NOAA Data Report ERL PMEL-65

THE VENTS CURRENT OBSERVATION PROGRAM, 1984–1997 ANALYSIS: PERIODIC MOTIONS, M_2 AND K_1 TIDAL CONSTITUENTS, INERTIAL AND 4-DAY PERIOD FORCED MOTIONS

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July 1998

Contribution No. 1977 from NOAA/Pacific Marine Environmental Laboratory

NOTICE

Contribution No. 1977 from NOAA/Pacific Marine Environmental Laboratory

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The VENTS Current Observation Program, 1984–1997 Analysis: Periodic Motions, M_2 and K_1 Tidal Constituents, Inertial and 4-day Period Forced Motions

David J. Pashinski

Abstract. This report summarizes the M_2 and K_1 tidal constituents and the energies in the inertial and 4-day period motions seasonally from current observations made by the NOAA VENTS program from 1984–1997. The area included extends from 42–47°N, 127–134°W.

1. Introduction

The National Oceanic and Atmospheric Administration (NOAA) VENTS Program was established in 1984 to study the oceanic effects of hydrothermal activity along seafloor spreading centers. The VENTS Program scientists from the Pacific Marine Environmental Laboratory (PMEL) have conducted extensive oceanographic research in the area of the Juan de Fuca Ridge, a spreading center located in the northeast Pacific Ocean basin. The floor of this area of the Northeast Pacific Ocean is a complex region characterized by numerous massive seamounts and the spreading center where the Cascadia Plate moves eastward and the Pacific Plate moves westward. The sector of the research community interested in tectonic spreading processes, geophysical, physical chemical and dynamical, have intensely studied the area for 13 years. Research activities have concentrated on the Cleft segment of the Juan de Fuca ridge with excursions to other areas as indications of seismic activity presented themselves. Activity manifested as hydrothermal venting perturbs the thermal and chemical fields in the region of the ridge. The influence of these perturbations is significant locally as well as at greater distances from the sources (Baker *et al.*, 1989; Baker and Massoth, 1987; Cannon *et al.*, 1993; Cannon *et al.*, 1997). To contribute to the understanding of the processes that transport the perturbations away from the source regions, deep moorings carrying current meters have been deployed over the years at separations from order kilometers to hundreds of kilometers (Fig. 1). Previous works have addressed the averaged circulation based on these records with suggestions of the influence of periodic motion on the processes of physically transporting the perturbing material out of the central rift valley into the general circulation (Cannon and Pashinski, 1997; Cannon and Thompson, 1996). Present efforts and numerical approaches to the transport processes suggest that the periodic motions are critically important to describing the processes (Lavelle, personal communication). The objective of this work is to present a comprehensive summary of the periodic motions available through the current meter investigations.

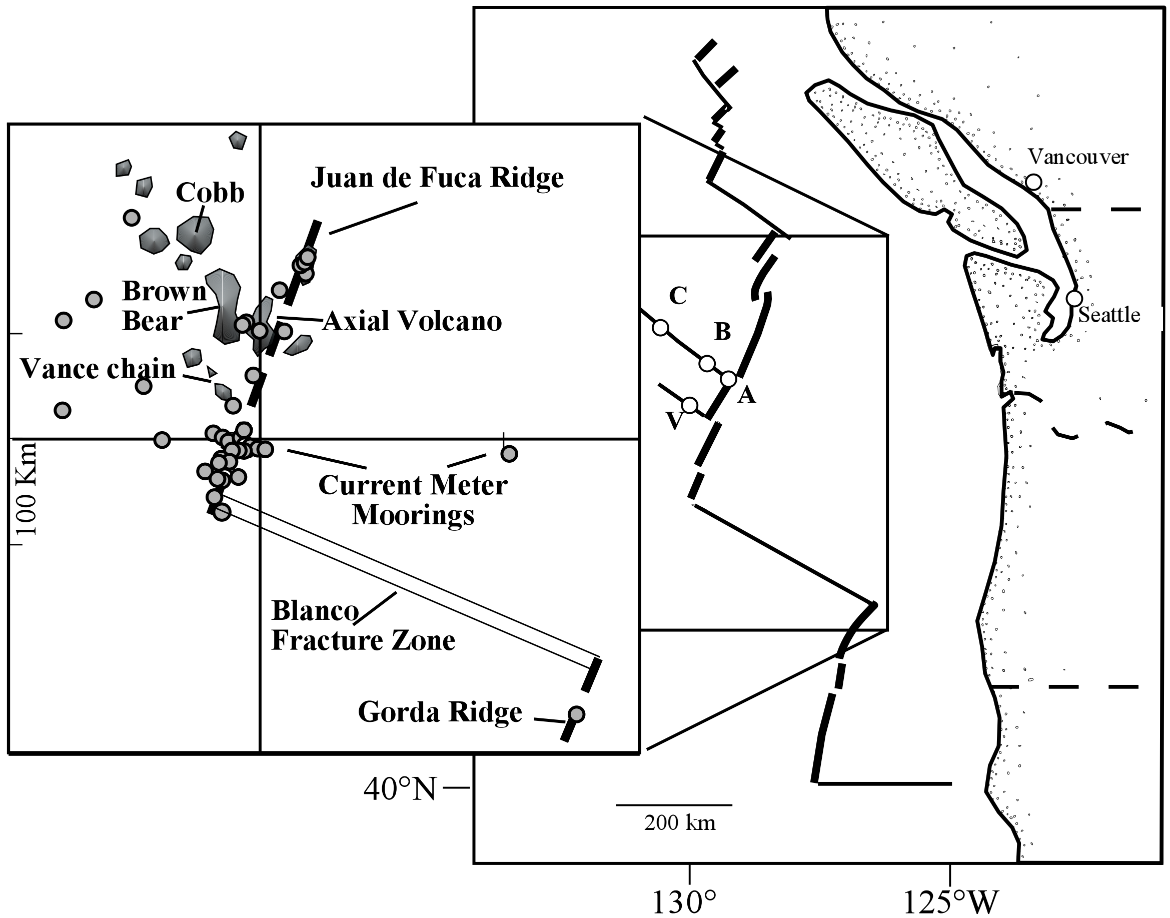

Fig. 1. Location diagram depicting the study area with major features noted. The locations of current meter observations are designated by filled circles.

2. Data Scope

Beginning in 1984 a program of Eulerian current measurement was begun on the Southern Juan de Fuca Ridge (44° 40′N, 130° 20′W). As the scope of the VENTS investigations expanded, the current observation program was enlarged to eventually incorporate observations in the region bounded in Fig. 1 (42°–47°N, 127°–134°W). The majority of the individual observations were of 1-year duration.

2.1 Instruments

The current data originate predominantly from Aanderaa recording current meters, models 4, 5, 7, and 8. These devices record the flow passing the unit by accumulating the rotations of a Savonious rotor and logging the count, direction, pressure, and temperature at assigned intervals, usually from 15 minutes to hourly. The Aanderaa instruments were calibrated on a biannual schedule at the Northwest Regional Calibration Center. Two records were from Niel Brown ACM-2 current meters.

2.2 Mooring

All the instruments are suspended from sub-surface moorings buoyed with glass sphere flotation and recovered upon activation of acoustic releases (Fig. 2). Various mooring configurations were utilized with instruments placed from near-bottom locations (~5 m) to as close to the surface as 100 m depth.

2.3 Analysis

The record lengths sampled provided 31-day series broken down by season. The summer is nominally defined as the year day 210 through 241 and the winter season defined as year day 030 through 061. The majority of the 182 full series allowed both a summer and winter sub-sample. All the data series were archived in a local analysis and display package (Pearson *et al.*, 1978; Pearson, 1981). From the tidal analysis major and minor current ellipse amplitudes, ellipse direction, and phase were selected for the M_2 and K_1 tidal constituents.

The major and minor amplitudes allows the calculation of eccentricity. The eccentricity of the current ellipses, the ratio of the root difference of the squares of the major and minor components to the major component ranges from a value of 1 for a straight line and 0 for a circle. The M_2 and K_1 constituents are very nearly linear with mean eccentricities of 0.97 and 0.99, respectively. Subsequent analyses use the major components

The data series were also passed through the spectral analysis option to generate periodograms of the current. The short length of the series dictated the use of periodograms to allow frequency resolution while sacrificing statistical confidence in each estimate by reducing the degree of freedom in the analysis to the minimum of two. The frequency resolution of the analysis provided several estimates in the inertial motion period range of 16 to 18 hours as well as several estimates in the longer period motions, 3 days to 5 days. Both the inertial motions and the 4-day motions are influenced by meteorological forcing and as such reflect seasonal variation

2.3.1 Seasonal

The basic statistics of the seasonal amplitudes (Table 1) suggest the tidal constituents stem from the same population as would be expected from astronomical forcing and the limited spatial extent of the observations. The distribution of the M_2 major and the K_1 major amplitudes are Gaussian in character (Fig. 3). Student-t tests comparing the seasonal paired data sets confirm that the means are not significantly different. As the deviations reflect, there is a broad range of amplitudes sampled over the extensive spatial range. The various extremes appear to be dependant on location of the sample and the Gaussian character arrives from the breadth of the sampling and

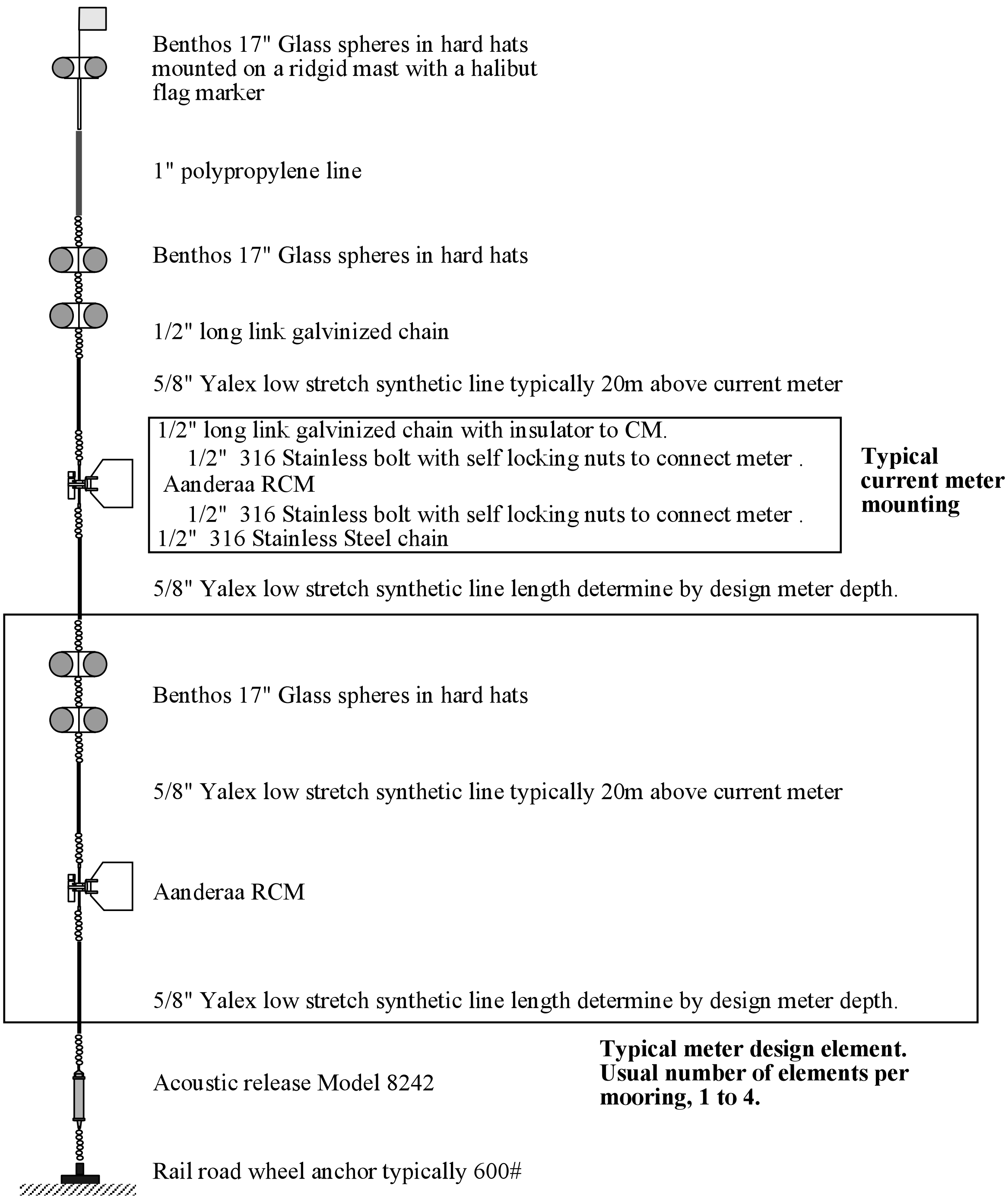

Fig. 2. Typical VENTS sub-surface taut mooring design used throughout the experiment area.

Table 1. Statistics of 182 samples distributed over the entire sampling region and period (1984–97).

	Mean M_2	Std. Dev. M_2	Mean K_1	Std. Dev. K_1	Mean Inertial	Std. Dev. Inertial	Mean 4-day	Std. Dev. 4-day
	(cm/s)		(cm/s)		$((cm/s)^2/cpd)$		$((cm/s)^2/cpd)$	
Summer	3.0	1.0	1.2	0.3	30.5	47.7	11.3	11.0
Winter	2.9	1.0	1.3	0.4	126.5	36.8	46.4	56.6

the random character of the individual instruments. The highest values of M_2 were found at depths of less than 500 m in or above the thermocline.

Seasonal differences in the inertial and 4-day analyses are considerable. The energy in the inertial frequencies is known to be derived from the impulsive forcing of motions by passing storms. As such, the large increase in winter inertial energy does not come as a surprise. The distributions of inertial energy are strongly skewed and quite peaked, not reflecting a Gaussian distribution (Fig. 4). The data series were transformed by taking the logarithm of the data and then performing a student-t analysis on the results. The analysis confirmed a significant difference in the mean of the populations. The winter inertial energy is nearly four times greater than summer, which in effect quantifies the nasty quality of winter field operations in the northeast Pacific.

The character of the distributions of the 4-day energy is similar to that of the inertial energy. The same transformation and student-t procedure was performed on the data. Similarly, the analysis confirmed the significance of the difference between the summer and winter data sets. The mean of the winter observations is also nearly four times larger. The result suggests that the forcing of the 4-day motions stems from the same winter storms as drive the inertial motions. The character of the motions as waves propagating along the ridge was presented in Cannon and Thompson (1996). At this point, however, the nature of the transformation from atmospheric forcing to 4-day motions remains unclear. Upon examination of specific records, a dependence of the energy on the location of the sample is suggested and will be discussed later.

2.3.2 Topographic

The Juan de Fuca ridge and neighboring seamounts exert a major influence on the mean flows in the Northeast Pacific (Cannon *et al.*, 1991). Theoretical consideration can attribute the mean flow to periodic motions in the presence of bathymetry. It is natural to search for the effects of bathymetry on these periodic motions.

Theoretical considerations of Allen and Thompson (1993) find that oscillatory flow over a ridge produces an intensified diurnal tidal flow evident near the ridge. This should manifest itself by higher amplitudes at heights close to the bottom and at distances not far from the ridge. Their findings did not show an intensification of the semi-diurnal motions. The distribution of magnitudes of the data reported here versus height and distance from the axis reference show no obvious

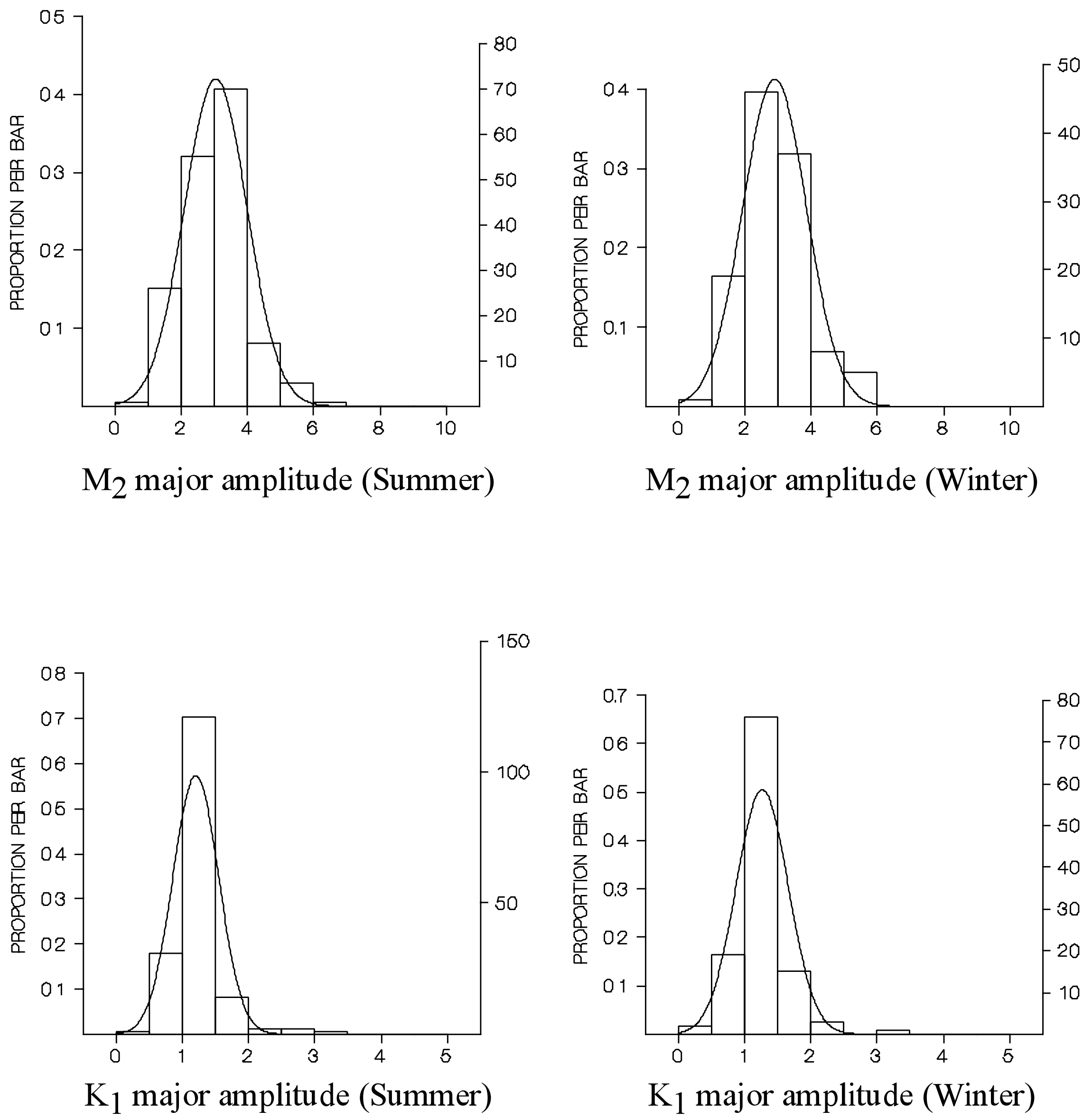

Fig. 3. Summer and winter distributions of M_2 and K_1 constituent major amplitudes. Distributions are overlain with a "normal" smoothed line.

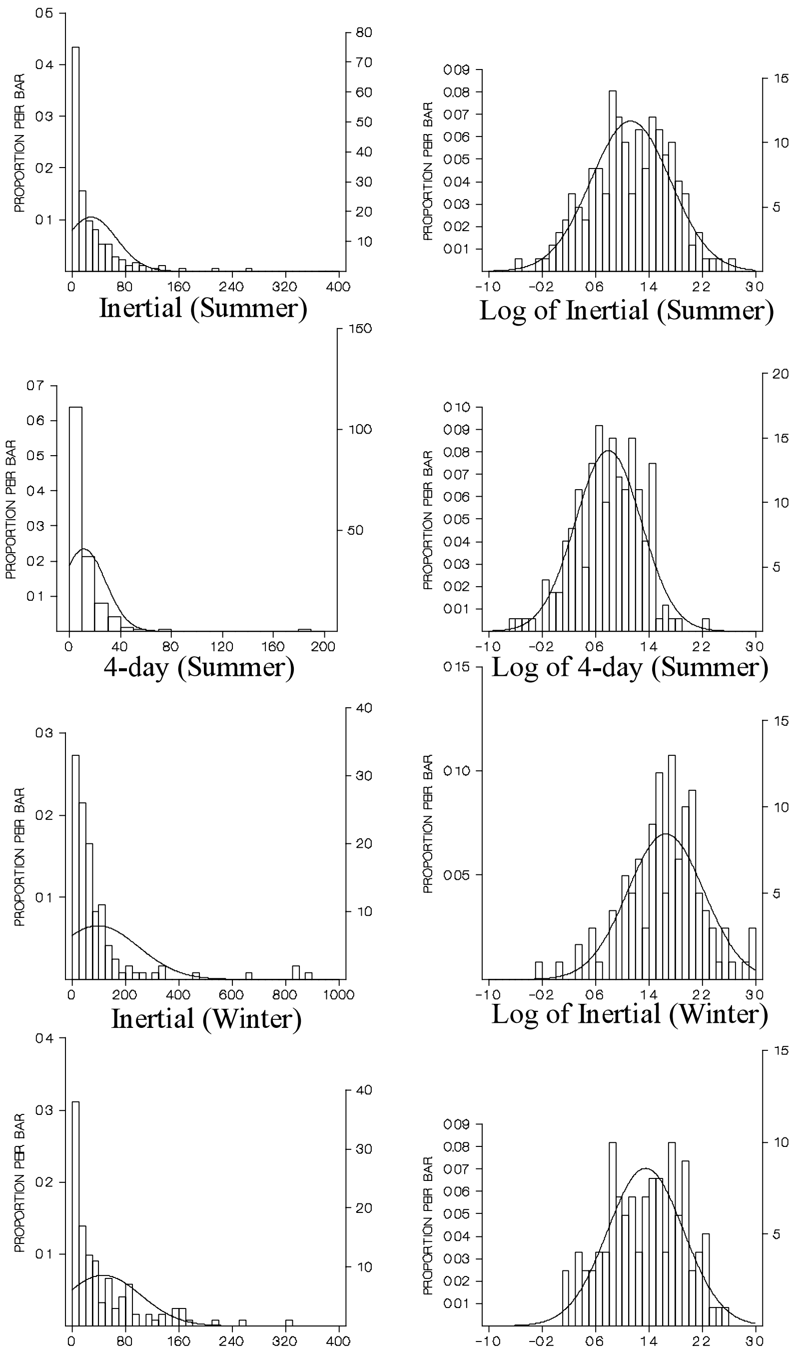

Fig. 4. Summer and winter distributions of inertial period and 4-day period energy densities and their logarithm transforms. Each distribution is overlain with a “normal” fit line.

systematic variation for either M_2 or K_1 (Fig. 5) contrary to Allen and Thompson. The lack of apparent intensification in either of the tidal constituents reflects the scale of tidal excursion; neither constituent would have an excursion greater than 1 km, which, if oriented normal to the ridge axis, is less than the width of the crest. Neither major component orientation is normal to the ridge (Fig. 6)—M_2 oriented 350 to 010 degrees and K_1 oriented 320 to 340 degrees—in general agreement with Thompson *et al.* (1990), such that there is a 20-degree angle between M_2 and the ridge and a 50-degree angle between the K_1 and the ridge. Thus the tidal motions are embedded in the ambient flow and do not feel the ridge. The difference in Allen and Thompson and these results may be a result of the difference in latitude or perhaps subtle differences in ridge profiles.

