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GLOBAL OCEAN TIDES. PART VI. THE SEMIDIURNAL ELLIPTICAL LUNAR T--ETC(U)

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1° x 1° grid system in an atlas of 42° x 71° overlapping charts covering the whole oceanic globe. A corresponding atlas of global corange and cotidal maps is included to provide the reader with a quick general overview of the major tidal phenomena. The specifying hydrodynamical parameters of the model are listed along with quoted sources of empirical tide data, and significant tidal features are explained and discussed. The semidiurnal N_2 ocean tide is found to resemble closely the semidiurnal M_2 and S_2 tides (compare Parts II and III). As mentioned in Parts II, III, IV, and V only qualitative similarities are displayed between the semidiurnal and diurnal ocean tides.

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FOREWORD

In Part I of this report (Schwiderski, 1978a), a combined hydrodynamical-empirical method was introduced to compute numerically harmonic partial tides in the world oceans with an accuracy of better than 5 cm, which is needed in various military and civil applications of today. In this report, the computed semidiurnal elliptical lunar tide (N_2) is displayed in an atlas of tabulated tidal charts and plotted corange and cotidal maps.

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ABSTRACT

In Part I (Schwiderski, 1978a) of this report, a unique hydrodynamical interpolation technique was introduced, extensively tested, and evaluated in order to compute partial global ocean tides in great detail and with a high degree of accuracy. This novel method has been applied to construct the semidiurnal elliptical lunar (N_2) ocean tide with a relative accuracy of better than 5 cm anywhere in the open oceans. The resulting tidal amplitudes and phases are tabulated on a $1^\circ \times 1^\circ$ grid system in an atlas of $42^\circ \times 71^\circ$ overlapping charts covering the whole oceanic globe. A corresponding atlas of global corange and cotidal maps is included to provide the reader with a quick general overview of the major tidal phenomena. The specifying hydrodynamical parameters of the model are listed along with quoted sources of empirical tide data, and significant tidal features are explained and discussed. The semidiurnal N_2 ocean tide is found to resemble closely the semidiurnal M_2 and S_2 tides (compare Parts II and III). As mentioned in Parts II, III, IV, and V only qualitative similarities are displayed between the semidiurnal and diurnal ocean tides.

1. INTRODUCTION

Part I of this report (Schwiderski, 1978a) introduced a unique combination of hydrodynamical and empirical methods to model detailed ocean tides with a relative component accuracy of better than 5 cm anywhere in the open oceans. This enormous accuracy is well above minimum requirements set by, for instance, the National Aeronautics and Space Administration (NASA) and the Department of Defense (DoD) – to map the geoid at sea by satellite altimetry to within 10 cm. The following features of this unique hydrodynamical interpolation model made the achievement of this accuracy possible.

a. A spherically graded $1^\circ \times 1^\circ$ grid system is set up in connection with a corresponding $1^\circ \times 1^\circ$ bathymetry to assure a sufficient resolution of all important tidal phenomena.

b. The bathymetry of the gridwise, simply connected ocean basin is hydrodynamically defined (Schwiderski, 1978c) by appropriate modifications of earlier realistic depth data collections. The hydrodynamical redefinition was needed in order to model the well-known strong distortion and retardation effects of shallow continental shelves, narrow ocean ridges or island chains, and other significant bottom irregularities.

c. The Boussinesq substitution of the turbulent Reynolds stresses is applied in the form of eddy dissipation with a novel physically meaningful eddy viscosity that depends linearly on the lateral grid-cell area and, hence, directly on the ocean depth.

d. The linear law of bottom friction is introduced with a bottom-friction coefficient depending linearly on the bottom grid-cell area which is independent of the ocean depth. In boundary cells, the otherwise constant friction coefficient is subjected to an indirect cellwise adjustment in order to permit a consistent hydrodynamical interpolation (see h., below) of empirical tide data known from tide gauge stations at continental shores, islands, or other shallow-ocean bottom irregularities.

e. The effects of the terrestrial tide and the oceanic tidal load are included as simple second-order approximations in the sense of Love and Accad and Pekeris (1978).

f. The Hansen-Zahel (Zahel, 1970 and 1977; Estes, 1977) finite differencing technique is modified by a new differencing scheme in time which improved decay, dispersion, and stability characteristics of the numerical procedure and facilitates the simple indirect adjustment of the bottom-friction coefficient in the hydrodynamical interpolation technique (see d. and h.).

g. At land-ocean cell walls, the conditions of no-flow across and free-slip along the boundaries are enforced. The no-flow condition is subsequently relaxed by allowing controlled periodic inflows and outflows over the mathematically assumed boundaries. This allowance redefines indirectly more realistic shorelines in order to further improve the consistency of the hydrodynamical interpolation of empirical data (see d. and h.).

h. A unique hydrodynamical interpolation technique is introduced which incorporates into the theoretical model empirical tidal constants collected from over 2 000 tide-gauge stations around the world in a hydrodynamically consistent fashion (see d., f., and g., above).

i. A new higher order approximation of Arctic Ocean tides is used, that is described in Schwiderski (1981d).

With these features, the new model was successfully applied to chart the semidiurnal principal lunar (M_2) ocean tide with the desired accuracy. The technique and accuracy of the model were extensively described and discussed in Part 1 of this report as well as in subsequent journal publications and symposia presentations by the author (Schwiderski 1978a, b; 1979a, b, c, d, e; and 1980).

The same hydrodynamical interpolation technique has been applied to chart the semidiurnal elliptical lunar (N_2) ocean tide with the same relative accuracy as M_2 . Again, it must be emphasized that the enormous accuracy achieved over all open ocean regions diminishes somewhat near coastal areas where known empirical data are marginal in quantity and/or quality.

A complete listing of all sources of empirical ocean tide data, which were interpolated into the N_2 tidal charts, is presented in Appendix A. In the meantime, Section 2 of this report lists the significant hydrodynamical input parameters that specified the constructed N_2 ocean tide. The major features of the global N_2 tide are discussed in Section 3. A complete numerical display is presented in Appendix A where all tidal amplitudes and phases are gridwise tabulated in map-like charts. Corange (equi-amplitude) and cotidal (equi-phase) maps of the N_2 ocean tide are plotted in Appendix B.

2. N₂ OCEAN-TIDE PARAMETERS

The astronomical semidiurnal elliptical lunar (N₂) equilibrium tide η (or tide-generating potential $G\eta$; see Schwiderski, 1978a) at the geographical point (λ, ϕ) and instant (Y, D, t) is determined by

$$\eta = K \cos^2 \phi \cos(\sigma t + \chi + 2\lambda) \quad (1)$$

where

$G = 9.81 \text{ m/sec}^2$ earth gravity acceleration

λ = longitude (east in rad)

ϕ = latitude (north in rad)

$Y (\geq 1975)$ = year number

D = day number of year Y ($D = 1$ for January 1)

t = universal standard time of day D (in sec)

$K = 0.046398 \text{ m} = M_2$ equilibrium tide amplitude

$\sigma = 1.37880 \cdot 10^{-4} \text{ sec}^{-1} = M_2$ tide frequency

$\chi = \pi (2h_o - 3s_o + p_o)/180 = M_2$ astronomical argument (in rad)

$h_o \begin{cases} = 279.696\,68 + 36\,000.768\,930\,485T + 3.03 \cdot 10^{-4} T^2 \\ = \text{mean longitude of the sun relative to Greenwich midnight of day } D \text{ (in deg)} \end{cases}$

$s_o \begin{cases} = 270.434\,358 + 481\,267.883\,141\,37T - 0.001\,133T^2 + 1.9 \cdot 10^{-6} T^3 \\ = \text{mean longitude of the moon relative to Greenwich midnight of day } D \text{ (in deg)} \end{cases}$

$p_o \begin{cases} = 334.329\,653 + 4069.034\,032\,9575T - 0.010325T^2 - 1.2 \cdot 10^{-5} T^3 \\ = \text{mean longitude of lunar perigee at Greenwich midnight to day } D \text{ (in deg)} \end{cases}$

$T = [27\,392.500\,528 + 1.000\,000\,035\,6\bar{D}]/36\,525$

$\bar{D} = D + 365(Y - 1975) + \text{Int}[(Y - 1973)/4]$

$\text{Int}[x]$ = integral part of x

The corresponding instantaneous ocean partial tide (Schwiderski, 1978a) is determined by

$$\zeta = \xi \cos(\sigma t + \chi - \delta), \quad (2)$$

where the local harmonic constants

$\xi = \xi(\lambda, \phi) = N_2$ ocean tide amplitude (in m)

and

$\delta = \delta(\lambda, \phi) = N_2$ ocean tide Greenwich phase (in rad)

must be determined, say, by linear interpolation in the tidal charts of Appendix A.

A simple second-order approximation in the sense of Love and Accad and Pekeris (see Part I, Schwiderski, 1978a, 1979c, and 1980; and Accad and Pekeris, 1978) yields

$$\zeta^e \approx 0.612\eta \text{ and } \zeta^{eo} \approx -0.0667\zeta, \quad (3)$$

i.e., the corresponding terrestrial tide ζ^e and the earth dip ζ^{eo} (yielding) under the oceanic tidal load ζ , respectively. A more elaborate and probably slightly more accurate earth dip ζ^{eo} may be computed by using Farrell's Green function (see Farrell, 1972 and 1973; and Schwiderski, 1980). In linear superposition, one finds the corresponding instantaneous geocentric partial N_2 tide:

$$\zeta^g = \zeta + \zeta^e + \zeta^{eo}. \quad (4)$$

A detailed description of the hydrodynamical-empirical model to compute the ocean tidal amplitudes ξ and phases δ (listed in Appendix A) was given in Schwiderski (1978a, 1979c, d, and 1980). In particular, all model input parameters such as the dimensionless eddy coefficient ϵ (Eq's. 103 and 123), the bottom-friction parameter b (Eq's. 4a and b), and the differencing parameters κ and $\bar{\kappa}$ (Eq's. 64 and 72) were all specified in Schwiderski (1978a) (referenced equations). These parameters were determined for M_2 by extensive trial-and-error computations and remained unchanged for the construction of N_2 .

In the computation of the N_2 tide model, the following mode-dependent parameters were used (see referenced equations in Schwiderski, 1978a):

- a. The time step Δt (Eq's. 64, 123)

$$\Delta t = 189.8748 \text{ sec} \quad (5)$$

- b. The hydrodynamical interpolation control limits, k_1 , k_2 , and k_3 (Eq's. 88, 89, 94, 97, and 99)

$$k_1 = 0.045, k_2 = 0.045, k_3 = 0.5. \quad (6)$$

It may be noted that the input parameters k_1 and k_2 of Equation 6 are the same as for the semidiurnal M_2 and S_2 components, but different from those values used for the diurnal K_1 and O_1 species (see Parts II, III, IV, and V).

