) | .00115 | .00036 | .00018 | .00013 | .00142 | .00127 | .00048 | .00028 | .00005 | .00007 | .00025 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 126.8 | 173.0 | 96.3 | 163.7 | 118.0 | 67.5 | 110.0 | 55.9 | -21.1 | -99.5 | -81.6 |
| Tangential (EW) | 93.4 | 126.8 | 82.9 | 129.1 | -169.3 | 168.6 | -169.3 | 147.6 | -104.8 | 73.5 | 135.4 |
| Tangential (NS) | 11.6 | 74.7 | -34.1 | 80.2 | -118.0 | -144.0 | -117.6 | -160.6 | -139.9 | 83.8 | 118.6 |

OTAY

OTAY MOUNTAIN lon/lat: -116°8408 32°6007

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00663 | .00333 | .00225 | .00119 | .01257 | .00796 | .00396 | .00151 | .00018 | .00013 | .00065 |
| Tangential (EW) | .00243 | .00046 | .00047 | .00011 | .00397 | .00253 | .00124 | .00044 | .00009 | .00004 | .00035 |
| Tangential (NS) | .00425 | .00171 | .00092 | .00053 | .00199 | .00119 | .00064 | .00027 | .00001 | .00001 | .00017 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -45.3 | -75.8 | -64.6 | -69.8 | 38.7 | 23.6 | 37.5 | 15.4 | -108.0 | -173.2 | 57.5 |
| Tangential (EW) | -168.3 | -126.1 | 159.1 | -146.5 | -138.8 | -153.5 | -139.4 | -159.4 | 125.5 | 116.5 | -144.2 |
| Tangential (NS) | 95.7 | 111.2 | 79.5 | 107.5 | -179.9 | 172.3 | 178.9 | 165.1 | -23.3 | 152.7 | -122.3 |

OTTA4840

OTTA484048 lon/lat: -75°.7059 45°.3986

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00615 | .00184 | .00111 | .00056 | .00283 | .00176 | .00095 | .00035 | .00033 | .00009 | .00067 |
| Tangential (EW) | .00311 | .00072 | .00066 | .00021 | .00025 | .00022 | .00009 | .00006 | .00006 | .00007 | .00026 |
| Tangential (NS) | .00070 | .00039 | .00017 | .00012 | .00005 | .00022 | .00001 | .00006 | .00005 | .00004 | .00008 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 155.2 | -172.2 | 132.0 | -173.9 | -3.9 | -4.2 | -1.1 | 0.8 | 12.2 | -43.6 | -68.7 |
| Tangential (EW) | -162.3 | -142.1 | 175.3 | -145.8 | -108.4 | 172.5 | -114.8 | 151.2 | -10.3 | -140.6 | -89.4 |
| Tangential (NS) | 5.0 | 46.9 | 12.9 | 41.6 | 176.1 | -107.4 | 129.9 | -149.3 | -120.5 | -162.4 | 48.5 |

OVRO 130

OVRO130 lon/lat: -118°.2827 37°.2303

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00276 | .00102 | .00097 | .00031 | .01000 | .00629 | .00310 | .00118 | .00012 | .00003 | .00025 |
| Tangential (EW) | .00238 | .00079 | .00041 | .00020 | .00295 | .00188 | .00089 | .00032 | .00007 | .00004 | .00025 |
| Tangential (NS) | .00319 | .00127 | .00071 | .00039 | .00156 | .00094 | .00048 | .00020 | .00006 | .00004 | .00014 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 38.5 | -143.5 | -33.2 | -97.2 | 47.1 | 32.7 | 46.5 | 24.4 | -45.0 | 99.2 | 105.6 |
| Tangential (EW) | -125.7 | -75.0 | -153.8 | -78.8 | -126.1 | -139.4 | -125.9 | -143.3 | 141.2 | 113.5 | -169.2 |
| Tangential (NS) | 97.7 | 111.2 | 79.6 | 108.1 | 179.6 | 167.4 | 178.1 | 158.1 | -162.1 | 177.3 | -119.8 |

P VRDS

PVE PALOS VERDES lon/lat: -118°.4035 33°.7426

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00756 | .00314 | .00250 | .00117 | .01418 | .00895 | .00446 | .00167 | .00018 | .00010 | .00076 |
| Tangential (EW) | .00264 | .00073 | .00047 | .00018 | .00381 | .00243 | .00118 | .00041 | .00009 | .00004 | .00034 |
| Tangential (NS) | .00471 | .00190 | .00105 | .00058 | .00246 | .00149 | .00079 | .00032 | .00000 | .00002 | .00020 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -31.5 | -70.1 | -57.5 | -63.9 | 39.9 | 25.1 | 39.1 | 16.8 | -86.2 | -175.6 | 62.9 |
| Tangential (EW) | -147.3 | -95.6 | -178.2 | -103.6 | -135.2 | -149.6 | -135.3 | -155.1 | 132.4 | 125.8 | -146.7 |
| Tangential (NS) | 102.0 | 114.6 | 84.9 | 111.0 | -174.3 | 176.3 | -175.1 | 167.7 | 71.4 | 140.1 | -116.1 |

PTRK-A70

PTRK-A7069 lon/lat: -80°.6057 28°.2269

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01161 | .00285 | .00223 | .00074 | .00259 | .00194 | .00068 | .00041 | .00042 | .00021 | .00183 |
| Tangential (EW) | .00491 | .00092 | .00110 | .00026 | .00061 | .00064 | .00020 | .00014 | .00003 | .00004 | .00026 |
| Tangential (NS) | .00335 | .00051 | .00085 | .00013 | .00038 | .00037 | .00011 | .00006 | .00005 | .00007 | .00011 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 170.9 | -159.8 | 148.9 | -165.1 | 9.9 | 13.2 | 7.8 | 21.8 | 147.7 | 155.7 | -110.3 |
| Tangential (EW) | -177.2 | -162.5 | 162.5 | -166.0 | 49.7 | 47.8 | 53.5 | 41.9 | 10.0 | -150.8 | -108.5 |
| Tangential (NS) | -159.1 | -108.8 | 174.7 | -104.2 | 1.5 | -51.7 | -11.5 | -80.3 | -66.7 | 90.5 | 125.9 |

PENTICTN

PENTICTON lon/lat: -119°.6199 49°.3226

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00815 | .00268 | .00128 | .00058 | .00785 | .00493 | .00247 | .00093 | .00044 | .00027 | .00053 |
| Tangential (EW) | .00412 | .00154 | .00075 | .00042 | .00266 | .00177 | .00083 | .00032 | .00010 | .00008 | .00026 |
| Tangential (NS) | .00121 | .00029 | .00030 | .00011 | .00155 | .00092 | .00047 | .00019 | .00002 | .00002 | .00012 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 84.7 | 139.0 | 45.8 | 133.6 | 59.7 | 46.9 | 58.8 | 39.5 | 4.6 | 23.6 | 41.9 |
| Tangential (EW) | -108.8 | -68.1 | -132.6 | -71.5 | -109.4 | -123.5 | -110.5 | -127.3 | 155.3 | -160.2 | -138.8 |
| Tangential (NS) | 164.6 | 125.0 | 129.7 | 121.1 | -158.3 | -171.5 | -160.4 | 176.7 | 88.1 | -133.0 | -103.3 |

PGC1 90

PGC1 9013 lon/lat: -123°4511 48°6473

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01388 | .00410 | .00252 | .00096 | .01106 | .00696 | .00385 | .00128 | .00051 | .00034 | .00069 |
| Tangential (EW) | .00650 | .00239 | .00126 | .00066 | .00367 | .00246 | .00128 | .00045 | .00014 | .00011 | .00033 |
| Tangential (NS) | .00187 | .00021 | .00041 | .00008 | .00220 | .00128 | .00065 | .00025 | .00007 | .00006 | .00016 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 75.8 | 122.8 | 41.4 | 114.1 | 61.9 | 49.1 | 59.5 | 41.9 | -1.2 | 25.6 | 35.9 |
| Tangential (EW) | -109.9 | -72.9 | -133.8 | -76.6 | -112.3 | -126.7 | -115.9 | -131.1 | 158.2 | -163.8 | -147.4 |
| Tangential (NS) | -169.0 | -176.9 | 156.2 | 154.8 | -152.5 | -162.9 | -158.0 | -175.3 | 166.6 | -169.0 | -132.5 |

PIETWN

PTW PIE TOWN lon/lat: -108°1192 34°2999

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00065 | .00143 | .00049 | .00042 | .00586 | .00385 | .00184 | .00075 | .00006 | .00006 | .00021 |
| Tangential (EW) | .00119 | .00021 | .00023 | .00005 | .00218 | .00139 | .00068 | .00025 | .00005 | .00002 | .00022 |
| Tangential (NS) | .00180 | .00074 | .00041 | .00023 | .00079 | .00046 | .00025 | .00012 | .00006 | .00005 | .00008 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 161.5 | -132.1 | -60.9 | -111.7 | 38.9 | 24.3 | 37.4 | 16.5 | -149.0 | -178.8 | 160.1 |
| Tangential (EW) | -171.4 | -119.1 | 149.4 | -153.0 | -135.3 | -151.4 | -136.3 | -159.5 | 131.2 | 166.8 | -133.2 |
| Tangential (NS) | 95.0 | 104.2 | 83.1 | 101.8 | 158.1 | 154.8 | 154.7 | 151.6 | -152.6 | -173.1 | -125.3 |

