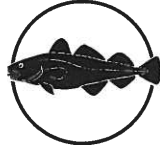


The Faroese Fisheries Laboratory

Fiskirannsóknarstovan



Faroese GEM ADCP Deployments 1999 - 2000

By

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Technical Report No.: 00-02

Tórshavn

October 2000

Introduction

This report documents 2 ADCP deployments in Faroese waters in 1999 - 2000 within the Faroese GEM programme. The measurements were acquired at the 2 Faroese Gem standard mooring sites, shown in Figure 1. The deployments are listed in Table 1. Each deployment is identified by an 8-character label where the first four characters indicate the site (Fig. 1) while the last characters show year and month of deployment.

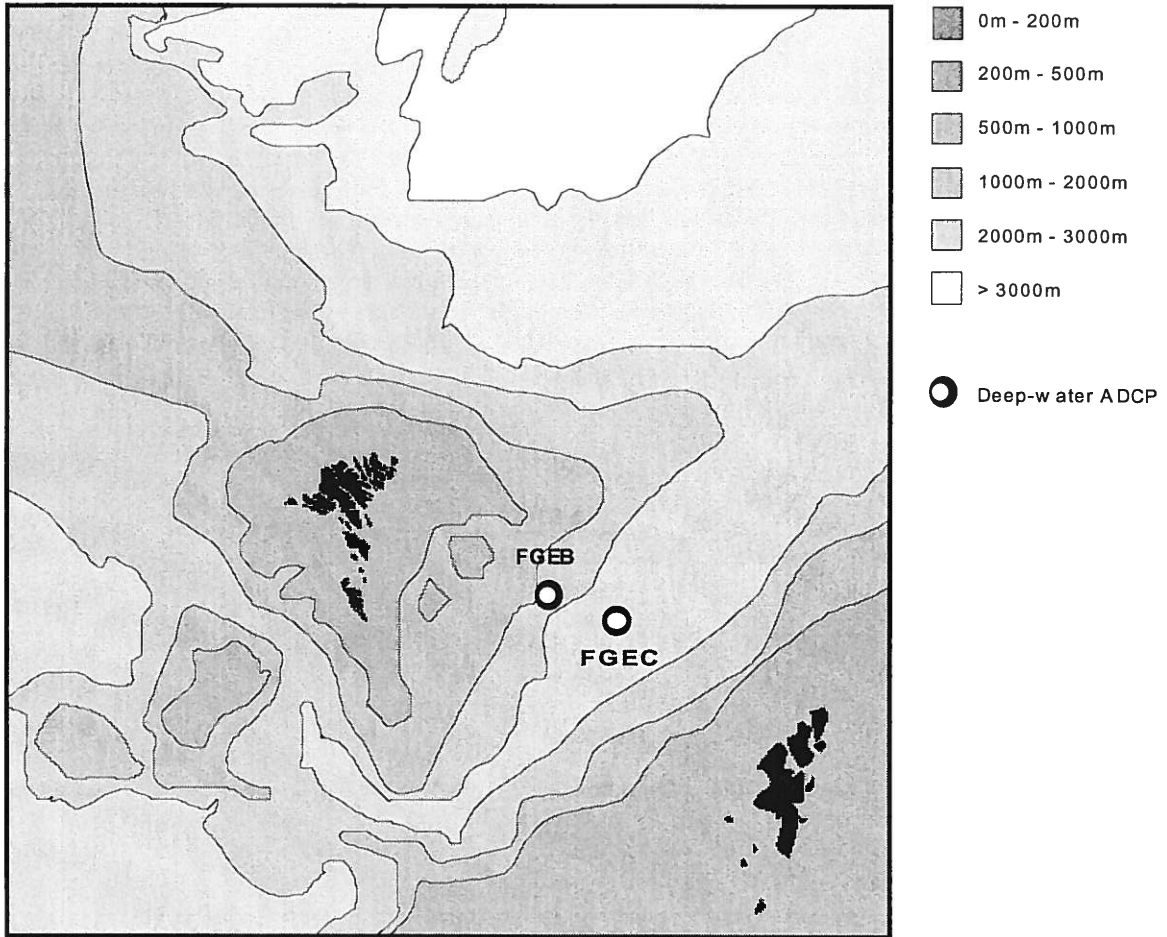


Figure 1. Faroese GEM ADCP mooring sites superposed on a map with the bottom topography. Each site is indicated by a four-letter label.