3. N_2 OCEAN-TIDE FEATURES

The entire constructed N_2 ocean tide is gridwise displayed in map-like amplitude and phase tables in Appendix A. The $42^\circ \times 71^\circ$ charts cover the whole globe north of colatitude 169° (Antarctica) in three zones: a northern zone N from 0° to 71° colatitude, a middle zone M from 48° to 118° colatitude, and a southern zone S from 98° to 168° colatitude. The overlapping geographical areas of the tidal charts have been chosen to provide a worldwide coverage for special applications and to allow the reader to scan the large amplitude and phase charts together in order to evaluate their quality and visualize the important tidal features. In addition, a generally superficial overview of some tidal features can be recognized by inspecting the more schematically plotted corange and cotidal maps provided in Appendix B.

For an easy evaluation of the tidal charts in Appendix A, all hydrodynamically interpolated empirical tidal amplitudes and phases have been visibly marked by subbars for all shore data and subbrackets for all near-shore deep-sea input constants. Furthermore, the charts display the approximate locations of distant off-shore deep-sea stations by subtildes under the computed amplitude and phase data. The corresponding empirical data, which were excluded from hydrodynamical interpolation (see Sect. 1 and Schwiderski, 1978a, 1979d, and 1980), are listed and compared with the modeled data in Tables 1, 2, and 3. Finally, the approximate geographical locations of the important amphidromic points of zero amplitudes are marked by a circled $\otimes$.

The tidal charts and maps permit the viewer to follow the tidal waves, that is the high water fronts (crests), in forward (or backward) direction, for instance, on their rotation around the amphidromic points. In the tidal phase charts of Appendix A, it is best to start from the prominently visible $0^\circ = 360^\circ$ or 100° cotidal lines. Since the Greenwich phases specify the time lags (in degrees: $30^\circ \approx 1$ hour) of the tidal crests relative to the cresting time of the corresponding equilibrium tide along Greenwich meridian, one gathers a vivid impression of the significant global and local tidal phenomena.

By following the tidal waves on their periodic rotations, one finds these waves passing through the specially marked stations in empirically correct time and with the correct height. In fact, all over the globe over 2 000 tidal phases and 2 000 amplitudes are coherently integrated. This is particularly impressive for the charts of the Pacific Ocean, where the empirical data from so many clustered and scattered island stations fit smoothly into the surrounding computed tides. From the smoothness features of erratically interpolated tidal data (see Parts I and II), one concludes that this result is not an artifact of the interpolation applied but constitutes a vivid manifestation of the excellent compatibility of both the empirical and hydrodynamical procedures combined.

On the basis of this observation, it can again (see Schwiderski, 1978a, b; 1979a, b, d, e; 1980, and 1981a, b, c) be estimated that the N_2 tidal charts permit a tide prediction with a uniform accuracy relative to M_2 of better than 5 cm anywhere in the open oceans. Naturally, near rough ocean basin reliefs (e.g., Arctic and Antarctic shores), where empirical tide (and depth) data

are marginal in quality and quantity, a somewhat lesser accuracy must be expected. The estimated accuracy of the computed N_2 tide is, of course, fully validated by all 32 empirical tide data from distant off-shore deep-sea tide gauge stations, which are listed along with the computed data in Tables 1, 2, and 3. The differences (not necessarily errors) range from 0 to 2 cm in amplitudes and 0° to 17° (36 minutes) in phases and thus verify the estimated prediction accuracy. In this connection one may recall the accuracy evaluation of the deep-sea empirical data presented in Part IV of this report.

Table 1. North Atlantic Ocean Deep-Sea Empirical and Modeled N_2 Tides

LONG W	LAT N	EMP ξ	MOD ξ	$\Delta\xi$	EMP δ	MOD δ	$\Delta\delta$	IAPSO NR	SOURCES
13°51'	58°16'	16	17	+1	145	152	+7	1.1.37	C
24°43'	62°50'	18	18	0	157	166	+9	1.1.29	C
28°46'	60°12'	14	15	+1	160	173	+13	1.1.30	C
29°58'	57°01'	10	11	+1	152	169	+17	1.1.31	C
30°10'	53°39'	8	6	-2	132	146	-14	1.1.32	C
25°06'	53°31'	11	10	-1	123	128	+5	1.1.33	C
20°00'	53°39'	15	14	-1	120	123	+3	1.1.34	C
28°11'	48°45'	9	7	-2	90	82	-8	1.1.38	C
28°09'	45°21'	10	9	-1	69	62	-7	1.1.39	C
27°57'	41°25'	11	11	0	56	53	-3	1.1.40	C
20°05'	37°09'	15	14	-1	48	47	-1	1.1.41	C
14°15'	36°41'	19	18	-1	51	46	-5	1.1.42	C
75°38'	32°42'	9	10	+1	339	341	+2	1.2. 3	C, M
76°25'	30°26'	11	10	-1	336	342	+6	1.2.11	C, P
76°48'	28°27'	10	10	0	344	346	+2	1.2.15	C
76°47'	28°01'	10	10	0	352	346	-6	1.2.14	C
67°32'	28°14'	8	8	0	338	341	+3	1.2. 5	C, Z
69°45'	28°08'	8	8	0	340	342	+2	1.2. 4	C, Z
69°40'	27°59'	8	8	0	336	344	+8	1.2. 8	C, Z
69°40'	27°58'	8	8	0	339	344	+5	1.2. 7	C, Z
69°20'	26°28'	8	7	-1	342	346	+4	1.2.10	C, Z
69°19'	26°27'	7	7	0	336	346	+10	1.2. 9	C, Z

ξ = Amplitudes (cm)

δ = Greenwich Phases (deg)

IAPSO = Int. Assoc. for the Phys. Sci. of the Oceans

C = Cartwright et al. (1979)

M = Moffield (1975)

P = Pearson (1975)

Z = Zetler et al. (1975)

Table 2. Northeastern Pacific Ocean Deep-Sea Empirical and Modeled N_2 Tides

LONG W	LAT N	EMP ξ	MOD ξ	$\Delta\xi$	EMP δ	MOD δ	$\Delta\delta$	IAPSO NR	SOURCES
144°22'	56°08'	20	20	0	258	259	+1	2.1.17	C
135°38'	53°19'	19	20	+1	251	243	-8	2.1.16	C
132°47'	49°35'	20	19	-1	231	228	-3	2.1.15	C
145°00'	34°00'	—	4	—	—	251	—	—	—
145°00'	34°00'	—	4	—	—	251	—	—	—
124°26'	27°45'	7	7	0	100	115	+15	2.1.13	C, M
129°01'	24°47'	5	5	0	77	86	+9	2.1.10	C, M

ξ = Amplitudes (cm)

δ = Greenwich Phases (deg)

IAPSO = Int. Assoc. for the Phys. Sci. of the Oceans

C = Cartwright et al. (1979)

M = Munk et al. (1970)

Table 3. Southeast Indian Ocean Deep-Sea Empirical and Modeled N_2 Tides

LONG E	LAT S	EMP ξ	MOD ξ	$\Delta\xi$	EMP δ	MOD δ	$\Delta\delta$	IAPSO NR	SOURCES
132°01'	37°01'	3	2	-1	167	156	-11	4.1. 1	C, IS
132°09'	50°02'	2	1	-1	79	80	+1	4.1. 2	C, IS
132°07'	60°01'	4	3	-1	63	72	+9	4.1. 3	C, IS

ξ = Amplitudes (cm)

δ = Greenwich Phases (deg)

IAPSO = Int. Assoc. for the Phys. Sci. of the Oceans

C = Cartwright et al. (1979)

IS = Irish and Snodgrass (1972)

From the tidal charts and maps in Appendixes A and B, one concludes that the rotating tidal waves of the semidiurnal N_2 tide resemble closely those of the semidiurnal M_2 and S_2 tides (compare Parts II and III). There is also a qualitative similarity to the diurnal K_1 and O_1 tides (see Parts IV and V). However, the distribution of the amphidromic systems between the diurnal and semidiurnal species varies considerably.

4. CONCLUSIONS

The hydrodynamical interpolation technique has been applied to construct the semidiurnal elliptical lunar tide (N_2) with a relative accuracy of better than 5 cm anywhere in the open oceans. The constructed tide is displayed by tabulated charts in Appendix A and by corange and cotidal maps in Appendix B. The major features of the N_2 tide are discussed in Section 3. A comparison with the earlier computed semidiurnal M_2 and S_2 tides reveals close similarities. However, only qualitative similarities exist between the semidiurnal and diurnal species as K_1 and O_1 .

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APPENDIX A

**ATLAS OF $1^{\circ} \times 1^{\circ} N_2$ OCEAN TIDE AMPLITUDE
AND PHASE CHARTS FOR $42^{\circ} \times 71^{\circ}$ AREAS**

APPENDIX A

ATLAS OF $1^\circ \times 1^\circ N_2$ OCEAN TIDE AMPLITUDE AND PHASE CHARTS FOR $42^\circ \times 71^\circ$ AREAS

1. GUIDE TO TIDAL CHARTS

M	= m: Longitude Number
N	= n: Colatitude Number
λ_m	= $(m - 0.5)^\circ$: Geographical Longitude East
θ_n	= $(n - 0.5)^\circ$: Geographical Colatitude
$\xi_{m,n}$	= $\xi(\lambda_m, \theta_n)$: Amplitude (in cm)
$\delta_{m,n}$	= $\delta(\lambda_m, \theta_n)$: Greenwich Phases (in deg.; $30^\circ \approx 1$ h)
x	= Amphidromic Points
—	= Subbars Mark Empirical Input Data at Shore Stations
┌	= Subbrackets Mark Empirical Input Data at Near-Shore Deep-Sea Stations
~	= Subtildes Mark Approximately Distant Offshore Deep-Sea Stations with Excluded Empirical Tide Data Listed in Tables 1, 2, and 3

2. SOURCES OF EMPIRICAL TIDE DATA

Publications:

National Ocean Survey (1942), British Admiralty (1977), International Hydrographic Bureau (1978), Defant (1961), Miyazaki et al. (1967), Nowroozi et al. (1969), Munk et al. (1970), Zahel (1970), Irish et al. (1971), Irish and Snodgrass (1972), Nowroozi (1972), Luther and Wunsch (1975), Mofjeld (1975), Pearson (1975), Zetler et al. (1975), Cartwright et al. (1979), and Pugh (1979).

Private Communications:

D. C. Simpson (1977), National Ocean Survey, Rockville, Maryland; S. K. Gill and D. L. Porter (1978), National Ocean Survey, Rockville, Maryland; K. Wyrski (1978), University of Hawaii, Honolulu, Hawaii, and D. E. Cartwright and D. Pugh (1978), Institute of Oceanographic Sciences, Bidston Observatory, U.K.