In the locally forced motions, inertial, and 4-day considerably more systematic variation is noted. In the inertial band the most energetic motions are found relatively close to the surface and in winter (Fig. 7). Below 500 m depth the intensity is uniformly distributed with increasing depth until very near the bottom. Between 600 m and 300 m above the bottom there is an increase in energy density and then from 300 m above to the bottom itself there is a significant decrease in energy. Examining the variation with distance away from the ridge, a distance influence is apparent from the higher energy densities near the axis, though the range includes values down to zero. This is in fact the influence of the peak in energy at about 300 m above bottom. To visualize the multivariate dependence those values at 300 m above the bottom and below the data are displayed relative to a normal distance from the ridge and the height above bottom. This visualization demonstrates the decrease in energy as the bottom is approached and as the crest is departed (Fig. 8). This figure clearly depicts the intensification of inertial flows over the ridge as well as a significant dissipating effect of the ridge crest (Thompson *et al.*, 1990).

The vertical distribution of 4-day energy clearly demonstrates a topographic effect in that the largest values are found near the bottom. The influence begins at 1000 m above the bottom, though it is also apparent that there is another factor in play. Again, displaying the data less than 1000 m above the bottom in normal distance and height coordinates the clear influence of the ridge presence can be seen. The 4-day energies are distinctly greater closer to the ridge and closer to the bottom. The consistency of the increase in energy suggests that the mechanism which dampens the inertial energy is not effective in the 4-day flow which exists for an unexpectedly long period (Luther, 1982). This suggests that the scale of excursion associated with the 4-day flow, and its nature as a long wave, bottom trapped is sufficient to minimize any dissipating influences. The increase in flow at the ridge crest relative to flow at similar heights distant from the crest demonstrates the intensification as the flow passes over the ridge.

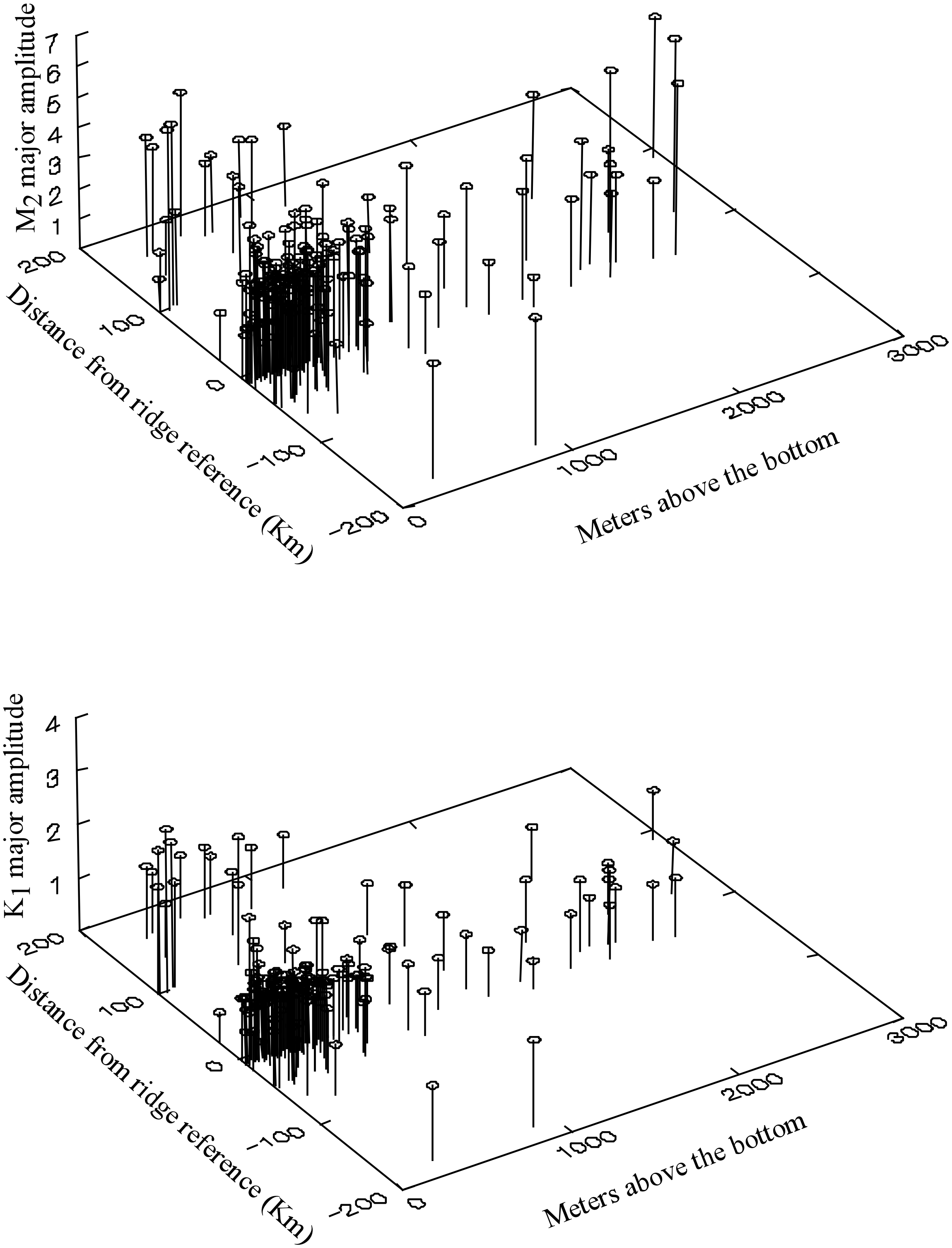

Fig. 5. Spatial distributions of summer M_2 and K_1 major amplitudes showing the limited spatial variation in either tidal constituent in the VENTS study area.

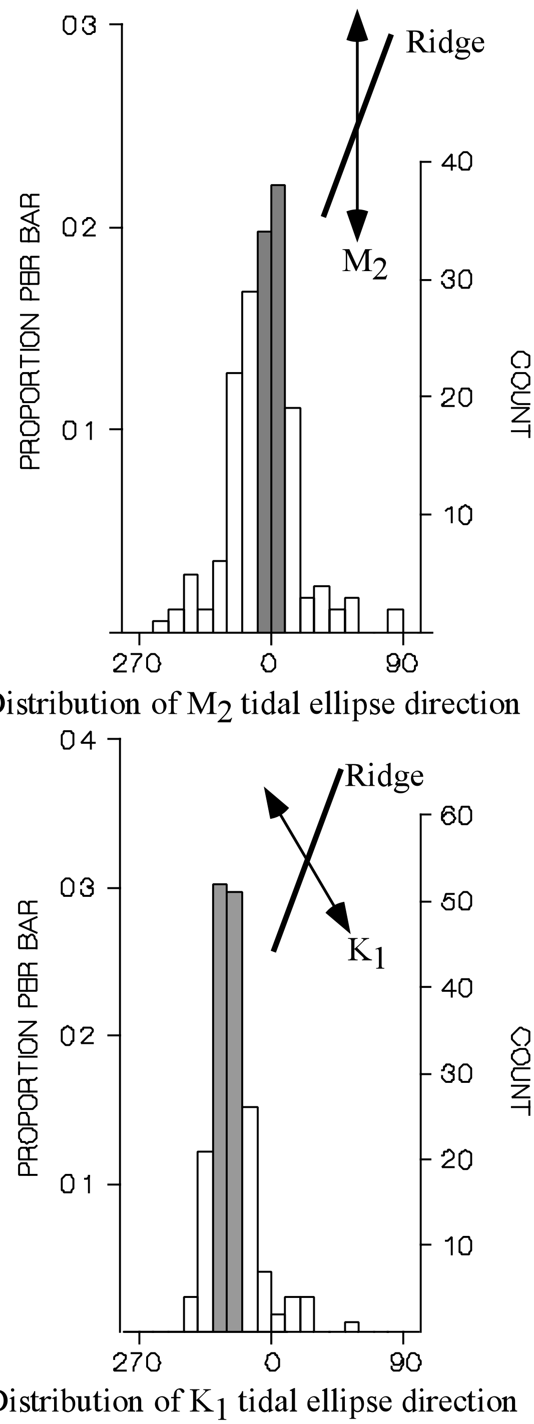

Fig. 6. The distributions of M_2 and K_1 tidal ellipse directions displaying the uniformity of orientation throughout the VENTS study area and the relation to the orientation of the Juan de Fuca ridge at 020°T.

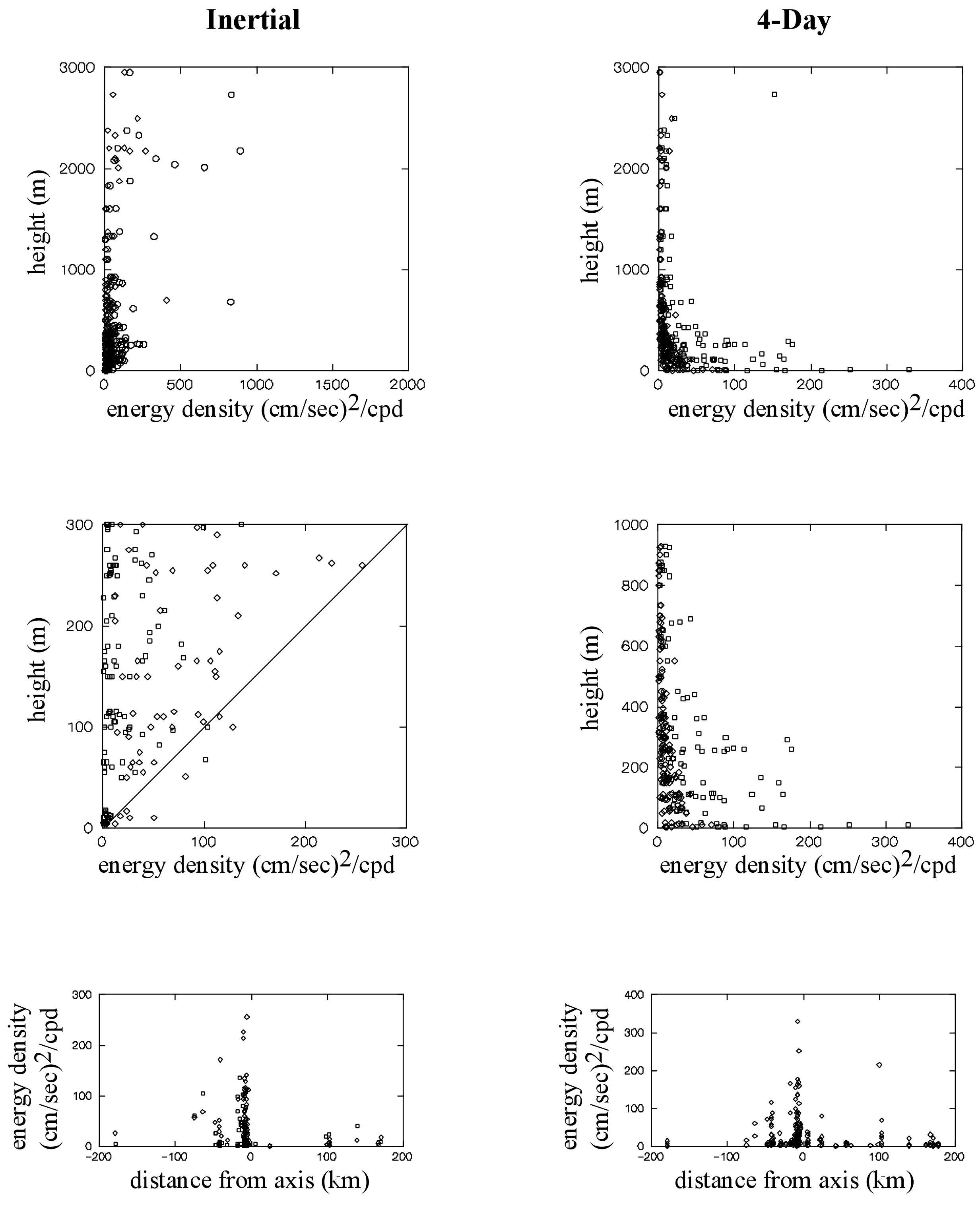

Fig. 7. The distributions of inertial and 4-day energy densities relative to height above the bottom and the distance from the ridge reference. Detailed distributions of the same parameters near bottom reveal distinct bottom topographic effects.

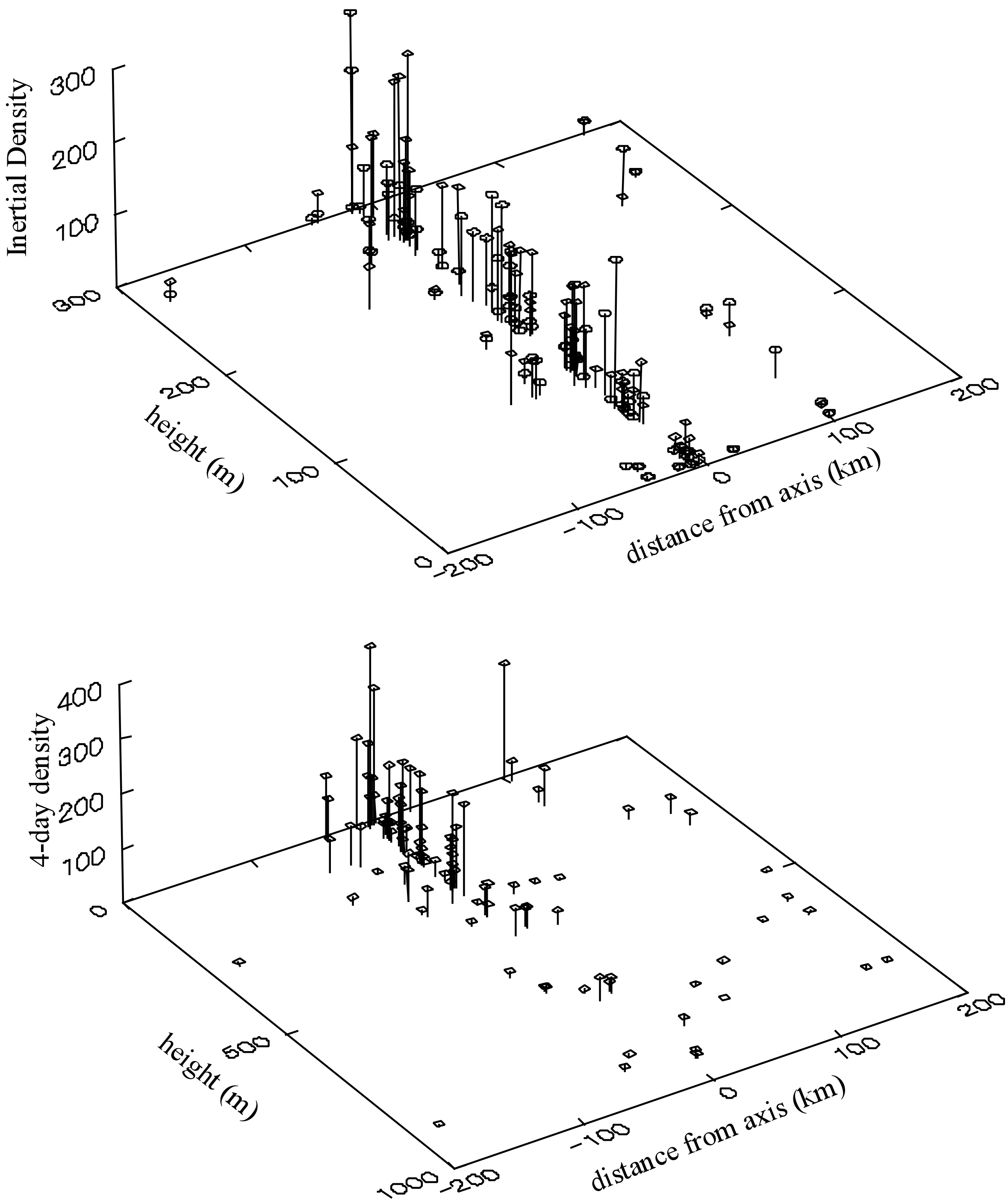

Fig. 8. Spatial display of inertial and 4-day energy densities displaying both the effect of height above bottom and distance from the ridge reference. Note the reversal of the height above bottom scale for the 4-day energies. The data are restricted to the lower 300 m for inertial energies and the lower 1000 m for the 4-day energies.

2.4 Summary

The results have shown:

- Tidal constituents have no seasonal variation, with mean properties, M_2 amplitude 3.0 cm/sec with an orientation of 350°T to 010°T, and K_1 amplitude 1.2 cm/sec and orientation of 320°T to 340°T.
- The inertial energy density is four times greater in winter than summer, summer 30.5 $(cm/sec)^2$/cpd and winter 126.5 $(cm/sec)^2$/cpd.
- The bathymetrically influenced energy peaks at 300 m above the ridge crest.
- The 4-day energy density also experiences a fourfold increase in winter, summer 11.2 $(cm/sec)^2$/cpd and winter 46.4 $(cm/sec)^2$/cpd.
- The energy peaks at the bottom and at the ridge crest.

3. Acknowledgments

The research was supported by the National Oceanic and Atmospheric Administration's VENTS Program. The assistance and professionalism of the officers and crews of the NOAA Ships *Discoverer, McArthur,* and *Surveyor* is gratefully acknowledged. Particular recognition is deserved for Dr. Glenn A. Cannon, whose guidance led to the success of the current observation program.

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Appendix A: Index of moorings

Column 1.	Reference in R2D2 archive file
Column 2.	Mooring name
Column 3.	Current meter ID number
Column 4.	Depth of instrument
Column 5.	Start time (YYDDDHHMM)
Column 6.	End time (YYDDDHHMM)
Column 7.	The number of samples in the record
Column 8.	Sample interval in hours
Column 9.	Latitude in decimal degrees north
Column 10.	Longitude in decimal degrees west
Column 11.	Bottom depth in meters

Ref	Mooring	Meter	Meter depth	Start	End	Records	Sample interval	Latitude	Longitude	Bottom depth
6	PMS–84–V5	1203	2340	841550200	843331330	8568	0.5	44.65	130.43	2358
7	PMS–84–V5	95	2260	841550200	843342300	8635	0.5	44.65	130.43	2358
8	PMS–84–V5	7629	2058	841550200	843301300	8423	0.5	44.65	130.43	2358
9	PMS–84–V1	AN7626	2030	841462000	851691800	9335	1	44.64	130.4	2130
10	85V08	AN7627	2070	851600800	852261200	1589	1	44.72	130.56	2620
11	85V08	AN7629	1720	851600800	861031300	7398	1	44.72	130.56	2620
13	85V08	AN7628	2320	851600800	861800700	9240	1	44.72	130.56	2620
14	86AXIAL	7626	1500	862000500	862382200	3717	0.25	45.93	130.02	1550
16	V8609B	AN5214	153	862921600	872082100	6750	1	44.83	130.4	2650
17	V8609B	AN3428	553	862921600	872082100	6750	1	44.83	130.4	2650
18	V8609A	AN1988	1000	862280800	872081800	8291	1	44.79	130.41	2605
20	V8609A	AN3431	2400	862280800	872081800	8291	1	44.79	130.41	2605
21	V8611	AN3429	2000	862350300	871961700	7839	1	44.68	130.23	2550
22	V8611	AN3183	2400	862350300	871961700	7839	1	44.68	130.23	2550
23	V8612	AN1821	2000	862360800	872081500	8096	1	44.69	130.35	2252
27	PMS85–V7	CM1154	2150	851580300	852040300	13249	0.08	44.69	130.38	2250
30	87V14	AN2354	1833	872002100	881922300	8571	1	45.98	130.19	1838
32	87V15	AN7627	2579	871961300	882071900	9031	1	44.87	127.5	2894
34	87V16	AN1825	2050	871990800	881942400	8657	1	45.25	132	3650
35	87V16	AN7629	2550	871990800	881942400	8657	1	45.25	132	3650
36	87V17	AN3221	500	872010300	881961900	8657	1	44.99	130.99	2876
37	87V17	AN6557	1000	872010300	881970200	8664	1	44.99	130.99	2876
38	87V17	AN1029	1500	872010300	881970200	8664	1	44.99	130.99	2876
39	87V17	AN7628	2500	872010300	881970200	8664	1	44.99	130.99	2876
40	87V18	AN2500	2000	871981200	881982200	8771	1	44.89	130.26	2297
41	87V18	AN3220	2292	871981200	881982200	8771	1	44.89	130.26	2297
43	87V19	AN1070	2000	871970400	881992100	8826	1	44.68	130.35	2253
44	87V19	AN7626	2248	871970400	881992100	8826	1	44.68	130.35	2253
47	88v24	CM3177	1880	882002000	892241500	9356	1	45.09	130.18	2310
48	88v24	CM1988	1380	882002000	891972200	8715	1	45.09	130.18	2310
49	88v24	TR2505	1630	882002000	892042000	8881	1	45.09	130.18	2310
50	88V23	TR1986	1600	882020100	892221500	9279	1	44.79	130.32	2223
52	88V24	TR2510	2130	882002000	882301600	765	1	45.09	130.18	2310
53	88V22	AN5430	506	881960600	892252000	9495	1	45.46	131.18	2836
54	88V22	AN5262	1506	881960600	892252000	9495	1	45.46	131.18	2836
55	88V22	AN1821	1006	881960600	892252000	9495	1	45.46	131.18	2836
56	88V22	AN1981	106	881960600	892252000	9495	1	45.46	131.18	2836
57	88V22	AN3431	2006	881960600	892252000	9495	1	45.46	131.18	2836
58	88V22	AN3183	2506	881960600	892252000	9495	1	45.46	131.18	2836
61	V8925	TR2502	1615	892250100	900872300	5471	1	45.09	130.16	2290