At each site, 75 kHz RDI Broadband ADCP's were placed in the top of single-point moorings. For each deployment the ADCP measures the velocity averaged over a number (23) of depth layers ("bins") which were 25m. At 20 minutes intervals the ADCP records the data from all bins into "ensembles". In these deployments, each ensemble is based only upon one ping.

Table 1. List of Faroese GEM ADCP deployments in the period July 1999 - June 2000 with information on duration and range of valid data.

Deployment	Bottom depth	Int. min.	Valid data period	Dur. days	No bins	Depthrange	Comments
FGEB9907	787	20	1999 07 05-2000 06 17	348	23	93- 643	
FGEC9907	1221	20	1999 07 05-2000 06 17	348	23	122- 672	

Quality control and calibration

The data have been quality controlled by a standard procedure based upon consideration of ADCP performance (error velocity etc.) and data variation with time in relation to neighbouring bins (spikes). The editing has been done manually using an interactive graphical software package developed by the Faroese Fisheries Laboratory (FFL), based upon MATLAB. Generally, the series have been edited up to the level where about 50% of the observations were found to be valid. Bins above this level have not been included.

Report format

For each deployment, the report contains several pages, beginning with a page that has a drawing of the mooring and details of the deployment. After that there is a page which for each bin lists the average speed (scalar average) and velocity magnitude and direction (vectorial average) as well as the fraction of "good" ensembles (in parts per thousand). On the next page there is a more detailed error statistics for the deployment which indicates also how many "long" (i.e. several consecutive ensembles) error gaps are for each bin. This is followed by a frequency distribution of speeds for each bin which lists the frequency (in parts per thousand) of speeds (scalar) exceeding specified values. Finally, there are 2-3 pages listing tidal constituents. These pages contain 5 tables with data for the constituents M2, S2, N2, O1, and K1. Each table lists for each bin the amplitude and Greenwich phase lag for the east and north velocity components and lists also major and minor axes of the tidal ellipse for the constituent as well as its inclination (Fig. 2) and sense of rotation (cyclonic = C, anticyclonic = A). The tidal constants were computed by an adapted version of the Foreman FORTRAN package.

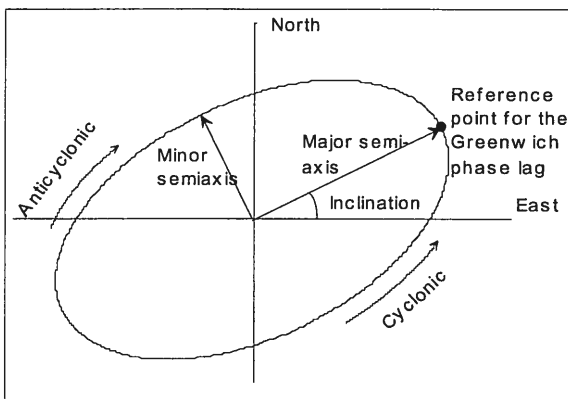


Figure 2. Parameters of the tidal ellipse for a given constituent. The reference point for the Greenwich phase lag is always chosen to be above the east-west axis.

Deployment Id: FGEB9907

Project: GEM- ADCP

Latitude: 61°36.201'N

Longitude: 004°20.193'W

Echo sounding depth: 806m

Bottom depth corr.: 787m

Time of deployment: 05/07 -1999 0357UTC

Time of recovery: 17/06 - 2000 1411UTC

ADCP:

Instrument no.: RDI ADCP 1642

Instrument frequency: 75kHz

Height above bottom: 108m

Depth: 679m (corr.)