PINY 90

PINY 9014 lon/lat: -116°4582 33°6110

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00332 | .00212 | .00144 | .00079 | .01033 | .00657 | .00353 | .00122 | .00014 | .00014 | .00048 |
| Tangential (EW) | .00219 | .00057 | .00039 | .00013 | .00347 | .00223 | .00118 | .00038 | .00008 | .00003 | .00032 |
| Tangential (NS) | .00370 | .00149 | .00079 | .00046 | .00177 | .00105 | .00056 | .00023 | .00001 | .00003 | .00015 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -41.5 | -90.2 | -61.4 | -79.6 | 41.2 | 26.5 | 38.2 | 18.3 | -113.2 | -155.2 | 18.1 |
| Tangential (EW) | -154.2 | -101.7 | 174.2 | -111.3 | -136.8 | -151.5 | -139.4 | -157.3 | 128.9 | 128.7 | -146.0 |
| Tangential (NS) | 94.7 | 110.5 | 79.4 | 105.4 | 178.9 | 172.8 | 175.3 | 163.7 | -24.6 | 91.0 | -174.0 |

PINYON

PNF PINYON FLAT lon/lat: -116°4579 33°6092

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00370 | .00222 | .00156 | .00082 | .01069 | .00678 | .00335 | .00128 | .00014 | .00010 | .00050 |
| Tangential (EW) | .00225 | .00058 | .00041 | .00013 | .00357 | .00229 | .00111 | .00039 | .00008 | .00004 | .00033 |
| Tangential (NS) | .00389 | .00155 | .00086 | .00048 | .00187 | .00111 | .00060 | .00025 | .00001 | .00002 | .00015 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -41.1 | -89.5 | -62.8 | -77.6 | 41.0 | 26.0 | 39.9 | 17.7 | -104.0 | -176.5 | 49.4 |
| Tangential (EW) | -154.5 | -102.1 | 174.2 | -112.1 | -136.9 | -151.6 | -137.5 | -157.4 | 128.7 | 128.2 | -145.9 |
| Tangential (NS) | 96.6 | 111.0 | 80.3 | 107.3 | 179.7 | 172.3 | 178.5 | 164.7 | -86.9 | 161.4 | -121.5 |

PLATVL

PTV PLATTEVILLE lon/lat: -104°7260 40°1828

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00248 | .00128 | .00025 | .00029 | .00473 | .00311 | .00150 | .00061 | .00006 | .00001 | .00024 |
| Tangential (EW) | .00179 | .00045 | .00034 | .00011 | .00178 | .00117 | .00056 | .00021 | .00004 | .00003 | .00020 |
| Tangential (NS) | .00123 | .00054 | .00031 | .00017 | .00064 | .00035 | .00020 | .00009 | .00008 | .00006 | .00007 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 115.7 | -168.2 | 16.5 | -152.2 | 39.9 | 26.4 | 38.7 | 19.9 | 12.3 | 41.4 | -180.0 |
| Tangential (EW) | -147.8 | -97.9 | -178.7 | -108.6 | -130.0 | -146.9 | -131.1 | -155.1 | 135.1 | 176.7 | -131.9 |
| Tangential (NS) | 112.2 | 106.4 | 97.2 | 104.2 | 158.9 | 153.9 | 155.2 | 150.7 | -153.3 | -167.0 | -108.2 |

POTSDA11

POTSDA1181 lon/lat: 13°0653 52°3790

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00446 | .00128 | .00088 | .00028 | .00187 | .00084 | .00058 | .00006 | .00055 | .00032 | .00047 |
| Tangential (EW) | .00192 | .00046 | .00047 | .00013 | .00045 | .00042 | .00019 | .00008 | .00011 | .00003 | .00009 |
| Tangential (NS) | .00053 | .00019 | .00010 | .00005 | .00026 | .00007 | .00005 | .00004 | .00003 | .00004 | .00013 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -64.4 | -31.6 | -83.1 | -29.7 | -56.9 | -100.8 | -59.2 | -133.8 | 10.5 | 0.8 | 4.5 |
| Tangential (EW) | 63.3 | 99.9 | 34.9 | 95.1 | 91.7 | 35.7 | 80.6 | 25.8 | 165.6 | 72.2 | 163.6 |
| Tangential (NS) | -3.9 | 44.9 | 27.1 | 56.7 | 47.1 | -67.3 | 37.1 | 168.9 | -157.7 | 80.8 | 88.7 |

PRBLSM

PRB PEARBLOSSOM lon/lat: -117°9215 34°5121

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00400 | .00195 | .00163 | .00075 | .01159 | .00731 | .00362 | .00137 | .00014 | .00008 | .00057 |
| Tangential (EW) | .00258 | .00080 | .00045 | .00020 | .00355 | .00228 | .00110 | .00039 | .00009 | .00004 | .00032 |
| Tangential (NS) | .00416 | .00166 | .00093 | .00051 | .00214 | .00128 | .00068 | .00028 | .00000 | .00002 | .00017 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -24.14 | -88.4 | -55.7 | -74.0 | 42.4 | 27.6 | 41.6 | 19.2 | -83.6 | 178.0 | 54.1 |
| Tangential (EW) | -141.5 | -90.0 | -170.4 | -95.9 | -134.3 | -148.6 | -134.5 | -154.1 | 133.8 | 133.7 | -147.4 |
| Tangential (NS) | 100.1 | 113.0 | 82.9 | 109.3 | -176.8 | 174.5 | -177.6 | 166.0 | -123.2 | 152.8 | -118.0 |

PRSDIO

PRS PRESIDIO lon/lat: -122°4550 37°8041

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00976 | .00052 | .00230 | .00034 | .01558 | .00969 | .00476 | .00181 | .00033 | .00011 | .00087 |
| Tangential (EW) | .00483 | .00163 | .00089 | .00045 | .00416 | .00267 | .00125 | .00047 | .00013 | .00005 | .00034 |
| Tangential (NS) | .00379 | .00148 | .00087 | .00046 | .00240 | .00141 | .00073 | .00029 | .00001 | .00001 | .00018 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 34.9 | 94.3 | -12.1 | -0.9 | 48.3 | 34.2 | 48.7 | 25.7 | -34.9 | 76.3 | 66.6 |
| Tangential (EW) | -124.7 | -82.2 | -151.1 | -88.8 | -127.1 | -140.5 | -126.6 | -145.2 | 146.1 | 173.1 | -146.8 |
| Tangential (NS) | 106.3 | 115.7 | 86.6 | 112.9 | -172.6 | 176.3 | -172.0 | 166.7 | -179.4 | 132.3 | -116.1 |

PT REY

PTR POINT REYES lon/lat: -122°9365 38°1023

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01111 | .00089 | .00253 | .00039 | .01637 | .01018 | .00497 | .00190 | .00037 | .00014 | .00093 |
| Tangential (EW) | .00499 | .00171 | .00092 | .00047 | .00417 | .00269 | .00125 | .00047 | .00013 | .00005 | .00034 |
| Tangential (NS) | .00376 | .00146 | .00086 | .00046 | .00240 | .00140 | .00073 | .00029 | .00001 | .00001 | .00017 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 37.1 | 90.4 | -8.4 | 16.4 | 48.8 | 34.8 | 49.2 | 26.3 | -33.1 | 69.0 | 68.0 |
| Tangential (EW) | -123.1 | -80.9 | -149.5 | -87.2 | -126.2 | -139.4 | -125.8 | -144.1 | 147.0 | 174.1 | -147.1 |
| Tangential (NS) | 106.0 | 115.5 | 86.2 | 112.9 | -172.8 | 175.9 | -172.2 | 166.3 | -179.4 | 128.8 | -116.5 |

PURA4540

PURA454045 lon/lat: 118°8248 32°0660

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00365 | .00116 | .00119 | .00041 | .00414 | .00354 | .00140 | .00077 | .00010 | .00015 | .00034 |
| Tangential (EW) | .00156 | .00087 | .00049 | .00030 | .00165 | .00116 | .00057 | .00023 | .00006 | .00009 | .00024 |
| Tangential (NS) | .00216 | .00069 | .00032 | .00017 | .00134 | .00108 | .00043 | .00021 | .00004 | .00008 | .00013 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 132.5 | 134.1 | 138.9 | 136.4 | -98.5 | -110.5 | -93.8 | -116.6 | 136.0 | 114.2 | 172.7 |
| Tangential (EW) | 122.6 | 123.8 | 135.9 | 130.6 | -113.0 | -136.8 | -108.6 | -144.2 | 33.3 | 28.0 | 64.3 |
| Tangential (NS) | 9.0 | 38.3 | 20.4 | 40.9 | 122.7 | 97.0 | 128.0 | 77.1 | -146.6 | -137.2 | 145.9 |

QUINCY

QUI QUINCY lon/lat: -120°9447 39°9750

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00634 | .00133 | .00128 | .00011 | .01117 | .00698 | .00344 | .00130 | .00022 | .00010 | .00028 |
| Tangential (EW) | .00365 | .00125 | .00063 | .00034 | .00325 | .00206 | .00099 | .00038 | .00011 | .00005 | .00025 |
| Tangential (NS) | .00295 | .00116 | .00067 | .00036 | .00165 | .00098 | .00049 | .00020 | .00007 | .00004 | .00014 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 58.1 | 149.5 | 1.1 | 144.4 | 51.5 | 37.7 | 51.1 | 29.4 | -24.5 | 49.4 | 101.4 |
| Tangential (EW) | -119.7 | -73.5 | -147.2 | -80.6 | -121.2 | -134.5 | -121.2 | -139.9 | 153.7 | -165.2 | -129.3 |
| Tangential (NS) | 100.9 | 111.9 | 81.7 | 109.6 | -177.8 | 169.1 | -179.1 | 159.2 | -165.2 | 178.5 | -118.7 |