Ref	Mooring	Meter	Meter depth	Start	End	Records	Sample interval	Latitude	Longitude	Bottom depth
62	V8925	AN7845	1365	892250100	901202100	6261	1	45.09	130.16	2290
63	V8925	AN1825	1865	892250100	900781700	5249	1	45.09	130.16	2290
64	V8926	TR3134	1610	892230300	901071300	5987	1	44.79	130.32	2225
65	V8926	AN3221	1860	892230300	892610500	915	1	44.79	130.32	2225
66	V8926	AN6200	1360	892230300	900972100	5755	1	44.79	130.32	2225
67	V8927	AN1978	2537	892270400	900871600	5413	1	46.01	131.99	3337
68	V8927	AN6557	2037	892270400	900942000	5585	1	46.01	131.99	3337
69	V8928	AN1070	2005	892262300	900960900	5627	1	46.19	131.68	3205
70	V8928	AN1074	255	892262300	900990200	5692	1	46.19	131.68	3205
71	V8928	AN3291	1005	892262300	900901900	5493	1	46.19	131.68	3205
72	V8928	AN7626	2505	892262300	901131700	6043	1	46.19	131.68	3205
73	V8930	AN3145	1982	892282300	901211300	6183	1	46.9	131.3	3082
75	V8931	AN2355	1995	892250400	900842300	5396	1	45.29	130.28	2445
76	V8931	AN7629	2440	892250400	900891400	5507	1	45.29	130.28	2445
1	V9032	AN1821	1960	901941900	902621815	6526	0.25	44.9	130.13	2455
2	V9032	AN1988	2060	901941900	902621715	6522	0.25	44.9	130.13	2455
3	V9032	AN3183	2160	901941900	902621815	6526	0.25	44.9	130.13	2455
4	V9032	AN5430	1810	901941900	902621815	6526	0.25	44.9	130.13	2455
5	V9033	AN1804	1975	901942300	902602345	6340	0.25	44.92	130.21	2245
6	V9033	AN2505	2075	901942300	902602345	6340	0.25	44.92	130.21	2245
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10	V9034	AN1982	1569	901970000	902601745	6120	0.25	44.94	130.24	2262
11	V9034	TR2510	2069	901970000	902601800	6121	0.25	44.94	130.24	2262
12	V9034	AN3177	1819	901970000	902601800	6121	0.25	44.94	130.24	2262
13	V9034	AN3431	2169	901970000	902601800	6121	0.25	44.94	130.24	2262
14	V9035	AN1452	1832	901960500	902602200	4660	0.33	44.95	130.26	2150
15	V9035	AN1813	1982	901960500	902602145	6212	0.25	44.95	130.26	2150
16	V9035	TR1986	2082	901960500	902602145	6212	0.25	44.95	130.26	2150
17	V9036	AN1815	225	901980100	902611915	6122	0.25	44.96	130.34	2430
18	V9036	AN1981	2185	901980100	902611915	6122	0.25	44.96	130.34	2430
20	V9036	AN2095	2085	901980100	902611915	6122	0.25	44.96	130.34	2430
21	V9037	AN2096	1985	901932000	902432000	4801	0.25	44.96	130.18	2360
22	V9037	TR2511	2085	901932000	902591500	6317	0.25	44.96	130.18	2360
23	V9037	AN9003	1835	901932000	902591500	6317	0.25	44.96	130.18	2360
24	V9038	TR2504	2078	901932300	902591845	6320	0.25	44.98	130.22	2260
25	V9038	AN2097	2178	901932300	902341915	3922	0.25	44.98	130.22	2260
26	V9039	TR2476	2075	901940100	902592130	6323	0.25	44.98	130.28	2260
27	V9039	AN3446	1825	901940100	902592100	4741	0.33	44.98	130.28	2260

Ref	Mooring	Meter	Meter depth	Start	End	Records	Sample interval	Latitude	Longitude	Bottom depth
28	V9040	AN2500	1825	901950100	902622245	6520	0.25	44.89	130.2	2340
29	V9040	TR3210	2075	901950100	902622245	6520	0.25	44.89	130.2	2340
30	V9040	AN3429	1975	901950100	902622245	6520	0.25	44.89	130.2	2340
31	V9041	AN1071	2175	901961900	902620045	6264	0.25	44.9	130.3	2272
32	V9041	AN1960	1975	901961900	902620045	6264	0.25	44.9	130.31	2272
33	V9041	TR3323	2075	901961900	902620045	6264	0.25	44.9	130.31	2272
34	V9042	TR1453	2105	901960300	902651845	6688	0.25	44.92	130.31	2305
35	V9042	AN2117	1855	901960300	902651839	5016	0.33	44.92	130.31	2305
36	V9042	AN3442	2005	901960300	902651830	6687	0.25	44.92	130.31	2305
37	V9036	AN1068	1835	901980100	902611839	4590	0.33	44.96	130.34	2430
38	V9043	AN3221	266	902650300	911612400	6286	1	44.98	130.19	2306
39	V9043	TR3134	1616	902650300	911612400	6286	1	44.98	130.19	2306
40	V9043	AN6557	1866	902650300	911612400	6286	1	44.98	130.19	2306
41	V9043	AN3145	2016	902650300	911612400	6286	1	44.98	130.19	2306
42	V9043	TR2502	2116	902650300	902750800	246	1	44.98	130.19	2306
43	V9043	AN7628	2216	902650300	911612400	6286	1	44.98	130.19	2306
44	V9144	AN3446	1970	911630100	920432400	5904	1	44.95	130.16	2330
45	V9144	AN1070	2120	911630100	921391400	8198	1	44.95	130.16	2330
46	V9144	AN1978	2220	911630100	921391400	8198	1	44.95	130.16	2330
47	V9145	AN3133	257	911622200	921212000	7775	1	44.98	130.26	2267
48	V9145	AN2117	2007	911622200	921391600	8203	1	44.98	130.26	2267
49	V9145	AN1825	2157	911622200	921391600	8203	1	44.98	130.26	2267
50	V9145	AN2355	2257	911622200	921391600	8203	1	44.98	130.26	2267
51	V9146	AN1452	2002	911640100	921381800	8154	1	44.99	130.2	2262
52	V9146	AN3291	2152	911640100	921381800	8154	1	44.99	130.2	2262
53	V9146	AN3183	2252	911640100	921381800	8154	1	44.99	130.2	2262
54	V9147	AN1068	2006	911650000	921381600	8129	1	44.95	130.22	2268
55	V9147	AN6200	2156	911650100	921381500	8127	1	44.95	130.22	2268
56	V9147	AN3431	2256	911650100	921381500	8127	1	44.95	130.22	2268
57	V9148	AN7626	2136	911702200	921411800	8061	1	44.38	130.4	2351
58	V9149	AN7629	2122	911710000	921302000	7797	1	44.5	130.47	2222
59	92V50	AN9004	1997	921482300	930411600	6210	1	44.96	130.19	2252
60	92V50	AN2358	2147	921482300	931641800	9164	1	44.96	130.2	2252
61	92V50	AN1823	2248	921482300	931641800	9164	1	44.96	130.2	2252
62	92V51	AN7486	2247	921490300	931642200	9164	1	45.01	130.19	2251
63	92V52	AN2111	1999	921490100	931642000	9164	1	44.98	130.19	2259
64	92V52	AN1981	2249	921490100	931642000	9164	1	44.98	130.19	2259
65	92V53	AN1071	1994	921482200	931641600	9163	1	44.95	130.22	2261
66	92V53	AN5427	2244	921482100	931641600	9164	1	44.95	130.22	2261

Ref	Mooring	Meter	Meter depth	Start	End	Records	Sample interval	Latitude	Longitude	Bottom depth
67	92V54	AN2477	2150	921492000	931641300	9138	1	44.98	130.24	2250
68	92V55	AN7628	2153	921492100	931651300	9161	1	45.01	130.22	2303
69	92V56	AN1675	249	921492300	931651600	9162	1	44.97	130.31	2424
70	92V57	AN1068	2147	923481800	931291700	7055	0.5	44.98	130.2	2198
71	93V58	AN1978	2150	931691800	932262120	4115	0.33	44.91	129.95	2635
72	93V59	AN2355	2156	931692100	932262000	4102	0.33	44.92	130.03	2519
73	93V60	AN3183	2166	931692100	932261839	4098	0.33	44.95	130.09	2516
74	93V61	AN3431	2168	931692300	932261739	4089	0.33	44.96	130.15	2397
76	93V64	AN1825	2156	931700000	932271500	4150	0.33	44.98	130.26	2261
77	93V65	AN1070	2150	931701800	932271620	4100	0.33	45	130.31	2400
78	93V66	AN6200	2150	931701900	932271720	4100	0.33	45.01	130.38	2580
79	93V67	AN3291	2153	931702000	932271820	4100	0.33	45.04	130.47	2743
80	93V68	AN3145	254	931690100	932272339	4245	0.33	44.97	130.31	2429
81	94V70	AN1452	2004	932320100	942571800	9378	1	44.96	130.22	2269
82	94V70	AN5427	2154	932320100	942571600	9376	1	44.96	130.22	2269
83	92V71	AN2117	1804	932310300	941091900	5849	1	46.49	129.6	2403
84	93V71	AN7628	2153	932310300	941091900	5849	1	46.49	129.6	2403
85	93V73	AN1071	1791	932310300	941091500	5845	1	46.51	129.55	2441
86	93V73	AN7486	2141	932310100	941091300	5845	1	46.51	129.55	2441
87	93V74	AN2358	1806	932310500	941082300	5827	1	46.42	129.55	2656
88	93V75	AN2111	1796	932302100	941092200	5858	1	46.57	129.54	2646
89	93V75	AN1981	2146	932302100	941092300	5859	1	46.57	129.54	2646
90	94V76	AN3291	2095	941121900	942581430	7000	0.5	44.96	130.21	2275
91	94V80	AN6200	1900	941122300	942571500	6945	0.5	44.97	130.21	2260
92	94V80	AN1825	2100	941122300	942571500	6945	0.5	44.97	130.21	2260
93	94V80	AN3183	2200	941122300	942571500	6945	0.5	44.97	130.21	2260
94	94V81	AN2117	2101	941101700	942461600	6527	0.5	44.97	130.22	2156
95	94V82	AN1070	2104	942592000	951672300	6556	1	44.97	130.2	2264
96	94V82	AN7629	2204	942592000	951672300	6556	1	44.97	130.2	2264
97	94V83	AN2111	1599	942592200	951681800	6573	1	44.96	130.21	2254
98	94V83	AN2358	1999	942592200	951681800	6573	1	44.96	130.21	2254
99	94V83	AN1981	2099	942592200	951681800	6573	1	44.96	130.21	2254
100	94V83	AN3431	2199	942592200	951681800	6573	1	44.96	130.21	2254
101	94V84	AN7486	2096	942600100	951672100	6549	1	44.97	130.22	2271
102	94V84	AN2355	2196	942600100	951672100	6549	1	44.97	130.22	2271
103	94V85	AN1675	2109	942600200	951791600	6831	1	44.98	130.21	2274
104	94V85	AN1978	2209	942600200	951791600	6831	1	44.98	130.21	2274
105	94V86	AN5257	255	942590300	951682000	6594	1	44.98	130.17	2333
106	94V86	AN3133	1005	942590300	951682000	6594	1	44.98	130.17	2333

Ref	Mooring	Meter	Meter depth	Start	End	Records	Sample interval	Latitude	Longitude	Bottom depth
107	94V86	AN1071	2005	942590300	951682000	6594	1	44.98	130.17	2333
108	94V86	AN7628	2105	942590300	951682000	6594	1	44.98	130.17	2333
1	95V87	AN6200	2012	952030200	961301700	7024	1	44.97	130.21	2272
2	95V88	AN1452	1909	952030400	961301800	7023	1	44.97	130.21	2274
3	95V88	AN1825	2109	952030400	961301800	7023	1	44.97	130.21	2274
4	95V88	AN7626	2209	952030300	961301900	7025	1	44.97	130.21	2274
5	95V89	AN3183	2106	952030000	961301500	7024	1	44.99	130.2	2256
6	95V90	AN2117	1902	952030900	961302100	7021	1	44.68	130.36	2215
7	95V90	AN3291	2102	952030900	961302100	7021	1	44.68	130.36	2215
8	95V90	AN5427	2202	952030900	961302100	7021	1	44.68	130.36	2215
9	96V91	AN7486	1907	961722100	971822100	9025	1	44.97	130.21	2272
10	96V91	AN1978	2107	961722200	971822000	9023	1	44.97	130.21	2272
11	96V91	AN7629	2207	961722200	971822000	9023	1	44.97	130.21	2272
12	96V92	AN2355	2105	961722300	971822300	9025	1	44.99	130.2	2255
13	96V92	AN3183	2205	961730000	971822200	9023	1	44.99	130.2	2255
14	96V93	AN3431	2033	961662100	971820100	9149	1	42.64	126.83	2908
15	96V93	AN5427	2633	961662200	971812400	9147	1	42.64	126.83	2908
16	96V94	AN1071	1498	961742100	971830300	8983	1	45.55	130.08	2233
17	96V94	AN1675	1898	961742200	971830200	8981	1	45.55	130.08	2233
18	96V95	AN2111	1498	961752300	962320200	1348	1	45.92	129.77	1993
19	96V95	AN3291	1898	961760000	971831100	8964	1	45.92	129.77	1993
20	96V96	AN1825	1475	961751900	971831900	8977	1	46.27	129.81	2105
21	96V96	AN6200	1875	961752000	971831800	8975	1	46.27	129.81	2105
22	96V98	AN1452	1808	961752100	971831600	8972	1	46	130.15	1923
23	96V98	AN1070	1908	961752300	971831500	8969	1	46	130.15	1923

Appendix B: Summer tidal analysis

Column 1.	Reference number in R2D2 archive system
Column 2.	Mooring name
Column 3.	Depth of instrument in meters
Column 4.	M_2 constituent major component amplitude in cm/sec
Column 5.	M_2 constituent minor component amplitude in cm/sec
Column 6.	Orientation of the major component axis
Column 7.	Phase relative to Greenwich
Column 8.	The sense of rotation of the component vector (cw – clockwise, ccw – counter-clockwise)
Column 9.	K_1 constituent major component amplitude in cm/sec
Column 10.	K_1 constituent minor component amplitude in cm/sec
Column 11.	Orientation of the major component axis
Column 12.	Phase relative to Greenwich
Column 13.	The sense of rotation of the component vector (cw – clockwise, ccw – counter-clockwise)

Ref	Mooring	Meter depth	M_2 major	M_2 minor	Direction	Phase	Rot	K_1 major	K_1 minor	Direction	Phase	Rot
6	PMS–84–V5	2340	3.99	1.87	23.8	185.4	cw	1.67	0.77	3.8	180.7	ccw
7	PMS–84–V5	2260	1.09	0.4	8.2	–17.3	cw	1.07	0.3	–29.8	–11.6	ccw
8	PMS–84–V5	2058	2.53	0.64	–18.4	194.9	cw	1.18	0.4	–18	233.1	cw
9	PMS–84–V1	2030	5.7	1.01	129.4	62.4	cw	2.49	0.81	141.1	60.8	cw
10	85V08	2070	1.63	0.73	2	127.2	ccw	1.04	0.06	–25.5	199.9	cw
11	85V08	1720	1.93	0.14	–3.5	69.1	ccw	0.81	0.16	–24	160.5	ccw
13	85V08	2320	.	.	.	.	.	.	.	.	.	.
14	86AXIAL	1500	5.89	0.85	–16.8	189.4	cw	3.04	1.23	–9.2	238.7	cw
16	V8609B	153	5.6	2.45	80.4	96.4	cw	1.1	0.38	–11.3	208	ccw
17	V8609B	553	2.73	0.92	24	159.4	ccw	1	0.06	–32.7	223.8	ccw
18	V8609A	1000	0.98	0.26	–18.2	243.9	ccw	0.52	0.01	160.9	80.4	ccw
20	V8609A	2400	3.14	0.16	–10.4	217.9	cw	0.83	0.23	–16.1	225.2	ccw
21	V8611	2000	3.04	0.55	–20.6	210.6	cw	0.95	0	140.1	53.1	cw
22	V8611	2400	2.97	0.97	–1.4	204.1	cw	0.67	0.13	–12.9	218.4	ccw
23	V8612	2000	1.79	0.29	–22.2	232.8	ccw	1.38	0.7	154.8	72.1	cw
27	PMS85–V7	2150	3.75	1.01	–32.6	216.8	cw	1.57	0.87	151.7	70.9	cw
30	87V14	1833	1.96	0.14	21.7	247.1	cw	2.68	0.1	14.1	–72.7	cw
32	87V15	2579	2.77	0.1	–21.6	234	ccw	1.21	0.08	–13.5	228.7	ccw
34	87V16	2050	3.52	0.67	–16	233.5	cw	0.94	0.14	–12.5	239.8	ccw
35	87V16	2550	2.79	0.11	4.2	233.4	ccw	0.95	0.1	3.7	246.9	ccw
36	87V17	500	2.57	0.01	29	180.4	ccw	1.06	0.08	–27.9	239.8	cw
37	87V17	1000	2.88	0.34	7.9	208.2	cw	1.02	0.03	–16.9	239.1	ccw
38	87V17	1500	1.71	0.04	164.5	86	ccw	0.86	0.05	–13.5	250.3	ccw
39	87V17	2500	1.64	0.58	–31.8	236.9	ccw	0.93	0.09	–26.5	241.9	ccw
40	87V18	2000	2.67	0.02	–32.5	207.4	ccw	1.23	0.24	147	58.5	cw
41	87V18	2292	2.12	0.04	0.9	220.6	ccw	0.71	0.07	147.4	81.5	ccw
43	87V19	2000	3.76	0.76	128	52.2	cw	1.44	0.55	–36.9	230.2	cw
44	87V19	2248	2.18	0.06	–19.4	227.1	cw	1.01	0.26	131.4	92.4	cw
47	88v24	1880	3.18	0.42	–26.5	202.1	ccw	1.21	0.04	–22.4	227.4	cw
48	88v24	1380	3.33	1.1	–2.4	169.8	cw	1.05	0.29	–10.7	210.4	cw
49	88v24	1630	3.46	0.35	–21.8	197.6	cw	0.99	0.03	–26.6	222.2	cw
50	88V23	1600	4.03	0.83	9.3	202.5	cw	1.19	0.05	–22.5	234.1	cw
52	88V24	2130	3.22	0.29	12.5	218.2	cw	0.88	0.01	–24.3	245.6	ccw
53	88V22	506	2.73	0.37	148.6	62.4	cw	0.97	0	–10.8	228.5	ccw
54	88V22	1506	2.4	0.21	18.8	193	ccw	1.03	0.11	–26	232.7	ccw
55	88V22	1006	3.35	0.34	–21.9	229.9	cw	1.17	0.08	144.9	57.1	ccw
56	88V22	106	5.66	3.44	1.7	251.7	cw	0.97	0.12	–17.7	247.9	ccw
57	88V22	2006	2.14	1.11	35.7	174.8	ccw	1.08	0.01	146	65.9	cw
58	88V22	2506	1.77	1.1	128.9	78.8	ccw	1.01	0.03	–26.6	239.9	ccw
61	V8925	1615	3.67	0.95	5.2	206.5	cw	1.08	0.01	–28.2	241.5	ccw
62	V8925	1365	3.68	1.39	16.3	201.3	cw	1	0.07	149.3	59.8	ccw
63	V8925	1865	4.57	1.73	4.3	211.9	cw	1.16	0.07	–25	236.8	cw

Ref	Mooring	Meter depth	M_2 major	M_2 minor	Direction	Phase	Rot	K_1 major	K_1 minor	Direction	Phase	Rot
64	V8926	1610	2.54	0.04	–1.3	206.1	cw	1.23	0.1	–26	238.6	cw
65	V8926	1860	2.82	0.4	4.2	189.3	ccw	1.42	0.2	135.7	62.8	cw
66	V8926	1360	2.63	0.37	–14.5	224.1	cw	1.21	0.05	–23.6	237.7	cw
67	V8927	2537	3.56	0.91	2.7	212.5	cw	0.99	0.27	134.6	76.1	ccw
68	V8927	2037	3.23	0.62	–12.8	217.4	cw	1.15	0.23	145.2	59	ccw
69	V8928	2005	1.85	0.46	47.9	165.1	ccw	0.97	0.21	–13.9	231.7	ccw
70	V8928	255	4.66	2.64	90	124.2	cw	0.93	0.08	139.3	79.3	ccw
71	V8928	1005	3.43	0.79	9.8	225.1	cw	1	0.04	–18.5	237.9	cw
72	V8928	2505	1.69	0.49	–22.6	225.7	cw	0.7	0.37	19.4	217.1	ccw
73	V8930	1982	2.64	0.46	–67.8	18.9	cw	1	0.17	129	110.8	ccw
75	V8931	1995	3.99	1.2	1	214.5	cw	0.85	0.1	–25.6	227.4	ccw
76	V8931	2440	1.56	0.69	39.5	190.7	ccw	0.56	0.32	12.4	150.7	ccw
1	V9032	1960	3.49	0.8	3	182	cw	1.13	0.06	–22.5	220	ccw
2	V9032	2060	3.53	0.73	–4.6	178.7	cw	1.17	0.04	–35.1	217.9	cw
3	V9032	2160	3.64	0.84	4.9	185.8	cw	1.07	0.04	–33.2	219.5	ccw
4	V9032	1810	3.18	0.51	2.6	187.1	cw	1.05	0.06	–28.8	219.3	ccw
5	V9033	1975	3.25	0.49	–0.8	187.9	cw	1.16	0.06	–24.4	231.9	cw
6	V9033	2075	2.94	0.33	3	194.4	cw	1.23	0.34	–14.3	239.8	cw
8	V9033	1825	3.36	0.53	5	185.5	cw	1.14	0.11	–30.5	227.8	cw
9	V9034	1969	2.92	0.16	–7.9	196.2	cw	1.2	0.13	–30.2	233.5	cw
10	V9034	1569	3.81	0.85	–3.9	190.3	cw	1.11	0.08	–32.2	228.3	ccw
11	V9034	2069	2.33	0.02	–7.3	204.7	cw	0.84	0.08	–34.1	232	ccw
12	V9034	1819	3.99	0.96	–2.5	189.3	cw	1.28	0.1	–26	231.7	cw
13	V9034	2169	3.09	0.21	–1.5	193.2	cw	1.21	0.19	–30.1	236.1	cw
14	V9035	1832	3.08	0.45	–4.4	193.9	cw	1.25	0.18	–20.9	231.2	cw
15	V9035	1982	3.2	0.11	–14.6	198.7	cw	1.36	0.36	–33.4	234.1	cw
16	V9035	2082	2.97	0.05	–12.1	193.4	ccw	1.82	0.64	136.6	61.3	cw
17	V9036	225	2.84	0.17	125.7	57.1	ccw	1.04	0.09	–11.4	215.4	ccw
18	V9036	2185	2.82	0.07	11.7	178.9	ccw	1.04	0.1	–14.8	228.4	ccw
20	V9036	2085	2.5	0.36	16.6	182.2	ccw	1.03	0.02	–17.2	231.5	cw
21	V9037	1985	3.21	0.42	0.7	191.7	cw	1.23	0.05	–26.8	234.9	ccw
22	V9037	2085	3.38	0.4	–5.8	191.6	cw	1.24	0.18	–23.8	327.2	cw
23	V9037	1835	3.1	0.45	–8	197.8	cw	1.04	0.12	–27.5	225.6	cw
24	V9038	2078	3.35	0.5	–16.1	204.2	cw	1.35	0.04	–32.8	236.7	cw
25	V9038	2178	3.13	0.02	–1.6	188.2	cw	1.51	0.42	142.7	52.9	cw
26	V9039	2075	3.11	0.31	2.6	188.2	cw	1.17	0.05	–24.1	237	cw
27	V9039	1825	3.03	0.33	–18.1	201.6	cw	1.03	0.12	–32.5	226.6	cw
28	V9040	1825	3.78	0.96	–7.7	187.1	cw	1.32	0.08	–30.7	222.9	cw
29	V9040	2075	3.18	0.49	8.1	187.9	cw	1.12	0.07	–22.5	230.6	cw
30	V9040	1975	3.12	0.5	2.6	184.7	cw	1.23	0.12	–27.1	230.5	cw
31	V9041	2175	3.12	0.18	1	191.3	cw	1.29	0.1	140.8	56.4	cw
32	V9041	1975	2.89	0.29	–9.6	198.7	ccw	1.27	0.26	–27.6	229.9	cw