Time of first data: 05/07 - 1999 0440UTC

Time of last data: 17/06 - 2000 1400UTC

Sample interval: 20 min

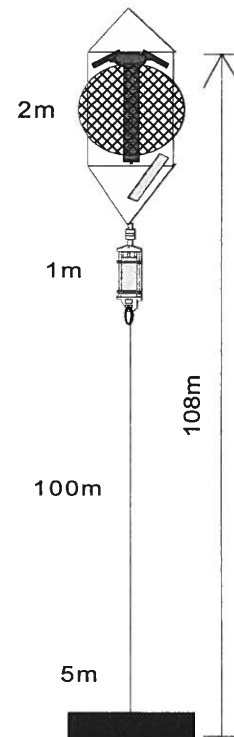
No. of ensembles: 25085

Pings per ens.: 1

Binlength: 25m

Depth of first bin: 643 (corr.)

No. of bins: 23



Deployment: FGEB9907
 Instrument no.: 1642
 Instrument freq.: 75
 Latitude: 61 36.201 N
 Longitude: 04 20.193 W
 Bottom depth: 787
 Instrument depth: 679
 Center depth of first bin: 643
 Bin length: 25
 Number of bins: 23
 Number of first ensemble: 321
 Time of first ensemble: 1999 07 05 04 40
 Number of last ensemble: 25405
 Time of last ensemble: 2000 06 17 14 00
 Time between ensembles (min.): 20
 All directions have been corrected by adding: -11.0

Below is listed for each bin the average speed (scalar average) and the average velocity magnitude and direction formed as a vectorial average of non-flagged (Good) observations. The last column shows the number of good values used in parts per thousand

Bin no.	Depth m	Height m	Speed mm/s	Vel mm/s	Dir deg	Good ppt
1	643	144	148	80	218	996
2	618	169	146	76	218	995
3	593	194	142	72	217	994
4	568	219	140	68	216	994
5	543	244	139	66	215	995
6	518	269	138	64	214	995
7	493	294	139	64	213	996
8	468	319	142	66	212	997
9	443	344	147	67	210	997
10	418	369	153	72	210	997
11	393	394	161	80	209	996
12	368	419	173	89	208	995
13	343	444	186	99	207	992
14	318	469	197	108	205	992
15	293	494	204	114	203	993
16	268	519	208	117	201	988
17	243	544	209	117	200	969
18	218	569	208	117	199	956
19	193	594	204	113	199	932
20	168	619	203	111	199	859
21	143	644	195	103	199	803
22	118	669	187	94	199	718
23	93	694	182	87	198	648

Error statistics for deployment: FGEB9907

Surface distance not edited
 Heading, pitch and roll not edited
 Temperature edited by MCP in Aug 2000
 Velocity edited up to and including bin 23 by HH in Aug 2000
 Intensity edited up to and including bin 24 by MCP in Aug 2000

Total number of ensembles: 25085
 Interval between ensembles: 20 min
 Original number of bins: 28
 Number of acceptable velocity bins: 23
 Number of acceptable intensity bins: 23

Flagged values have been replaced by error codes: -999.99 for temperature, -999 for velocity and intensity. For observations where velocity is flagged, error codes have been inserted into speed, direction and vertical velocity files

Number of temperature ens. flagged: 0

Below are for each bin listed ensembles flagged for intensity in number and for velocity in number and % of total ens.number. For velocity is also shown the number of gaps of various lengths (gap length = number of consecutive flagged ens.)