REUA1240

REUA124012 lon/lat: 55°5718 -21°2075

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00909 | .00444 | .00203 | .00102 | .00138 | .00082 | .00054 | .00044 | .00070 | .00060 | .00158 |
| Tangential (EW) | .00592 | .00342 | .00109 | .00092 | .00032 | .00028 | .00012 | .00006 | .00005 | .00006 | .00024 |
| Tangential (NS) | .00202 | .00105 | .00047 | .00029 | .00154 | .00072 | .00049 | .00017 | .00006 | .00004 | .00017 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 139.5 | 129.0 | 120.9 | 135.9 | -139.7 | -175.5 | -113.5 | 162.4 | -173.0 | -149.7 | -62.5 |
| Tangential (EW) | 43.1 | 82.2 | 33.6 | 83.1 | -7.8 | -24.8 | -11.8 | -107.2 | -135.3 | -92.6 | -28.2 |
| Tangential (NS) | 160.0 | -131.4 | 144.8 | -134.7 | 146.5 | 162.0 | 148.5 | 161.6 | -139.6 | 160.4 | 142.4 |

RICA2340

RICA234023 lon/lat: -80°3856 25°6239

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00780 | .00224 | .00126 | .00059 | .00162 | .00115 | .00039 | .00026 | .00052 | .00030 | .00196 |
| Tangential (EW) | .00379 | .00070 | .00085 | .00020 | .00062 | .00067 | .00019 | .00014 | .00003 | .00005 | .00021 |
| Tangential (NS) | .00241 | .00044 | .00065 | .00013 | .00023 | .00043 | .00009 | .00009 | .00006 | .00004 | .00016 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 162.7 | -164.3 | 137.6 | -170.6 | 14.0 | 26.4 | 20.2 | 44.0 | 157.3 | -176.3 | -109.6 |
| Tangential (EW) | 179.3 | -171.9 | 159.6 | -172.6 | 55.4 | 48.8 | 56.8 | 43.1 | -16.6 | -131.2 | -100.6 |
| Tangential (NS) | -153.7 | -85.8 | 178.1 | -83.4 | -48.1 | -89.8 | -41.8 | -117.5 | -59.8 | 107.3 | 103.3 |

RICHMOND

RICHMOND lon/lat: -80°3847 25°6128

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00871 | .00250 | .00144 | .00062 | .00192 | .00135 | .00063 | .00034 | .00047 | .00023 | .00133 |
| Tangential (EW) | .00401 | .00070 | .00091 | .00020 | .00072 | .00075 | .00025 | .00016 | .00002 | .00002 | .00018 |
| Tangential (NS) | .00234 | .00040 | .00061 | .00012 | .00030 | .00031 | .00011 | .00006 | .00005 | .00003 | .00010 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 167.2 | -162.4 | 147.0 | -168.8 | 17.2 | 26.4 | 14.9 | 36.7 | 148.0 | 144.7 | -144.6 |
| Tangential (EW) | -179.0 | -163.9 | 160.7 | -166.7 | 43.2 | 40.6 | 44.9 | 36.4 | 1.2 | -140.6 | -99.1 |
| Tangential (NS) | -155.1 | -88.0 | 176.1 | -90.0 | -16.8 | -65.2 | -3.9 | -98.7 | -94.5 | 144.1 | 80.2 |

RIGA 18

RIGA 1884 lon/lat: 24°0591 56°9474

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00284 | .00077 | .00055 | .00017 | .00160 | .00093 | .00051 | .00012 | .00057 | .00040 | .00050 |
| Tangential (EW) | .00162 | .00033 | .00042 | .00009 | .00050 | .00053 | .00020 | .00011 | .00010 | .00001 | .00008 |
| Tangential (NS) | .00025 | .00001 | .00006 | .00001 | .00026 | .00010 | .00005 | .00002 | .00003 | .00002 | .00017 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -62.6 | -25.6 | -85.5 | -14.9 | -56.6 | -103.7 | -59.1 | -131.7 | 19.9 | 6.6 | 30.4 |
| Tangential (EW) | 39.3 | 77.7 | 13.7 | 80.6 | 90.5 | 38.8 | 81.8 | 25.2 | 177.4 | 115.4 | -168.0 |
| Tangential (NS) | -90.6 | 109.8 | 146.2 | 117.7 | 47.3 | -30.6 | 32.4 | -155.2 | 173.4 | 64.7 | 90.9 |

RIOA1740

RIOA174017 lon/lat: -67°.7519 -53°.7846

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01849 | .00426 | .00433 | .00182 | .00863 | .00933 | .00291 | .00211 | .00117 | .00110 | .00123 |
| Tangential (EW) | .00622 | .00185 | .00156 | .00056 | .00026 | .00072 | .00015 | .00015 | .00002 | .00009 | .00030 |
| Tangential (NS) | .00825 | .00247 | .00210 | .00082 | .00138 | .00094 | .00055 | .00021 | .00003 | .00005 | .00017 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 151.2 | -130.5 | 139.5 | -132.5 | -96.3 | -129.2 | -100.7 | -145.9 | 14.0 | 23.1 | 24.3 |
| Tangential (EW) | 150.5 | 169.4 | 126.0 | -177.5 | 41.0 | -120.8 | 95.8 | -149.8 | -72.6 | 82.3 | -117.1 |
| Tangential (NS) | -152.8 | -98.7 | 177.7 | -102.1 | 71.5 | 61.6 | 78.4 | 56.8 | -85.6 | 91.5 | 114.9 |

ROUMEL75

ROUMEL7517 lon/lat: 24°.6942 35°.4030

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00375 | .00107 | .00077 | .00026 | .00061 | .00039 | .00021 | .00004 | .00009 | .00015 | .00029 |
| Tangential (EW) | .00199 | .00044 | .00051 | .00011 | .00036 | .00010 | .00012 | .00005 | .00003 | .00003 | .00006 |
| Tangential (NS) | .00112 | .00020 | .00019 | .00005 | .00064 | .00033 | .00017 | .00007 | .00010 | .00006 | .00011 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -68.8 | -46.7 | -90.5 | -49.6 | -107.9 | -124.2 | -112.4 | -126.5 | 2.0 | 0.9 | 49.1 |
| Tangential (EW) | 27.8 | 42.1 | 8.8 | 49.4 | 155.5 | 134.8 | 135.8 | 130.1 | 174.0 | 29.8 | -114.1 |
| Tangential (NS) | -78.9 | -32.4 | -113.5 | -47.6 | 54.6 | 66.5 | 55.2 | 84.7 | -138.8 | 172.1 | 130.4 |

SADDLEPK

SADDLEPK lon/lat: -118°.6561 34°.0784

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00662 | .00270 | .00227 | .00103 | .01371 | .00864 | .00430 | .00161 | .00018 | .00009 | .00073 |
| Tangential (EW) | .00271 | .00082 | .00047 | .00020 | .00372 | .00238 | .00115 | .00041 | .00009 | .00004 | .00033 |
| Tangential (NS) | .00470 | .00189 | .00105 | .00058 | .00250 | .00152 | .00080 | .00032 | .00000 | .00002 | .00020 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -27.3 | -73.0 | -55.6 | -64.9 | 40.9 | 26.1 | 40.2 | 17.8 | -82.4 | -177.9 | 61.5 |
| Tangential (EW) | -142.2 | -90.8 | -171.7 | -97.5 | -134.3 | -148.5 | -134.2 | -154.0 | 133.9 | 129.2 | -147.4 |
| Tangential (NS) | 102.9 | 115.0 | 85.6 | 111.5 | -173.7 | 176.7 | -174.4 | 167.9 | 107.6 | 139.2 | -115.4 |

SANA3840

SANA384038 lon/lat: -70°.5369 -33°.3947

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00410 | .00198 | .00129 | .00046 | .00605 | .00452 | .00194 | .00099 | .00016 | .00023 | .00065 |
| Tangential (EW) | .00311 | .00086 | .00070 | .00017 | .00167 | .00097 | .00053 | .00020 | .00003 | .00007 | .00033 |
| Tangential (NS) | .00061 | .00027 | .00010 | .00010 | .00132 | .00113 | .00044 | .00025 | .00006 | .00004 | .00025 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -134.3 | -64.5 | -179.1 | -60.0 | -130.2 | -150.6 | -129.9 | -166.1 | 52.1 | 16.4 | 26.6 |
| Tangential (EW) | 62.2 | 95.4 | 37.7 | 75.2 | 43.4 | -10.5 | 43.8 | -38.2 | -153.2 | 169.2 | -137.9 |
| Tangential (NS) | -121.8 | 134.2 | 141.8 | 138.4 | 124.4 | 93.1 | 124.9 | 70.5 | -155.6 | 170.3 | 123.5 |

SANPAULA

SANTA PAULA lon/lat: -118°.9988 34°.3867

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00595 | .00232 | .00210 | .00091 | .01345 | .00845 | .00420 | .00158 | .00017 | .00008 | .00071 |
| Tangential (EW) | .00282 | .00090 | .00049 | .00023 | .00368 | .00235 | .00114 | .00040 | .00009 | .00004 | .00033 |
| Tangential (NS) | .00457 | .00183 | .00102 | .00056 | .00244 | .00147 | .00078 | .00031 | .00000 | .00002 | .00019 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -21.7 | -76.0 | -53.2 | -65.6 | 41.9 | 27.1 | 41.3 | 18.7 | -78.0 | 179.0 | 60.6 |
| Tangential (EW) | -138.1 | -87.8 | -166.4 | -93.7 | -133.3 | -147.5 | -133.2 | -152.9 | 135.5 | 131.8 | -148.0 |
| Tangential (NS) | 102.2 | 114.5 | 84.6 | 110.9 | -174.2 | 176.2 | -174.8 | 167.2 | 136.8 | 139.3 | -116.3 |