Ref	Mooring	Meter depth	M_2 major	M_2 minor	Direction	Phase	Rot	K_1 major	K_1 minor	Direction	Phase	Rot
33	V9041	2075	0.3	0.05	9.8	213	ccw	0.41	0.01	148.3	78.7	ccw
34	V9042	2105	3.06	0.29	–0.3	192.2	cw	1.1	0.06	–27.6	231.4	cw
35	V9042	1855	2.69	0.23	–11.2	195.8	ccw	1.07	0.09	–33.1	235.7	ccw
36	V9042	2005	2.82	0.05	3	181.5	ccw	1.2	0.06	–24	229.4	cw
37	V9036	1835	2.44	0.07	–10.8	199.8	ccw	1.02	0.25	135.3	58.5	ccw
38	V9043	266	.	.	.	.	.	.	.	.	.	.
39	V9043	1616	.	.	.	.	.	.	.	.	.	.
40	V9043	1866	.	.	.	.	.	.	.	.	.	.
41	V9043	2016	.	.	.	.	.	.	.	.	.	.
42	V9043	2116	.	.	.	.	.	.	.	.	.	.
43	V9043	2216	.	.	.	.	.	.	.	.	.	.
44	V9144	1970	2.25	0.39	–1.5	242.4	ccw	1.07	0.07	141.8	90	cw
45	V9144	2120	2.48	0.29	32.3	182.8	cw	1.08	0.18	143.6	69.3	cw
46	V9144	2220	2.55	0.13	–6.8	232.4	ccw	1	0.06	149.4	66.2	ccw
47	V9145	257	4.22	1.18	140.1	57.7	cw	1.34	0.21	–18.4	228	cw
48	V9145	2007	1.92	0.83	46.8	199.7	ccw	0.97	0.03	–169.6	79.6	ccw
49	V9145	2157	1.75	1.19	105.8	118.2	ccw	1.14	0.3	145.7	76	cw
50	V9145	2257	1.76	1.15	138.7	92	ccw	1	0.29	138.4	81.3	ccw
51	V9146	2002	1.94	0.84	–18.9	250.8	ccw	1.15	0.03	149.6	70.8	ccw
52	V9146	2152	1.62	1	127.6	92.9	ccw	1.21	0.24	147.4	64	cw
53	V9146	2252	1.44	1.04	155.2	87.2	ccw	1.17	0.01	135.9	90.2	cw
54	V9147	2006	1.82	1.04	114.7	119.2	ccw	1.34	0.42	153.6	73.8	cw
55	V9147	2156	1.82	1.2	142.7	78.6	ccw	1.16	0.2	142	77.7	cw
56	V9147	2256	2.25	0.72	152.8	83.3	ccw	1.11	0.08	141.5	82.2	ccw
57	V9148	2136	2.27	0.42	31.3	178.8	ccw	0.94	0.05	–22.5	238.5	cw
58	V9149	2122	3.29	0.16	55.4	128.1	ccw	1.73	0.86	139.5	63.6	cw
59	92V50	1997	3.34	0.09	–6	248.7	ccw	1.31	0.04	145.5	88.9	cw
60	92V50	2147	3.75	0.47	–5	213.7	cw	1.5	0.11	147.7	70.4	cw
61	92V50	2248	1.73	0.03	–0.8	222.5	cw	0.6	0.04	139.1	120.1	ccw
62	92V51	2247	3.13	0.02	5.9	208.8	ccw	1.16	0.03	141.2	90.6	ccw
63	92V52	1999	3.55	0.61	–10.4	218	cw	1.36	0.17	153.9	65.7	cw
64	92V52	2249	3.47	0.27	3.2	203.8	cw	1.22	0.03	130.3	90.2	cw
65	92V53	1994	2.91	0.07	–15.2	220.1	ccw	1.28	0.02	145.2	69.3	cw
66	92V53	2244	3.01	0.41	5.2	211.6	cw	0.96	0.23	130.7	80	cw
67	92V54	2150	1.07	0.15	–0.8	219.3	cw	0.31	0.08	–6.6	–80.3	cw
68	92V55	2153	2.51	0.16	4.2	206.2	cw	1.02	0.07	–28.4	241.1	cw
69	92V56	249	3.2	0.31	–15.3	227.4	ccw	1.2	0.08	–13.3	240.9	ccw
70	92V57	2147	.	.	.	.	.	.	.	.	.	.
71	93V58	2150	3.31	0.7	16.9	176.1	cw	1.02	0.02	–15.3	218.1	cw
72	93V59	2156	2.89	0.7	18.4	170.9	cw	0.82	0.1	–8.4	216.8	ccw
73	93V60	2166	3.76	0.39	5.1	179.4	cw	1.01	0.05	–12.7	219.1	ccw
74	93V61	2168	3.07	0.45	11.9	176	ccw	1.13	0.07	–23.6	223.5	ccw

Ref	Mooring	Meter depth	M_2 major	M_2 minor	Direction	Phase	Rot	K_1 major	K_1 minor	Direction	Phase	Rot
76	93V64	2156	1.72	1.45	1.8	182.4	ccw	1.12	0.14	–31.2	230.7	cw
77	93V65	2150	1.86	0.54	–8.7	187.6	ccw	0.93	0.02	–26.8	230.5	cw
78	93V66	2150	1.64	1.18	28.1	166.4	ccw	1.1	0.14	–15.4	220.6	ccw
79	93V67	2153	2.32	0.22	16.8	168.1	ccw	1.03	0.17	–14.6	211.3	ccw
80	93V68	254	6.25	0.94	–14.9	233.7	cw	1.37	0.03	–24.4	233.1	ccw
81	94V70	2004	6.59	2.35	157.6	88.8	cw	2.17	0.37	151.5	78.4	cw
82	94V70	2154	3.75	0.96	0.4	242.1	cw	1.18	0.12	163.6	74.6	cw
83	92V71	1804	2.42	0.08	2.3	228	ccw	1.34	0	148.6	75.1	ccw
84	93V71	2153	3.89	1.01	11.2	211.8	cw	1.33	0.05	149.8	79.6	cw
85	93V73	1791	2.52	0.21	–2.2	–85.6	ccw	1.08	0.08	152.2	102.9	ccw
86	93V73	2141	3.41	0.41	5.2	213.3	cw	1.14	0.11	153.7	66.9	cw
87	93V74	1806	2.87	0.09	14.9	207.3	cw	1.15	0.03	154.4	68.7	cw
88	93V75	1796	2.54	0.36	–28.6	213.7	ccw	1.16	0.14	139.3	57.5	ccw
89	93V75	2146	4.72	2.18	5	212	cw	1.17	0.04	142	77.8	cw
90	94V76	2095	3.57	0.87	–4.2	212.6	cw	1.26	0.33	152	65.4	cw
91	94V80	1900	4.62	1.81	–7.5	207.6	cw	1.37	0.24	–25.6	237.2	cw
92	94V80	2100	3.05	0.54	–8	214.3	cw	1.13	0.08	–29	224.2	cw
93	94V80	2200	4.19	1.62	–0.8	215.9	cw	1.35	0.25	144.1	67.7	cw
94	94V81	2101	4.54	0.97	–54.6	36.7	cw	2.23	0.23	58.7	134.7	cw
95	94V82	2104	2.4	0.47	11.7	208.5	ccw	1.2	0.24	150.6	61.1	cw
96	94V82	2204	2.74	0.15	12.9	204.8	ccw	1.31	0.54	139.7	65.5	cw
97	94V83	1599	3.48	0.74	–18.1	230.1	cw	0.97	0.02	–26.2	243.4	cw
98	94V83	1999	2.55	0.45	–2.8	219.9	ccw	1.04	0.09	150.2	62.9	ccw
99	94V83	2099	2.83	0.12	10.9	205.2	ccw	1.37	0.07	142	60	cw
100	94V83	2199	3.09	0.04	6.4	212.6	cw	1.45	0.36	136.3	68.4	cw
101	94V84	2096	3.08	0.21	0.9	238.1	ccw	1.52	0.18	146.1	80.6	cw
102	94V84	2196	2.8	0.11	5	205.8	ccw	1.07	0.12	141.1	74.4	cw
103	94V85	2109	2.18	0.19	–2	216	ccw	1.01	0.23	147	59.2	cw
104	94V85	2209	2.68	0.28	13.2	197.5	ccw	0.96	0.2	120.5	74.7	cw
105	94V86	255	2.95	0.86	5.3	194.2	cw	0.91	0.18	–14.5	234.2	ccw
106	94V86	1005	3.91	1.55	1.5	240.5	cw	1	0.04	160.4	74.7	ccw
107	94V86	2005	2.56	0.49	–2.2	222.3	ccw	1.19	0.12	–10.5	243.7	cw
108	94V86	2105	2.55	0.56	–6.2	246.9	ccw	1.39	0.49	152	90.4	cw
1	95V87	2012	4.03	0.84	–20.8	237.3	cw	1.12	0.04	145.6	69.4	cw
2	95V88	1909	4.43	1.33	–13.1	229.3	cw	1.46	0.29	161.9	73.6	cw
3	95V88	2109	3.21	0.29	–26.6	237.2	cw	1.3	0.11	130.1	88.6	cw
4	95V88	2209	4.04	1	–19.6	235.2	cw	1.48	0.4	128.4	82.5	cw
5	95V89	2106	4.44	1.39	137.2	62.9	cw	1.14	0.17	127.9	75.7	cw
6	95V90	1902	4.63	2.03	–30	235.9	cw	1.36	0.37	147.7	70.5	cw
7	95V90	2102	3.98	1	–6.4	228.3	cw	1.81	1.06	152.2	87.1	cw
8	95V90	2202	2.66	0.46	–9.7	226	cw	1.24	0.77	140	112.7	cw
9	96V91	1907	3.63	0.4	152.5	68.3	ccw	1.21	0.01	153.1	68.9	ccw

Ref	Mooring	Meter depth	M_2 major	M_2 minor	Direction	Phase	Rot	K_1 major	K_1 minor	Direction	Phase	Rot
10	96V91	2107	3.03	0.71	–23.2	237.6	ccw	1.38	0.22	145.9	68.9	cw
11	96V91	2207	3.03	0.26	–10.8	238.5	ccw	1.06	0.29	154.7	80.3	cw
12	96V92	2105	3.33	0.56	–13.7	241.6	ccw	1.4	0.11	–23.5	245.9	cw
13	96V92	2205	2.99	0.53	–19.8	238.5	ccw	1.62	0.46	138	75.5	cw
14	96V93	2033	4.1	0.58	–17.2	225.6	cw	1.59	0.07	–11.7	227.2	cw
15	96V93	2633	3.74	1.27	14.3	192.8	cw	1.39	0.07	23.6	192.9	ccw
16	96V94	1498	2.55	0.4	–26.3	228.6	ccw	1.13	0	137.4	62.1	cw
17	96V94	1898	3.14	1.05	151.3	74.5	ccw	1.6	0.19	143.6	73.1	cw
18	96V95	1498	3.15	0.89	154.8	71.5	cw	1.5	0.45	–14.9	244.7	cw
19	96V95	1898	5.91	1.8	–37.6	230.3	cw	2.7	1.22	148.1	77.5	cw
20	96V96	1475	2.52	0.37	–17.5	224.5	ccw	1.17	0.27	135.4	83.8	cw
21	96V96	1875	1.8	0.45	51.2	196.2	ccw	0.99	0.21	–4	260.9	cw
22	96V98	1808	3.03	1.11	–169.2	91.5	cw	1.94	1.32	–155.9	73	cw
23	96V98	1908	1.01	0.14	–91.8	44.2	ccw	1.95	0.59	–5	–58	cw

Appendix C: Winter tidal analysis

Column 1.	Reference number in R2D2 archive system
Column 2.	Mooring name
Column 3.	Depth of instrument in meters
Column 4.	M_2 constituent major component amplitude in cm/sec
Column 5.	M_2 constituent minor component amplitude in cm/sec
Column 6.	Orientation of the major component axis
Column 7.	Phase relative to Greenwich
Column 8.	The sense of rotation of the component vector (cw – clockwise, ccw – counter-clockwise)
Column 9.	K_1 constituent major component amplitude in cm/sec
Column 10.	K_1 constituent minor component amplitude in cm/sec
Column 11.	Orientation of the major component axis
Column 12.	Phase relative to Greenwich
Column 13.	The sense of rotation of the component vector (cw – clockwise, ccw – counter-clockwise)

Ref	Mooring	Meter depth	M_2 major	M_2 minor	Dir	Phase	Rot	K_1 major	K_1 minor	Dir	Phase	Rot
6	PMS–84–V5	2340	.	.	.	.	.	.	.	.	.	.
7	PMS–84–V5	2260	.	.	.	.	.	.	.	.	.	.
8	PMS–84–V5	2058	.	.	.	.	.	.	.	.	.	.
9	PMS–84–V1	2030	5.99	1.09	111	60.7	cw	2.46	0.79	–44	222	cw
10	85V08	2070	.	.	.	.	.	.	.	.	.	.
11	85V08	1720	2.12	0.53	28.1	24	ccw	1.14	0.07	–31	159	cw
13	85V08	2320	–	.	.	.	.	.	.	.	.	.
14	86AXIAL	1500	.	.	.	.	.	.	.	.	.	.
16	V8609B	153	.	.	.	.	.	.	.	.	.	.
17	V8609B	553	2.15	0.66	8.3	184.2	ccw	1.26	0.14	–14	223	cw
18	V8609A	1000	2.24	0.24	–17	245.2	cw	0.96	0.02	–21	233	cw
20	V8609A	2400	2.89	0.12	8.6	202.4	ccw	1.26	0.01	–9.1	220	ccw
21	V8611	2000	3.15	0.79	–11	207	cw	1.12	0.01	139	57	ccw
22	V8611	2400	2.57	0.88	11.9	189.2	cw	0.9	0.08	–18	226	ccw
23	V8612	2000	2.12	0.17	35.9	166.5	ccw	1.53	0.67	154	67	cw
27	PMS85–V7	2150	.	.	.	.	.	.	.	.	.	.
30	87V14	1833	2.23	0.2	–20	217.7	cw	2.48	0.11	–167	90	ccw
32	87V15	2579	.	.	.	.	.	.	.	.	.	.
34	87V16	2050	3.15	0.33	–30	238.5	cw	1.04	0.1	–26	244	ccw
35	87V16	2550	1.6	0.07	148	60.4	ccw	0.74	0.05	154	65	ccw
36	87V17	500	2.83	0.86	36.2	181	ccw	1.07	0.01	152	64	ccw
37	87V17	1000	3.9	1.36	–0.8	208.3	cw	1.02	0.16	–24	240	ccw
38	87V17	1500	2.47	0.35	33.4	211.2	cw	0.84	0.06	160	77	ccw
39	87V17	2500	2.15	0.26	121	85	ccw	1.08	0.03	–25	239	ccw
40	87V18	2000	1.98	0.83	–22	199.4	ccw	1.4	0.31	–27	236	cw
41	87V18	2292	1.77	0.45	2.3	199.1	ccw	0.74	0.17	144	87	cw
43	87V19	2000	2.81	0.14	123	55.3	ccw	1.55	0.4	–29	237	cw
44	87V19	2248	2	0.5	–8.8	214.1	ccw	0.96	0.1	115	99	cw
47	88v24	1880	3.98	1.8	2.7	168.3	cw	1.19	0.12	–24	216	ccw
48	88v24	1380	1.79	0.36	6.6	167.7	cw	0.44	0.14	19.6	232	cw
49	88v24	1630	3.82	1.49	9.1	166.8	cw	1.11	0.13	–8.8	218	ccw
50	88V23	1600	3.8	0.89	8.2	208.3	cw	1.15	0.07	149	65	cw
52	88V24	2130	.	.	.	.	.	.	.	.	.	.
53	88V22	506	5.32	2.46	24.5	203.9	cw	1.38	0.13	–6.6	228	ccw
54	88V22	1506	3.12	0.54	125	79.8	cw	1.21	0.1	–26	231	ccw
55	88V22	1006	2.89	0.78	–18	230	ccw	1.33	0.17	–30	236	ccw
56	88V22	106	5.4	2.85	138	126.5	cw	0.98	0.16	95.1	82	ccw
57	88V22	2006	1.85	1.27	145	69.1	ccw	1	0.13	–22	244	ccw
58	88V22	2506	1.54	1.37	52.4	152.3	ccw	1	0.09	147	69	ccw
61	V8925	1615	4.38	1.67	–21	226.5	cw	1.11	0.07	–25	242	cw
62	V8925	1365	4.1	1.42	–26	233.2	cw	1.14	0.01	–28	238	ccw
63	V8925	1865	3.05	0.51	13.9	201.8	cw	1.26	0.07	–22	243	cw

Ref	Mooring	Meter depth	M_2 major	M_2 minor	Dir	Phase	Rot	K_1 major	K_1 minor	Dir	Phase	Rot
64	V8926	1610	1.48	0.07	58.1	145.5	cw	0.54	0.08	136	75	cw
65	V8926	1860	.	.	.	.	.	.	.	.	.	.
66	V8926	1360	1.95	0.5	129	81.2	ccw	1.21	0.08	146	63	cw
67	V8927	2537	.	.	.	.	.	.	.	.	.	.
68	V8927	2037	1.85	0.89	8.2	210.1	ccw	0.9	0.26	–17	236	ccw
69	V8928	2005	2.29	0.84	9.8	210.9	ccw	1.12	0.22	–18	236	ccw
70	V8928	255	.	.	.	.	.	.	.	.	.	.
71	V8928	1005	1.85	0.43	132	88.3	ccw	0.86	0.06	–21	244	ccw
72	V8928	2505	2.44	0.48	33.6	201	cw	0.87	0.16	–0.6	244	ccw
73	V8930	1982	3.1	0.41	55.5	183.4	ccw	1.97	0.16	138	87	ccw
75	V8931	1995	3.09	0.6	–19	232.5	cw	1.12	0.07	–24	232	cw
76	V8931	2440	1.41	0.05	15.1	187.3	ccw	0.51	0.09	24	127	ccw
1	V9032	1960	.	.	.	.	.	.	.	.	.	.
2	V9032	2060	.	.	.	.	.	.	.	.	.	.
3	V9032	2160	.	.	.	.	.	.	.	.	.	.
4	V9032	1810	.	.	.	.	.	.	.	.	.	.
5	V9033	1975	.	.	.	.	.	.	.	.	.	.
6	V9033	2075	.	.	.	.	.	.	.	.	.	.
8	V9033	1825	.	.	.	.	.	.	.	.	.	.
9	V9034	1969	.	.	.	.	.	.	.	.	.	.
10	V9034	1569	.	.	.	.	.	.	.	.	.	.
11	V9034	2069	.	.	.	.	.	.	.	.	.	.
12	V9034	1819	.	.	.	.	.	.	.	.	.	.
13	V9034	2169	.	.	.	.	.	.	.	.	.	.
14	V9035	1832	.	.	.	.	.	.	.	.	.	.
15	V9035	1982	.	.	.	.	.	.	.	.	.	.
16	V9035	2082	.	.	.	.	.	.	.	.	.	.
17	V9036	225	.	.	.	.	.	.	.	.	.	.
18	V9036	2185	.	.	.	.	.	.	.	.	.	.
20	V9036	2085	.	.	.	.	.	.	.	.	.	.
21	V9037	1985	.	.	.	.	.	.	.	.	.	.
22	V9037	2085	.	.	.	.	.	.	.	.	.	.
23	V9037	1835	.	.	.	.	.	.	.	.	.	.
24	V9038	2078	.	.	.	.	.	.	.	.	.	.
25	V9038	2178	.	.	.	.	.	.	.	.	.	.
26	V9039	2075	.	.	.	.	.	.	.	.	.	.
27	V9039	1825	.	.	.	.	.	.	.	.	.	.
28	V9040	1825	.	.	.	.	.	.	.	.	.	.
29	V9040	2075	.	.	.	.	.	.	.	.	.	.
30	V9040	1975	.	.	.	.	.	.	.	.	.	.
31	V9041	2175	.	.	.	.	.	.	.	.	.	.
32	V9041	1975	.	.	.	.	.	.	.	.	.	.