TABLE 1N: $1^{\circ} \times 1^{\circ}$ N₂ OCEAN TIDE AMPLITUDES ξ (CM)[illegible]

EUROPEAN USSR

NORWAY

33	22	9	3	2	$\frac{1}{2}$	2
34	21	16	5	1	1	2
35	22	12	7	4	1	2
36	23	19	12	8	3	10
37	33	23	15	11	5	10
	35	25	21	16	17	10
				9	12	

WESTERN EUROPE

$$\begin{array}{r} 27 \overline{) 26} \\ 30 \overline{) 27} \quad 27 \overline{) 26} \\ 44 \quad 45 \quad 46 \quad 47 \end{array}$$

$$\begin{array}{r} 30 \\ 39 \\ 40 \\ 41 \end{array} \quad \begin{array}{r} \text{BRITISH ISLES} \\ 23 \quad 38 \\ \hline 58 \quad 76 \end{array}$$

TABLE 1N: $1^{\circ} \times 1^{\circ}$ N, OCEAN TIDE GREENWICH PHASES δ (DEG)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	
NM	358	359	360																																					
NN																																								
1	61	61	61	61	51	62	62	62	62	62	62	62	62	62	62	62	63	63	63	63	63	63	63	63	63	63	64	64	64	64	64	64	64	64	64	64	64	65	65	
2	53	53	53	53	53	54	54	54	55	55	55	55	56	56	56	57	57	57	57	58	58	58	58	58	58	59	59	59	59	59	59	59	59	59	59	59	59	60	61	
3	45	45	45	46	46	47	47	47	48	48	49	49	50	50	51	51	51	52	52	53	53	54	54	54	54	55	56	57	57	58	58	59	60	60	61	61	61	61	61	61
4	37	38	38	39	39	40	40	41	42	42	43	43	44	45	45	46	46	47	48	48	49	49	50	51	51	52	53	54	55	56	57	58	59	60	60	61	61	61	61	61
5	31	31	32	33	33	34	35	36	36	37	38	38	39	40	40	41	42	43	43	44	45	46	46	47	48	49	50	51	51	52	53	54	55	56	57	58	59	60	60	61
6	23	24	25	26	27	27	29	30	30	31	32	33	34	35	36	37	38	39	40	41	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	
7	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
8	7	8	9	10	12	13	14	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
9	357	353	0	2	3	5	6	8	11	13	15	17	18	20	22	24	26	27	29	31	32	33	35	36	38	39	41	43	44	45	46	47	48	49	50	51	52	53	54	55
10	360	362	353	355	356	358	359	361	362	362	361	361	361	362	362	362	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	
11	364	364	362	363	366	368	369	370	371	372	372	371	371	371	371	371	372	372	372	372	372	372	372	372	372	372	372	372	372	372	372	372	372	372	372	372	372	372	372	
12	335	336	337	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	364	364	364	364	364	364	364	364	364	364	364
13	332	332	333	335	335	335	336	337	338	338	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	
14	339	339	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	
15	329	329	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	
16	327	327	328	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364
17	327	327	328	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364
18	325	325	325	325	326	327	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	
19	322	322	322	322	322	323	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	
20	319	319	318	317	317	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	
21	319	318	318	317	317	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	
22	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313		
23	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307	307		
24	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308		
25	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308		
26	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308		
27	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308		
28	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308		
29	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308		
30	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308		
31	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308		
32	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308		
33	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308		
34	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308		
35	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308		
36	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308		
37	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308		
38	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	308	30											

EUROPEAN USSR

WESTERN EUROPE

	BRITISH ISLES
0	
9	
0	201 251 29€
1	<u>16€</u> 255

TABLE 2N: $1^{\circ} \times 1^{\circ}$ N₂ OCEAN TIDE AMPLITUDES ξ (CM)[illegible]

CENTRAL USSR

[illegible]

TABLE 2N: $1^{\circ} \times 1^{\circ}$ N, OCEAN TIDE GREENWICH PHASES δ (DEG)[illegible]

CENTRAL USSR

[illegible]

[illegible]

	EASTERN INDIA	BANGLADESH	SOUTHERN CHINA
63			
64			
65			
66			
67			
68			
69			
70			
71			

EASTERN INDIA

BANGLADESH

2	12	14	15	16	17
7	10	13	14	15	16
					17

[illegible]

SOUTHERN CHINA

	EASTERN INDIA		BANGLADESH		SOUTHERN CHINA	
1955	85	92	94	52	61	52
1956	86	93	94	53	52	53
1957	87	94	94	54	53	54
1958	88	95	94	55	54	55
1959	89	96	94	56	55	56
1960	90	97	94	57	56	57
1961	91	98	94	58	57	58
1962	92	99	94	59	58	59
1963	93	100	94	60	59	60
1964	94	101	94	61	60	61
1965	95	102	94	62	61	62
1966	96	103	94	63	62	63
1967	97	104	94	64	63	64
1968	98	105	94	65	64	65
1969	99	106	94	66	65	66
1970	100	107	94	67	66	67
1971	101	108	94	68	67	68
1972	102	109	94	69	68	69
1973	103	110	94	70	69	70
1974	104	111	94	71	70	71
1975	105	112	94	72	71	72
1976	106	113	94	73	72	73
1977	107	114	94	74	73	74
1978	108	115	94	75	74	75
1979	109	116	94	76	75	76
1980	110	117	94	77	76	77
1981	111	118	94	78	77	78
1982	112	119	94	79	78	79
1983	113	120	94	80	79	80
1984	114	121	94	81	80	81
1985	115	122	94	82	81	82
1986	116	123	94	83	82	83
1987	117	124	94	84	83	84
1988	118	125	94	85	84	85
1989	119	126	94	86	85	86
1990	120	127	94	87	86	87
1991	121	128	94	88	87	88
1992	122	129	94	89	88	89
1993	123	130	94	90	89	90
1994	124	131	94	91	90	91
1995	125	132	94	92	91	92
1996	126	133	94	93	92	93
1997	127	134	94	94	93	94
1998	128	135	94	95	94	95
1999	129	136	94	96	95	96
2000	130	137	94	97	96	97
2001	131	138	94	98	97	98
2002	132	139	94	99	98	99
2003	133	140	94	100	99	100
2004	134	141	94	101	100	101
2005	135	142	94	102	101	102
2006	136	143	94	103	102	103
2007	137	144	94	104	103	104
2008	138	145	94	105	104	105
2009	139	146	94	106	105	106
2010	140	147	94	107	106	107
2011	141	148	94	108	107	108
2012	142	149	94	109	108	109
2013	143	150	94	110	109	110
2014	144	151	94	111	110	111

TABLE 4N: $1^{\circ} \times 1^{\circ}$ N₂ OCEAN TIDE AMPLITUDES ξ (CM)

EASTERN SIBERIAN USSR

EASTERN CHINA

[illegible]

TABLE 4N: $1^\circ \times 1^\circ$ N, OCEAN TIDE GREENWICH PHASES δ (DEG)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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WM 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204

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TABLE 5N: $1^{\circ} \times 1^{\circ}$ N, OCEAN TIDE GREENWICH PHASES δ (DEG)

TABLE 6N: $1^{\circ} \times 1^{\circ} N_2$ OCEAN TIDE AMPLITUDES ξ (CM)

NW	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241					
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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TABLE 6N: $1^{\circ} \times 1^{\circ}$ N, OCEAN TIDE GREENWICH PHASES δ (DEG)

WM	280	201	282	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241		
1	68	67	67	67	67	67	67	67	67	67	67	67	67	67	66	66	66	66	66	66	66	66	66	66	66	66	65	65	65	65	65	65	65	65	65	65	65	65	65	64	64	64	64	
2	72	71	71	71	71	70	70	70	70	70	70	69	69	69	69	69	69	69	68	67	67	67	66	66	66	66	66	65	65	65	65	65	65	65	65	65	65	65	65	65	64	64	64	64
3	76	76	75	75	74	73	73	72	72	71	71	70	69	69	69	69	69	69	68	67	67	66	66	66	66	66	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	64	64
4	82	81	80	79	79	78	77	77	76	75	74	73	72	71	70	69	69	69	68	67	67	66	66	66	66	66	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	64	64
5	87	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	66	66	66	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	64	64
6	95	94	93	92	90	89	88	85	83	82	81	79	78	76	75	74	73	72	71	69	68	66	66	66	66	66	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	64	64
7	104	103	101	98	96	94	92	90	89	87	85	83	81	79	77	75	73	71	69	68	66	66	66	66	66	66	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	64	64
8	118	117	115	113	110	107	105	102	100	98	96	93	91	89	87	85	83	81	79	77	75	72	70	68	66	64	62	60	58	56	54	52	50	48	47	45	44	43	42	41	40	40	40	
9	139	138	136	134	131	128	125	121	118	115	111	107	101	94	88	81	78	75	72	69	67	65	62	60	58	56	54	52	50	48	47	45	44	43	42	41	40	39	38	37	36	35	34	
10	170	175	176	170	162	158	154	150	146	142	138	134	129	123	116	110	104	98	92	86	80	74	68	62	56	50	44	38	32	26	20	14	8	2	24	22	22	22	21	21	20	20	20	
11	210	213	216	220	224	229	233	237	242	247	252	256	261	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355	360	365	370	375	380	385	390	395	399	399		
12	233	236	239	242	245	248	251	253	256	259	261	264	266	269	271	273	275	277	280	282	284	286	288	290	292	294	296	298	300	302	304	306	307	309	311	313	314	315	316	317	317	318	318	
13	244	246	249	251	253	255	258	260	262	264	266	268	270	271	273	275	276	278	280	282	283	285	286	288	289	291	292	294	295	297	299	300	301	303	304	305	306	306	307	308	308	309		
14	252	254	256	259	261	263	265	267	269	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	299	300	300	301		
15	260	261	263	265	267	269	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	299	300	301	301	301	302	302		
16	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	299	300	301	301	301	302	302	303	303		
17	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	307	308	308	309	309	310	310	311		
18	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	317	318	318	319	319		
19	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	327	328		
20	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336		
21	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343		
22	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350		
23	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357		
24	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364		
25	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371		
26	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378		
27	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385		
28	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392		
29	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	
30	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406		
31	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413		
32	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420		
33	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427		
34	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434		
35	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441		
36	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424																										

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TABLE 8N: 1° × 1° N, OCEAN TIDE GREENWICH PHASES δ (DEG)

[illegible]

TABLE 9N: 1° × 1° N. OCEAN TIDE AMPLITUDES ξ (CM)[illegible]