Bin	Int. ens. flgd	Velocity ens. flgd	% flgd	Number of velocity gaps of length										
				1	2	3	4	5	6-10	11-20	21-30	31-50	>50	
1	12	90	0	90	0	0	0	0	0	0	0	0	0	0
2	6	122	0	116	3	0	0	0	0	0	0	0	0	0
3	1	159	1	149	5	0	0	0	0	0	0	0	0	0
4	0	148	1	133	6	1	0	0	0	0	0	0	0	0
5	0	128	1	124	2	0	0	0	0	0	0	0	0	0
6	0	128	1	128	0	0	0	0	0	0	0	0	0	0
7	0	101	0	101	0	0	0	0	0	0	0	0	0	0
8	0	70	0	70	0	0	0	0	0	0	0	0	0	0
9	0	83	0	79	2	0	0	0	0	0	0	0	0	0
10	0	86	0	86	0	0	0	0	0	0	0	0	0	0
11	0	89	0	83	3	0	0	0	0	0	0	0	0	0
12	1	133	1	127	3	0	0	0	0	0	0	0	0	0
13	0	196	1	182	4	2	0	0	0	0	0	0	0	0
14	0	191	1	178	5	1	0	0	0	0	0	0	0	0
15	1	184	1	154	6	1	1	0	0	1	0	0	0	0
16	3	310	1	220	18	5	3	0	0	0	1	0	0	0
17	0	777	3	368	37	13	5	4	9	2	2	3	0	0
18	2	1104	4	431	56	25	11	4	8	7	5	4	0	0
19	1	1694	7	507	101	34	15	13	22	11	9	5	0	0
20	0	3528	14	578	108	41	17	12	30	29	36	20	2	2
21	1	4954	20	598	138	49	23	15	33	29	48	44	3	3
22	0	7062	28	565	135	31	32	16	29	33	40	61	22	22
23	1	8833	35	381	93	46	22	8	29	10	31	62	46	46

Harmonic constants for constituent M2 for deployment FGEB9907.

Bin	Depth m	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
01	643	76	240	88	252	115	12	49	247	C
02	618	76	241	90	252	117	11	50	247	C
03	593	76	242	89	252	117	11	50	248	C
04	568	74	242	91	252	117	10	51	248	C
05	543	73	244	92	253	117	8	52	249	C
06	518	72	246	94	252	119	6	52	250	C
07	493	72	248	97	253	120	4	53	251	C
08	468	70	252	102	253	124	1	55	252	C
09	443	71	255	105	252	127	3	56	253	A
10	418	73	257	109	251	131	7	56	253	A
11	393	75	261	113	250	135	11	56	253	A
12	368	78	265	118	249	140	17	57	254	A
13	343	81	267	121	249	144	22	57	254	A
14	318	80	269	122	249	144	24	57	255	A
15	293	80	270	120	249	142	24	57	255	A
16	268	78	271	117	251	139	22	57	257	A
17	243	75	271	113	251	134	21	57	257	A
18	218	72	272	109	253	129	20	57	258	A
19	193	67	273	104	253	122	20	58	259	A
20	168	67	273	102	254	121	18	57	260	A
21	143	65	274	96	254	115	19	57	260	A
22	118	63	274	89	253	107	18	55	260	A
23	93	63	243	82	222	102	18	53	230	A

Harmonic constants for constituent S2 for deployment FGEB9907.

Bin	Depth m	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
01	643	34	272	30	280	45	3	41	275	C
02	618	33	272	29	279	44	3	41	275	C
03	593	33	272	31	279	45	3	42	275	C
04	568	34	272	31	278	46	2	42	275	C
05	543	33	272	30	279	45	3	42	275	C
06	518	32	272	30	281	44	3	43	276	C
07	493	32	276	32	281	45	2	45	279	C
08	468	32	280	34	282	46	0	47	281	C
09	443	30	284	37	282	47	1	51	283	A
10	418	29	292	40	284	49	3	54	287	A
11	393	28	299	43	286	50	5	57	290	A
12	368	26	306	45	289	51	7	60	293	A
13	343	26	311	47	291	53	8	62	295	A
14	318	25	310	48	293	53	7	62	296	A
15	293	23	309	46	296	51	5	64	298	A
16	268	22	316	46	299	50	6	65	302	A
17	243	23	322	47	299	52	8	65	303	A
18	218	24	319	44	298	50	7	62	303	A
19	193	23	317	40	303	46	5	61	306	A
20	168	22	321	39	308	44	4	61	311	A
21	143	22	326	39	313	44	4	61	316	A
22	118	22	330	36	315	42	5	60	319	A
23	93	17	299	34	282	37	5	63	285	A

Harmonic constants for constituent N2 for deployment FGEB9907.