Ref	Mooring	Meter depth	M_2 major	M_2 minor	Dir	Phase	Rot	K_1 major	K_1 minor	Dir	Phase	Rot
33	V9041	2075	.	.	.	.	.	.	.	.	.	.
34	V9042	2105	.	.	.	.	.	.	.	.	.	.
35	V9042	1855	.	.	.	.	.	.	.	.	.	.
36	V9042	2005	.	.	.	.	.	.	.	.	.	.
37	V9036	1835	.	.	.	.	.	.	.	.	.	.
38	V9043	266	5.32	1.39	116	81.9	cw	0.96	0	–12	240	ccw
39	V9043	1616	1.59	0.01	2.6	223.1	cw	0.46	0.03	–6.3	–82	cw
40	V9043	1866	2.42	0.6	6.1	210.5	ccw	1.33	0.37	–26	241	cw
41	V9043	2016	3.41	1.15	20.8	213.7	ccw	1.63	0.07	157	82	cw
42	V9043	2116	.	.	.	.	.	.	.	.	.	.
43	V9043	2216	2.72	0.27	21.5	205.5	ccw	1.23	0.43	–13	245	cw
44	V9144	1970	.	.	.	.	.	.	.	.	.	.
45	V9144	2120	2.55	0.14	5.7	200.4	cw	1.15	0.16	148	69	cw
46	V9144	2220	2.43	0.1	4.3	199.5	cw	1.12	0.28	146	71	cw
47	V9145	257	5.03	1.75	138	81.8	cw	1.07	0.25	–21	232	ccw
48	V9145	2007	3.27	0.26	32.5	206.9	ccw	1.23	0.32	–22	247	ccw
49	V9145	2157	2	0.34	38.1	171.4	ccw	1.14	0.17	141	68	cw
50	V9145	2257	2.38	0.41	39.9	174.5	ccw	1.35	0.38	168	94	cw
51	V9146	2002	3.04	0.18	–1	205.9	cw	1.49	0.39	135	73	cw
52	V9146	2152	1.27	0.01	11.8	208	cw	0.64	0.33	144	65	cw
53	V9146	2252	2.13	0.33	19.7	192.4	ccw	1.16	0.01	148	85	cw
54	V9147	2006	2.74	0.12	22.5	191.7	cw	1.11	0.31	137	65	cw
55	V9147	2156	2.53	0.06	27	190.3	ccw	1.33	0.27	–14	248	cw
56	V9147	2256	2.13	0.53	41.2	178	ccw	1.36	0.13	145	78	ccw
57	V9148	2136	2.91	0.46	9.7	194.2	cw	0.85	0.1	–18	226	ccw
58	V9149	2122	2.38	0.95	100	88.6	ccw	1.89	0.9	144	69	cw
59	92V50	1997	3.89	0.49	152	86.4	cw	1.48	0.24	150	76	cw
60	92V50	2147	2.95	0.07	95.9	107.4	cw	1.13	0.02	146	63	cw
61	92V50	2248	1.46	0.01	96.9	111.1	ccw	0.8	0.03	111	106	ccw
62	92V51	2247	1.86	0.61	122	95.6	ccw	1.36	0.11	133	88	cw
63	92V52	1999	3.19	0.24	107	104.5	cw	1.4	0.08	–18	240	cw
64	92V52	2249	2.28	0.24	122	91.6	ccw	0.91	0.13	131	85	ccw
65	92V53	1994	3.02	0.24	94.7	113.5	cw	1.4	0.15	139	63	cw
66	92V53	2244	2.51	0.22	104	108.6	ccw	1.29	0.5	131	80	cw
67	92V54	2150	2.38	0.2	105	103.5	cw	1.29	0.38	149	67	cw
68	92V55	2153	2.02	0.48	120	84.9	ccw	1.23	0.1	–23	243	cw
69	92V56	249	4.81	1.61	–4.1	253.2	cw	1.41	0.16	–4.4	220	cw
70	92V57	2147	2.77	0.35	92	96.6	cw	1.11	0.05	134	60	ccw
71	93V58	2150	.	.	.	.	.	.	.	.	.	.
72	93V59	2156	.	.	.	.	.	.	.	.	.	.
73	93V60	2166	.	.	.	.	.	.	.	.	.	.
74	93V61	2168	.	.	.	.	.	.	.	.	.	.

Ref	Mooring	Meter depth	M_2 major	M_2 minor	Dir	Phase	Rot	K_1 major	K_1 minor	Dir	Phase	Rot
76	93V64	2156	.	.	.	.	.	.	.	.	.	.
77	93V65	2150	.	.	.	.	.	.	.	.	.	.
78	93V66	2150	.	.	.	.	.	.	.	.	.	.
79	93V67	2153	.	.	.	.	.	.	.	.	.	.
80	93V68	254	.	.	.	.	.	.	.	.	.	.
81	94V70	2004	4.03	0.46	2.3	230.2	cw	2.16	0.2	140	86	cw
82	94V70	2154	2.68	0.11	5.8	202.3	cw	1.27	0.26	150	81	cw
83	92V71	1804	3.58	1.11	–7.9	237	cw	1.33	0.05	150	80	cw
84	93V71	2153	3.18	0.7	7.3	215.6	cw	1.36	0.36	134	73	cw
85	93V73	1791	3.72	1.07	167	100.5	cw	1.24	0.01	152	97	ccw
86	93V73	2141	3.58	0.99	5.6	213.8	cw	1.24	0.02	139	79	cw
87	93V74	1806	3.02	0.16	16.6	208.3	cw	1.15	0.13	–17	246	ccw
88	93V75	1796	3.22	0.51	–4.7	177.4	cw	1.27	0.07	140	60	ccw
89	93V75	2146	4.33	1.43	–6.5	228	cw	1.34	0	151	80	cw
90	94V76	2095	.	.	.	.	.	.	.	.	.	.
91	94V80	1900	.	.	.	.	.	.	.	.	.	.
92	94V80	2100	.	.	.	.	.	.	.	.	.	.
93	94V80	2200	.	.	.	.	.	.	.	.	.	.
94	94V81	2101	.	.	.	.	.	.	.	.	.	.
95	94V82	2104	2.93	0.35	–27	241.4	cw	1.47	0.49	–23	240	cw
96	94V82	2204	2.56	0.29	–22	236.6	cw	1.37	0.4	148	71	cw
97	94V83	1599	3.92	1.21	–4.2	210.5	cw	1.08	0.08	–15	228	ccw
98	94V83	1999	3.31	0.49	–28	242.7	cw	1.43	0.42	–37	232	cw
99	94V83	2099	2.94	0.36	–23	239.7	cw	1.19	0.17	156	71	cw
100	94V83	2199	2.76	0.45	–20	239.9	cw	1.23	0.4	154	73	cw
101	94V84	2096	2.73	0.32	152	87.4	cw	1.17	0.26	151	72	cw
102	94V84	2196	2.6	0.17	–26	238.6	cw	1.32	0.59	146	65	cw
103	94V85	2109	2.67	0.21	141	64.5	cw	1.7	0.72	–24	233	cw
104	94V85	2209	2.53	0.03	–29	238.4	ccw	1.65	0.33	133	89	cw
105	94V86	255	4.92	1.16	150	63	cw	1.04	0.21	–5	224	cw
106	94V86	1005	3.46	0.62	22.7	211.8	cw	1.13	0.03	151	70	ccw
107	94V86	2005	3.59	0.74	–25	239.5	cw	1.47	0.2	152	62	cw
108	94V86	2105	3.17	0.62	150	90.8	cw	1.05	0.12	138	79	cw
1	95V87	2012	3.42	0.34	6.9	219.7	cw	1.32	0.02	–4	241	cw
2	95V88	1909	4.13	1.1	–2.7	216.4	cw	1.71	0.17	–30	240	cw
3	95V88	2109	3.26	0.16	–2.3	208.8	cw	0.98	0.22	152	70	cw
4	95V88	2209	3.31	0.29	–3.7	209.6	cw	1.13	0.37	111	68	cw
5	95V89	2106	1.98	0.36	–18	217.9	ccw	1.26	0.8	131	64	cw
6	95V90	1902	3.12	0.33	132	76.8	cw	1.64	0.51	155	72	cw
7	95V90	2102	1.84	0.48	132	66.9	ccw	1.73	0.61	143	88	cw
8	95V90	2202	1.42	0.12	3.8	242.1	ccw	1.46	0.09	3.4	–67	cw
9	96V91	1907	3.54	0.24	146	70.7	cw	1.22	0.07	–19	243	cw

Ref	Mooring	Meter depth	M_2 major	M_2 minor	Dir	Phase	Rot	K_1 major	K_1 minor	Dir	Phase	Rot
10	96V91	2107	2.55	0.1	116	72.4	ccw	1.5	0.55	130	58	cw
11	96V91	2207	2.28	0.05	143	64.6	ccw	1.27	0.11	141	79	ccw
12	96V92	2105	3.21	0.06	145	71.8	cw	1.63	0.62	–20	241	cw
13	96V92	2205	3.05	0.01	141	67.1	ccw	1.24	0.1	144	90	cw
14	96V93	2033	3.29	0.25	137	70.1	ccw	1.49	0.02	–4.5	221	cw
15	96V93	2633	4.73	1.88	10.8	213.5	cw	1.56	0.23	32.9	185	cw
16	96V94	1498	3.84	0.93	–16	225.7	cw	1.05	0.31	141	66	ccw
17	96V94	1898	2.32	0.62	59.4	120	cw	0.83	0.55	96.2	52	cw
18	96V95	1498	.	.	.	.	.	.	.	.	.	.
19	96V95	1898	1.88	0.09	32.9	161.6	ccw	3.44	1.62	152	75	cw
20	96V96	1475	2.91	0.18	–9.1	221.5	cw	1.15	0.12	145	82	ccw
21	96V96	1875	3.07	0.08	–0.8	230.9	cw	1.35	0.15	0.5	261	cw
22	96V98	1808	3.97	2.43	152	62.6	cw	1.83	1.19	15.7	247	cw
23	96V98	1908	0.72	0.15	28.3	193.1	cw	1.77	0.21	171	97	cw

Appendix D: Summer inertial spectral analysis

Column 1.	Reference number in R2D2 archive system
Column 2.	Mooring name
Column 3.	Depth of instrument in meters
Column 4.	Frequency range of analysis component (cycles per day)
Column 5.	Center frequency of analysis component (cycles per day)
Column 6.	Period in days of the analysis component
Column 7.	Variance in the north-south component of the current record $(cm/sec)^2$
Column 8.	Variance in the east-west component of the current record $(cm/sec)^2$
Column 9.	Sum of the component variances
Column 10.	Energy density of the total variance $(cm/sec)^2$/(bandwidth in cpd)

Ref	Mooring	Meter depth	Bandwidth	cpd	Period	0	90	Sum	Density
6	PMS–84–V5	2340	0.064516	1.53226	0.653	0.049	0.097	0.146	2.263
7	PMS–84–V5	2260	0.032258	1.45161	0.689	0.202	0.625	0.826	25.606
8	PMS–84–V5	2058	0.032258	1.45161	0.689	0.068	0.050	0.117	3.627
9	PMS–84–V1	2030	0.032258	1.41935	0.705	0.282	0.568	0.850	26.350
10	85V08	2070	0.032258	1.41935	0.705	0.327	0.215	0.540	16.740
11	85V08	1720	0.032258	1.41935	0.705	0.109	0.092	0.201	6.231
13	85V08	2320	0.032258	1.45161	0.689	0.075	0.098	0.173	5.363
14	86AXIAL	1500	0.032323	1.48687	0.673	0.375	0.233	0.609	18.841
16	V8609B	153	0.032258	1.41935	0.705	3.393	3.547	6.941	215.171
17	V8609B	553	0.032258	1.41935	0.705	1.111	1.023	2.134	66.154
18	V8609A	1000	0.032258	1.45161	0.689	0.179	0.173	0.352	10.912
20	V8609A	2400	0.032258	1.45161	0.689	0.083	0.033	0.115	3.565
21	V8611	2000	0.032258	1.41935	0.705	0.126	0.147	0.273	8.463
22	V8611	2400	0.032258	1.48387	0.674	0.127	0.101	0.228	7.068
23	V8612	2000	0.032258	1.48387	0.674	0.095	0.124	0.220	6.820
26	PMS85–V7	2150	0.032258	1.41935	0.705	0.139	0.119	0.258	7.998
30	87V14	1833	0.032258	1.45161	0.689	0.017	0.060	0.077	2.387
32	87V15	2579	0.032258	1.41935	0.705	0.118	0.097	0.215	6.665
34	87V16	2050	0.032258	1.3871	0.721	0.039	0.046	0.085	2.635
35	87V16	2550	0.032258	1.48387	0.674	0.103	0.047	0.150	4.650
36	87V17	500	0.032258	1.41935	0.705	0.274	0.264	0.538	16.678
37	87V17	1000	0.032258	1.41935	0.705	1.604	1.431	3.034	94.054
38	87V17	1500	0.032258	1.41935	0.705	0.379	0.181	0.560	17.360
39	87V17	2500	0.032258	1.45161	0.689	0.076	0.042	0.118	3.658
40	87V18	2000	0.032258	1.41935	0.705	0.055	0.095	0.150	4.650
41	87V18	2292	0.032258	1.48387	0.674	0.020	0.018	0.038	1.178
43	87V19	2000	0.032258	1.51613	0.660	0.082	0.161	0.242	7.502
44	87V19	2248	0.032258	1.48387	0.674	0.034	0.009	0.043	1.333
47	88v24	1880	0.032258	1.45161	0.689	0.147	0.205	0.353	10.943
48	88v24	1380	0.032258	1.41935	0.705	0.883	0.419	1.302	40.362
49	88v24	1630	0.032258	1.45161	0.689	0.330	0.486	0.816	25.296
50	88V23	1600	0.032258	1.41935	0.705	0.577	0.458	1.035	32.085
52	88V24	2130	0.033613	1.41176	0.708	0.081	0.082	0.162	4.820
53	88V22	506	0.032258	1.41935	0.705	1.242	0.993	2.235	69.285
54	88V22	1506	0.032258	1.45161	0.689	0.946	0.952	1.898	58.838
55	88V22	1006	0.032258	1.3871	0.721	0.296	0.338	0.634	19.654
56	88V22	106	0.032258	1.48387	0.674	0.939	0.853	1.793	55.583
57	88V22	2006	0.032258	1.45161	0.689	1.090	1.029	2.119	65.689
58	88V22	2506	0.032258	1.3871	0.721	0.017	0.047	0.063	1.953
61	8925	1615	0.032258	1.41935	0.705	0.856	0.791	1.647	51.057
62	8925	1365	0.032258	1.45161	0.689	0.848	0.913	1.761	54.591
63	8925	1865	0.032258	1.45161	0.689	0.155	0.176	0.330	10.230

Ref	Mooring	Meter depth	Bandwidth	cpd	Period	0	90	Sum	Density
64	8926	1610	0.032258	1.41935	0.705	0.487	0.496	0.983	30.473
65	8926	1860	0.032258	1.41935	0.705	0.117	0.101	0.219	6.789
66	8926	1360	0.032258	1.41935	0.705	0.332	0.348	0.680	21.080
67	8927	2537	0.032258	1.41935	0.705	0.004	0.016	0.020	0.620
68	8927	2037	0.032258	1.3871	0.721	0.030	0.042	0.071	2.201
69	V8928	2005	0.032258	1.41935	0.705	0.067	0.063	0.130	4.030
70	8928	255	0.032258	1.45161	0.689	2.132	2.090	4.222	130.882
71	8928	1005	0.032258	1.45161	0.689	0.536	0.390	0.926	28.706
72	8928	2505	0.032258	1.3871	0.721	0.039	0.105	0.144	4.464
73	8930	1982	0.032258	1.51613	0.660	0.402	0.307	0.710	22.010
75	8931	1995	0.032258	1.45161	0.689	0.298	0.415	0.713	22.103
76	8931	2440	0.032258	1.3871	0.721	0.004	0.006	0.009	0.279
1	9032	1960	0.032323	1.42222	0.703	0.334	0.329	0.663	20.512
2	9032	2060	0.032323	1.42222	0.703	0.151	0.136	0.286	8.848
3	9032	2160	0.032323	1.45455	0.688	0.079	0.087	0.167	5.167
4	9032	1810	0.032323	1.42222	0.703	0.578	0.590	1.168	36.135
5	9033	1975	0.032323	1.42222	0.703	0.858	0.719	1.577	48.789
6	9033	2075	0.032323	1.42222	0.703	0.766	0.615	1.381	42.725
8	9033	1825	0.032323	1.42222	0.703	0.871	1.049	1.920	59.400
9	9034	1969	0.032323	1.42222	0.703	0.565	0.496	1.061	32.825
10	9034	1569	0.032323	1.42222	0.703	6.756	6.460	13.216	408.873
11	9034	2069	0.032323	1.42222	0.703	0.843	0.668	1.511	46.747
12	9034	1819	0.032323	1.42222	0.703	1.263	1.462	2.725	84.305
13	9034	2169	0.032323	1.42222	0.703	0.643	0.635	1.278	39.538
14	9035	1832	0.032258	1.41935	0.705	0.456	0.428	0.884	27.404
15	9035	1982	0.032323	1.42222	0.703	1.091	1.487	2.578	79.757
16	9035	2082	0.032323	1.42222	0.703	1.310	1.975	3.285	101.630
17	9036	225	0.032323	1.45455	0.688	2.158	1.929	4.087	126.442
18	9036	2185	0.032323	1.42222	0.703	0.704	0.780	1.483	45.881
20	9036	2085	0.032323	1.42222	0.703	0.439	0.494	0.933	28.865
21	9037	1985	0.032323	1.42222	0.703	0.622	0.536	1.158	35.826
22	9037	2085	0.032323	1.42222	0.703	0.618	0.410	1.028	31.804
23	9037	1835	0.032323	1.42222	0.703	0.693	0.568	1.261	39.012
24	9038	2078	0.032323	1.42222	0.703	1.122	1.380	2.502	77.406
25	9038	2178	0.032323	1.42222	0.703	0.752	1.044	1.796	55.564
26	9039	2075	0.032323	1.42222	0.703	0.779	0.725	1.504	46.530
27	9039	1825	0.032258	1.41935	0.705	0.509	0.464	0.973	30.163
28	9040	1825	0.032323	1.42222	0.703	0.346	0.405	0.751	23.234
29	9040	2075	0.032323	1.42222	0.703	0.623	0.411	1.034	31.990
30	9040	1975	0.032323	1.42222	0.703	0.960	0.904	1.864	57.668
31	9041	2175	0.032323	1.42222	0.703	1.154	1.085	2.239	69.270
32	9041	1975	0.032323	1.42222	0.703	1.565	1.644	3.209	99.279

Ref	Mooring	Meter depth	Bandwidth	cpd	Period	0	90	Sum	Density
33	9041	2075	0.032323	1.42222	0.703	0.053	0.026	0.079	2.444
34	9042	2105	0.032323	1.42222	0.703	0.880	0.884	1.764	54.574
35	9042	1855	0.032258	1.41935	0.705	1.426	1.699	3.125	96.875
36	9042	2005	0.032323	1.42222	0.703	2.125	2.291	4.416	136.621
37	9036	1835	0.032258	1.41935	0.705	0.816	0.631	1.447	44.857
38	9043	266	.	.	.	.	.	.	.
39	9043	1616	.	.	.	.	.	.	.
40	9043	1866	.	.	.	.	.	.	.
41	9043	2016	.	.	.	.	.	.	.
42	9043	2116	.	.	.	.	.	.	.
43	9043	2216	.	.	.	.	.	.	.
44	9144	1970	0.032258	1.45161	0.689	0.215	0.224	0.439	13.609
45	9144	2120	0.032258	1.45161	0.689	0.199	0.102	0.301	9.331
46	9144	2220	0.032258	1.45161	0.689	0.044	0.074	0.119	3.689
47	9145	257	0.032258	1.48387	0.674	1.261	1.542	2.803	86.893
48	9145	2007	0.032258	1.45161	0.689	0.216	0.106	0.322	9.982
49	9145	2157	0.032258	1.45161	0.689	0.463	0.215	0.678	21.018
50	9145	2257	0.032258	1.48387	0.674	0.085	0.104	0.189	5.859
51	9146	2002	0.032258	1.45161	0.689	0.242	0.163	0.404	12.524
52	9146	2152	0.032258	1.45161	0.689	0.166	0.143	0.309	9.579
53	9146	2252	0.032258	1.45161	0.689	0.099	0.045	0.145	4.495
54	9147	2006	0.032258	1.45161	0.689	0.676	0.546	1.221	37.851
55	9147	2156	0.032258	1.45161	0.689	0.344	0.184	0.529	16.399
56	9147	2256	0.032258	1.45161	0.689	0.117	0.124	0.241	7.471
57	9148	2136	0.032258	1.45161	0.689	0.737	1.228	1.965	60.915
58	9149	2122	0.032258	1.45161	0.689	1.259	2.086	3.345	103.695
59	92V50	1997	0.032258	1.45161	0.689	0.140	0.108	0.247	7.657
60	92V50	2147	0.032258	1.45161	0.689	0.194	0.204	0.398	12.338
61	92V50	2248	0.032258	1.41935	0.705	0.009	0.012	0.021	0.651
62	92V51	2247	0.032258	1.45161	0.689	0.016	0.038	0.057	1.767
63	92V52	1999	0.032258	1.45161	0.689	0.096	0.118	0.214	6.634
64	92V52	2249	0.032258	1.45161	0.689	0.008	0.027	0.035	1.085
65	92V53	1994	0.032258	1.45161	0.689	0.155	0.241	0.396	12.276
66	92V53	2244	0.032258	1.45161	0.689	0.037	0.050	0.086	2.666
67	92V54	2150	0.032258	1.41935	0.705	0.045	0.010	0.055	1.705
68	92V55	2153	0.032258	1.41935	0.705	0.113	0.051	0.163	5.053
69	92V56	249	0.032258	1.45161	0.689	3.950	4.633	8.583	266.074
70	92V57	2147	0.032258	.	.	.	.	.	.
71	93V58	2150	0.032258	1.45161	0.689	0.114	0.127	0.242	7.502
72	93V59	2156	0.032258	1.45161	0.689	0.214	0.177	0.391	12.121
73	93V60	2166	0.032258	1.45161	0.689	0.139	0.081	0.220	6.820
74	93V61	2168	0.032258	1.45161	0.689	0.181	0.167	0.348	10.788