TABLE 9N: 1° & 1° N, OCEAN TIDE GREENWICH PHASES δ (DEG)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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TABLE 3M: $1^{\circ} \times 1^{\circ} N_2$ OCEAN TIDE AMPLITUDES ξ (CM)

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TABLE 4M: 1° × 1° N₂ OCEAN TIDE GREENWICH PHASES δ (DEG)

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228	225	222	219	216	213	210	207	204	201	198	195	192	189	186	183	180	177	174	171	168	165	162	159	156	153	150	147	144	141	138	135	132	129	126	123	120	117	114	111	108	105	102	99	96	93	90	87	84	81	78	75	72	69	66	63	60	57	54	51	48	45	42	39	36	33	30	27	24	21	18	15	12	9	6	3	0	-3	-6	-9	-12	-15	-18	-21	-24	-27	-30	-33	-36	-39	-42	-45	-48	-51	-54	-57	-60	-63	-66	-69	-72	-75	-78	-81	-84	-87	-90	-93	-96	-99	-102	-105	-108	-111	-114	-117	-120	-123	-126	-129	-132	-135	-138	-141	-144	-147	-150	-153	-156	-159	-162	-165	-168	-171	-174	-177	-180	-183	-186	-189	-192	-195	-198	-201	-204	-207	-210	-213	-216	-219	-222	-225	-228	-231	-234	-237	-240	-243	-246	-249	-252	-255	-258	-261	-264	-267	-270	-273	-276	-279	-282	-285	-288	-291	-294	-297	-300	-303	-306	-309	-312	-315	-318	-321	-324	-327	-330	-333	-336	-339	-342	-345	-348	-351	-354	-357	-360	-363	-366	-369	-372	-375	-378	-381	-384	-387	-390	-393	-396	-399	-402	-405	-408	-411	-414	-417	-420	-423	-426	-429	-432	-435	-438	-441	-444	-447	-450	-453	-456	-459	-462	-465	-468	-471	-474	-477	-480	-483	-486	-489	-492	-495	-498	-501	-504	-507	-510	-513	-516	-519	-522	-525	-528	-531	-534	-537	-540	-543	-546	-549	-552	-555	-558	-561	-564	-567	-570	-573	-576	-579	-582	-585	-588	-591	-594	-597	-600	-603	-606	-609	-612	-615	-618	-621	-624	-627	-630	-633	-636	-639	-642	-645	-648	-651	-654	-657	-660	-663	-666	-669	-672	-675	-678	-681	-684	-687	-690	-693	-696	-699	-702	-705	-708	-711	-714	-717	-720	-723	-726	-729	-732	-735	-738	-741	-744	-747	-750	-753	-756	-759	-762	-765	-768	-771	-774	-777	-780	-783	-786	-789	-792	-795	-798	-801	-804	-807	-810	-813	-816	-819	-822	-825	-828	-831	-834	-837	-840	-843	-846	-849	-852	-855	-858	-861	-864	-867	-870	-873	-876	-879	-882	-885	-888	-891	-894	-897	-900	-903	-906	-909	-912	-915	-918	-921	-924	-927	-930	-933	-936	-939	-942	-945	-948	-951	-954	-957	-960	-963	-966	-969	-972	-975	-978	-981	-984	-987	-990	-993	-996	-999	-1002	-1005	-1008	-1011	-1014	-1017	-1020	-1023	-1026	-1029	-1032	-1035	-1038	-1041	-1044	-1047	-1050	-1053	-1056	-1059	-1062	-1065	-1068	-1071	-1074	-1077	-1080	-1083	-1086	-1089	-1092	-1095	-1098	-1101	-1104	-1107	-1110	-1113	-1116	-1119	-1122	-1125	-1128	-1131	-1134	-1137	-1140	-1143	-1146	-1149	-1152	-1155	-1158	-1161	-1164	-1167	-1170	-1173	-1176	-1179	-1182	-1185	-1188	-1191	-1194	-1197	-1200	-1203	-1206	-1209	-1212	-1215	-1218	-1221	-1224	-1227	-1230	-1233	-1236	-1239	-1242	-1245	-1248	-1251	-1254	-1257	-1260	-1263	-1266	-1269	-1272	-1275	-1278	-1281	-1284	-1287	-1290	-1293	-1296	-1299	-1302	-1305	-1308	-1311	-1314	-1317	-1320	-1323	-1326	-1329	-1332	-1335	-1338	-1341	-1344	-1347	-1350	-1353	-1356	-1359	-1362	-1365	-1368	-1371	-1374	-1377	-1380	-1383	-1386	-1389	-1392	-1395	-1398	-1401	-1404	-1407	-1410	-1413	-1416	-1419	-1422	-1425	-1428	-1431	-1434	-1437	-1440	-1443	-1446	-1449	-1452	-1455	-1458	-1461	-1464	-1467	-1470	-1473	-1476	-1479	-1482	-1485	-1488	-1491	-1494	-1497	-1500	-1503	-1506	-1509	-1512	-1515	-1518	-1521	-1524	-1527	-1530	-1533	-1536	-1539	-1542	-1545	-1548	-1551	-1554	-1557	-1560	-1563	-1566	-1569	-1572	-1575	-1578	-1581	-1584	-1587	-1590	-1593	-1596	-1599	-1602	-1605	-1608	-1611	-1614	-1617	-1620	-1623	-1626	-1629	-1632	-1635	-1638	-1641	-1644	-1647	-1650	-1653	-1656	-1659	-1662	-1665	-1668	-1671	-1674	-1677	-1680	-1683	-1686	-1689	-1692	-1695	-1698	-1701	-1704	-1707	-1710	-1713	-1716	-1719	-1722	-1725	-1728	-1731	-1734	-1737	-1740	-1743	-1746	-1749	-1752	-1755	-1758	-1761	-1764	-1767	-1770	-1773	-1776	-1779	-1782	-1785	-1788	-1791	-1794	-1797	-1800	-1803	-1806	-1809	-1812	-1815	-1818	-1821	-1824	-1827	-1830	-1833	-1836	-1839	-1842	-1845	-1848	-1851	-1854	-1857	-1860	-1863	-1866	-1869	-1872	-1875	-1878	-1881	-1884	-1887	-1890	-1893	-1896	-1899	-1902	-1905	-1908	-1911	-1914	-1917	-1920	-1923	-1926	-1929	-1932	-1935	-1938	-1941	-1944	-1947	-1950	-1953	-1956	-1959	-1962	-1965	-1968	-1971	-1974	-1977	-1980	-1983	-1986	-1989	-1992	-1995	-1998	-2001	-2004	-2007	-2010	-2013	-2016	-2019	-2022	-2025	-2028	-2031	-2034	-2037	-2040	-2043	-2046	-2049	-2052	-2055	-2058	-2061	-2064	-2067	-2070	-2073	-2076	-2079	-2082	-2085	-2088	-2091	-2094	-2097	-2100	-2103	-2106	-2109	-2112	-2115	-2118	-2121	-2124	-2127	-2130	-2133	-2136	-2139	-2142	-2145	-2148	-2151	-2154	-2157	-2160	-2163	-2166	-2169	-2172	-2175	-2178	-2181	-2184	-2187	-2190	-2193	-2196	-2199	-2202	-2205	-2208	-2211	-2214	-2217	-2220	-2223	-2226	-2229	-2232	-2235	-2238	-2241	-2244	-2247	-2250	-2253	-2256	-2259	-2262	-2265	-2268	-2271	-2274	-2277	-2280	-2283	-2286	-2289	-2292	-2295	-2298	-2301	-2304	-2307	-2310	-2313	-2316	-2319	-2322	-2325	-2328	-2331	-2334	-2337	-2340	-2343	-2346	-2349	-2352	-2355	-2358	-2361	-2364	-2367	-2370	-2373	-2376	-2379	-2382	-2385	-2388	-2391	-2394	-2397	-2400	-2403	-2406	-2409	-2412	-2415	-2418	-2421	-2424	-2427	-2430	-2433	-2436	-2439	-2442	-2445	-2448	-2451	-2454	-2457	-2460	-2463	-2466	-2469	-2472	-2475	-2478	-2481	-2484	-2487	-2490	-2493	-2496	-2499	-2502	-2505	-2508	-2511	-2514	-2517	-2520	-2523	-2526	-2529	-2532	-2535	-2538	-2541	-2544	-2547	-2550	-2553	-2556	-2559	-2562	-2565	-2568	-2571	-2574	-2577	-2580	-2583	-2586	-2589	-2592	-2595	-2598	-2601	-2604	-2607	-2610	-2613	-2616	-2619	-2622	-2625	-2628	-2631	-2634	-2637	-2640	-2643	-2646	-2649	-2652	-2655	-2658	-2661	-2664	-2667	-2670	-2673	-2676	-2679	-2682	-2685	-2688	-2691	-2694	-2697	-2700	-2703	-2706	-2709	-2712	-2715	-2718	-2721	-2724	-2727	-2730	-2733	-2736	-2739	-2742	-2745	-2748	-2751	-2754	-2757	-2760	-2763	-2766	-2769	-2772	-2775	-2778	-2781	-2784	-2787	-2790	-2793	-2796	-2799	-2802	-2805	-2808	-2811	-2814	-2817	-2820	-2823	-2826	-2829	-2832	-2835	-2838	-2841	-2844	-2847	-2850	-2853	-2856	-2859	-2862	-2865	-2868	-2871	-2874	-2877	-2880	-2883	-2886	-2889	-2892	-2895	-2898	-2901	-2904	-2907	-2910	-2913	-2916	-2919	-2922	-2925	-2928	-2931	-2934	-2937	-2940	-2943	-2946	-2949	-2952	-2955	-2958	-2961	-2964	-2967	-2970	-2973	-2976	-2979	-2982	-2985	-2988	-2991	-2994	-2997	-3

TABLE 5M: 1° × 1° N, OCEAN TIDE AMPLITUDES ξ (CM)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80																				

TABLE 5M: 1° × 1° N₂ OCEAN TIDE GREENWICH PHASES δ (DEG)