Bin	Depth m	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
01	643	18	193	12	229	21	6	30	202	C
02	618	19	195	13	228	22	6	32	205	C
03	593	17	197	13	229	21	6	37	209	C
04	568	16	199	15	230	21	6	43	214	C
05	543	15	204	16	231	21	5	47	218	C
06	518	16	207	16	228	22	4	47	218	C
07	493	16	214	18	225	24	2	48	220	C
08	468	17	225	21	223	27	0	51	223	A
09	443	17	232	24	221	29	3	54	225	A
10	418	19	240	26	220	32	5	55	227	A
11	393	20	249	29	219	34	9	57	228	A
12	368	20	252	30	219	35	9	59	229	A
13	343	19	253	30	219	35	9	59	229	A
14	318	18	255	29	225	33	8	60	232	A
15	293	17	259	28	227	32	8	61	235	A
16	268	18	262	28	228	32	9	59	237	A
17	243	18	264	28	226	32	10	60	236	A
18	218	19	261	27	228	32	9	57	238	A
19	193	17	259	25	231	29	7	56	239	A
20	168	15	257	24	233	28	5	59	240	A
21	143	14	263	23	241	27	5	59	247	A
22	118	13	268	22	242	25	5	60	249	A
23	93	11	251	18	215	21	6	63	223	A

Harmonic constants for constituent O1 for deployment FGEB9907.

Bin	Depth m	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
01	643	7	17	8	339	10	4	50	355	A
02	618	7	20	8	337	10	4	51	355	A
03	593	7	20	9	336	10	4	54	352	A
04	568	6	13	9	333	10	3	58	344	A
05	543	6	13	8	334	10	3	55	347	A
06	518	6	4	8	333	10	3	54	344	A
07	493	7	6	8	329	10	3	50	344	A
08	468	8	6	8	323	11	4	49	342	A
09	443	6	353	8	325	10	3	53	335	A
10	418	6	352	8	332	10	2	54	339	A
11	393	6	3	9	332	11	3	57	341	A
12	368	7	5	9	333	11	3	56	343	A
13	343	8	343	9	317	11	3	47	329	A
14	318	8	337	7	310	10	2	44	324	A
15	293	7	339	6	325	9	1	42	333	A
16	268	6	342	5	332	8	1	41	337	A
17	243	5	343	5	330	8	1	46	336	A
18	218	4	335	6	336	7	0	56	335	C
19	193	2	307	7	342	7	1	79	341	C
20	168	2	282	11	354	11	2	86	353	C
21	143	2	299	14	358	14	2	85	358	C
22	118	2	327	16	3	16	1	83	2	C
23	93	4	314	21	342	21	2	82	342	C

Harmonic constants for constituent K1 for deployment FGEB9907.

Bin	Depth m	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
01	643	5	219	7	180	9	3	56	192	A
02	618	5	215	7	176	8	3	58	187	A
03	593	5	212	7	171	8	3	61	181	A
04	568	5	216	8	169	9	3	62	180	A
05	543	6	216	8	166	9	4	58	181	A
06	518	6	220	8	172	9	4	58	186	A
07	493	5	218	7	167	8	4	60	181	A
08	468	5	218	8	170	8	3	61	182	A
09	443	6	228	9	175	10	4	60	190	A
10	418	7	227	9	163	10	6	61	181	A
11	393	7	226	10	159	10	6	64	176	A
12	368	6	236	9	151	9	6	84	155	A
13	343	4	221	9	140	9	4	84	143	A
14	318	3	217	8	142	8	3	84	144	A
15	293	3	202	8	149	9	2	77	152	A
16	268	4	218	8	165	8	3	69	173	A
17	243	6	233	8	183	9	4	57	200	A
18	218	7	234	11	187	12	5	61	200	A
19	193	7	252	13	201	14	5	69	209	A
20	168	8	244	21	202	22	5	73	206	A
21	143	13	241	27	206	29	7	66	212	A
22	118	18	240	28	206	32	9	59	216	A
23	93	23	222	27	178	33	13	52	195	A

Deployment Id: FGEC9907

Project: GEM - ADCP

Latitude: 61°29.387'N

Longitude: 003°45.463'W

Echo sounding depth: 1241m

Bottom depth corr.: 1221m

Time of deployment: 05/07 -1999 0135UTC

Time of recovery: 17/06 - 2000 1651UTC

ADCP:

Instrument no.: RDI ADCP 1644

Instrument frequency: 75kHz

Height above bottom: 513m

Depth: 708m (corr.)