Ref	Mooring	Meter depth	Bandwidth	cpd	Period	0	90	Sum	Density
76	93V64	2156	0.032258	1.45161	0.689	0.195	0.153	0.347	10.757
77	93V65	2150	0.032258	1.45161	0.689	0.199	0.252	0.452	14.012
78	93V66	2150	0.032258	1.41935	0.705	0.247	0.318	0.565	17.515
79	93V67	2153	0.032258	1.41935	0.705	0.153	0.164	0.317	9.827
80	93V68	254	0.032258	1.3871	0.721	2.415	2.915	5.330	165.230
81	94V70	2004	0.032258	1.45161	0.689	1.454	1.728	3.182	98.642
82	94V70	2154	0.032258	1.45161	0.689	0.255	0.182	0.437	13.547
83	92V71	1804	0.032258	1.41935	0.705	0.096	0.044	0.140	4.340
84	93V71	2153	0.032258	1.45161	0.689	0.071	0.047	0.118	3.658
85	93V73	1791	0.032258	1.41935	0.705	0.113	0.158	0.271	8.401
86	93V73	2141	0.032258	1.41935	0.705	0.154	0.139	0.293	9.083
87	93V74	1806	0.032258	1.41935	0.705	0.035	0.015	0.050	1.550
88	93V75	1796	0.032258	1.45161	0.689	0.057	0.042	0.099	3.069
89	93V75	2146	0.032258	1.45161	0.689	0.110	0.096	0.206	6.386
90	94V76	2095	0.032258	1.41935	0.705	0.258	0.243	0.501	15.531
91	94V80	1900	0.032258	1.3871	0.721	0.281	0.273	0.554	17.174
92	94V80	2100	0.032258	1.41935	0.705	0.210	0.213	0.423	13.113
93	94V80	2200	0.032258	1.41935	0.705	0.155	0.130	0.285	8.835
94	94V81	2101	0.032258	1.41935	0.705	0.323	0.691	1.014	31.434
95	94V82	2104	0.032258	1.3871	0.721	0.042	0.037	0.080	2.480
96	94V82	2204	0.032258	1.41935	0.705	0.035	0.011	0.046	1.426
97	94V83	1599	0.032258	1.41935	0.705	0.850	0.721	1.572	48.732
98	94V83	1999	0.032258	1.3871	0.721	0.127	0.123	0.251	7.781
99	94V83	2099	0.032258	1.41935	0.705	0.025	0.003	0.027	0.837
100	94V83	2199	0.032258	1.41935	0.705	0.015	0.040	0.054	1.674
101	94V84	2096	0.032258	1.3871	0.721	0.024	0.039	0.063	1.953
102	94V84	2196	0.032258	1.41935	0.705	0.042	0.008	0.050	1.550
103	94V85	2109	0.032258	1.45161	0.689	0.018	0.045	0.062	1.922
104	94V85	2209	0.032258	1.3871	0.721	0.015	0.017	0.032	0.992
105	94V86	255	0.032258	1.45161	0.689	1.108	1.366	2.474	76.694
106	94V86	1005	0.032258	1.41935	0.705	0.631	0.822	1.452	45.012
107	94V86	2005	0.032258	1.45161	0.689	0.031	0.090	0.121	3.751
108	94V86	2105	0.032258	1.45161	0.689	0.024	0.010	0.034	1.054
1	95V87	2012	0.032258	1.41935	0.705	0.098	0.320	0.419	12.989
2	95V88	1909	0.032258	1.45161	0.689	0.677	1.031	1.708	52.948
3	95V88	2109	0.032258	1.41935	0.705	0.231	0.136	0.367	11.377
4	95V88	2209	0.032258	1.45161	0.689	0.066	0.059	0.124	3.844
5	95V89	2106	0.032258	1.41935	0.705	0.133	0.158	0.291	9.021
6	95V90	1902	0.032258	1.41935	0.705	0.165	0.111	0.276	8.556
7	95V90	2102	0.032258	1.45161	0.689	0.124	0.081	0.205	6.355
8	95V90	2202	0.032258	1.45161	0.689	0.104	0.017	0.121	3.751
9	96V91	1907	0.032258	1.45161	0.689	1.253	1.167	2.420	75.020

Ref	Mooring	Meter depth	Bandwidth	cpd	Period	0	90	Sum	Density
10	96V91	2107	0.032258	1.45161	0.689	0.670	0.588	1.258	38.998
11	96V91	2207	0.032258	1.45161	0.689	0.423	0.214	0.637	19.747
12	96V92	2105	0.032258	1.45161	0.689	0.401	0.467	0.868	26.908
13	96V92	2205	0.032258	1.45161	0.689	0.303	0.279	0.582	18.042
14	96V93	2033	0.032258	1.41935	0.705	0.440	0.379	0.819	25.389
15	96V93	2633	0.032258	1.45161	0.689	0.108	0.032	0.139	4.309
16	96V94	1498	0.032258	1.45161	0.689	0.110	0.077	0.187	5.797
17	96V94	1898	0.032258	1.45161	0.689	0.346	0.496	0.842	26.102
18	96V95	1498	0.032258	1.41935	0.705	0.286	0.293	0.579	17.949
19	96V95	1898	0.032258	1.45161	0.689	0.224	0.514	0.738	22.878
20	96V96	1475	0.032258	1.3871	0.721	0.325	0.411	0.736	22.816
21	96V96	1875	0.032258	1.45161	0.689	0.443	0.829	1.272	39.432
22	96V98	1808	0.032258	1.41935	0.705	0.090	0.137	0.227	7.037
23	96V98	1908	0.032258	1.3871	0.721	0.089	0.001	0.090	2.790

Appendix E: Winter inertial spectral analysis

Column 1.	Reference number in R2D2 archive system
Column 2.	Mooring name
Column 3.	Depth of instrument in meters
Column 4.	Frequency range of analysis component (cycles per day)
Column 5.	Center frequency of analysis component (cycles per day)
Column 6.	Period in days of the analysis component
Column 7.	Variance in the north-south component of the current record $(cm/sec)^2$
Column 8.	Variance in the east-west component of the current record $(cm/sec)^2$
Column 9.	Sum of the component variances
Column 10.	Energy density of the total variance $(cm/sec)^2$/(bandwidth in cpd)

Ref	Mooring	Meter depth	Bandwidth	cpd	Period	0	90	Sum	Density
6	PMS–84–V5	2340	.	.	.	.	.	.	.
7	PMS–84–V5	2260	.	.	.	.	.	.	.
8	PMS–84–V5	2058	.	.	.	.	.	.	.
9	PMS–84–V1	2030	0.032258	1.45161	0.689	0.543	0.979	1.523	47.213
10	85V08	2070	.	.	.	.	.	.	.
11	85V08	1720	0.032258	1.41935	0.705	0.924	1.081	2.004	62.124
13	85V08	2320	0.032258	1.48387	0.674	0.545	0.734	1.279	39.649
14	86AXIAL	1500	.	.	.	.	.	.	.
16	V8609B	153	0.032258	1.45161	0.689	58.677	63.912	122.589	3800.267
17	V8609B	553	0.032258	1.45161	0.689	5.314	5.501	10.815	335.266
18	V8609A	1000	0.032258	1.41935	0.705	1.367	0.955	2.322	71.982
20	V8609A	2400	0.032258	1.48387	0.674	0.223	0.166	0.389	12.059
21	V8611	2000	0.032258	1.51613	0.660	1.044	0.979	2.023	62.713
22	V8611	2400	0.032258	1.48387	0.674	0.336	0.299	0.635	19.685
23	V8612	2000	0.032258	1.48387	0.674	3.008	2.511	5.519	171.089
26	PMS85–V7	2150	.	.	.	.	.	.	.
30	87V14	1833	0.032258	1.3871	0.721	0.064	0.047	0.111	3.441
32	87V15	2579	0.032258	1.41935	0.705	0.201	0.189	0.389	12.059
34	87V16	2050	0.032258	1.41935	0.705	0.486	0.521	1.008	31.248
35	87V16	2550	0.032258	1.41935	0.705	0.330	0.189	0.519	16.089
36	87V17	500	0.032258	1.45161	0.689	2.565	2.117	4.683	145.173
37	87V17	1000	0.032258	1.41935	0.705	3.075	2.278	5.353	165.943
38	87V17	1500	0.032258	1.41935	0.705	1.798	1.342	3.140	97.340
39	87V17	2500	0.032258	1.41935	0.705	1.045	0.986	2.031	62.961
40	87V18	2000	0.032258	1.48387	0.674	1.357	1.658	3.014	93.434
41	87V18	2292	0.032258	1.45161	0.689	0.029	0.005	0.034	1.054
43	87V19	2000	0.032258	1.3871	0.721	0.834	0.849	1.683	52.173
44	87V19	2248	0.032258	1.3871	0.721	0.009	0.063	0.072	2.232
47	88v24	1880	0.032258	1.41935	0.705	1.754	2.184	3.938	122.078
48	88v24	1380	0.032258	1.41935	0.705	0.947	0.287	1.234	38.254
49	88v24	1630	0.032258	1.41935	0.705	13.356	13.412	26.768	829.810
50	88V23	1600	0.032258	1.3871	0.721	1.005	1.151	2.156	66.836
52	88V24	2130	0.033613	.	.	.	.	.	.
53	88V22	506	0.032258	1.45161	0.689	3.549	3.625	7.175	222.425
54	88V22	1506	0.032258	1.45161	0.689	0.408	0.380	0.788	24.428
55	88V22	1006	0.032258	1.41935	0.705	0.612	0.510	1.121	34.751
56	88V22	106	0.032258	1.45161	0.689	13.279	13.600	26.878	833.220
57	88V22	2006	0.032258	1.45161	0.689	0.538	0.483	1.021	31.651
58	88V22	2506	0.032258	1.48387	0.674	0.536	0.533	1.069	33.139
61	V8925	1615	0.032258	1.41935	0.705	0.246	0.346	0.592	18.352
62	V8925	1365	0.032258	1.41935	0.705	1.014	1.121	2.136	66.216
63	V8925	1865	0.032258	1.45161	0.689	1.537	1.599	3.135	97.185

Ref	Mooring	Meter depth	Bandwidth	cpd	Period	0	90	Sum	Density
64	V8926	1610	0.032258	1.41935	0.705	2.760	3.234	5.994	185.814
65	V8926	1860	0.032258	.	.	.	.	.	.
66	V8926	1360	0.032258	1.41935	0.705	1.907	1.782	3.689	114.359
67	V8927	2537	0.032258	1.45161	0.689	0.241	0.330	0.571	17.701
68	V8927	2037	0.032258	1.41935	0.705	0.060	0.046	0.106	3.286
69	V8928	2005	0.032258	1.45161	0.689	0.205	0.318	0.523	16.213
70	V8928	255	0.032258	1.45161	0.689	2.774	2.485	5.259	163.029
71	V8928	1005	0.032258	1.48387	0.674	1.378	1.316	2.695	83.545
72	V8928	2505	0.032258	1.45161	0.689	0.271	0.204	0.474	14.694
73	V8930	1982	0.032258	1.45161	0.689	0.225	0.221	0.447	13.857
75	V8931	1995	0.032258	1.45161	0.689	0.963	1.068	2.032	62.992
76	V8931	2440	0.032258	1.41935	0.705	0.004	0.016	0.019	0.589
1	V9032	1960	.	.	.	.	.	.	.
2	V9032	2060	.	.	.	.	.	.	.
3	V9032	2160	.	.	.	.	.	.	.
4	V9032	1810	.	.	.	.	.	.	.
5	V9033	1975	.	.	.	.	.	.	.
6	V9033	2075	.	.	.	.	.	.	.
8	V9033	1825	.	.	.	.	.	.	.
9	V9034	1969	.	.	.	.	.	.	.
10	V9034	1569	.	.	.	.	.	.	.
11	V9034	2069	.	.	.	.	.	.	.
12	V9034	1819	.	.	.	.	.	.	.
13	V9034	2169	.	.	.	.	.	.	.
14	V9035	1832	.	.	.	.	.	.	.
15	V9035	1982	.	.	.	.	.	.	.
16	V9035	2082	.	.	.	.	.	.	.
17	V9036	225	.	.	.	.	.	.	.
18	V9036	2185	.	.	.	.	.	.	.
20	V9036	2085	.	.	.	.	.	.	.
21	V9037	1985	.	.	.	.	.	.	.
22	V9037	2085	.	.	.	.	.	.	.
23	V9037	1835	.	.	.	.	.	.	.
24	V9038	2078	.	.	.	.	.	.	.
25	V9038	2178	.	.	.	.	.	.	.
26	V9039	2075	.	.	.	.	.	.	.
27	V9039	1825	.	.	.	.	.	.	.
28	V9040	1825	.	.	.	.	.	.	.
29	V9040	2075	.	.	.	.	.	.	.
30	V9040	1975	.	.	.	.	.	.	.
31	V9041	2175	.	.	.	.	.	.	.
32	V9041	1975	.	.	.	.	.	.	.

Ref	Mooring	Meter depth	Bandwidth	cpd	Period	0	90	Sum	Density
33	V9041	2075	.	.	.	.	.	.	.
34	V9042	2105	.	.	.	.	.	.	.
35	V9042	1855	.	.	.	.	.	.	.
36	V9042	2005	.	.	.	.	.	.	.
37	V9036	1835	.	.	.	.	.	.	.
38	V9043	266	0.032258	1.45161	0.689	7.322	7.522	14.844	460.165
39	V9043	1616	0.032258	1.45161	0.689	0.834	0.254	1.088	33.728
40	V9043	1866	0.032258	1.48387	0.674	0.740	0.862	1.603	49.693
41	V9043	2016	0.032258	1.48387	0.674	1.761	1.887	3.648	113.088
42	V9043	2116	0.032258	.	.	.	.	.	.
43	V9043	2216	0.032258	1.48387	0.674	0.544	0.294	0.837	25.947
44	V9144	1970	0.032258	1.41935	0.705	0.815	0.636	1.451	44.981
45	V9144	2120	0.032258	1.45161	0.689	2.217	2.097	4.314	133.734
46	V9144	2220	0.032258	1.45161	0.689	0.998	0.936	1.934	59.954
47	V9145	257	0.032258	1.41935	0.705	10.127	11.011	21.138	655.279
48	V9145	2007	0.032258	1.45161	0.689	1.824	1.692	3.516	108.996
49	V9145	2157	0.032258	1.45161	0.689	1.436	2.289	3.725	115.475
50	V9145	2257	0.032258	1.45161	0.689	0.700	0.936	1.636	50.716
51	V9146	2002	0.032258	1.45161	0.689	4.219	4.039	8.258	255.999
52	V9146	2152	0.032258	1.45161	0.689	1.029	0.706	1.734	53.754
53	V9146	2252	0.032258	1.45161	0.689	0.340	0.511	0.851	26.381
54	V9147	2006	0.032258	1.45161	0.689	3.026	4.278	7.303	226.393
55	V9147	2156	0.032258	1.45161	0.689	1.303	1.729	3.032	93.992
56	V9147	2256	0.032258	1.45161	0.689	0.226	0.332	0.558	17.298
57	V9148	2136	0.032258	1.45161	0.689	0.808	1.028	1.836	56.916
58	V9149	2122	0.032258	1.45161	0.689	1.018	1.201	2.218	68.758
59	92V50	1997	0.032258	1.45161	0.689	1.419	0.801	2.220	68.820
60	92V50	2147	0.032258	1.45161	0.689	1.747	1.462	3.208	99.448
61	92V50	2248	0.032258	1.45161	0.689	0.078	0.049	0.126	3.906
62	92V51	2247	0.032258	1.45161	0.689	0.278	0.120	0.397	12.307
63	92V52	1999	0.032258	1.45161	0.689	2.274	2.254	4.528	140.368
64	92V52	2249	0.032258	1.45161	0.689	0.163	0.067	0.230	7.130
65	92V53	1994	0.032258	1.45161	0.689	3.423	3.468	6.891	213.621
66	92V53	2244	0.032258	1.45161	0.689	0.431	0.325	0.756	23.436
67	92V54	2150	0.032258	1.45161	0.689	1.963	2.171	4.135	128.185
68	92V55	2153	0.032258	1.45161	0.689	1.701	1.907	3.608	111.848
69	92V56	249	0.032258	1.41935	0.705	14.013	14.740	28.753	891.345
70	92V57	2147	0.032258	1.45161	0.689	1.235	1.403	2.638	81.778
71	93V58	2150	0.032258	.	.	.	.	.	.
72	93V59	2156	0.032258	.	.	.	.	.	.
73	93V60	2166	0.032258	.	.	.	.	.	.
74	93V61	2168	0.032258	.	.	.	.	.	.

Ref	Mooring	Meter depth	Bandwidth	cpd	Period	0	90	Sum	Density
76	93V64	2156	0.032258	.	.	.	.	.	.
77	93V65	2150	0.032258	.	.	.	.	.	.
78	93V66	2150	0.032258	.	.	.	.	.	.
79	93V67	2153	0.032258	.	.	.	.	.	.
80	93V68	254	0.032258	.	.	.	.	.	.
81	94V70	2004	0.032258	1.45161	0.689	5.209	5.821	11.031	341.962
82	94V70	2154	0.032258	1.45161	0.689	1.418	0.857	2.276	70.556
83	92V71	1804	0.032258	1.45161	0.689	0.527	0.462	0.989	30.659
84	93V71	2153	0.032258	1.45161	0.689	0.045	0.169	0.213	6.603
85	93V73	1791	0.032258	1.41935	0.705	0.173	0.184	0.358	11.098
86	93V73	2141	0.032258	1.45161	0.689	0.218	0.345	0.564	17.484
87	93V74	1806	0.032258	1.45161	0.689	0.659	0.543	1.202	37.262
88	93V75	1796	0.032258	1.45161	0.689	0.230	0.276	0.506	15.686
89	93V75	2146	0.032258	1.3871	0.721	0.083	0.059	0.142	4.402
90	94V76	2095	0.032258	.	.	.	.	.	.
91	94V80	1900	0.032258	.	.	.	.	.	.
92	94V80	2100	0.032258	.	.	.	.	.	.
93	94V80	2200	0.032258	.	.	.	.	.	.
94	94V81	2101	0.032258	.	.	.	.	.	.
95	94V82	2104	0.032258	1.41935	0.705	1.349	1.056	2.404	74.524
96	94V82	2204	0.032258	1.41935	0.705	0.396	0.482	0.878	27.218
97	94V83	1599	0.032258	1.41935	0.705	1.348	1.245	2.592	80.352
98	94V83	1999	0.032258	1.41935	0.705	1.916	1.434	3.350	103.850
99	94V83	2099	0.032258	1.45161	0.689	1.805	1.783	3.588	111.228
100	94V83	2199	0.032258	1.45161	0.689	0.625	0.656	1.280	39.680
101	94V84	2096	0.032258	1.45161	0.689	1.646	2.081	3.727	115.537
102	94V84	2196	0.032258	1.45161	0.689	0.649	0.528	1.177	36.487
103	94V85	2109	0.032258	1.41935	0.705	1.108	1.883	2.991	92.721
104	94V85	2209	0.032258	1.45161	0.689	0.514	0.661	1.175	36.425
105	94V86	255	0.032258	1.45161	0.689	1.007	0.982	1.989	61.659
106	94V86	1005	0.032258	1.41935	0.705	4.925	5.496	10.421	323.052
107	94V86	2005	0.032258	1.45161	0.689	1.897	2.500	4.396	136.276
108	94V86	2105	0.032258	1.41935	0.705	1.884	1.766	3.650	113.150
1	95V87	2012	0.032258	1.45161	0.689	0.613	0.782	1.396	43.276
2	95V88	1909	0.032258	1.45161	0.689	0.236	0.375	0.611	18.941
3	95V88	2109	0.032258	1.45161	0.689	0.576	0.533	1.109	34.379
4	95V88	2209	0.032258	1.45161	0.689	0.494	0.452	0.946	29.326
5	95V89	2106	0.032258	1.45161	0.689	0.588	0.489	1.078	33.418
6	95V90	1902	0.032258	1.41935	0.705	0.216	0.156	0.373	11.563
7	95V90	2102	0.032258	1.45161	0.689	0.479	0.473	0.952	29.512
8	95V90	2202	0.032258	1.45161	0.689	0.199	0.013	0.212	6.572
9	96V91	1907	0.032258	1.41935	0.705	0.414	0.460	0.874	27.094

Ref	Mooring	Meter depth	Bandwidth	cpd	Period	0	90	Sum	Density
10	96V91	2107	0.032258	1.48387	0.674	1.759	1.669	3.428	106.268
11	96V91	2207	0.032258	1.48387	0.674	0.900	0.731	1.631	50.561
12	96V92	2105	0.032258	1.45161	0.689	0.575	0.850	1.426	44.206
13	96V92	2205	0.032258	1.45161	0.689	0.244	0.510	0.754	23.374
14	96V93	2033	0.032258	1.41935	0.705	1.615	1.446	3.061	94.891
15	96V93	2633	0.032258	1.41935	0.705	0.559	0.268	0.827	25.637
16	96V94	1498	0.032258	1.41935	0.705	0.191	0.221	0.411	12.741
17	96V94	1898	0.032258	1.48387	0.674	0.67	0.991	1.662	51.522
18	96V95	1498	0.032258	.	.	.	.	.	.
19	96V95	1898	0.032258	1.45161	0.689	0.278	0.183	0.461	14.291
20	96V96	1475	0.032258	1.41935	0.705	0.864	0.858	1.722	53.382
21	96V96	1875	0.032258	1.45161	0.689	0.142	0.252	0.394	12.214
22	96V98	1808	0.032258	1.45161	0.689	0.162	0.067	0.229	7.099
23	96V98	1908	0.032258	1.45161	0.689	0.074	0.003	0.077	2.387

Appendix F: Summer 4-day spectral analysis

Column 1.	Reference number in R2D2 archive system
Column 2.	Mooring name
Column 3.	Depth of instrument in meters
Column 4.	Frequency range of analysis component (cycles per day)
Column 5.	Center frequency of analysis component (cycles per day)
Column 6.	Period in days of the analysis component
Column 7.	Variance in the north-south component of the current record $(cm/sec)^2$
Column 8.	Variance in the east-west component of the current record $(cm/sec)^2$
Column 9.	Sum of the component variances
Column 10.	Energy density of the total variance $(cm/sec)^2$/(bandwidth in cpd)