NW	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201		
48	119	112	104	97	89	81	74	67	61	54	48	42	37	32	29	25	21	17	13	9	5	2	359	355	352	346	341	337	333	329	326	322	318	314	310	307	303	300	296	293	290			
49	119	112	103	96	88	80	73	66	59	53	47	42	37	32	29	25	21	17	13	9	5	2	358	354	351	345	340	336	332	328	325	321	317	313	310	307	303	300	296	293	290			
50	118	110	101	93	85	77	70	63	57	52	46	42	38	33	29	25	21	17	13	9	5	2	358	354	351	345	340	336	332	328	325	321	317	313	310	307	303	300	296	293	290			
51	118	108	99	90	82	75	68	62	56	51	46	42	38	33	29	25	21	17	13	9	5	2	359	355	352	346	341	337	333	329	326	322	318	314	310	307	303	300	296	293	290			
52	114	106	97	88	80	73	66	60	54	49	44	40	36	32	28	24	20	16	12	8	4	360	356	353	347	342	338	334	330	326	322	318	314	310	306	303	299	296	293	290				
53	110	100	92	83	75	68	62	57	52	47	43	40	37	33	29	25	21	17	13	9	5	2	358	354	351	345	340	336	332	328	325	321	317	313	310	306	303	299	296	293	290			
54	107	97	90	83	77	72	67	62	57	53	48	44	41	39	35	32	29	25	22	18	14	6	4	358	354	351	345	340	336	332	328	325	321	317	313	310	306	303	299	296	293	290		
55	106	96	88	81	75	71	67	63	59	55	52	49	46	43	41	38	35	32	29	25	22	18	13	8	3	359	355	352	346	342	338	334	330	326	322	318	314	310	306	303	299	296	293	290
56	106	96	88	81	75	71	67	63	59	55	52	49	46	43	41	38	35	32	29	25	22	18	13	8	3	359	355	352	346	342	338	334	330	326	322	318	314	310	306	303	299	296	293	290
57	107	96	87	80	75	71	67	63	59	55	52	49	46	43	41	38	35	32	29	25	22	18	13	8	3	359	355	352	346	342	338	334	330	326	322	318	314	310	306	303	299	296	293	290
58	107	96	87	80	75	71	67	63	59	55	52	49	46	43	41	38	35	32	29	25	22	18	13	8	3	359	355	352	346	342	338	334	330	326	322	318	314	310	306	303	299	296	293	290
59	107	96	87	80	75	71	67	63	59	55	52	49	46	43	41	38	35	32	29	25	22	18	13	8	3	359	355	352	346	342	338	334	330	326	322	318	314	310	306	303	299	296	293	290
60	107	96	87	80	75	71	67	63	59	55	52	49	46	43	41	38	35	32	29	25	22	18	13	8	3	359	355	352	346	342	338	334	330	326	322	318	314	310	306	303	299	296	293	290
61	110	100	92	83	75	68	62	57	52	47	43	40	37	33	29	25	21	17	13	9	5	2	359	355	352	346	341	337	333	329	326	322	318	314	310	307	303	300	296	293	290			
62	110	100	92	83	75	68	62	57	52	47	43	40	37	33	29	25	21	17	13	9	5	2	359	355	352	346	341	337	333	329	326	322	318	314	310	307	303	300	296	293	290			
63	109	101	94	86	80	74	69	64	59	54	50	46	42	38	34	30	26	22	18	14	10	6	4	358	354	351	345	340	336	332	328	324	320	316	312	308	304	300	296	292	288	284	280	
64	109	101	94	86	80	74	69	64	59	54	50	46	42	38	34	30	26	22	18	14	10	6	4	358	354	351	345	340	336	332	328	324	320	316	312	308	304	300	296	292	288	284	280	
65	110	103	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	305	301	297	293	289	285	281	
66	110	103	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	305	301	297	293	289	285	281	
67	110	103	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	305	301	297	293	289	285	281	
68	110	103	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	305	301	297	293	289	285	281	
69	110	103	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	305	301	297	293	289	285	281	
70	111	104	100	95	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	355	351	347	343	339	335	331	327	323	319	315	311	307	303	299	295	291	287	283	279	
71	111	104	100	95	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	355	351	347	343	339	335	331	327	323	319	315	311	307	303	299	295	291	287	283	279	
72	111	104	100	95	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	355	351	347	343	339	335	331	327	323	319	315	311	307	303	299	295	291	287	283	279	
73	112	105	101	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	305	301	297	293	289	285	281
74	112	105	101	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	305	301	297	293	289	285	281
75	112	105	101	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	305	301	297	293	289	285	281
76	112	105	101	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	305	301	297	293	289	285	281
77	112	105	101	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	305	301	297	293	289	285	281
78	112	105	101	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	305	301	297	293	289	285	281
79	112	105	101	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	305	301	297	293	289	285	281
80	112	105	101	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	305	301	297	293	289	285	281
81	112	105	101	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	305	301	297	293	289	285	281
82	112	105	101	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	305	301	297	293	289	285	281
83	112	105	101	96	91	86	81	76	71	66	61	56	51	46	41	36	31	26	21	16	11	6	1	5	359	355	352	346	341	337	333	329	325	321	317	313	309	30						

TABLE 6M: 1° × 1° N, OCEAN TIDE AMPLITUDES ξ (CM)

46	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500																																																																																																																									
USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA	USA

TABLE 6M: $1^\circ \times 1^\circ$ N₂ OCEAN TIDE GREENWICH PHASES δ (DEG)[illegible]

TABLE 7M: $1^\circ \times 1^\circ N_2$ OCEAN TIDE AMPLITUDES ξ (CM)

SOUTHERN USA

	CALIFORNIA	MEXICO	MIDDLE AMERICA	FLORIDA	AMERICA
10	10	10	10	10	10
10	10	10	10	10	10
9	9	9	9	9	9
9	9	9	9	9	9
60	60	60	60	60	60
61	61	61	61	61	61
62	62	62	62	62	62
63	63	63	63	63	63
64	64	64	64	64	64
65	65	65	65	65	65
66	66	66	66	66	66
67	67	67	67	67	67
68	68	68	68	68	68
69	69	69	69	69	69
70	70	70	70	70	70
71	71	71	71	71	71
72	72	72	72	72	72
73	73	73	73	73	73
74	74	74	74	74	74
75	75	75	75	75	75
76	76	76	76	76	76
77	77	77	77	77	77
78	78	78	78	78	78
79	79	79	79	79	79
80	80	80	80	80	80
81	81	81	81	81	81
82	82	82	82	82	82
83	83	83	83	83	83
84	84	84	84	84	84
85	85	85	85	85	85
86	86	86	86	86	86
87	87	87	87	87	87
88	88	88	88	88	88
89	89	89	89	89	89
90	90	90	90	90	90
91	91	91	91	91	91
92	92	92	92	92	92
93	93	93	93	93	93
94	94	94	94	94	94
95	95	95	95	95	95
96	96	96	96	96	96
97	97	97	97	97	97
98	98	98	98	98	98
99	99	99	99	99	99
100	100	100	100	100	100
101	101	101	101	101	101
102	102	102	102	102	102
103	103	103	103	103	103
104	104	104	104	104	104
105	105	105	105	105	105
106	106	106	106	106	106
107	107	107	107	107	107
108	108	108	108	108	108
109	109	109	109	109	109
110	110	110	110	110	110
111	111	111	111	111	111
112	112	112	112	112	112
113	113	113	113	113	113
114	114	114	114	114	114
115	115	115	115	115	115
116	116	116	116	116	116
117	117	117	117	117	117
118	118	118	118	118	118
119	119	119	119	119	119
120	120	120	120	120	120
121	121	121	121	121	121
122	122	122	122	122	122
123	123	123	123	123	123
124	124	124	124	124	124
125	125	125	125	125	125
126	126	126	126	126	126
127	127	127	127	127	127
128	128	128	128	128	128
129	129	129	129	129	129
130	130	130	130	130	130
131	131	131	131	131	131
132	132	132	132	132	132
133	133	133	133	133	133
134	134	134	134	134	134
135	135	135	135	135	135
136	136	136	136	136	136
137	137	137	137	137	137

TABLE 8M: $1^\circ \times 1^\circ$ N_2 OCEAN TIDE AMPLITUDES ξ (CM)[illegible]

NORTHERN SOUTH AMERICA

[illegible][illegible]

239	234	228	221	203	201	200	199	200	183
231	207	182	183	183	184	185	187	187	181
223	200	169	183	178	175	176	181	177	173
215	206		187	180	172	173	177	174	173
			197	187	179				181

350 351 352 353 354 355 356 357 358 359 360

NORTHWESTERN AFRICA

0 0 0
5 5 5
0 0 0
0 0 0
0 0 0

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1990	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100

IBERIA 4

EASTERN BRAZIL

EASTERN BRAZIL

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
W	359	358	359	360	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38			

[illegible]

NM	377	358	359	360
	1	2	3	4
	5	6	7	8
	9	10	11	12
	13	14	15	16
	17	18	19	20
	21	22	23	24
	25	26	27	28
	29	30	31	32
	33	34	35	36
	37	38		

WM	357	358	359	360	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38		
NA	98	93	90	87	84	82	81	79	78	78	77	76	76	75	75	75	74																											
NA	99	93	89	86	83	77	76	75	74	73	72	71	71	73	73	73	71																											
NA	99	93	89	86	83	77	76	75	74	73	72	71	71	73	73	73	71																											
NA	99	93	89	86	83	77	76	75	74	73	72	71	71	73	73	73	71																											
NA	99	93	89	86	83	77	76	75	74	73	72	71	71	73	73	73	71																											
NA	99	93	89	86	83	77	76	75	74	73	72	71	71	73	73	73	71																											
NA	99	93	89	86	83	77	76	75	74	73	72	71	71	73	73	73	71																											
NA	99	93	89	86	83	77	76	75	74	73	72	71	71	73	73	73	71																											
NA	99	93	89	86	83	77	76	75	74	73	72	71	71	73	73	73	71																											
NA	99	93	89	86	83	77	76	75	74	73	72	71	71	73	73	73	71																											
NA	99	93	89	86	83	77	76	75	74	73	72	71	71	73	73	73	71																											
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NA	99	93	89	86	83	77	76	75	74	73	72	71	71	73	73	73	71																											
NA	99	93	89	86	83	77	76	75	74	73	72	71	71	73	73	73	71																											
NA	99	93	89	86	83	77	76	75	74	73	72	71	71	73	73	73	71																											</

[illegible]

TABLE 2S: 1° x 1° N₂ OCEAN TIDE GREENWICH PHASES δ (DEG)

39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000

ANTARCTICA

TABLE 3S: $1^{\circ} \times 1^{\circ}$ N₂ OCEAN TIDE AMPLITUDES ξ (CM)[illegible]

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ARU		SPECIAL OPERATIONS										SYNOPTIC																														
16	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160

NM	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343
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TABLE 4S: $1^{\circ} \times 1^{\circ} \text{ N}_2$ OCEAN TIDE GREENWICH PHASES δ (DEG)

[illegible]

CENTRAL EASTERN AUSTRALIA

ANTARCTICA

98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201																																																																																																		
MA	SOLOMON	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35																																																																																																																																																																							

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TABLE 5S: $1^{\circ} \times 1^{\circ}$ N₂ OCEAN TIDE GREENWICH PHASES δ (DEG)

NM	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300								
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
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TABLE 6S: $1^{\circ} \times 1^{\circ} \text{ N}_2$ OCEAN TIDE AMPLITUDES ξ (CM)