SANT 90

SANT 9015 lon/lat: -70°6680 -33°1499

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00456 | .00209 | .00138 | .00048 | .00621 | .00458 | .00198 | .00099 | .00016 | .00023 | .00067 |
| Tangential (EW) | .00323 | .00089 | .00073 | .00018 | .00171 | .00099 | .00054 | .00020 | .00003 | .00007 | .00034 |
| Tangential (NS) | .00063 | .00028 | .00011 | .00010 | .00131 | .00113 | .00044 | .00025 | .00006 | .00004 | .00025 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -133.3 | -66.6 | -177.5 | -63.3 | -130.6 | -151.5 | -130.4 | -167.3 | 54.2 | 15.1 | 26.1 |
| Tangential (EW) | 61.4 | 94.4 | 36.5 | 74.7 | 43.3 | -10.1 | 43.6 | -37.8 | -151.5 | 168.8 | -138.4 |
| Tangential (NS) | -124.3 | 136.7 | 141.9 | 140.8 | 125.5 | 93.9 | 125.6 | 71.1 | -155.9 | 170.0 | 123.2 |

SCRI 90

SCRI 9016 lon/lat: -117°2523 32°8666

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00688 | .00333 | .00229 | .00121 | .01289 | .00819 | .00443 | .00152 | .00019 | .00018 | .00060 |
| Tangential (EW) | .00248 | .00049 | .00048 | .00012 | .00394 | .00251 | .00126 | .00043 | .00009 | .00004 | .00034 |
| Tangential (NS) | .00439 | .00180 | .00094 | .00055 | .00218 | .00132 | .00060 | .00028 | .00002 | .00004 | .00017 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -42.1 | -72.9 | -61.6 | -69.0 | 38.8 | 24.1 | 35.8 | 16.1 | -110.9 | -152.7 | 30.1 |
| Tangential (EW) | -166.2 | -122.9 | 160.8 | -141.3 | -138.4 | -152.9 | -139.8 | -158.8 | 127.1 | 117.0 | -144.1 |
| Tangential (NS) | 98.4 | 113.2 | 83.1 | 108.3 | -176.8 | 175.6 | 175.9 | 166.9 | 6.8 | 79.3 | -167.1 |

SANTIA74

SANTIA7400 lon/lat: -70°6686 -33°1485

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00456 | .00209 | .00138 | .00048 | .00621 | .00458 | .00198 | .00099 | .00016 | .00023 | .00067 |
| Tangential (EW) | .00323 | .00089 | .00073 | .00018 | .00171 | .00099 | .00054 | .00020 | .00003 | .00007 | .00034 |
| Tangential (NS) | .00063 | .00028 | .00011 | .00010 | .00131 | .00113 | .00044 | .00025 | .00006 | .00004 | .00025 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -133.3 | -66.6 | -177.5 | -63.3 | -130.6 | -151.5 | -130.4 | -167.3 | 54.2 | 15.1 | 26.1 |
| Tangential (EW) | 61.4 | 94.3 | 36.5 | 74.6 | 43.3 | -10.1 | 43.6 | -37.8 | -151.5 | 168.8 | -138.4 |
| Tangential (NS) | -124.4 | 136.7 | 141.9 | 140.8 | 125.5 | 93.9 | 125.6 | 71.1 | -155.9 | 170.0 | 123.2 |

SEATTLE1

SEATTLE 1 lon/lat: -122°2491 47°6857

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01170 | .00348 | .00202 | .00077 | .01042 | .00652 | .00328 | .00122 | .00048 | .00033 | .00067 |
| Tangential (EW) | .00564 | .00200 | .00105 | .00054 | .00347 | .00227 | .00109 | .00041 | .00013 | .00010 | .00030 |
| Tangential (NS) | .00147 | .00037 | .00037 | .00014 | .00184 | .00109 | .00056 | .00022 | .00003 | .00001 | .00013 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 75.9 | 127.3 | 38.9 | 117.9 | 60.4 | 47.2 | 59.1 | 39.4 | -1.3 | 29.3 | 52.3 |
| Tangential (EW) | -109.9 | -70.8 | -134.7 | -75.0 | -110.9 | -124.4 | -112.5 | -128.8 | 156.8 | -156.9 | -137.7 |
| Tangential (NS) | 159.5 | 130.0 | 126.0 | 125.4 | -157.7 | -171.0 | -160.0 | 177.4 | 98.4 | -135.5 | -104.8 |

SHANGH78

SHANGH7837 lon/lat: 121°1917 31°0964

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00558 | .00116 | .00162 | .00039 | .00606 | .00483 | .00207 | .00103 | .00015 | .00022 | .00049 |
| Tangential (EW) | .00224 | .00075 | .00055 | .00027 | .00227 | .00160 | .00077 | .00032 | .00007 | .00011 | .00025 |
| Tangential (NS) | .00338 | .00123 | .00043 | .00031 | .00159 | .00125 | .00050 | .00024 | .00003 | .00010 | .00012 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 170.9 | -163.2 | 164.8 | -175.7 | -98.6 | -114.5 | -93.9 | -118.6 | 120.4 | 113.2 | 171.5 |
| Tangential (EW) | 151.5 | 154.9 | 155.0 | 155.8 | -112.3 | -139.5 | -109.7 | -144.5 | 42.5 | 37.8 | 71.2 |
| Tangential (NS) | -5.8 | 26.7 | -5.1 | 23.4 | 118.4 | 91.5 | 122.3 | 72.5 | -142.0 | -132.0 | 160.4 |

SIGA5040

SIGA504050 lon/lat: -45°.5956 -60°.7077

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .02175 | .01053 | .00410 | .00281 | .00938 | .01237 | .00347 | .00284 | .00150 | .00107 | .00106 |
| Tangential (EW) | .00130 | .00047 | .00028 | .00018 | .00092 | .00069 | .00036 | .00015 | .00007 | .00010 | .00032 |
| Tangential (NS) | .00193 | .00089 | .00040 | .00029 | .00130 | .00091 | .00041 | .00015 | .00004 | .00005 | .00010 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 96.2 | 121.6 | 86.3 | 133.1 | -128.6 | -146.4 | -134.5 | -158.0 | 20.6 | 17.9 | 9.7 |
| Tangential (EW) | -134.1 | 82.5 | -178.2 | 82.7 | 119.5 | 107.0 | 117.7 | 87.6 | 179.1 | -161.5 | -124.4 |
| Tangential (NS) | -169.1 | -87.6 | 161.7 | -72.0 | 31.8 | 11.1 | 34.3 | 5.8 | -20.3 | 94.0 | 159.2 |

SIMOSA78

SIMOSA7838 lon/lat: 135°.9370 33°.5765

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01357 | .00597 | .00273 | .00175 | .01123 | .00869 | .00386 | .00183 | .00012 | .00049 | .00063 |
| Tangential (EW) | .00205 | .00115 | .00028 | .00030 | .00168 | .00136 | .00053 | .00029 | .00004 | .00011 | .00030 |
| Tangential (NS) | .00309 | .00126 | .00058 | .00037 | .00217 | .00166 | .00061 | .00033 | .00005 | .00013 | .00010 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 88.0 | 106.1 | 93.8 | 109.2 | -126.7 | -146.1 | -126.0 | -154.0 | -36.3 | 40.5 | 102.5 |
| Tangential (EW) | 13.0 | 45.5 | 25.2 | 52.3 | -161.8 | 173.7 | -162.4 | 169.0 | -51.5 | -6.8 | 44.6 |
| Tangential (NS) | -61.6 | -43.0 | -66.8 | -41.5 | 90.0 | 67.9 | 99.0 | 51.3 | -177.0 | -155.5 | -174.8 |

SNDPOINT

SAND POINT lon/lat: -160°.4755 55°.3511

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01873 | .00812 | .00337 | .00215 | .01469 | .01061 | .00496 | .00193 | .00140 | .00097 | .00162 |
| Tangential (EW) | .00584 | .00137 | .00123 | .00028 | .00301 | .00180 | .00088 | .00037 | .00004 | .00009 | .00013 |
| Tangential (NS) | .00306 | .00179 | .00072 | .00055 | .00386 | .00235 | .00117 | .00047 | .00010 | .00024 | .00032 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 126.8 | 150.8 | 122.3 | 150.5 | 112.2 | 103.1 | 114.4 | 100.8 | -4.6 | 54.9 | 66.2 |
| Tangential (EW) | 109.5 | 157.5 | 80.1 | 152.7 | 41.9 | 13.7 | 40.3 | -2.3 | 171.9 | -31.7 | 112.3 |
| Tangential (NS) | -67.3 | -38.0 | -70.9 | -38.7 | -100.6 | -119.6 | -105.7 | -128.7 | 165.2 | 179.0 | -144.4 |

SOCA4040

SOCA404040 lon/lat: -110°.9539 18°.7256

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01581 | .00929 | .00401 | .00288 | .01201 | .00821 | .00350 | .00166 | .00083 | .00056 | .00112 |
| Tangential (EW) | .00243 | .00039 | .00058 | .00017 | .00265 | .00154 | .00081 | .00025 | .00005 | .00002 | .00020 |
| Tangential (NS) | .00227 | .00043 | .00042 | .00011 | .00063 | .00011 | .00020 | .00006 | .00005 | .00003 | .00022 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -90.2 | -81.6 | -88.7 | -80.6 | 21.9 | 7.1 | 17.6 | -4.0 | -155.8 | -159.7 | 12.8 |
| Tangential (EW) | 80.2 | 144.5 | 42.6 | 115.5 | -142.6 | -160.2 | -144.1 | -170.7 | 94.9 | 131.3 | -154.6 |
| Tangential (NS) | 30.5 | 5.6 | 7.8 | 5.5 | 92.2 | 150.2 | 74.7 | 156.8 | -15.9 | 76.2 | 121.5 |