Time of first data: 05/07 - 1999 0220UTC

Time of last data: 17/06 - 2000 1640UTC

Sample interval: 20 min

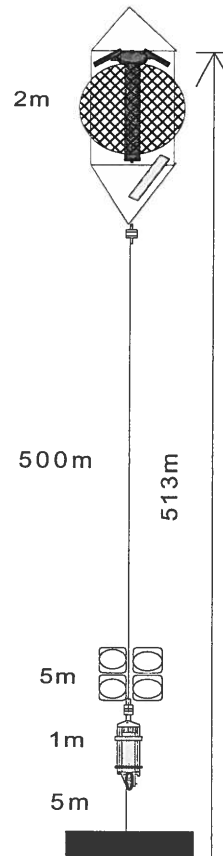
No. of ensembles: 25100

Pings per ens.: 1

Binlength: 25m

Depth of first bin: 672m (corr.)

No. of bins: 23



Deployment: FGEC9907 updated 2000/08/21
 Instrument no.: 1644
 Instrument freq.: 75
 Latitude: 61 29.387 N
 Longitude: 03 45.463 W
 Bottom depth: 1221
 Instrument depth: 708
 Center depth of first bin: 672
 Bin length: 25
 Number of bins: 23
 Number of first ensemble: 314
 Time of first ensemble: 1999 07 05 02 20
 Number of last ensemble: 25413
 Time of last ensemble: 2000 06 17 16 40
 Time between ensembles (min.): 20
 All directions have been corrected by adding: -11.0

Below is listed for each bin the average speed (scalar average) and the average velocity magnitude and direction formed as a vectorial average of non-flagged (Good) observations. The last column shows the number of good values used in parts per thousand

Bin no.	Depth m	Height m	Speed mm/s	Vel mm/s	Dir deg	Good ppt
1	672	549	141	12	1	996
2	647	574	141	11	1	996
3	622	599	140	11	359	996
4	597	624	139	11	359	996
5	572	649	139	10	359	997
6	547	674	139	10	359	998
7	522	699	138	9	360	997
8	497	724	138	8	6	996
9	472	749	139	8	16	996
10	447	774	140	8	20	994
11	422	799	143	9	26	992
12	397	824	145	8	32	989
13	372	849	148	7	40	989
14	347	874	155	7	58	988
15	322	899	165	11	72	987
16	297	924	173	19	67	983
17	272	949	182	28	61	960
18	247	974	192	34	56	914
19	222	999	205	40	55	843
20	197	1024	221	46	55	783
21	172	1049	234	57	56	682
22	147	1074	248	68	57	590
23	122	1099	267	79	56	486

Error statistics for deployment: FGEC9907 updated 2000/08/21

Surface distance not edited
 Heading, pitch and roll not edited
 Temperature edited by HH in Aug 2000
 Velocity edited up to and including bin 23 by HH in Aug 2000
 Intensity edited up to and including bin 23 by HH in Aug 2000

Total number of ensembles: 25100
 Interval between ensembles: 20 min
 Original number of bins: 28
 Number of acceptable velocity bins: 23
 Number of acceptable intensity bins: 23

Flagged values have been replaced by error codes: -999.99 for temperature, -999 for velocity and intensity. For observations where velocity is flagged, error codes have been inserted into speed, direction and vertical velocity files

Number of temperature ens. flagged: 0

Below are for each bin listed ensembles flagged for intensity in number and for velocity in number and % of total ens.number. For velocity is also shown the number of gaps of various lengths (gap length = number of consecutive flagged ens.)