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93	164	151	140	120	95	80	68	58	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																	
94	173	163	150	130	107	94	82	70	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																
95	182	171	163	148	127	108	94	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0															
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97	200	190	180	166	145	124	106	90	72	60	50	40	34	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0														
98	209	200	190	175	154	132	113	95	76	62	50	40	34	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0														
99	218	209	200	184	161	138	118	100	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0														
100	227	218	209	193	169	145	124	106	86	70	58	48	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0														
101	236	227	218	200	184	161	138	118	100	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0													
102	245	236	227	210	193	169	145	124	106	86	70	58	48	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0													
103	254	245	236	218	200	184	161	138	118	100	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0												
104	263	254	245	227	210	193	169	145	124	106	86	70	58	48	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0												
105	272	263	254	236	218	200	184	161	138	118	100	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0											
106	281	272	263	245	227	210	193	169	145	124	106	86	70	58	48	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0											
107	290	281	272	254	236	218	200	184	161	138	118	100	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0										
108	299	290	281	263	245	227	210	193	169	145	124	106	86	70	58	48	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0										
109	308	299	290	272	254	236	218	200	184	161	138	118	100	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0									
110	317	308	299	281	263	245	227	210	193	169	145	124	106	86	70	58	48	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0									
111	326	317	308	290	272	254	236	218	200	184	161	138	118	100	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0								
112	335	326	317	300	281	263	245	227	210	193	169	145	124	106	86	70	58	48	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0								
113	344	335	326	308	290	272	254	236	218	200	184	161	138	118	100	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0							
114	353	344	335	317	299	281	263	245	227	210	193	169	145	124	106	86	70	58	48	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0							
115	362	353	344	326	308	290	272	254	236	218	200	184	161	138	118	100	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0						
116	371	362	353	335	317	299	281	263	245	227	210	193	169	145	124	106	86	70	58	48	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0						
117	380	371	362	344	326	308	290	272	254	236	218	200	184	161	138	118	100	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0					
118	389	380	371	353	335	317	299	281	263	245	227	210	193	169	145	124	106	86	70	58	48	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0					
119	398	389	380	362	344	326	308	290	272	254	236	218	200	184	161	138	118	100	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0				
120	407	398	389	371	353	335	317	299	281	263	245	227	210	193	169	145	124	106	86	70	58	48	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0				
121	416	407	398	380	362	344	326	308	290	272	254	236	218	200	184	161	138	118	100	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0			
122	425	416	407	389	371	353	335	317	299	281	263	245	227	210	193	169	145	124	106	86	70	58	48	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0			
123	434	425	416	398	380	362	344	326	308	290	272	254	236	218	200	184	161	138	118	100	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		
124	443	434	425	407	389	371	353	335	317	299	281	263	245	227	210	193	169	145	124	106	86	70	58	48	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		
125	452	443	434	416	398	380	362	344	326	308	290	272	254	236	218	200	184	161	138	118	100	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
126	461	452	443	425	407	389	371	353	335	317	299	281	263	245	227	210	193	169	145	124	106	86	70	58	48	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
127	470	461	452	434	416	398	380	362	344	326	308	290	272	254	236	218	200	184	161	138	118	100	82	68	55	45	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
128	479	470	461	443	425	407	389	371	353	335	317	299	281	263	245	227	210	193	169	145	124	106	86	70	58	48	38	31	27	24	21	19	18	17	16	14	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
129	488	479	470	452	434	416	398	380	362	344	326																																									

TABLE 7S: 1° × 1° N, OCEAN TIDE AMPLITUDES ξ (CM)

[illegible]

TABLE 7S: 1° × 1° N₂ OCEAN TIDE GREENWICH PHASES δ (DEG)

[illegible]

M 204 205 206 207 208 209 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325

ANTARCTICA

TABLE 8S: $1^{\circ} \times 1^{\circ}$ N₂ OCEAN TIDE GREENWICH PHASES δ (DEG)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80																				

[illegible]

TABLE 9S: $1^{\circ} \times 1^{\circ}$ N, OCEAN TIDE GREENWICH PHASES δ (DEG)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
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APPENDIX B

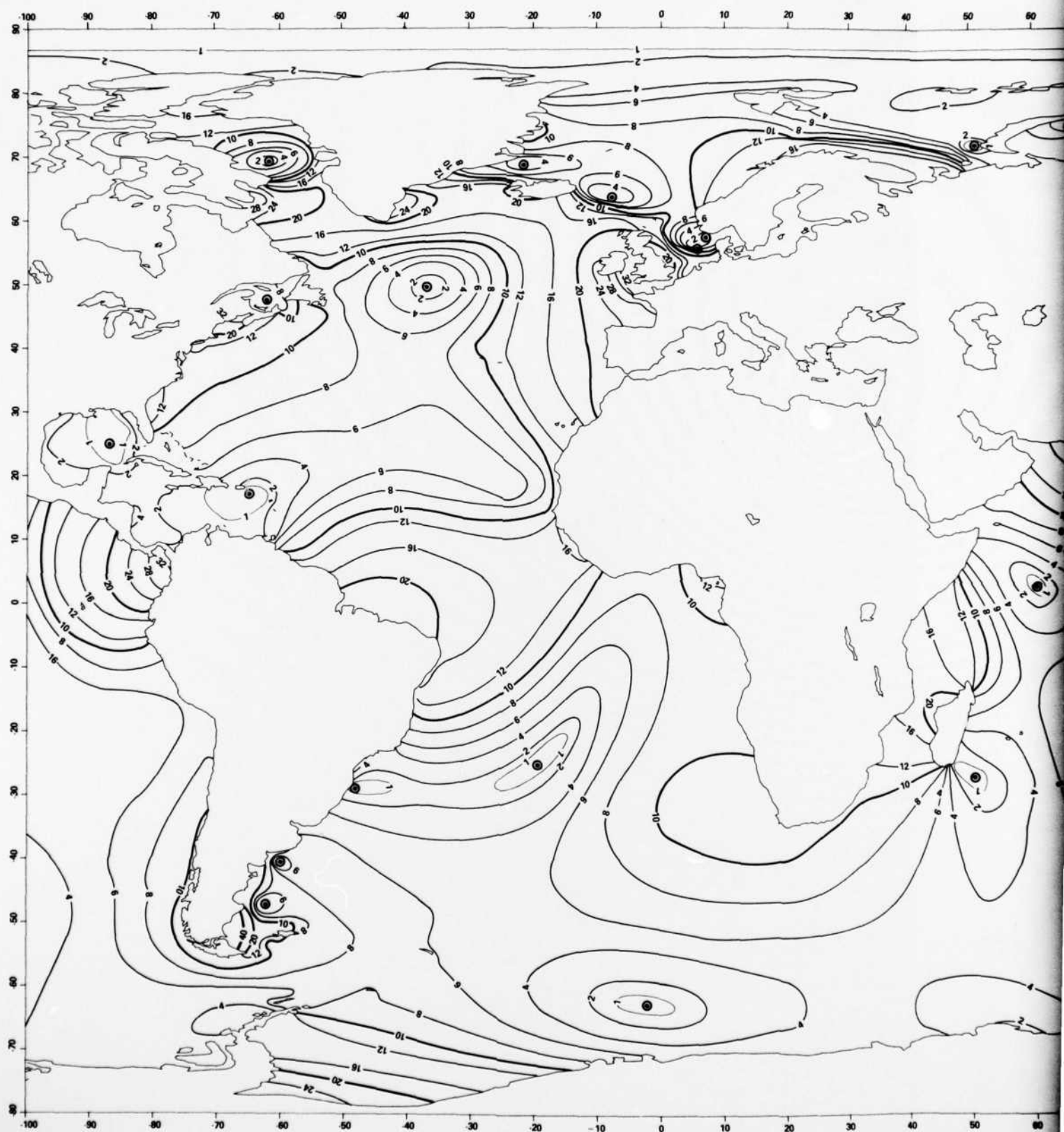
**ATLAS OF GLOBAL N₂ OCEAN TIDE
CORANGE AND COTIDAL MAPS**

APPENDIX B

ATLAS OF CORANGE AND COTIDAL MAPS OF THE N₂ OCEAN TIDE

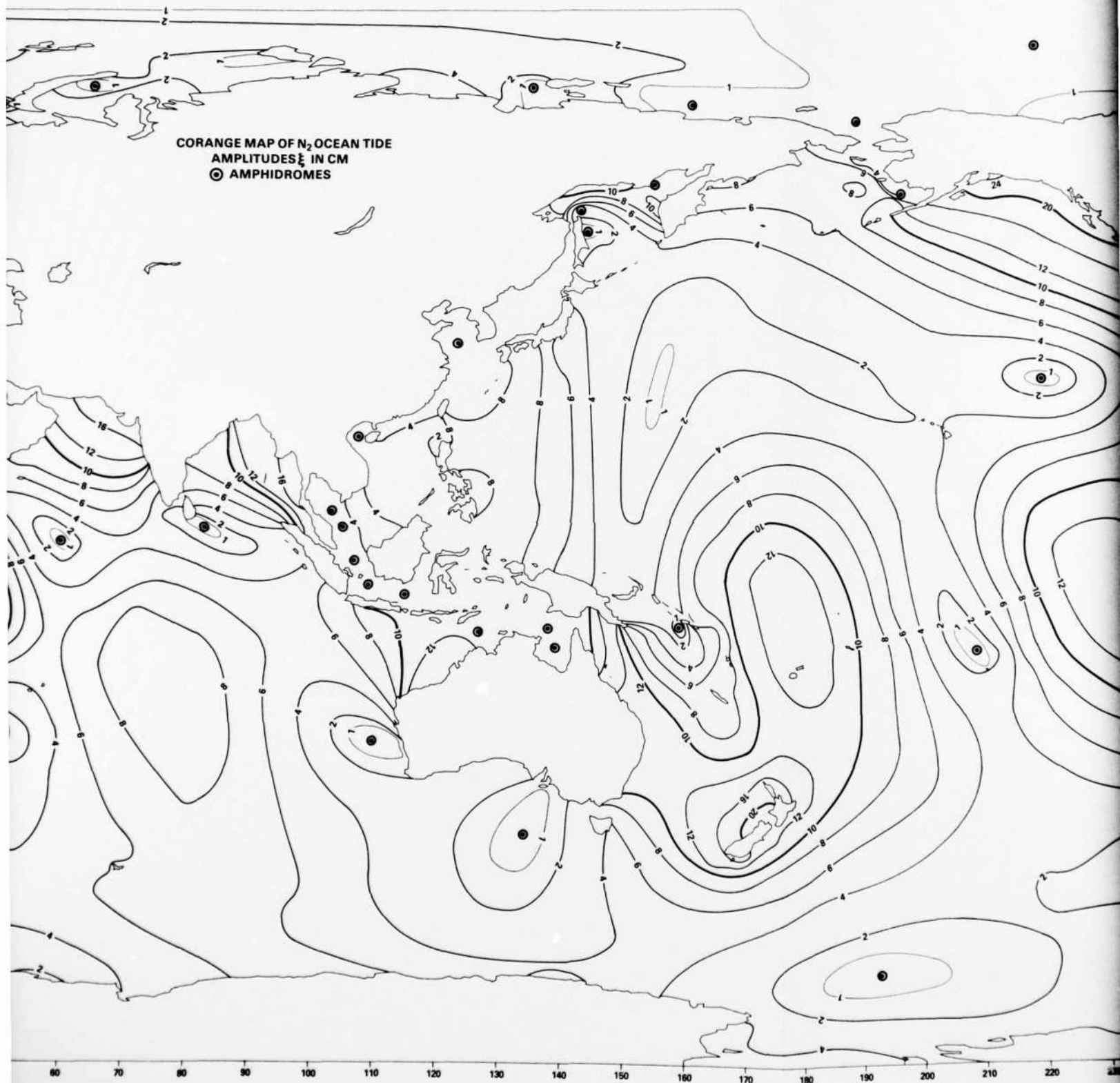
Amplitudes ξ of corange lines in cm.