SOURDOGH

SOURDOUGH lon/lat: -145°.4837 62°.6629

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01141 | .00450 | .00182 | .00115 | .00701 | .00466 | .00226 | .00085 | .00093 | .00062 | .00098 |
| Tangential (EW) | .00026 | .00052 | .00009 | .00018 | .00092 | .00079 | .00029 | .00019 | .00006 | .00003 | .00017 |
| Tangential (NS) | .00533 | .00198 | .00097 | .00054 | .00288 | .00175 | .00092 | .00032 | .00016 | .00016 | .00031 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 101.8 | 139.5 | 83.2 | 135.8 | 92.0 | 82.2 | 91.2 | 75.7 | 13.2 | 24.7 | 56.8 |
| Tangential (EW) | 125.8 | -71.8 | 53.8 | -63.3 | -23.3 | -61.2 | -28.0 | -64.4 | 176.6 | -153.6 | 169.7 |
| Tangential (NS) | -90.5 | -51.0 | -107.7 | -52.4 | -106.8 | -119.1 | -107.5 | -126.7 | 145.0 | -140.7 | -126.0 |

SPIA2040

SPIA204020 lon/lat: 11°9317 78°9229

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00772 | .00283 | .00154 | .00041 | .00132 | .00149 | .00040 | .00036 | .00178 | .00124 | .00155 |
| Tangential (EW) | .00284 | .00083 | .00062 | .00016 | .00067 | .00079 | .00024 | .00016 | .00017 | .00004 | .00019 |
| Tangential (NS) | .00172 | .00059 | .00027 | .00016 | .00052 | .00040 | .00015 | .00012 | .00004 | .00004 | .00024 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -158.4 | -116.3 | 175.5 | -113.8 | -25.3 | -122.3 | -25.2 | -156.4 | 32.0 | 5.5 | 47.1 |
| Tangential (EW) | -6.1 | 40.4 | -30.5 | 43.9 | 90.8 | 47.2 | 83.6 | 34.8 | -177.1 | 171.3 | -149.8 |
| Tangential (NS) | 17.7 | 53.6 | -13.5 | 71.0 | 136.1 | 42.2 | 137.8 | -2.1 | -32.8 | -43.9 | 70.2 |

TIDBIN64

TIDBINBILLA lon/lat: 148°9813 -35°4013

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00951 | .00128 | .00204 | .00031 | .00276 | .00278 | .00103 | .00083 | .00014 | .00005 | .00048 |
| Tangential (EW) | .00515 | .00182 | .00091 | .00049 | .00125 | .00073 | .00040 | .00014 | .00003 | .00015 | .00010 |
| Tangential (NS) | .00116 | .00037 | .00019 | .00012 | .00147 | .00129 | .00050 | .00029 | .00006 | .00005 | .00017 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 125.7 | 173.0 | 96.0 | 161.2 | 118.6 | 67.0 | 111.9 | 53.9 | -18.9 | -73.9 | -96.9 |
| Tangential (EW) | 93.0 | 126.4 | 82.3 | 128.8 | -168.6 | 169.1 | -170.4 | 148.2 | -105.3 | 73.1 | 134.8 |
| Tangential (NS) | 7.9 | 70.2 | -31.5 | 79.8 | -117.0 | -143.6 | -117.5 | -160.6 | -144.8 | 92.7 | 116.0 |

TLRS-H78

TLRS-H7888 lon/lat: -110°8782 31°6840

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00162 | .00189 | .00086 | .00063 | .00693 | .00453 | .00222 | .00087 | .00017 | .00015 | .00036 |
| Tangential (EW) | .00136 | .00033 | .00024 | .00007 | .00279 | .00180 | .00090 | .00032 | .00006 | .00003 | .00031 |
| Tangential (NS) | .00249 | .00099 | .00052 | .00030 | .00108 | .00062 | .00034 | .00015 | .00002 | .00003 | .00013 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -97.7 | -108.3 | -74.3 | -95.6 | 38.3 | 23.4 | 35.7 | 15.0 | -150.4 | -159.2 | -17.6 |
| Tangential (EW) | -172.4 | -121.4 | 154.5 | -140.5 | -140.6 | -156.5 | -142.7 | -164.2 | 118.0 | 139.2 | -144.4 |
| Tangential (NS) | 87.7 | 103.7 | 76.8 | 98.3 | 165.2 | 168.6 | 159.8 | 161.1 | -58.9 | 108.9 | 168.0 |

TLSA2 40

TLSA2 4002 lon/lat: 1°4812 43°5569

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01083 | .00353 | .00217 | .00087 | .00210 | .00039 | .00063 | .00010 | .00042 | .00020 | .00046 |
| Tangential (EW) | .00435 | .00135 | .00094 | .00038 | .00036 | .00032 | .00016 | .00004 | .00010 | .00012 | .00010 |
| Tangential (NS) | .00228 | .00084 | .00038 | .00020 | .00013 | .00023 | .00003 | .00010 | .00006 | .00002 | .00005 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -78.8 | -49.0 | -96.6 | -52.4 | -66.0 | -126.3 | -68.3 | 72.6 | -13.8 | -76.9 | -47.5 |
| Tangential (EW) | 76.4 | 107.2 | 52.3 | 102.4 | 82.7 | -9.4 | 69.3 | -42.7 | 133.1 | 49.0 | 105.4 |
| Tangential (NS) | -46.8 | -9.0 | -60.1 | -8.1 | -1.8 | -166.8 | -52.0 | 158.0 | -92.4 | 149.6 | 120.7 |

TLTA2940

TLTA294029 lon/lat: 1°4835 43°5595

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01083 | .00353 | .00217 | .00087 | .00210 | .00039 | .00063 | .00010 | .00042 | .00020 | .00046 |
| Tangential (EW) | .00435 | .00135 | .00094 | .00038 | .00036 | .00032 | .00016 | .00004 | .00010 | .00012 | .00010 |
| Tangential (NS) | .00228 | .00084 | .00038 | .00020 | .00013 | .00023 | .00003 | .00010 | .00006 | .00002 | .00005 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -78.8 | -49.0 | -96.6 | -52.4 | -66.0 | -126.3 | -68.3 | 72.6 | -13.8 | -76.9 | -47.5 |
| Tangential (EW) | 76.4 | 107.2 | 52.3 | 102.5 | 82.8 | -9.4 | 69.3 | -42.7 | 133.1 | 49.0 | 105.4 |
| Tangential (NS) | -46.8 | -9.0 | -60.1 | -8.1 | -1.8 | -166.8 | -52.0 | 158.0 | -92.4 | 149.5 | 120.7 |

TRIA5 40

TRIA5 4005 lon/lat: -12°3125 -37°0641

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01621 | .00511 | .00409 | .00144 | .00024 | .00108 | .00019 | .00047 | .00026 | .00043 | .00103 |
| Tangential (EW) | .00436 | .00170 | .00089 | .00043 | .00124 | .00046 | .00032 | .00007 | .00003 | .00002 | .00011 |
| Tangential (NS) | .00150 | .00069 | .00028 | .00026 | .00103 | .00103 | .00033 | .00024 | .00012 | .00013 | .00022 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -144.9 | -121.0 | -164.4 | -108.6 | -168.4 | -148.3 | -179.3 | -152.6 | -178.6 | 139.7 | -146.0 |
| Tangential (EW) | -129.5 | -112.1 | -126.4 | -120.2 | -123.1 | -172.5 | -123.9 | 127.6 | -162.8 | 66.8 | -102.4 |
| Tangential (NS) | -32.0 | -16.3 | -44.5 | -11.1 | 77.7 | 29.5 | 70.5 | 6.7 | -164.0 | -176.5 | 160.4 |

TROA5440

TROA544054 lon/lat: 18°9393 69°6621

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00913 | .00319 | .00181 | .00080 | .00224 | .00169 | .00065 | .00043 | .00135 | .00099 | .00109 |
| Tangential (EW) | .00402 | .00122 | .00086 | .00032 | .00068 | .00089 | .00026 | .00020 | .00023 | .00009 | .00025 |
| Tangential (NS) | .00190 | .00071 | .00046 | .00019 | .00039 | .00017 | .00008 | .00005 | .00015 | .00015 | .00034 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -168.3 | -134.6 | 157.6 | -142.8 | -22.2 | -115.2 | -36.8 | -170.4 | 38.4 | 8.2 | 46.3 |
| Tangential (EW) | -8.3 | 26.7 | -36.1 | 22.0 | 107.7 | 42.6 | 93.9 | 14.6 | -156.5 | 172.6 | -160.2 |
| Tangential (NS) | -163.0 | -125.3 | 160.3 | -128.7 | 76.0 | -44.4 | 80.6 | -127.5 | 80.1 | 8.9 | 85.9 |

TROM 90

TROM 9017 lon/lat: 18°9383 69°6619

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00913 | .00319 | .00181 | .00080 | .00224 | .00169 | .00065 | .00043 | .00135 | .00099 | .00109 |
| Tangential (EW) | .00402 | .00122 | .00086 | .00032 | .00068 | .00089 | .00026 | .00020 | .00023 | .00009 | .00025 |
| Tangential (NS) | .00190 | .00071 | .00046 | .00019 | .00039 | .00017 | .00008 | .00005 | .00015 | .00015 | .00034 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -168.3 | -134.6 | 157.6 | -142.8 | -22.2 | -115.2 | -36.8 | -170.4 | 38.4 | 8.2 | 46.3 |
| Tangential (EW) | -8.3 | 26.7 | -36.1 | 22.0 | 107.7 | 42.6 | 93.9 | 14.6 | -156.5 | 172.6 | -160.2 |
| Tangential (NS) | -163.0 | -125.3 | 160.3 | -128.7 | 76.0 | -44.4 | 80.6 | -127.5 | 80.1 | 8.9 | 85.9 |