Ref	Mooring	Meter depth	Bandwidth	cpd	t	0	90	Sum	Density
6	PMS–84–V5	2340	0.064516	0.24194	4.133	0.551	0.032	0.584	9.052
7	PMS–84–V5	2260	0.032258	0.22581	4.429	0.061	0.095	0.156	4.836
8	PMS–84–V5	2058	0.032258	0.22581	4.429	0.049	0.007	0.055	1.705
9	PMS–84–V1	2030	0.032258	0.29032	3.444	0.062	0.122	0.183	5.673
10	85V08	2070	0.032258	0.22581	4.429	0.015	0.058	0.073	2.263
11	85V08	1720	0.032258	0.25806	3.875	0.057	0.016	0.073	2.263
13	85V08	2320	0.032258	0.22581	4.429	0.007	0.201	0.208	6.448
14	86AXIAL	1500	0.032323	0.29091	3.438	0.150	0.023	0.173	5.352
16	V8609B	153	0.032258	0.19355	5.167	0.212	0.328	0.539	16.709
17	V8609B	553	0.032258	0.19355	5.167	0.014	0.030	0.044	1.364
18	V8609A	1000	0.032258	0.25806	3.875	0.020	0.018	0.038	1.178
20	V8609A	2400	0.032258	0.25806	3.875	0.083	0.018	0.101	3.131
21	V8611	2000	0.032258	0.25806	3.875	0.456	0.245	0.701	21.731
22	V8611	2400	0.032258	0.25806	3.875	0.218	0.002	0.221	6.851
23	V8612	2000	0.032258	0.25806	3.875	0.176	0.430	0.606	18.786
26	PMS85–V7	2150	0.032258	0.22581	4.429	0.765	0.212	0.977	30.287
30	87V14	1833	0.032258	0.19355	5.167	5.704	0.237	5.940	184.140
32	87V15	2579	0.032258	0.19355	5.167	0.024	0.000	0.024	0.744
34	87V16	2050	0.032258	0.19355	5.167	0.058	0.037	0.095	2.945
35	87V16	2550	0.032258	0.22581	4.429	0.037	0.036	0.073	2.263
36	87V17	500	0.032258	0.22581	4.429	0.033	0.022	0.055	1.705
37	87V17	1000	0.032258	0.19355	5.167	0.060	0.040	0.100	3.100
38	87V17	1500	0.032258	0.19355	5.167	0.035	0.037	0.072	2.232
39	87V17	2500	0.032258	0.19355	5.167	0.041	0.080	0.122	3.782
40	87V18	2000	0.032258	0.19355	5.167	0.159	0.042	0.201	6.231
41	87V18	2292	0.032258	0.25806	3.875	0.295	0.004	0.299	9.269
43	87V19	2000	0.032258	0.25806	3.875	0.130	0.053	0.183	5.673
44	87V19	2248	0.032258	0.25806	3.875	0.186	0.152	0.338	10.478
47	88v24	1880	0.032258	0.29032	3.444	0.224	0.022	0.247	7.657
48	88v24	1380	0.032258	0.29032	3.444	0.092	0.014	0.106	3.286
49	88v24	1630	0.032258	0.29032	3.444	0.043	0.012	0.055	1.705
50	88V23	1600	0.032258	0.29032	3.444	0.053	0.079	0.132	4.092
52	88V24	2130	0.033613	0.20168	4.958	0.228	0.155	0.383	11.394
53	88V22	506	0.032258	0.29032	3.444	0.030	0.047	0.077	2.387
54	88V22	1506	0.032258	0.22581	4.429	0.024	0.020	0.044	1.364
55	88V22	1006	0.032258	0.22581	4.429	0.029	0.002	0.031	0.961
56	88V22	106	0.032258	0.19355	5.167	0.022	0.094	0.116	3.596
57	88V22	2006	0.032258	0.22581	4.429	0.030	0.012	0.042	1.302
58	88V22	2506	0.032258	0.22581	4.429	0.044	0.020	0.064	1.984
61	V8925	1615	0.032258	0.25806	3.875	0.076	0.027	0.103	3.193
62	V8925	1365	0.032258	0.22581	4.429	0.078	0.006	0.084	2.604
63	V8925	1865	0.032258	0.25806	3.875	0.073	0.031	0.104	3.224

Ref	Mooring	Meter depth	Bandwidth	cpd	t	0	90	Sum	Density
64	V8926	1610	0.032258	0.25806	3.875	0.051	0.060	0.111	3.441
65	V8926	1860	0.032258	0.25806	3.875	0.139	0.069	0.208	6.448
66	V8926	1360	0.032258	0.25806	3.875	0.017	0.035	0.052	1.612
67	V8927	2537	0.032258	0.19355	5.167	0.014	0.028	0.041	1.271
68	V8927	2037	0.032258	0.25806	3.875	0.001	0.006	0.007	0.217
69	V8928	2005	0.032258	0.25806	3.875	0.004	0.007	0.010	0.310
70	V8928	255	0.032258	0.22581	4.429	0.016	0.001	0.016	0.496
71	V8928	1005	0.032258	0.22581	4.429	0.001	0.010	0.011	0.341
72	V8928	2505	0.032258	0.22581	4.429	0.023	0.043	0.066	2.046
73	V8930	1982	0.032258	0.29032	3.444	0.038	0.013	0.051	1.581
75	V8931	1995	0.032258	0.25806	3.875	0.028	0.094	0.121	3.751
76	V8931	2440	0.032258	0.22581	4.429	0.339	0.030	0.369	11.439
1	V9032	1960	0.032323	0.22626	4.420	0.021	0.088	0.109	3.372
2	V9032	2060	0.032323	0.22626	4.420	0.077	0.133	0.210	6.497
3	V9032	2160	0.032323	0.22626	4.420	0.114	0.184	0.298	9.219
4	V9032	1810	0.032323	0.25859	3.867	0.043	0.013	0.056	1.733
5	V9033	1975	0.032323	0.25859	3.867	0.098	0.048	0.146	4.517
6	V9033	2075	0.032323	0.25859	3.867	0.169	0.061	0.230	7.116
8	V9033	1825	0.032323	0.25859	3.867	0.093	0.061	0.154	4.764
9	V9034	1969	0.032323	0.25859	3.867	0.088	0.048	0.136	4.208
10	V9034	1569	0.032323	0.25859	3.867	0.115	0.032	0.147	4.548
11	V9034	2069	0.032323	0.25859	3.867	0.092	0.153	0.245	7.580
12	V9034	1819	0.032323	0.25859	3.867	0.230	0.116	0.347	10.735
13	V9034	2169	0.032323	0.25859	3.867	0.188	0.193	0.381	11.787
14	V9035	1832	0.032258	0.25806	3.875	0.273	0.072	0.345	10.695
15	V9035	1982	0.032323	0.25859	3.867	0.417	0.311	0.728	22.523
16	V9035	2082	0.032323	0.25859	3.867	0.533	0.451	0.983	30.412
17	V9036	225	0.032323	0.29091	3.438	0.013	0.010	0.022	0.681
18	V9036	2185	0.032323	0.22626	4.420	0.309	0.220	0.529	16.366
20	V9036	2085	0.032323	0.25859	3.867	0.264	0.041	0.305	9.436
21	V9037	1985	0.032323	0.25859	3.867	0.099	0.114	0.212	6.559
22	V9037	2085	0.032323	0.25859	3.867	0.126	0.094	0.220	6.806
23	V9037	1835	0.032323	0.25859	3.867	0.116	0.037	0.153	4.733
24	V9038	2078	0.032323	0.25859	3.867	0.232	0.147	0.379	11.725
25	V9038	2178	0.032323	0.25859	3.867	0.382	0.626	1.008	31.185
26	V9039	2075	0.032323	0.25859	3.867	0.628	0.248	0.877	27.132
27	V9039	1825	0.032258	0.25806	3.875	0.126	0.067	0.190	5.890
28	V9040	1825	0.032323	0.25859	3.867	0.071	0.089	0.160	4.950
29	V9040	2075	0.032323	0.25859	3.867	0.102	0.109	0.211	6.528
30	V9040	1975	0.032323	0.25859	3.867	0.130	0.094	0.224	6.930
31	V9041	2175	0.032323	0.22626	4.420	0.297	0.028	0.325	10.055
32	V9041	1975	0.032323	0.25859	3.867	0.182	0.109	0.291	9.003

Ref	Mooring	Meter depth	Bandwidth	cpd	t	0	90	Sum	Density
33	V9041	2075	0.032323	0.22626	4.420	0.088	0.051	0.140	4.331
34	V9042	2105	0.032323	0.25859	3.867	0.417	0.106	0.523	16.180
35	V9042	1855	0.032258	0.25806	3.875	0.153	0.076	0.229	7.099
36	V9042	2005	0.032323	0.25859	3.867	0.184	0.106	0.290	8.972
37	V9036	1835	0.032258	0.25806	3.875	0.047	0.106	0.153	4.743
38	V9043	266	.	.	.	.	.	.	.
39	V9043	1616	.	.	.	.	.	.	.
40	V9043	1866	.	.	.	.	.	.	.
41	V9043	2016	.	.	.	.	.	.	.
42	V9043	2116	.	.	.	.	.	.	.
43	V9043	2216	.	.	.	.	.	.	.
44	V9144	1970	0.032258	0.25806	3.875	0.121	0.141	0.262	8.122
45	V9144	2120	0.032258	0.22581	4.429	0.218	0.094	0.313	9.703
46	V9144	2220	0.032258	0.25806	3.875	0.174	0.021	0.194	6.014
47	V9145	257	0.032258	0.25806	3.875	0.174	0.119	0.293	9.083
48	V9145	2007	0.032258	0.25806	3.875	0.253	0.208	0.461	14.291
49	V9145	2157	0.032258	0.22581	4.429	0.725	0.627	1.352	41.912
50	V9145	2257	0.032258	0.22581	4.429	1.391	0.881	2.272	70.432
51	V9146	2002	0.032258	0.25806	3.875	0.355	0.113	0.468	14.508
52	V9146	2152	0.032258	0.25806	3.875	0.791	0.127	0.918	28.458
53	V9146	2252	0.032258	0.25806	3.875	1.388	0.485	1.873	58.063
54	V9147	2006	0.032258	0.25806	3.875	0.217	0.250	0.468	14.508
55	V9147	2156	0.032258	0.22581	4.429	0.477	0.377	0.854	26.474
56	V9147	2256	0.032258	0.22581	4.429	0.818	0.198	1.015	31.465
57	V9148	2136	0.032258	0.22581	4.429	0.026	0.084	0.110	3.410
58	V9149	2122	0.032258	0.22581	4.429	0.476	0.396	0.872	27.032
59	92V50	1997	0.032258	0.22581	4.429	0.395	0.030	0.426	13.206
60	92V50	2147	0.032258	0.22581	4.429	0.386	0.080	0.466	14.446
61	92V50	2248	0.032258	0.29032	3.444	0.309	0.249	0.558	17.298
62	92V51	2247	0.032258	0.22581	4.429	1.444	0.021	1.464	45.384
63	92V52	1999	0.032258	0.22581	4.429	0.159	0.108	0.267	8.277
64	92V52	2249	0.032258	0.22581	4.429	0.640	0.163	0.802	24.862
65	92V53	1994	0.032258	0.22581	4.429	0.140	0.147	0.287	8.897
66	92V53	2244	0.032258	0.22581	4.429	0.353	0.200	0.553	17.143
67	92V54	2150	0.032258	0.22581	4.429	0.043	0.017	0.059	1.829
68	92V55	2153	0.032258	0.22581	4.429	0.186	0.061	0.247	7.657
69	92V56	249	0.032258	0.25806	3.875	0.003	0.054	0.058	1.798
70	92V57	2147	0.032258	.	.	.	.	.	.
71	93V58	2150	0.032258	0.25806	3.875	0.017	0.012	0.029	0.899
72	93V59	2156	0.032258	0.22581	4.429	0.017	0.016	0.034	1.054
73	93V60	2166	0.032258	0.29032	3.444	0.056	0.081	0.137	4.247
74	93V61	2168	0.032258	0.25806	3.875	0.025	0.132	0.157	4.867

Ref	Mooring	Meter depth	Bandwidth	cpd	t	0	90	Sum	Density
76	93V64	2156	0.032258	0.25806	3.875	0.440	0.314	0.754	23.374
77	93V65	2150	0.032258	0.25806	3.875	0.125	0.071	0.196	6.076
78	93V66	2150	0.032258	0.29032	3.444	0.028	0.143	0.171	5.301
79	93V67	2153	0.032258	0.29032	3.444	0.024	0.051	0.075	2.325
80	93V68	254	0.032258	0.22581	4.429	0.163	0.272	0.435	13.485
81	94V70	2004	0.032258	0.29032	3.444	0.307	0.248	0.555	17.205
82	94V70	2154	0.032258	0.29032	3.444	0.398	0.192	0.590	18.290
83	92V71	1804	0.032258	0.22581	4.429	0.142	0.006	0.148	4.588
84	93V71	2153	0.032258	0.25806	3.875	0.047	0.053	0.100	3.100
85	93V73	1791	0.032258	0.32258	3.100	0.002	0.018	0.021	0.651
86	93V73	2141	0.032258	0.29032	3.444	0.014	0.064	0.078	2.418
87	93V74	1806	0.032258	0.22581	4.429	0.068	0.013	0.081	2.511
88	93V75	1796	0.032258	0.25806	3.875	0.000	0.040	0.040	1.240
89	93V75	2146	0.032258	0.25806	3.875	0.041	0.001	0.043	1.333
90	94V76	2095	0.032258	0.25806	3.875	0.152	0.040	0.192	5.952
91	94V80	1900	0.032258	0.29032	3.444	0.088	0.052	0.140	4.340
92	94V80	2100	0.032258	0.25806	3.875	0.091	0.015	0.107	3.317
93	94V80	2200	0.032258	0.22581	4.429	0.252	0.277	0.529	16.399
94	94V81	2101	0.032258	0.22581	4.429	0.172	0.076	0.248	7.688
95	94V82	2104	0.032258	0.22581	4.429	0.213	0.221	0.434	13.454
96	94V82	2204	0.032258	0.29032	3.444	0.436	0.355	0.791	24.521
97	94V83	1599	0.032258	0.29032	3.444	0.082	0.083	0.165	5.115
98	94V83	1999	0.032258	0.29032	3.444	0.236	0.243	0.479	14.849
99	94V83	2099	0.032258	0.29032	3.444	0.274	0.080	0.354	10.974
100	94V83	2199	0.032258	0.22581	4.429	0.260	0.222	0.482	14.942
101	94V84	2096	0.032258	0.22581	4.429	0.524	0.155	0.679	21.049
102	94V84	2196	0.032258	0.29032	3.444	0.605	0.222	0.827	25.637
103	94V85	2109	0.032258	0.29032	3.444	0.620	0.117	0.737	22.847
104	94V85	2209	0.032258	0.22581	4.429	0.648	0.360	1.008	31.248
105	94V86	255	0.032258	0.22581	4.429	0.062	0.056	0.118	3.658
106	94V86	1005	0.032258	0.22581	4.429	0.053	0.020	0.073	2.263
107	94V86	2005	0.032258	0.22581	4.429	0.291	0.205	0.495	15.345
108	94V86	2105	0.032258	0.22581	4.429	0.431	0.189	0.620	19.220
1	95V87	2012	0.032258	0.25806	3.875	0.055	0.089	0.144	4.464
2	95V88	1909	0.032258	0.22581	4.429	0.103	0.015	0.117	3.627
3	95V88	2109	0.032258	0.25806	3.875	0.101	0.109	0.210	6.510
4	95V88	2209	0.032258	0.29032	3.444	0.342	0.160	0.502	15.562
5	95V89	2106	0.032258	0.22581	4.429	0.281	0.075	0.356	11.036
6	95V90	1902	0.032258	0.29032	3.444	0.029	0.111	0.141	4.371
7	95V90	2102	0.032258	0.22581	4.429	0.512	0.017	0.529	16.399
8	95V90	2202	0.032258	0.22581	4.429	0.778	0.221	0.999	30.969
9	96V91	1907	0.032258	0.25806	3.875	0.191	0.113	0.305	9.455

Ref	Mooring	Meter depth	Bandwidth	cpd	t	0	90	Sum	Density
10	96V91	2107	0.032258	0.25806	3.875	0.332	0.102	0.433	13.423
11	96V91	2207	0.032258	0.25806	3.875	0.335	0.120	0.455	14.105
12	96V92	2105	0.032258	0.25806	3.875	0.317	0.156	0.472	14.632
13	96V92	2205	0.032258	0.25806	3.875	0.386	0.797	1.184	36.704
14	96V93	2033	0.032258	0.22581	4.429	0.004	0.021	0.025	0.775
15	96V93	2633	0.032258	0.25806	3.875	0.450	0.017	0.466	14.446
16	96V94	1498	0.032258	0.22581	4.429	0.028	0.085	0.114	3.534
17	96V94	1898	0.032258	0.25806	3.875	0.220	0.113	0.333	10.323
18	96V95	1498	0.032258	0.25806	3.875	0.047	0.004	0.051	1.581
19	96V95	1898	0.032258	0.25806	3.875	0.222	0.069	0.291	9.021
20	96V96	1475	0.032258	0.29032	3.444	0.024	0.008	0.032	0.992
21	96V96	1875	0.032258	0.25806	3.875	0.058	0.015	0.073	2.263
22	96V98	1808	0.032258	0.22581	4.429	0.297	0.603	0.899	27.869
23	96V98	1908	0.032258	0.25806	3.875	0.034	0.832	0.866	26.846

Appendix G: Winter 4-day spectral analysis

Column 1.	Reference number in R2D2 archive system
Column 2.	Mooring name
Column 3.	Depth of instrument in meters
Column 4.	Frequency range of analysis component (cycles per day)
Column 5.	Center frequency of analysis component (cycles per day)
Column 6.	Period in days of the analysis component
Column 7.	Variance in the north-south component of the current record $(cm/sec)^2$
Column 8.	Variance in the east-west component of the current record $(cm/sec)^2$
Column 9.	Sum of the component variances
Column 10.	Energy density of the total variance $(cm/sec)^2$/(bandwidth in cpd)

Ref	Mooring	Meter depth	Bandwidth	cpd	Period	0	90	Sum	Density
6	PMS–84–V5	2340	.	.	.	.	.	.	.
7	PMS–84–V5	2260	.	.	.	.	.	.	.
8	PMS–84–V5	2058	.	.	.	.	.	.	.
9	PMS–84–V1	2030	0.032258	0.29032	3.444	1.001	1.315	2.316	71.796
10	85V08	2070	.	.	.	.	.	.	.
11	85V08	1720	0.032258	0.25806	3.875	0.160	0.165	0.325	10.075
13	85V08	2320	0.032258	0.25806	3.875	0.049	0.177	0.227	7.037
14	86AXIAL	1500	.	.	.	.	.	.	.
16	V8609B	153	0.032258	0.22581	4.429	0.396	0.256	0.652	20.212
17	V8609B	553	0.032258	0.25806	3.875	0.128	0.087	0.215	6.665
18	V8609A	1000	0.032258	0.25806	3.875	0.125	0.173	0.298	9.238
20	V8609A	2400	0.032258	0.25806	3.875	0.396	0.714	1.110	34.410
21	V8611	2000	0.032258	0.25806	3.875	0.174	0.201	0.375	11.625
22	V8611	2400	0.032258	0.25806	3.875	0.044	0.109	0.153	4.743
23	V8612	2000	0.032258	0.25806	3.875	1.976	0.841	2.816	87.296
26	PMS85–V7	2150	.	.	.	.	.	.	.
30	87V14	1833	0.032258	0.25806	3.875	6.659	0.255	6.914	214.334
32	87V15	2579	0.032258	0.25806	3.875	0.048	0.000	0.048	1.488
34	87V16	2050	0.032258	0.19355	5.167	0.187	0.051	0.237	7.347
35	87V16	2550	0.032258	0.25806	3.875	0.033	0.014	0.047	1.457
36	87V17	500	0.032258	0.25806	3.875	0.091	0.126	0.217	6.727
37	87V17	1000	0.032258	0.25806	3.875	0.022	0.096	0.118	3.658
38	87V17	1500	0.032258	0.25806	3.875	0.043	0.055	0.098	3.038
39	87V17	2500	0.032258	0.25806	3.875	0.133	0.122	0.255	7.905
40	87V18	2000	0.032258	0.25806	3.875	1.940	0.928	2.868	88.908
41	87V18	2292	0.032258	0.25806	3.875	5.175	0.162	5.337	165.447
43	87V19	2000	0.032258	0.25806	3.875	1.326	0.550	1.876	58.156
44	87V19	2248	0.032258	0.25806	3.875	2.890	0.859	3.749	116.219
47	88v24	1880	0.032258	0.19355	5.167	0.927	0.318	1.245	38.595
48	88v24	1380	0.032258	0.19355	5.167	0.265	0.046	0.311	9.641
49	88v24	1630	0.032258	0.19355	5.167	0.650	0.259	0.909	28.179
50	88V23	1600	0.032258	0.19355	5.167	0.144	0.267	0.411	12.741
52	88V24	2130	0.033613	.	.	.	.	.	.
53	88V22	506	0.032258	0.19355	5.167	0.126	0.198	0.324	10.044
54	88V22	1506	0.032258	0.19355	5.167	0.188	0.331	0.519	16.089
55	88V22	1006	0.032258	0.19355	5.167	0.164	0.169	0.333	10.323
56	88V22	106	0.032258	0.19355	5.167	3.002	1.895	4.897	151.807
57	88V22	2006	0.032258	0.19355	5.167	0.227	0.271	0.498	15.438
58	88V22	2506	0.032258	0.19355	5.167	0.465	0.113	0.578	17.918
61	V8925	1615	0.032258	0.22581	4.429	0.395	0.157	0.552	17.112
62	V8925	1365	0.032258	0.22581	4.429	0.391	0.104	0.495	15.345
63	V8925	1865	0.032258	0.22581	4.429	0.840	0.211	1.050	32.550

Ref	Mooring	Meter depth	Bandwidth	cpd	Period	0	90	Sum	Density
64	V8926	1610	0.032258	0.29032	3.444	0.106	0.111	0.217	6.727
65	V8926	1860	0.032258	.	.	.	.	.	.
66	V8926	1360	0.032258	0.29032	3.444	0.094	0.056	0.151	4.681
67	V8927	2537	0.032258	0.29032	3.444	0.062	0.014	0.075	2.325
68	V8927	2037	0.032258	0.22581	4.429	0.053	0.025	0.077	2.387
69	V8928	2005	0.032258	0.22581	4.429	0.012	0.056	0.069	2.139
70	V8928	255	0.032258	0.22581	4.429	0.033	0.018	0.051	1.581
71	V8928	1005	0.032258	0.22581	4.429	0.054	0.050	0.104	3.224
72	V8928	2505	0.032258	0.29032	3.444	0.057	0.026	0.083	2.573
73	V8930	1982	0.032258	0.22581	4.429	0.035	0.387	0.422	13.082
75	V8931	1995	0.032258	0.22581	4.429	0.293	0.528	0.820	25.420
76	V8931	2440	0.032258	0.22581	4.429	2.049	0.507	2.555	79.205
1	V9032	1960	.	.	.	.	.	.	.
2	V9032	2060	.	.	.	.	.	.	.
3	V9032	2160	.	.	.	.	.	.	.
4	V9032	1810	.	.	.	.	.	.	.
5	V9033	1975	.	.	.	.	.	.	.
6	V9033	2075	.	.	.	.	.	.	.
8	V9033	1825	.	.	.	.	.	.	.
9	V9034	1969	.	.	.	.	.	.	.
10	V9034	1569	.	.	.	.	.	.	.
11	V9034	2069	.	.	.	.	.	.	.
12	V9034	1819	.	.	.	.	.	.	.
13	V9034	2169	.	.	.	.	.	.	.
14	V9035	1832	.	.	.	.	.	.	.
15	V9035	1982	.	.	.	.	.	.	.
16	V9035	2082	.	.	.	.	.	.	.
17	V9036	225	.	.	.	.	.	.	.
18	V9036	2185	.	.	.	.	.	.	.
20	V9036	2085	.	.	.	.	.	.	.
21	V9037	1985	.	.	.	.	.	.	.
22	V9037	2085	.	.	.	.	.	.	.
23	V9037	1835	.	.	.	.	.	.	.
24	V9038	2078	.	.	.	.	.	.	.
25	V9038	2178	.	.	.	.	.	.	.
26	V9039	2075	.	.	.	.	.	.	.
27	V9039	1825	.	.	.	.	.	.	.
28	V9040	1825	.	.	.	.	.	.	.
29	V9040	2075	.	.	.	.	.	.	.
30	V9040	1975	.	.	.	.	.	.	.
31	V9041	2175	.	.	.	.	.	.	.
32	V9041	1975	.	.	.	.	.	.	.