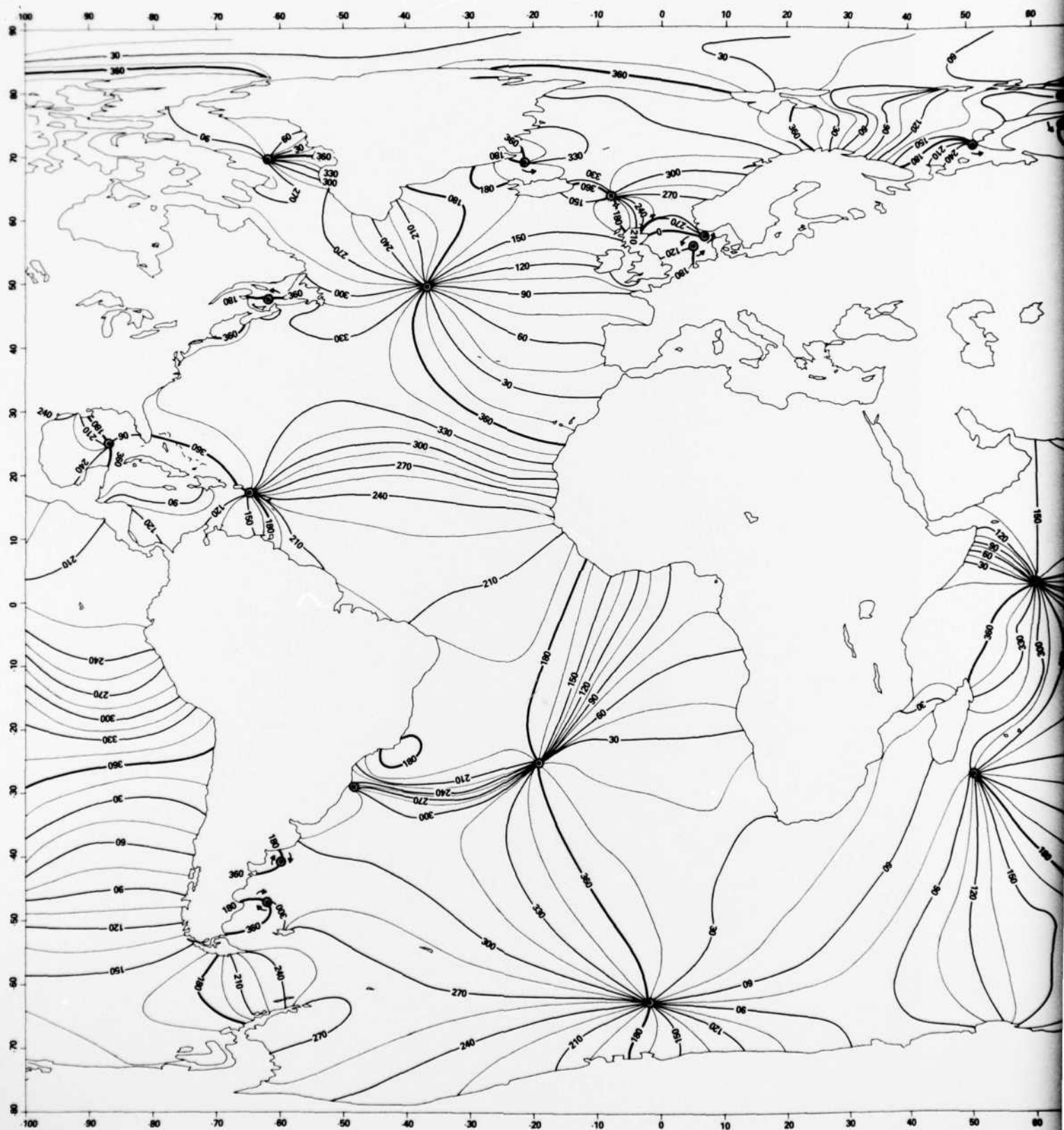
Greenwich phases δ of cotidal lines in 15, 30, 45, 60, 75, 90, 105, 120, 135, 150, 165, 180, 195, 210, 225, 240, 255, 270, 285, 300, 315, 330, 345, 360 = 0° where 30° $\approx$ 1 hour.