TROMSO

TROMSO lon/lat: 18°9394 69°630

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01210 | .00433 | .00215 | .00095 | .00273 | .00183 | .00073 | .00044 | .00124 | .00098 | .00056 |
| Tangential (EW) | .00455 | .00147 | .00078 | .00032 | .00063 | .00063 | .00019 | .00015 | .00022 | .00010 | .00025 |
| Tangential (NS) | .00255 | .00092 | .00057 | .00024 | .00042 | .00013 | .00011 | .00005 | .00016 | .00015 | .00036 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -169.9 | -134.5 | 159.8 | -140.9 | -17.5 | -115.2 | -24.5 | -170.8 | 43.0 | 12.6 | 110.3 |
| Tangential (EW) | -8.3 | 28.8 | -40.8 | 19.1 | 139.6 | 42.9 | 116.1 | 3.5 | -151.7 | 178.7 | -154.3 |
| Tangential (NS) | -159.2 | -119.3 | 164.4 | -126.2 | 68.1 | -68.4 | 72.6 | -145.7 | 86.3 | 13.4 | 98.5 |

USUD 90

USUD 9018 lon/lat: 138°3620 36°1319

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00668 | .00328 | .00128 | .00094 | .00888 | .00688 | .00319 | .00144 | .00010 | .00032 | .00044 |
| Tangential (EW) | .00218 | .00118 | .00026 | .00031 | .00181 | .00147 | .00058 | .00032 | .00005 | .00010 | .00031 |
| Tangential (NS) | .00190 | .00079 | .00035 | .00025 | .00185 | .00140 | .00066 | .00028 | .00004 | .00012 | .00011 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 72.4 | 87.9 | 87.0 | 93.6 | -134.0 | -153.3 | -133.3 | -159.1 | -7.4 | 43.8 | 101.6 |
| Tangential (EW) | 12.0 | 46.0 | 19.7 | 53.0 | -164.4 | 173.2 | -163.1 | 169.6 | -13.9 | 8.0 | 47.5 |
| Tangential (NS) | -67.0 | -52.9 | -71.3 | -47.4 | 91.3 | 67.9 | 87.0 | 50.6 | 178.5 | -162.8 | -178.8 |

VACAVILL

| VACAVILL | lon/lat: | -121°9588 | 38°3751 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00744 | .00077 | .00172 | .00011 | .01334 | .00831 | .00408 | .00155 | .00028 | .00010 | .00072 |
| Tangential (EW) | .00453 | .00159 | .00083 | .00044 | .00386 | .00250 | .00117 | .00044 | .00012 | .00005 | .00033 |
| Tangential (NS) | .00357 | .00138 | .00082 | .00043 | .00217 | .00126 | .00066 | .00026 | .00001 | .00002 | .00016 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 42.8 | 143.8 | -10.0 | -6.6 | 49.5 | 35.5 | 49.5 | 27.1 | -31.7 | 64.4 | 61.2 |
| Tangential (EW) | -122.6 | -79.9 | -148.2 | -85.4 | -126.3 | -139.7 | -126.1 | -144.3 | 146.4 | 171.2 | -147.9 |
| Tangential (NS) | 103.5 | 113.6 | 84.0 | 110.6 | -175.1 | 174.1 | -175.1 | 164.6 | -165.6 | 146.0 | -117.8 |

VLA

| VLA | lon/lat: | -107°6184 | 34°0791 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00071 | .00143 | .00048 | .00042 | .00572 | .00376 | .00180 | .00074 | .00007 | .00006 | .00021 |
| Tangential (EW) | .00118 | .00020 | .00023 | .00005 | .00215 | .00138 | .00067 | .00025 | .00005 | [illegible] | [illegible] |
| Tangential (NS) | .00173 | .00072 | .00039 | .00022 | .00076 | .00044 | .00024 | .00012 | .00006 | .00005 | [illegible] |
| Phases (deg) | | | | | | | | | | | |
| Radial | 163.3 | -132.2 | -61.2 | -112.2 | 38.4 | 23.8 | 36.8 | 16.0 | -153.2 | [illegible] | [illegible] |
| Tangential (EW) | -174.4 | -126.0 | 146.8 | -161.5 | -135.8 | -152.0 | -136.9 | -160.3 | 130.1 | 166.8 | [illegible] |
| Tangential (NS) | 95.3 | 103.7 | 83.8 | 101.5 | 156.7 | 154.1 | 153.2 | 151.4 | -152.1 | [illegible] | [illegible] |

VNDNBERG

| VANDENBERG | lon/lat: | -120°6164 | 34°5550 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00884 | .00257 | .00271 | .00104 | .01638 | .01022 | .00511 | .00190 | .00023 | .00008 | .00094 |
| Tangential (EW) | .00334 | .00111 | .00059 | .00029 | .00384 | .00244 | .00118 | .00042 | .00010 | .00004 | [illegible] |
| Tangential (NS) | .00462 | .00183 | .00102 | .00056 | .00239 | .00143 | .00076 | .00030 | .00001 | .00002 | .00019 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -10.8 | -61.0 | -45.4 | -53.3 | 42.2 | 27.5 | 42.3 | 18.8 | -66.2 | 177.4 | 66.7 |
| Tangential (EW) | -132.0 | -84.1 | -159.1 | -90.2 | -131.5 | -145.3 | -130.7 | -150.5 | 138.8 | 131.5 | -148.7 |
| Tangential (NS) | 98.7 | 112.6 | 80.7 | 108.9 | -175.5 | 174.6 | -175.8 | 164.7 | -11.2 | 126.9 | [illegible] |

VERNAL

| VERNAL | lon/lat: | -109°5707 | 40°3258 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00238 | .00128 | .00034 | .00028 | .00581 | .00375 | .00183 | .00072 | .00011 | .00003 | .00027 |
| Tangential (EW) | .00250 | .00085 | .00046 | .00022 | .00239 | .00161 | .00074 | .00029 | .00006 | .00004 | .00029 |
| Tangential (NS) | .00184 | .00076 | .00045 | .00023 | .00101 | .00055 | .00031 | .00014 | .00004 | .00004 | .00009 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 102.7 | -169.4 | -2.7 | -148.2 | 44.4 | 30.5 | 43.3 | 23.2 | -1.2 | 24.7 | -4.7 |
| Tangential (EW) | -133.0 | -87.5 | -157.1 | -91.2 | -131.9 | -148.2 | -133.1 | -155.0 | 133.4 | 169.0 | -142.6 |
| Tangential (NS) | 108.3 | 107.7 | 91.6 | 103.9 | 172.2 | 169.1 | 170.1 | 162.2 | -140.4 | -167.8 | -109.6 |

WALA3740

| WALA374037 | lon/lat: | -176°1795 | -13°2652 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .03110 | .00906 | .00797 | .00240 | .00536 | .00337 | .00194 | .00075 | .00101 | .00056 | .00121 |
| Tangential (EW) | .00184 | .00133 | .00049 | .00036 | .00184 | .00108 | .00055 | .00021 | .00002 | .00006 | .00003 |
| Tangential (NS) | .00442 | .00199 | .00057 | .00050 | .00069 | .00014 | .00016 | .00003 | .00005 | .00003 | .00011 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -8.4 | -14.3 | -19.8 | -18.5 | -135.3 | -144.9 | -137.9 | -160.3 | -164.0 | -160.8 | -126.0 |
| Tangential (EW) | 168.0 | 164.6 | 150.3 | 167.6 | 38.1 | 16.7 | 34.7 | -7.4 | -66.6 | -127.2 | 96.1 |
| Tangential (NS) | -87.3 | -38.3 | -110.7 | -40.7 | 25.7 | 40.1 | 9.0 | 120.5 | -136.7 | -152.5 | 107.7 |

WERTHOVN

WERTHOVN lon/lat: 7°1297 50°6166

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00597 | .00179 | .00125 | .00041 | .00213 | .00088 | .00065 | .00003 | .00048 | .00024 | .00013 |
| Tangential (EW) | .00225 | .00064 | .00047 | .00017 | .00034 | .00025 | .00012 | .00003 | .00011 | .00003 | .00005 |
| Tangential (NS) | .00069 | .00030 | .00022 | .00011 | .00030 | .00015 | .00008 | .00003 | .00004 | .00005 | .00011 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -68.8 | -36.0 | -81.8 | -33.2 | -57.6 | -98.3 | -58.9 | -91.1 | 2.2 | -0.3 | -54.4 |
| Tangential (EW) | 81.2 | 116.7 | 58.0 | 110.6 | 100.2 | 27.6 | 89.0 | -5.5 | 162.9 | 119.2 | -129.9 |
| Tangential (NS) | 28.2 | 61.7 | 21.2 | 66.5 | 28.7 | -69.7 | 27.6 | -153.2 | -146.2 | 84.6 | 109.2 |

WSTRBORK

WESTERBORK lon/lat: 6°5917 52°9141

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00464 | .00137 | .00123 | .00033 | .00205 | .00097 | .00063 | .00009 | .00064 | .00039 | .00022 |
| Tangential (EW) | .00192 | .00052 | .00044 | .00013 | .00029 | .00025 | .00011 | .00003 | .00015 | .00006 | .00006 |
| Tangential (NS) | .00123 | .00033 | .00030 | .00014 | .00029 | .00014 | .00007 | .00002 | .00002 | .00011 | .00011 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -56.3 | -26.3 | -65.0 | -9.5 | -59.7 | -87.0 | -60.4 | -55.8 | 2.4 | 18.8 | -51.6 |
| Tangential (EW) | 98.8 | 139.8 | 85.3 | 147.4 | 88.6 | 47.7 | 80.1 | 57.6 | 167.1 | 179.0 | -162.5 |
| Tangential (NS) | 70.4 | 101.9 | 39.0 | 88.6 | 29.4 | -59.2 | 33.4 | -114.1 | -109.3 | 74.0 | 87.7 |