Ref	Mooring	Meter depth	Bandwidth	cpd	Period	0	90	Sum	Density
33	V9041	2075	.	.	.	.	.	.	.
34	V9042	2105	.	.	.	.	.	.	.
35	V9042	1855	.	.	.	.	.	.	.
36	V9042	2005	.	.	.	.	.	.	.
37	V9036	1835	.	.	.	.	.	.	.
38	V9043	266	0.032258	0.22581	4.429	0.168	0.149	0.317	9.827
39	V9043	1616	0.032258	0.22581	4.429	0.586	0.765	1.351	41.881
40	V9043	1866	0.032258	0.22581	4.429	1.154	0.414	1.567	48.577
41	V9043	2016	0.032258	0.22581	4.429	4.525	0.944	5.469	169.539
42	V9043	2116	0.032258	.	.	.	.	.	.
43	V9043	2216	0.032258	0.22581	4.429	2.193	0.617	2.810	87.110
44	V9144	1970	0.032258	0.22581	4.429	1.323	0.325	1.648	51.088
45	V9144	2120	0.032258	0.25806	3.875	0.739	0.221	0.960	29.760
46	V9144	2220	0.032258	0.25806	3.875	0.488	0.270	0.757	23.467
47	V9145	257	0.032258	0.25806	3.875	0.234	0.080	0.315	9.765
48	V9145	2007	0.032258	0.25806	3.875	3.529	2.145	5.674	175.894
49	V9145	2157	0.032258	0.25806	3.875	2.950	2.346	5.296	164.176
50	V9145	2257	0.032258	0.25806	3.875	6.438	4.181	10.619	329.190
51	V9146	2002	0.032258	0.25806	3.875	2.558	1.080	3.638	112.778
52	V9146	2152	0.032258	0.25806	3.875	0.756	0.506	1.262	39.122
53	V9146	2252	0.032258	0.25806	3.875	5.892	2.215	8.106	251.287
54	V9147	2006	0.032258	0.25806	3.875	2.236	0.963	3.199	99.169
55	V9147	2156	0.032258	0.25806	3.875	2.524	1.462	3.986	123.566
56	V9147	2256	0.032258	0.25806	3.875	3.790	1.218	5.007	155.217
57	V9148	2136	0.032258	0.22581	4.429	0.047	0.460	0.507	15.717
58	V9149	2122	0.032258	0.22581	4.429	0.898	1.022	1.920	59.520
59	92V50	1997	0.032258	0.22581	4.429	2.093	0.318	2.410	74.710
60	92V50	2147	0.032258	0.29032	3.444	1.271	0.326	1.597	49.507
61	92V50	2248	0.032258	0.29032	3.444	1.023	1.831	2.855	88.505
62	92V51	2247	0.032258	0.29032	3.444	1.400	0.223	1.624	50.344
63	92V52	1999	0.032258	0.29032	3.444	0.686	0.372	1.058	32.798
64	92V52	2249	0.032258	0.29032	3.444	2.074	0.732	2.806	86.986
65	92V53	1994	0.032258	0.29032	3.444	1.150	0.523	1.673	51.863
66	92V53	2244	0.032258	0.29032	3.444	0.767	1.068	1.835	56.885
67	92V54	2150	0.032258	0.29032	3.444	1.557	1.049	2.606	80.786
68	92V55	2153	0.032258	0.29032	3.444	1.260	0.626	1.886	58.466
69	92V56	249	0.032258	0.22581	4.429	0.168	0.125	0.293	9.083
70	92V57	2147	0.032258	0.29032	3.444	0.549	0.646	1.195	37.045
71	93V58	2150	0.032258	.	.	.	.	.	.
72	93V59	2156	0.032258	.	.	.	.	.	.
73	93V60	2166	0.032258	.	.	.	.	.	.
74	93V61	2168	0.032258	.	.	.	.	.	.

Ref	Mooring	Meter depth	Bandwidth	cpd	Period	0	90	Sum	Density
76	93V64	2156	0.032258	.	.	.	.	.	.
77	93V65	2150	0.032258	.	.	.	.	.	.
78	93V66	2150	0.032258	.	.	.	.	.	.
79	93V67	2153	0.032258	.	.	.	.	.	.
80	93V68	254	0.032258	.	.	.	.	.	.
81	94V70	2004	0.032258	0.22581	4.429	1.737	0.863	2.600	80.600
82	94V70	2154	0.032258	0.22581	4.429	0.966	0.457	1.423	44.113
83	92V71	1804	0.032258	0.22581	4.429	0.292	0.023	0.315	9.765
84	93V71	2153	0.032258	0.22581	4.429	0.971	0.032	1.004	31.124
85	93V73	1791	0.032258	0.22581	4.429	0.186	0.011	0.197	6.107
86	93V73	2141	0.032258	0.22581	4.429	0.722	0.000	0.722	22.382
87	93V74	1806	0.032258	0.22581	4.429	0.140	0.031	0.172	5.332
88	93V75	1796	0.032258	0.22581	4.429	0.127	0.111	0.238	7.378
89	93V75	2146	0.032258	0.22581	4.429	0.072	0.058	0.130	4.030
90	94V76	2095	0.032258	.	.	.	.	.	.
91	94V80	1900	0.032258	.	.	.	.	.	.
92	94V80	2100	0.032258	.	.	.	.	.	.
93	94V80	2200	0.032258	.	.	.	.	.	.
94	94V81	2101	0.032258	.	.	.	.	.	.
95	94V82	2104	0.032258	0.22581	4.429	0.453	0.091	0.544	16.864
96	94V82	2204	0.032258	0.22581	4.429	0.722	0.196	0.918	28.458
97	94V83	1599	0.032258	0.22581	4.429	0.171	0.009	0.179	5.549
98	94V83	1999	0.032258	0.25806	3.875	0.231	0.141	0.372	11.532
99	94V83	2099	0.032258	0.22581	4.429	0.251	0.119	0.369	11.439
100	94V83	2199	0.032258	0.22581	4.429	0.605	0.189	0.794	24.614
101	94V84	2096	0.032258	0.25806	3.875	0.200	0.070	0.270	8.370
102	94V84	2196	0.032258	0.25806	3.875	0.408	0.253	0.660	20.460
103	94V85	2109	0.032258	0.25806	3.875	0.243	0.243	0.486	15.066
104	94V85	2209	0.032258	0.25806	3.875	0.701	0.308	1.009	31.279
105	94V86	255	0.032258	0.22581	4.429	0.095	0.047	0.142	4.402
106	94V86	1005	0.032258	0.22581	4.429	0.111	0.058	0.169	5.239
107	94V86	2005	0.032258	0.22581	4.429	0.222	0.007	0.229	7.099
108	94V86	2105	0.032258	0.25806	3.875	0.337	0.088	0.425	13.175
1	95V87	2012	0.032258	0.22581	4.429	1.736	1.185	2.921	90.551
2	95V88	1909	0.032258	0.22581	4.429	1.185	0.776	1.961	60.791
3	95V88	2109	0.032258	0.25806	3.875	3.396	0.982	4.378	135.718
4	95V88	2209	0.032258	0.22581	4.429	3.270	1.132	4.402	136.462
5	95V89	2106	0.032258	0.22581	4.429	3.833	1.302	5.135	159.185
6	95V90	1902	0.032258	0.22581	4.429	1.034	0.685	1.719	53.289
7	95V90	2102	0.032258	0.22581	4.429	1.800	0.535	2.335	72.385
8	95V90	2202	0.032258	0.25806	3.875	1.912	0.581	2.494	77.314
9	96V91	1907	0.032258	0.29032	3.444	0.274	0.424	0.698	21.638

Ref	Mooring	Meter depth	Bandwidth	cpd	Period	0	90	Sum	Density
10	96V91	2107	0.032258	0.29032	3.444	0.673	0.317	0.990	30.690
11	96V91	2207	0.032258	0.29032	3.444	0.567	0.387	0.954	29.574
12	96V92	2105	0.032258	0.29032	3.444	0.497	0.577	1.074	33.294
13	96V92	2205	0.032258	0.29032	3.444	0.726	1.291	2.017	62.527
14	96V93	2033	0.032258	0.29032	3.444	0.007	0.090	0.097	3.007
15	96V93	2633	0.032258	0.29032	3.444	0.180	0.044	0.224	6.944
16	96V94	1498	0.032258	0.25806	3.875	0.027	0.045	0.073	2.263
17	96V94	1898	0.032258	0.25806	3.875	0.191	0.016	0.206	6.386
18	96V95	1498	0.032258	.	.	.	.	.	.
19	96V95	1898	0.032258	0.29032	3.444	0.633	0.083	0.716	22.196
20	96V96	1475	0.032258	0.29032	3.444	0.076	0.052	0.128	3.968
21	96V96	1875	0.032258	0.29032	3.444	0.593	0.069	0.663	20.553
22	96V98	1808	0.032258	0.25806	3.875	1.919	0.325	2.244	69.564
23	96V98	1908	0.032258	0.25806	3.875	0.697	0.473	1.170	36.270

Appendix H: Geographic transformation of coordinates

Column 1.	Reference number in R2D2 archive system
Column 2.	Mooring name
Column 3.	Distance of mooring site from 45°N (kilometers positive north)
Column 4.	Distance of mooring site from 130°W (kilometers positive east)
Column 5.	Depth of the instrument (meters)
Column 6.	Height of the instrument above the bottom (meters)
Column 7.	Distance in kilometers from a line oriented at 020°T through the point 45°N, 130°W.

Ref	Mooring	Km north	Km east	m depth	Mab	Normal distance (Km)
6	PMS–84–V5	–38.9	–33.9	2340	18	–46.99
7	PMS–84–V5	–38.9	–33.9	2260	98	–46.99
8	PMS–84–V5	–38.9	–33.9	2058	300	–46.99
9	PMS–84–V1	–40.0	–31.5	2030	100	–47.38
10	85V08	–31.1	–44.2	2070	550	–42.49
11	85V08	–31.1	–44.2	1720	900	–42.49
13	85V08	–31.1	–44.2	2320	300	–42.49
14	86AXIAL	103.3	–1.6	1500	50	98.52
16	V8609B	–18.9	–31.5	153	2497	–27.16
17	V8609B	–18.9	–31.5	553	2097	–27.16
18	V8609A	–23.3	–32.3	1000	1605	–31.64
20	V8609A	–23.3	–32.3	2400	205	–31.64
21	V8611	–35.6	–18.1	2000	550	–39.27
22	V8611	–35.6	–18.1	2400	150	–39.27
23	V8612	–34.4	–27.6	2000	252	–40.92
26	PMS85–V7	–34.4	–30.0	2150	100	–41.60
30	87V14	108.9	–15.0	1833	5	99.99
32	87V15	–14.4	197.1	2579	315	42.81
34	87V16	27.8	–157.7	2050	1600	–18.71
35	87V16	27.8	–157.7	2550	1100	–18.71
36	87V17	–1.1	–78.1	500	2376	–23.49
37	87V17	–1.1	–78.1	1000	1876	–23.49
38	87V17	–1.1	–78.1	1500	1376	–23.49
39	87V17	–1.1	–78.1	2500	376	–23.49
40	87V18	–12.2	–20.5	2000	297	–17.60
41	87V18	–12.2	–20.5	2292	5	–17.60
43	87V19	–35.6	–27.6	2000	253	–41.99
44	87V19	–35.6	–27.6	2248	5	–41.99
47	88v24	10.0	–14.2	1880	430	5.50
48	88v24	10.0	–14.2	1380	930	5.50
49	88v24	10.0	–14.2	1630	680	5.50
50	88V23	–23.3	–25.2	1600	623	–29.60
52	88V24	10.0	–14.2	2130	180	5.50
53	88V22	51.1	–93.0	506	2330	22.22
54	88V22	51.1	–93.0	1506	1330	22.22
55	88V22	51.1	–93.0	1006	1830	22.22
56	88V22	51.1	–93.0	106	2730	22.22
57	88V22	51.1	–93.0	2006	830	22.22
58	88V22	51.1	–93.0	2506	330	22.22
61	V8925	10.0	–12.6	1615	675	5.95
62	V8925	10.0	–12.6	1365	925	5.95
63	V8925	10.0	–12.6	1865	425	5.95

Ref	Mooring	Km north	Km east	m depth	Mab	Normal distance (Km)
64	V8926	–23.3	–25.2	1610	615	–29.60
65	V8926	–23.3	–25.2	1860	365	–29.60
66	V8926	–23.3	–25.2	1360	865	–29.60
67	V8927	112.2	–156.9	2537	800	62.40
68	V8927	112.2	–156.9	2037	1300	62.40
69	V8928	132.2	–132.5	2005	1200	88.59
70	V8928	132.2	–132.5	255	2950	88.59
71	V8928	132.2	–132.5	1005	2200	88.59
72	V8928	132.2	–132.5	2505	700	88.59
73	V8930	211.1	–102.5	1982	1100	172.76
75	V8931	32.2	–22.1	1995	450	24.52
76	V8931	32.2	–22.1	2440	5	24.52
1	V9032	–11.1	–10.3	1960	495	–13.59
2	V9032	–11.1	–10.3	2060	395	–13.59
3	V9032	–11.1	–10.3	2160	295	–13.59
4	V9032	–11.1	–10.3	1810	645	–13.59
5	V9033	–8.9	–16.6	1975	270	–13.27
6	V9033	–8.9	–16.6	2075	170	–13.27
8	V9033	–8.9	–16.6	1825	420	–13.27
9	V9034	–6.7	–18.9	1969	293	–11.82
10	V9034	–6.7	–18.9	1569	693	–11.82
11	V9034	–6.7	–18.9	2069	193	–11.82
12	V9034	–6.7	–18.9	1819	443	–11.82
13	V9034	–6.7	–18.9	2169	93	–11.82
14	V9035	–5.6	–20.5	1832	318	–11.21
15	V9035	–5.6	–20.5	1982	168	–11.21
16	V9035	–5.6	–20.5	2082	68	–11.21
17	V9036	–4.4	–26.8	225	2205	–11.96
18	V9036	–4.4	–26.8	2185	245	–11.96
20	V9036	–4.4	–26.8	2085	345	–11.96
21	V9037	–4.4	–14.2	1985	375	–8.34
22	V9037	–4.4	–14.2	2085	275	–8.34
23	V9037	–4.4	–14.2	1835	525	–8.34
24	V9038	–2.2	–17.3	2078	182	–7.11
25	V9038	–2.2	–17.3	2178	82	–7.11
26	V9039	–2.2	–22.1	2075	185	–8.47
27	V9039	–2.2	–22.1	1825	435	–8.47
28	V9040	–12.2	–15.8	1825	515	–16.24
29	V9040	–12.2	–15.8	2075	265	–16.24
30	V9040	–12.2	–15.8	1975	365	–16.24
31	V9041	–11.1	–23.7	2175	97	–17.44
32	V9041	–11.1	–24.4	1975	297	–17.67

Ref	Mooring	Km north	Km east	m depth	Mab	Normal distance (Km)
33	V9041	–11.1	–24.4	2075	197	–17.67
34	V9042	–8.9	–24.4	2105	200	–15.54
35	V9042	–8.9	–24.4	1855	450	–15.54
36	V9042	–8.9	–24.4	2005	300	–15.54
37	V9036	–4.4	–26.8	1835	595	–11.96
38	V9043	–2.2	–15.0	266	2040	–6.43
39	V9043	–2.2	–15.0	1616	690	–6.43
40	V9043	–2.2	–15.0	1866	440	–6.43
41	V9043	–2.2	–15.0	2016	290	–6.43
42	V9043	–2.2	–15.0	2116	190	–6.43
43	V9043	–2.2	–15.0	2216	90	–6.43
44	V9144	–5.6	–12.6	1970	360	–8.95
45	V9144	–5.6	–12.6	2120	210	–8.95
46	V9144	–5.6	–12.6	2220	110	–8.95
47	V9145	–2.2	–20.5	257	2010	–8.02
48	V9145	–2.2	–20.5	2007	260	–8.02
49	V9145	–2.2	–20.5	2157	110	–8.02
50	V9145	–2.2	–20.5	2257	10	–8.02
51	V9146	–1.1	–15.8	2002	260	–5.60
52	V9146	–1.1	–15.8	2152	110	–5.60
53	V9146	–1.1	–15.8	2252	10	–5.60
54	V9147	–5.6	–17.3	2006	262	–10.31
55	V9147	–5.6	–17.3	2156	112	–10.31
56	V9147	–5.6	–17.3	2256	12	–10.31
57	V9148	–68.9	–31.5	2136	215	–75.05
58	V9149	–55.6	–37.1	2122	100	–63.86
59	92V50	–4.4	–15.0	1997	255	–8.56
60	92V50	–4.4	–15.8	2147	105	–8.79
61	92V50	–4.4	–15.8	2248	4	–8.79
62	92V51	1.1	–15.0	2247	4	–3.24
63	92V52	–2.2	–15.0	1999	260	–6.43
64	92V52	–2.2	–15.0	2249	10	–6.43
65	92V53	–5.6	–17.3	1994	267	–10.31
66	92V53	–5.6	–17.3	2244	17	–10.31
67	92V54	–2.2	–18.9	2150	100	–7.57
68	92V55	1.1	–17.3	2153	150	–3.92
69	92V56	–3.3	–24.4	249	2175	–10.22
70	92V57	–2.2	–15.8	2147	51	–6.66
71	93V58	–10.0	3.9	2150	485	–8.45
72	93V59	–8.9	–2.4	2156	363	–9.19
73	93V60	–5.6	–7.1	2166	350	–7.36
74	93V61	–4.4	–11.8	2168	229	–7.66

Ref	Mooring	Km north	Km east	m depth	Mab	Normal distance (Km)
76	93V64	–2.2	–20.5	2156	105	–8.02
77	93V65	0.0	–24.4	2150	250	–7.02
78	93V66	1.1	–30.0	2150	430	–7.55
79	93V67	4.4	–37.1	2153	590	–6.39
80	93V68	–3.3	–24.4	254	2175	–10.22
81	94V70	–4.4	–17.3	2004	265	–9.24
82	94V70	–4.4	–17.3	2154	115	–9.24
83	92V71	165.6	31.5	1804	599	167.64
84	93V71	165.6	31.5	2153	250	167.64
85	93V73	167.8	35.5	1791	650	170.90
86	93V73	167.8	35.5	2141	300	170.90
87	93V74	157.8	35.5	1806	850	161.32
88	93V75	174.4	36.3	1796	850	177.51
89	93V75	174.4	36.3	2146	500	177.51
90	94V76	–4.4	–16.6	2095	180	–9.01
91	94V80	–3.3	–16.6	1900	360	–7.95
92	94V80	–3.3	–16.6	2100	160	–7.95
93	94V80	–3.3	–16.6	2200	60	–7.95
94	94V81	–3.3	–17.3	2101	55	–8.18
95	94V82	–3.3	–15.8	2104	160	–7.72
96	94V82	–3.3	–15.8	2204	60	–7.72
97	94V83	–4.4	–16.6	1599	655	–9.01
98	94V83	–4.4	–16.6	1999	255	–9.01
99	94V83	–4.4	–16.6	2099	155	–9.01
100	94V83	–4.4	–16.6	2199	55	–9.01
101	94V84	–3.3	–17.3	2096	175	–8.18
102	94V84	–3.3	–17.3	2196	75	–8.18
103	94V85	–2.2	–16.6	2109	165	–6.89
104	94V85	–2.2	–16.6	2209	65	–6.89
105	94V86	–2.2	–13.4	255	2078	–5.98
106	94V86	–2.2	–13.4	1005	1328	–5.98
107	94V86	–2.2	–13.4	2005	328	–5.98
108	94V86	–2.2	–13.4	2105	228	–5.98
1	95V87	–3.3	–16.6	2012	260	–7.95
2	95V88	–3.3	–16.6	1909	365	–7.95
3	95V88	–3.3	–16.6	2109	165	–7.95
4	95V88	–3.3	–16.6	2209	65	–7.95
5	95V89	–1.1	–15.8	2106	150	–5.60
6	95V90	–35.6	–28.4	1902	313	–42.21
7	95V90	–35.6	–28.4	2102	113	–42.21
8	95V90	–35.6	–28.4	2202	13	–42.21
9	96V91	–3.3	–16.6	1907	365	–7.95

Ref	Mooring	Km north	Km east	m depth	Mab	Normal distance (Km)
10	96V91	–3.3	–16.6	2107	165	–7.95
11	96V91	–3.3	–16.6	2207	65	–7.95
12	96V92	–1.1	–15.8	2105	150	–5.60
13	96V92	–1.1	–15.8	2205	50	–5.60
14	96V93	–262.2	249.9	2033	875	–179.35
15	96V93	–262.2	249.9	2633	275	–179.35
16	96V94	61.1	–6.3	1498	735	56.72
17	96V94	61.1	–6.3	1898	335	56.72
18	96V95	102.2	18.1	1498	495	103.12
19	96V95	102.2	18.1	1898	95	103.12
20	96V96	141.1	15.0	1475	630	139.47
21	96V96	141.1	15.0	1875	230	139.47
22	96V98	111.1	–11.8	1808	115	103.03
23	96V98	111.1	–11.8	1908	15	103.03