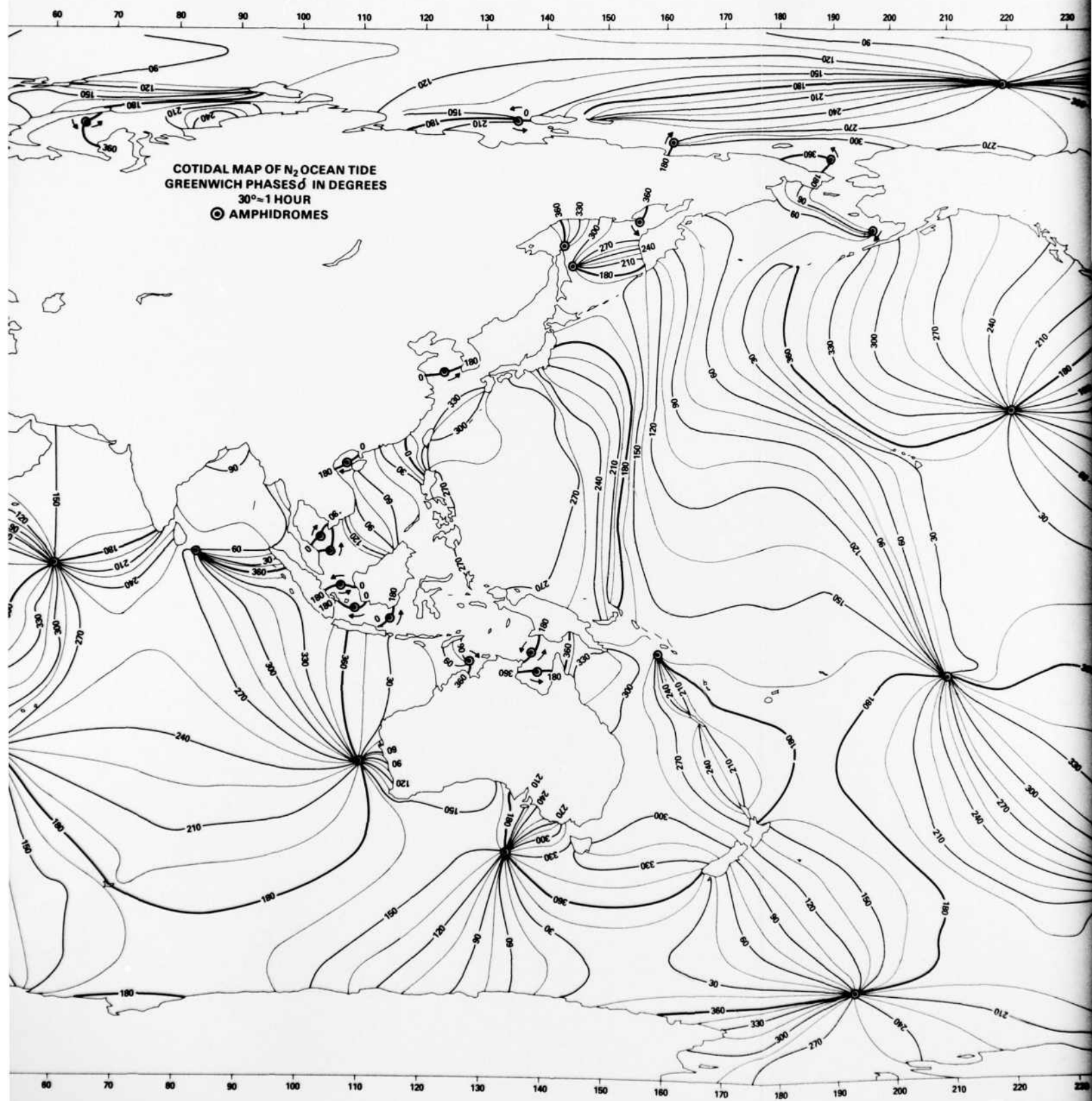


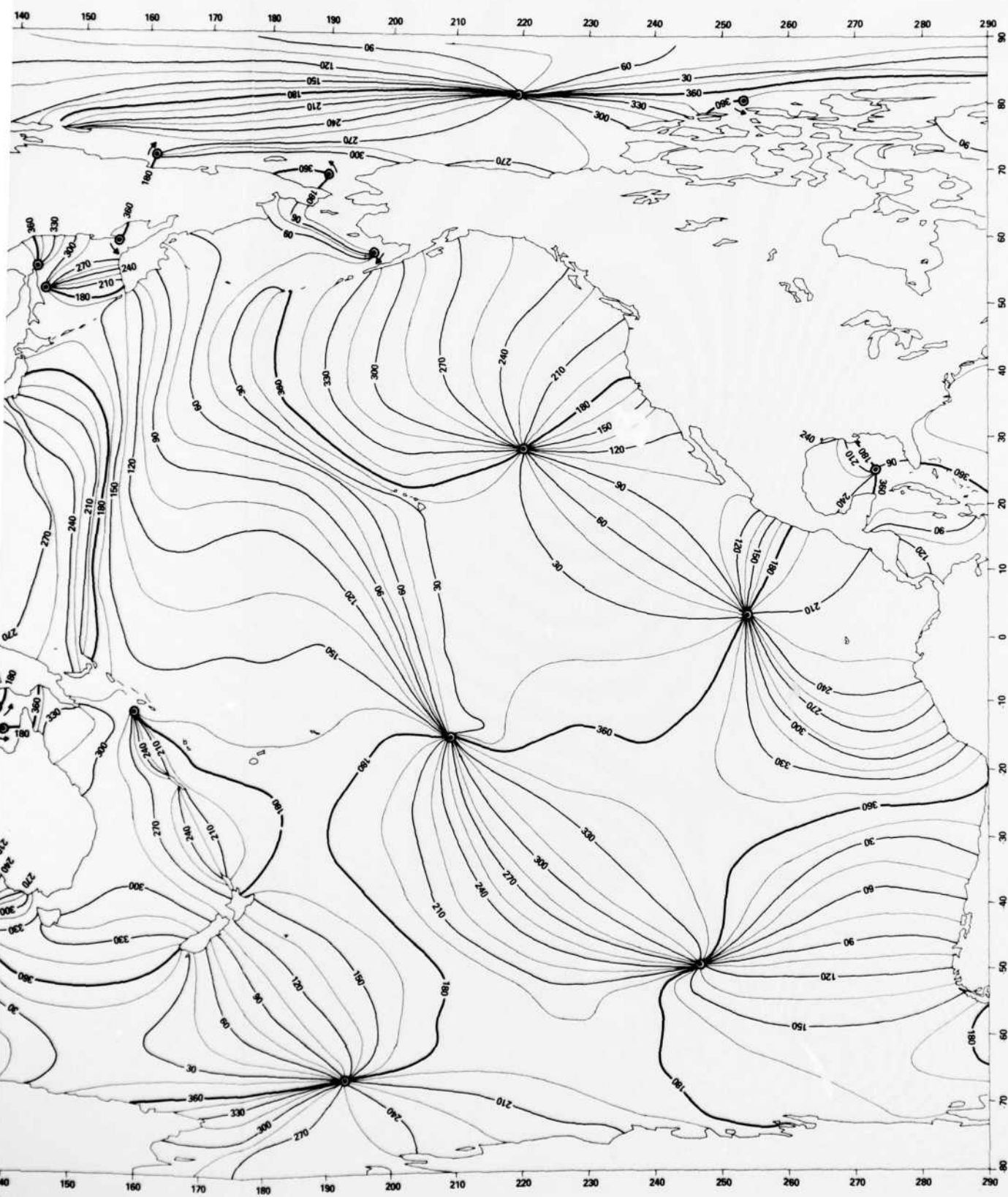
60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230

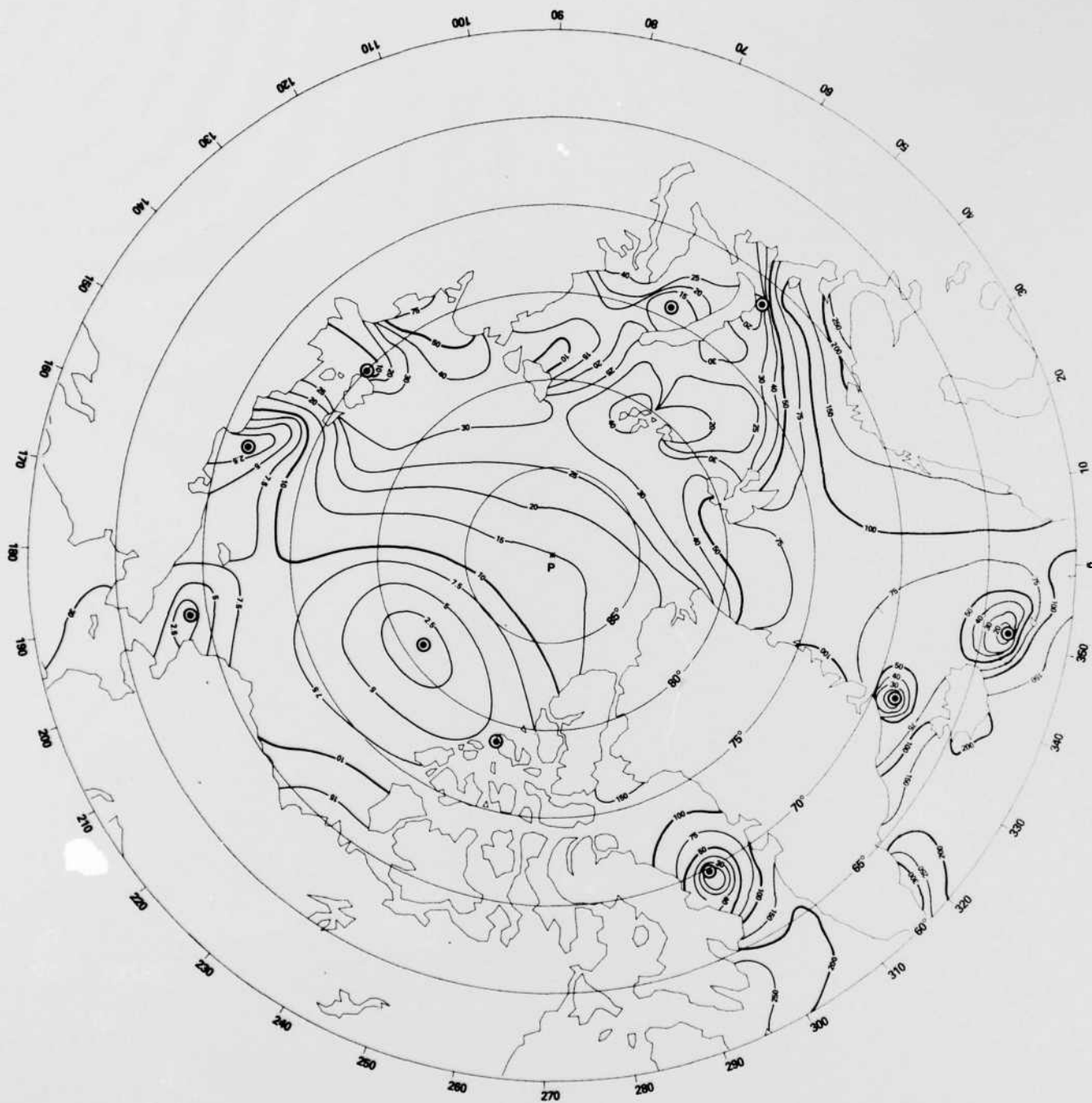
CORANGE MAP OF N₂ OCEAN TIDE
AMPLITUDES ξ IN CM
⊙ AMPHIDROMES







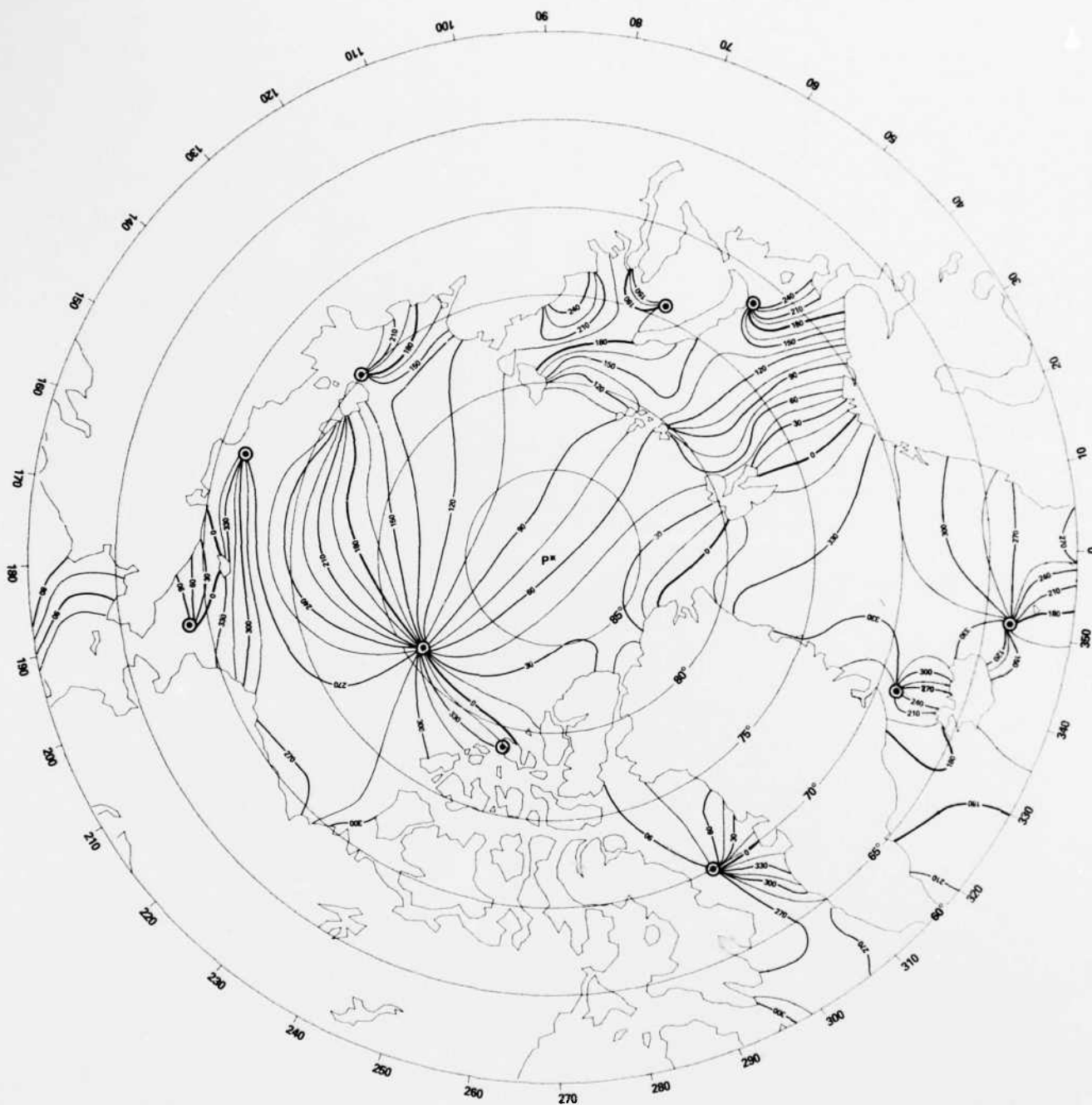




ARCTIC CORANGE MAP OF N_2 OCEAN TIDE
AMPLITUDES ξ IN MM

⊙ AMPHIDROMES

* P NORTH POLE



ARCTIC COTIDAL MAP OF N_2 OCEAN TIDE
 GREENWICH PHASES δ IN DEGREES
 $30^\circ \approx 1 \text{ HOUR}$

⊙ AMPHIDROMES

*P NORTH POLE

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