Bin	Int. ens. flgd	Velocity ens. flgd	% flgd	Number of velocity gaps of length										
				1	2	3	4	5	6-10	11-20	21-30	31-50	>50	
1	5	88	0	88	0	0	0	0	0	0	0	0	0	0
2	5	108	0	102	3	0	0	0	0	0	0	0	0	0
3	0	104	0	102	1	0	0	0	0	0	0	0	0	0
4	0	96	0	89	2	1	0	0	0	0	0	0	0	0
5	0	73	0	73	0	0	0	0	0	0	0	0	0	0
6	0	62	0	62	0	0	0	0	0	0	0	0	0	0
7	0	70	0	66	2	0	0	0	0	0	0	0	0	0
8	0	88	0	88	0	0	0	0	0	0	0	0	0	0
9	0	106	0	101	1	1	0	0	0	0	0	0	0	0
10	0	157	1	157	0	0	0	0	0	0	0	0	0	0
11	0	199	1	187	6	0	0	0	0	0	0	0	0	0
12	1	278	1	257	7	0	0	0	1	0	0	0	0	0
13	0	288	1	269	8	1	0	0	0	0	0	0	0	0
14	0	293	1	277	8	0	0	0	0	0	0	0	0	0
15	0	325	1	291	17	0	0	0	0	0	0	0	0	0
16	0	417	2	324	29	6	3	1	0	0	0	0	0	0
17	0	998	4	425	60	28	13	9	25	7	0	0	0	0
18	1	2165	9	489	89	36	24	20	40	28	13	5	0	0
19	1	3940	16	534	121	73	25	21	79	51	25	18	1	1
20	0	5455	22	526	179	100	57	48	107	73	29	27	2	2
21	3	7994	32	567	214	111	69	50	124	102	81	34	7	7
22	3	10303	41	548	215	109	65	35	132	76	104	69	18	18
23	0	12903	51	480	172	84	71	47	103	57	61	100	48	48

Harmonic constants for constituent M2 for deployment FGEC9907.

Bin	Depth m	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
01	672	98	270	104	250	141	24	47	259	A
02	647	98	270	104	250	141	24	47	259	A
03	622	97	269	103	250	140	23	47	259	A
04	597	97	268	102	250	139	22	46	259	A
05	572	97	267	100	250	138	21	46	258	A
06	547	96	266	98	250	136	19	45	258	A
07	522	94	265	95	251	133	16	45	258	A
08	497	91	264	93	252	130	13	46	258	A
09	472	89	262	91	253	127	11	45	258	A
10	447	87	262	90	254	126	8	46	258	A
11	422	86	260	90	256	124	5	46	258	A
12	397	82	258	87	258	120	0	47	258	A
13	372	76	256	83	262	112	6	48	259	C
14	347	71	253	81	266	107	12	49	260	C
15	322	67	250	79	268	103	16	50	261	C
16	297	64	248	78	272	99	20	52	262	C
17	272	62	245	77	274	96	24	52	263	C
18	247	59	241	76	276	92	27	53	263	C
19	222	56	243	78	277	92	27	56	266	C
20	197	52	244	80	279	92	26	60	269	C
21	172	50	255	83	278	95	17	60	272	C
22	147	54	257	86	277	100	15	58	271	C
23	122	53	267	87	276	101	7	59	273	C

Harmonic constants for constituent S2 for deployment FGEC9907.

Bin	Depth m	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
01	672	32	309	40	293	51	7	52	299	A
02	647	32	309	40	294	51	7	52	300	A
03	622	32	308	40	293	51	6	52	299	A
04	597	32	307	40	293	51	6	51	299	A
05	572	32	307	40	293	51	7	51	298	A
06	547	34	307	40	291	52	7	50	297	A
07	522	36	306	40	288	53	8	48	296	A
08	497	36	305	39	287	53	8	47	296	A
09	472	37	303	39	286	53	8	47	294	A
10	447	36	299	37	285	51	6	46	292	A
11	422	36	294	34	283	50	5	43	289	A
12	397	33	292	31	290	45	1	44	291	A
13	372	28	287	30	299	41	4	46	293	C
14	347	25	287	29	304	38	6	50	297	C
15	322	25	288	29	304	38	5	49	297	C
16	297	26	286	28	306	38	7	47	296	C
17	272	24	284	27	310	36	8	48	299	C
18	247	23	284	25	312	34	8	48	299	C
19	222	24	282	27	309	35	8	48	297	C
20	197	25	282	28	320	35	12	49	304	C
21	172	23	299	29	326	36	9	53	316	C
22	147	23	307	29	327	36	6	52	319	C
23	122	15	308	33	322	36	3	66	319	C

Harmonic constants for constituent N2 for deployment FGEC9907.