WESTFORD

WESTFORD lon/lat: -71°4881 42°6163

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01024 | .00278 | .00221 | .00078 | .00400 | .00269 | .00129 | .00057 | .00037 | .00021 | .00027 |
| Tangential (EW) | .00421 | .00096 | .00095 | .00026 | .00036 | .00022 | .00010 | .00004 | .00009 | .00004 | .00023 |
| Tangential (NS) | .00225 | .00062 | .00048 | .00017 | .00030 | .00037 | .00009 | .00011 | .00010 | .00008 | .00005 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -175.0 | -151.1 | 168.0 | -157.8 | -5.0 | -3.9 | -3.6 | -1.8 | 13.7 | 66.6 | -176.3 |
| Tangential (EW) | -144.8 | -123.1 | -169.4 | -129.7 | -11.4 | 23.6 | -16.5 | 31.8 | 0.7 | 165.0 | -76.2 |
| Tangential (NS) | -17.6 | 21.3 | -26.6 | 16.0 | -177.5 | -147.7 | -173.2 | -165.0 | -151.4 | -144.7 | -6.4 |

WETB 90

WETB 9019 lon/lat: 12°8783 49°1430

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00494 | .00143 | .00098 | .00033 | .00174 | .00072 | .00054 | .00004 | .00046 | .00026 | .00039 |
| Tangential (EW) | .00220 | .00054 | .00053 | .00016 | .00039 | .00034 | .00017 | .00006 | .00009 | .00004 | .00007 |
| Tangential (NS) | .00078 | .00025 | .00010 | .00006 | .00027 | .00002 | .00005 | .00004 | .00005 | .00003 | .00011 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -67.3 | -36.2 | -86.5 | -36.6 | -59.3 | -100.9 | -61.6 | -125.4 | 7.7 | -6.1 | 3.8 |
| Tangential (EW) | 61.6 | 94.7 | 34.5 | 91.7 | 94.9 | 31.8 | 81.9 | 25.3 | 160.5 | 59.6 | 163.1 |
| Tangential (NS) | -29.4 | 16.8 | -20.1 | 23.3 | 47.9 | -92.0 | 39.7 | 157.9 | -141.4 | 109.0 | 98.7 |

WETTZELL

WETTZELL lon/lat: 12°8774 49°1437

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00494 | .00143 | .00104 | .00034 | .00182 | .00077 | .00056 | .00004 | .00035 | .00020 | .00005 |
| Tangential (EW) | .00182 | .00049 | .00041 | .00015 | .00031 | .00021 | .00012 | .00004 | .00007 | .00004 | .00010 |
| Tangential (NS) | .00046 | .00017 | .00008 | .00006 | .00031 | .00007 | .00008 | .00002 | .00007 | .00004 | .00012 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -69.0 | -38.1 | -86.9 | -35.9 | -58.3 | -101.1 | -59.7 | -112.2 | 5.8 | 0.7 | -61.4 |
| Tangential (EW) | 65.0 | 100.3 | 42.2 | 96.3 | 105.3 | 20.5 | 87.9 | -7.6 | 161.2 | 70.2 | 157.6 |
| Tangential (NS) | -27.6 | 23.2 | -7.7 | 37.5 | 24.9 | -64.8 | 23.6 | 164.8 | -151.5 | 134.3 | 121.4 |

WHTHORSE

WHITEHORSE lon/lat: -135°0770 60°7102

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .01223 | .00454 | .00198 | .00114 | .00749 | .00483 | .00239 | .00089 | .00083 | .00056 | .00088 |
| Tangential (EW) | .00298 | .00153 | .00055 | .00045 | .00181 | .00142 | .00058 | .00028 | .00010 | .00008 | .00024 |
| Tangential (NS) | .00470 | .00154 | .00083 | .00040 | .00266 | .00159 | .00083 | .00029 | .00013 | .00014 | .00028 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 98.1 | 138.0 | 74.6 | 133.5 | 81.5 | 70.7 | 80.4 | 63.2 | 11.9 | 23.2 | 52.6 |
| Tangential (EW) | -89.9 | -58.6 | -108.8 | -59.3 | -80.2 | -98.9 | -83.1 | -101.2 | 167.4 | -160.2 | -166.4 |
| Tangential (NS) | -99.7 | -55.5 | -119.9 | -58.1 | -117.8 | -130.9 | -118.9 | -141.4 | 148.6 | -143.3 | -117.7 |

XRISOK75

XRISOK7525 lon/lat: 21°8776 36°7902

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00398 | .00114 | .00082 | .00028 | .00072 | .00039 | .00024 | .00004 | .00013 | .00015 | .00028 |
| Tangential (EW) | .00202 | .00045 | .00051 | .00012 | .00031 | .00007 | .00011 | .00004 | .00003 | .00004 | .00005 |
| Tangential (NS) | .00118 | .00025 | .00019 | .00006 | .00055 | .00027 | .00014 | .00007 | .00010 | .00006 | .00011 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -69.2 | -46.1 | -90.4 | -49.1 | -90.1 | -114.1 | -94.9 | -107.9 | 1.5 | -2.4 | 43.3 |
| Tangential (EW) | 33.4 | 49.8 | 13.0 | 56.4 | 151.1 | 112.3 | 126.8 | 122.8 | 165.3 | 35.7 | -124.4 |
| Tangential (NS) | -76.3 | -32.7 | -109.2 | -45.4 | 55.8 | 74.4 | 56.8 | 98.0 | -137.6 | 171.8 | 130.4 |

YAKATAGA

YAKATAGA lon/lat: -142°4864 60°0804

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .02460 | .00890 | .00438 | .00232 | .01319 | .00838 | .00425 | .00154 | .00105 | .00088 | .00133 |
| Tangential (EW) | .00162 | .00114 | .00032 | .00035 | .00146 | .00118 | .00048 | .00026 | .00009 | .00006 | .00023 |
| Tangential (NS) | .00867 | .00305 | .00162 | .00082 | .00447 | .00272 | .00143 | .00050 | .00021 | .00024 | .00043 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 101.0 | 137.4 | 78.1 | 133.3 | 87.4 | 75.1 | 85.7 | 67.3 | 5.1 | 31.7 | 54.2 |
| Tangential (EW) | -69.8 | -52.3 | -80.9 | -50.4 | -56.9 | -79.8 | -60.2 | -81.3 | 168.2 | -155.7 | -179.0 |
| Tangential (NS) | -87.6 | -49.4 | -108.7 | -52.1 | -106.4 | -119.7 | -107.9 | -128.8 | 154.2 | -144.1 | -123.8 |

YAR1 90

YAR1 lon/lat: 115°3470 -29°0455

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00412 | .00141 | .00077 | .00025 | .00826 | .00658 | .00272 | .00128 | .00015 | .00051 | .00136 |
| Tangential (EW) | .00178 | .00080 | .00047 | .00020 | .00138 | .00089 | .00045 | .00019 | .00004 | .00013 | .00039 |
| Tangential (NS) | .00249 | .00080 | .00062 | .00019 | .00068 | .00074 | .00020 | .00013 | .00005 | .00011 | .00021 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 169.0 | -107.0 | 95.0 | -108.5 | 12.9 | 6.5 | 13.6 | -3.3 | -139.7 | -129.5 | -60.8 |
| Tangential (EW) | -143.7 | -99.9 | -155.8 | -97.3 | 144.7 | 146.1 | 143.5 | 122.3 | 34.7 | 31.0 | 99.5 |
| Tangential (NS) | -146.9 | -104.5 | -163.8 | -102.5 | -63.7 | -106.3 | -71.9 | -139.9 | -125.8 | 121.3 | 133.4 |

YARAGA70

YARAGA7090 lon/lat: 115°3467 -29°0454

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00412 | .00141 | .00077 | .00025 | .00826 | .00659 | .00272 | .00128 | .00015 | .00051 | .00136 |
| Tangential (EW) | .00178 | .00080 | .00047 | .00020 | .00138 | .00089 | .00045 | .00019 | .00004 | .00013 | .00039 |
| Tangential (NS) | .00249 | .00080 | .00062 | .00019 | .00068 | .00074 | .00020 | .00013 | .00005 | .00011 | .00021 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | 169.0 | -107.0 | 95.0 | -108.5 | 12.9 | 6.5 | 13.6 | -3.3 | -139.7 | -129.5 | -60.8 |
| Tangential (EW) | -143.7 | -99.9 | -155.8 | -97.3 | 144.7 | 146.1 | 143.5 | 122.3 | 34.7 | 31.0 | 99.5 |
| Tangential (NS) | -146.9 | -104.5 | -163.8 | -102.5 | -63.7 | -106.3 | -71.9 | -139.9 | -125.8 | 121.3 | 133.4 |

YELA5140

YELA514051 lon/lat: -114°.4801 62°.4799

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00536 | .00197 | .00078 | .00048 | .00351 | .00221 | .00119 | .00042 | .00069 | .00037 | .00055 |
| Tangential (EW) | .00297 | .00118 | .00055 | .00034 | .00149 | .00118 | .00050 | .00023 | .00005 | .00006 | .00022 |
| Tangential (NS) | .00152 | .00028 | .00023 | .00006 | .00086 | .00046 | .00026 | .00009 | .00005 | .00006 | .00012 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 104.8 | 147.0 | 76.8 | 145.1 | 61.2 | 52.7 | 60.4 | 46.3 | 18.8 | 6.7 | 22.2 |
| Tangential (EW) | -117.6 | -75.2 | -140.3 | -77.3 | -102.1 | -122.9 | -105.0 | -129.3 | 165.5 | -173.5 | -142.4 |
| Tangential (NS) | -121.4 | -55.7 | -141.6 | -49.8 | -142.9 | -159.7 | -145.9 | 179.2 | 124.5 | -133.6 | -98.7 |

YELL 90

YELL 9021 lon/lat: -114°.4807 62°.4799

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00536 | .00197 | .00078 | .00048 | .00351 | .00221 | .00119 | .00042 | .00069 | .00037 | .00055 |
| Tangential (EW) | .00297 | .00118 | .00055 | .00034 | .00149 | .00118 | .00050 | .00023 | .00005 | .00006 | .00022 |
| Tangential (NS) | .00152 | .00028 | .00023 | .00006 | .00086 | .00046 | .00026 | .00009 | .00005 | .00006 | .00012 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 104.8 | 147.0 | 76.8 | 145.1 | 61.2 | 52.7 | 60.4 | 46.3 | 18.8 | 6.7 | 22.2 |
| Tangential (EW) | -117.6 | -75.2 | -140.3 | -77.3 | -102.1 | -122.9 | -105.0 | -129.3 | 165.5 | -173.5 | -142.4 |
| Tangential (NS) | -121.4 | -55.7 | -141.6 | -49.8 | -142.9 | -159.7 | -145.9 | 179.2 | 124.5 | -133.6 | -98.7 |

YELLOWKN

YELLOWKNIFE lon/lat: -114°.4723 62°.4794

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00545 | .00202 | .00077 | .00048 | .00363 | .00226 | .00117 | .00044 | .00051 | .00029 | .00026 |
| Tangential (EW) | .00244 | .00097 | .00041 | .00028 | .00133 | .00099 | .00042 | .00019 | .00005 | .00005 | .00015 |
| Tangential (NS) | .00134 | .00028 | .00021 | .00006 | .00087 | .00051 | .00027 | .00010 | .00006 | .00007 | .00012 |
| Phases (deg) | | | | | | | | | | | |
| Radial | 104.2 | 147.0 | 76.5 | 144.2 | 61.2 | 52.5 | 60.4 | 45.1 | 19.1 | 9.9 | -143.3 |
| Tangential (EW) | -114.4 | -69.6 | -138.5 | -73.2 | -93.1 | -112.5 | -95.0 | -119.1 | 169.5 | -172.4 | -136.9 |
| Tangential (NS) | -118.7 | -54.1 | -143.0 | -53.5 | -138.5 | -152.9 | -139.5 | -169.1 | 162.9 | -143.2 | -101.0 |

YIGILC75

YIGILC7587 lon/lat: 31°.4388 40°.9358

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00317 | .00088 | .00066 | .00021 | .00065 | .00054 | .00023 | .00008 | .00017 | .00022 | .00036 |
| Tangential (EW) | .00191 | .00040 | .00049 | .00010 | .00038 | .00018 | .00014 | .00004 | .00005 | .00001 | .00006 |
| Tangential (NS) | .00104 | .00014 | .00018 | .00004 | .00066 | .00035 | .00017 | .00006 | .00010 | .00006 | .00013 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -62.1 | -34.8 | -86.8 | -34.8 | -101.3 | -121.9 | -106.7 | -131.2 | 17.6 | 6.0 | 48.1 |
| Tangential (EW) | 21.2 | 42.5 | 2.9 | 48.9 | 127.5 | 69.5 | 113.6 | 81.7 | -174.9 | 13.6 | -113.0 |
| Tangential (NS) | -93.1 | -56.6 | -131.3 | -69.5 | 45.2 | 44.6 | 42.4 | 56.1 | -145.9 | 172.0 | 123.5 |

YOZGAT75

YOZGAT7585 lon/lat: 34°.8130 39°.7993

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amplitudes (m) | | | | | | | | | | | |
| Radial | .00297 | .00083 | .00062 | .00021 | .00060 | .00055 | .00022 | .00010 | .00014 | .00022 | .00036 |
| Tangential (EW) | .00190 | .00041 | .00048 | .00009 | .00040 | .00019 | .00014 | .00005 | .00005 | .00001 | .00007 |
| Tangential (NS) | .00103 | .00011 | .00020 | .00003 | .00076 | .00043 | .00020 | .00007 | .00010 | .00006 | .00014 |
| Phases (deg) | | | | | | | | | | | |
| Radial | -60.1 | -32.7 | -85.7 | -32.8 | -123.9 | -130.1 | -127.1 | -138.4 | 21.3 | 7.1 | 50.6 |
| Tangential (EW) | 14.7 | 36.0 | -2.3 | 41.3 | 129.0 | 76.6 | 117.1 | 88.2 | -168.9 | -13.4 | -103.6 |
| Tangential (NS) | -100.0 | -74.6 | -138.3 | -85.2 | 42.7 | 40.9 | 39.7 | 44.6 | -146.3 | 171.5 | 124.1 |

YUMA

YUM YUMA lon/lat: -114°2031 32°9380

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00231 | .00204 | .00119 | .00072 | .00881 | .00564 | .00275 | .00108 | .00013 | .00011 | .00037 |
| Tangential (EW) | .00180 | .00047 | .00032 | .00010 | .00321 | .00207 | .00100 | .00036 | .00007 | .00003 | .00032 |
| Tangential (NS) | .00329 | .00130 | .00072 | .00040 | .00147 | .00086 | .00047 | .00021 | .00001 | .00002 | .00012 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -61.7 | -100.5 | -69.2 | -86.7 | 40.4 | 25.4 | 39.0 | 16.8 | -126.1 | -173.8 | 34.5 |
| Tangential (EW) | -159.0 | -105.3 | 169.7 | -116.4 | -138.2 | -153.4 | -139.1 | -159.8 | 124.3 | 132.4 | -145.8 |
| Tangential (NS) | 92.4 | 107.8 | 77.4 | 104.0 | 173.5 | 169.2 | 171.8 | 162.5 | -89.7 | 171.4 | -126.8 |

ZIMRWA78

ZIMRWA7810 lon/lat: 7°4652 46°8760

| | $M_2$ | $S_2$ | $N_2$ | $K_2$ | $K_1$ | $O_1$ | $P_1$ | $Q_1$ | $M_f$ | $M_m$ | $S_{sa}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <u>Amplitudes (m)</u> | | | | | | | | | | | |
| Radial | .00648 | .00196 | .00128 | .00046 | .00189 | .00062 | .00058 | .00001 | .00044 | .00021 | .00039 |
| Tangential (EW) | .00276 | .00075 | .00062 | .00022 | .00037 | .00031 | .00017 | .00005 | .00009 | .00007 | .00007 |
| Tangential (NS) | .00111 | .00039 | .00018 | .00009 | .00021 | .00009 | .00004 | .00006 | .00004 | .00003 | .00009 |
| <u>Phases (deg)</u> | | | | | | | | | | | |
| Radial | -71.4 | -41.2 | -89.2 | -43.9 | -60.7 | -102.9 | -63.1 | 122.0 | 0.6 | -24.2 | -16.8 |
| Tangential (EW) | 69.6 | 101.4 | 42.9 | 96.6 | 92.6 | 19.1 | 78.1 | 9.5 | 150.2 | 56.1 | 137.0 |
| Tangential (NS) | -22.9 | 16.9 | -19.6 | 22.5 | 42.0 | -143.3 | 27.7 | 163.4 | -122.6 | 100.2 | 101.5 |

## Atmospheric Loading

The procedure described below is taken from the publication of Sovers and Fanselow (1987). A time varying atmospheric pressure distribution can induce crustal deformation. Rabbel and Schuh (1986) estimate the effects of atmospheric loading on VLBI baseline determinations, and conclude that they may amount to many millimeters of seasonal variation. In contrast to ocean tidal effects, analysis of the situation in the atmospheric case does not benefit from the presence of a well-understood periodic driving force. Otherwise, estimation of atmospheric loading via Green's function techniques is analogous to methods used to calculate ocean loading effects. Rabbel and Schuh recommend a simplified form of the dependence of the vertical crustal displacement on pressure distribution. It involves only the instantaneous pressure at the site in question, and an average pressure over a circular region C with a 2000 km radius surrounding the site. The expression for the vertical displacement (mm) is

$$\Delta r = -0.35p - 0.55\bar{p}, \qquad (1)$$

where p is the local pressure anomaly with respect to the standard pressure of 101.3 kPA (equivalent to 1013 mbar), and $\bar{p}$ the pressure anomaly within the 2000 km circular region mentioned above. Both quantities are in $10^{-1}$ kPA (equivalent to mbar). Note that the reference point for this displacement is the site location at standard pressure. Equation (1) permits one to estimate the seasonal displacement due to the large-scale atmospheric loading with an error less than ±1 mm (Rabbel and Schuh, 1986).

An additional mechanism for characterizing $\bar{p}$ may be applied. The two-dimensional surface pressure distribution surrounding a site is described by

$$p(x,y) = A_0 + A_1x + A_2y + A_3x^2 + A_4xy + A_5y^2, \qquad (2)$$

where x and y are the local East and North distances of the point in question from the VLBI site. The pressure anomaly $\bar{p}$ may be evaluated by the simple integration

$$\bar{p} = \iint_C dx\,dy\,p(x,y) \;/\; \iint_C dx\,dy \qquad (3)$$

giving

$$\bar{p} = A_0 + (A_3 + A_5)R^2/4, \qquad (4)$$

where $R^2=(x^2 + y^2)$.

It remains the task of the data analyst to perform a quadratic fit to the available weather data to determine the coefficients $A_{0\text{-}5}$. Van Dam and Wahr (1987) computed the displacements due to atmospheric loading by performing a convolution sum between barometric pressure data and the mass loading Green's Function. They found that the corrections based on Eq. (1) are inadequate for stations close to the coast. For these coastal stations, Eq.(1) can be improved by extending the regression equation.

Finally, the dynamical reaction of the ocean to air pressure changes are not taken into account. The assumption of an inverted barometer ocean is not appropriate for the short-period variations of the air pressure.

## References


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