Bin	Depth m	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
01	672	22	255	24	227	32	8	48	239	A
02	647	22	253	24	228	31	7	48	239	A
03	622	21	251	23	228	31	6	47	239	A
04	597	21	254	23	230	31	6	47	241	A
05	572	21	256	24	231	31	7	48	242	A
06	547	21	253	23	229	30	6	48	240	A
07	522	21	248	21	226	29	6	45	237	A
08	497	20	243	20	228	28	4	44	236	A
09	472	18	244	19	233	26	3	45	239	A
10	447	17	242	17	238	24	1	46	240	A
11	422	16	235	16	237	23	0	44	236	C
12	397	17	229	13	237	21	1	38	232	C
13	372	17	224	13	235	21	2	36	228	C
14	347	18	219	13	233	21	3	35	224	C
15	322	15	218	12	247	19	5	36	228	C
16	297	14	216	12	251	18	5	38	229	C
17	272	14	217	11	253	17	5	35	229	C
18	247	15	202	11	263	16	9	27	217	C
19	222	12	192	10	288	12	10	164	359	C
20	197	12	190	12	298	13	10	136	335	C
21	172	10	207	11	277	12	8	53	250	C
22	147	10	213	14	274	15	8	61	257	C
23	122	13	195	12	273	14	11	37	227	C

Harmonic constants for constituent O1 for deployment FGEC9907.

Bin	Depth m	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
01	672	7	14	7	350	9	2	43	3	A
02	647	7	11	6	352	9	2	44	2	A
03	622	6	11	7	357	9	1	49	3	A
04	597	6	7	7	357	9	1	50	1	A
05	572	6	9	7	356	9	1	49	2	A
06	547	6	13	7	358	9	1	48	4	A
07	522	6	13	7	357	10	1	49	4	A
08	497	7	11	7	354	10	1	48	2	A
09	472	7	15	7	349	9	2	46	2	A
10	447	7	14	7	352	9	2	44	3	A
11	422	6	17	7	355	9	2	47	5	A
12	397	6	21	6	354	8	2	46	7	A
13	372	6	3	7	349	10	1	49	355	A
14	347	7	4	8	346	11	2	50	353	A
15	322	6	9	9	349	11	2	54	356	A
16	297	6	347	8	340	10	1	53	343	A
17	272	5	350	8	344	9	0	57	346	A
18	247	4	319	7	0	7	2	64	351	C
19	222	2	319	5	356	6	1	70	351	C
20	197	2	329	3	314	3	0	52	320	A
21	172	5	104	5	297	7	1	139	290	A
22	147	6	115	12	317	13	2	116	313	A
23	122	8	157	13	327	15	1	122	330	C

Harmonic constants for constituent K1 for deployment FGEC9907.

Bin	Depth m	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
01	672	4	235	6	177	6	3	68	187	A
02	647	4	225	6	175	7	3	63	187	A
03	622	4	221	7	180	7	2	66	188	A
04	597	3	216	6	175	7	2	70	181	A
05	572	3	209	6	170	7	2	67	177	A
06	547	3	216	7	161	7	2	73	167	A
07	522	4	220	7	162	7	3	70	171	A
08	497	4	213	7	163	8	3	69	170	A
09	472	4	223	6	172	7	3	67	181	A
10	447	3	237	5	170	5	3	73	179	A
11	422	3	234	6	171	6	2	75	178	A
12	397	3	223	6	172	6	2	72	178	A
13	372	4	210	6	174	6	2	59	184	A
14	347	5	184	6	169	8	1	52	174	A
15	322	5	164	7	160	8	0	57	161	A
16	297	5	164	8	165	9	0	59	165	C
17	272	3	184	8	173	9	1	67	175	A
18	247	6	155	8	172	10	1	51	165	C
19	222	8	130	10	173	12	4	53	157	C
20	197	11	107	10	166	13	7	41	133	C
21	172	8	102	10	186	10	8	79	178	C
22	147	17	125	6	192	17	5	8	128	C
23	122	15	100	3	282	16	0	167	280	A