The Faroese Fisheries Laboratory

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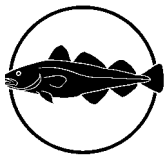

Current measurements in the Faroe-Shetland Channel 2001 - 2002

By

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Introduction

This report documents 5 deployments with ADCP and Aanderaa current measuring instruments in the Faroe-Shetland Channel in 2001 – 2002. 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. Two of the moorings (NWSB0107 and NWSC0107) were at standard (Nordic WOCE) sites, while the others were located at sites where high-velocity bottom currents could be expected from geological evidence.

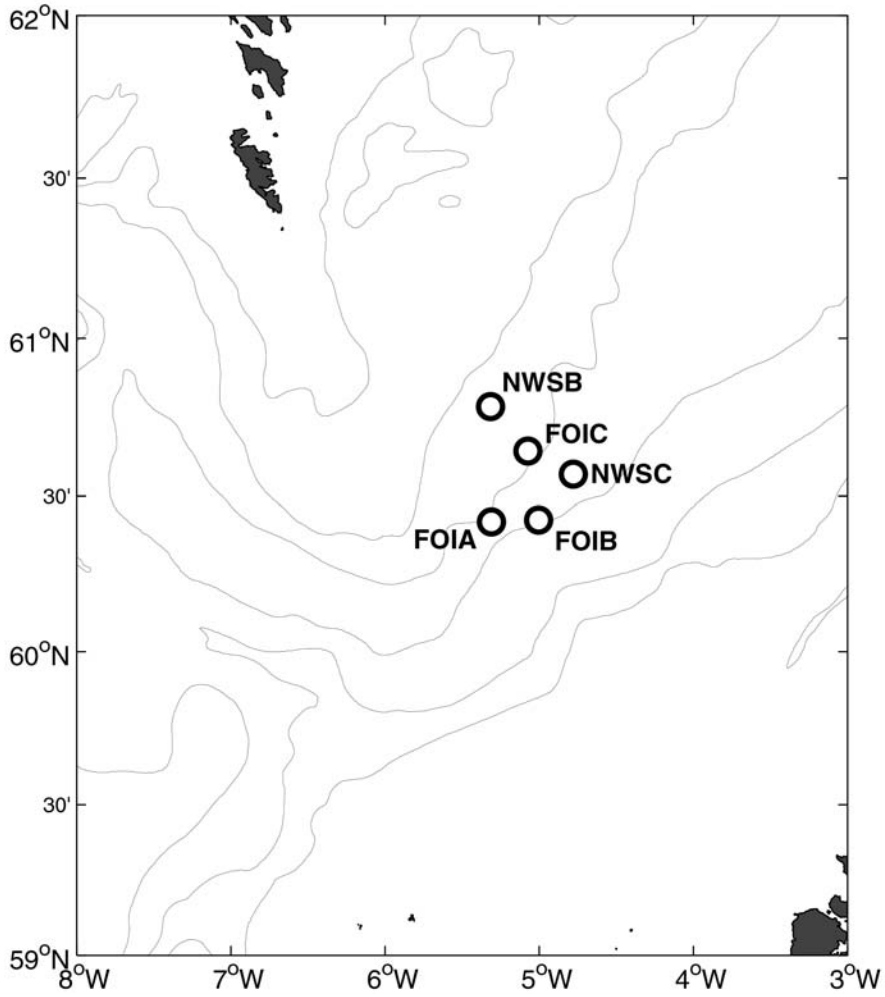


Figure 1. ADCP and Aanderaa mooring sites in Faroese waters 2001-2002 superposed on a map with the bottom topography. Each site is indicated by a four-letter label. The sites NWSB and NWSC are standard mooring sites.

At site FOIA, NWSB and NWSC, 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 (22 – 28) of depth layers ("bins") which are 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. At site FOIA and NWSC, an Aanderaa current meter was on the mooring line below the ADCP, while sites FOIB and FOIC only contained an Aanderaa current meter. All Aanderaa current meters recorded speed, direction and temperature at 60 minute's interval. In addition to that, the Aanderaa current meter at FOIA recorded conductivity and turbidity and that at NWSC recorded conductivity.

Table 1. List of deployments with information on duration and range of valid data.

Deployment	Bottom depth	Instrument	Inst. depth	Int. min.	Valid data period	Dur. days	No bins	Depthrange
FOIA0107	986	ADCP	980	20	2001 07 07-2002 06 16	343	28	269- 944
	986	AANDERAA	982	60	2001 07 07-2002 06 16	343	1	982
FOIB0107	932	AANDERAA	928	60	2001 07 07-2002 06 16	343	1	928
FOIC0107	910	AANDERAA	906	60	2001 07 07-2002 06 16	343	1	906
NWSB0107	775	ADCP	667	20	2001 07 08-2002 06 15	342	22	106- 631
NWSC0107	1073	ADCP	659	20	2001 07 07-2002 06 16	343	23	73- 623
	1073	AANDERAA	765	60	2001 07 07-2002 06 16	343	1	765

Quality control and calibration

The ADCP 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. The velocity direction has been corrected for magnetic deviation, by adding a constant as indicated in the header of the data file. The instrument depth at both ADCP and Aanderaa sites is found from the echo sounding depth (corrected for change in sound velocity) and the length of the mooring line, but at sites NWSB and NWSC the instrument depth is corrected using the data from the surface echo.

The Aanderaa data have been calibrated using calibration data from the manufacturer. In the Aanderaa current meter, several speed and compass readings are taken during a sampling interval, while the temperature, conductivity and turbidity readings are taken once at the end of the interval only. At the end of the interval, the instrument stores a vector average of the velocity for the whole sampling interval, as well as the temperature, conductivity and turbidity readings. In the data file, the time of each record is the middle of the speed-averaging interval. In the calibration procedure the velocity direction has been corrected for magnetic deviation, by adding a constant. The actual correction for each deployment is stored in the header of the data file. The data have been quality controlled by a standard procedure based upon data variation with time in relation to neighbouring values (spikes). The editing has been done manually using an interactive graphical software package developed by the Faroese Fisheries Laboratory (FFL), based upon MATLAB. Salinity is not calibrated.

High velocity pulses

As mentioned, three of the deployments were specifically located to where high current velocities could be expected close to the sea bed on geological evidence and the measurements do indeed show the occurrence of high velocity pulses. At each of these sites, an Aanderaa current meter was located as close to bottom (4 m) as was logistically possible. The details of these measurements are found further back in the report, but Figure 2 summarises the speed measured at each of these instruments. The lowest speeds were found at site FOIC where only one record exceeded 60 cm/s. At FOIB, speeds were generally higher and there were 9 pulses with speeds above 70 cm/s. Some of them lasted for two hours (two records), some of them only one.

The strongest pulses were, however, found at site FOIA, where a maximum speed of 98.8 cm/s was recorded by the near-bottom Aanderaa meter. Note that this is a vectorial average over one hour, so instantaneous speeds will have been higher. On this mooring there was also an upward-looking ADCP which adds velocity profiles to the near-bottom measurements. As an example, Figure 3 shows the speed measured by the Aanderaa meter and the simultaneous ADCP profiles during the hour when the Aanderaa meter measured its maximum speed.

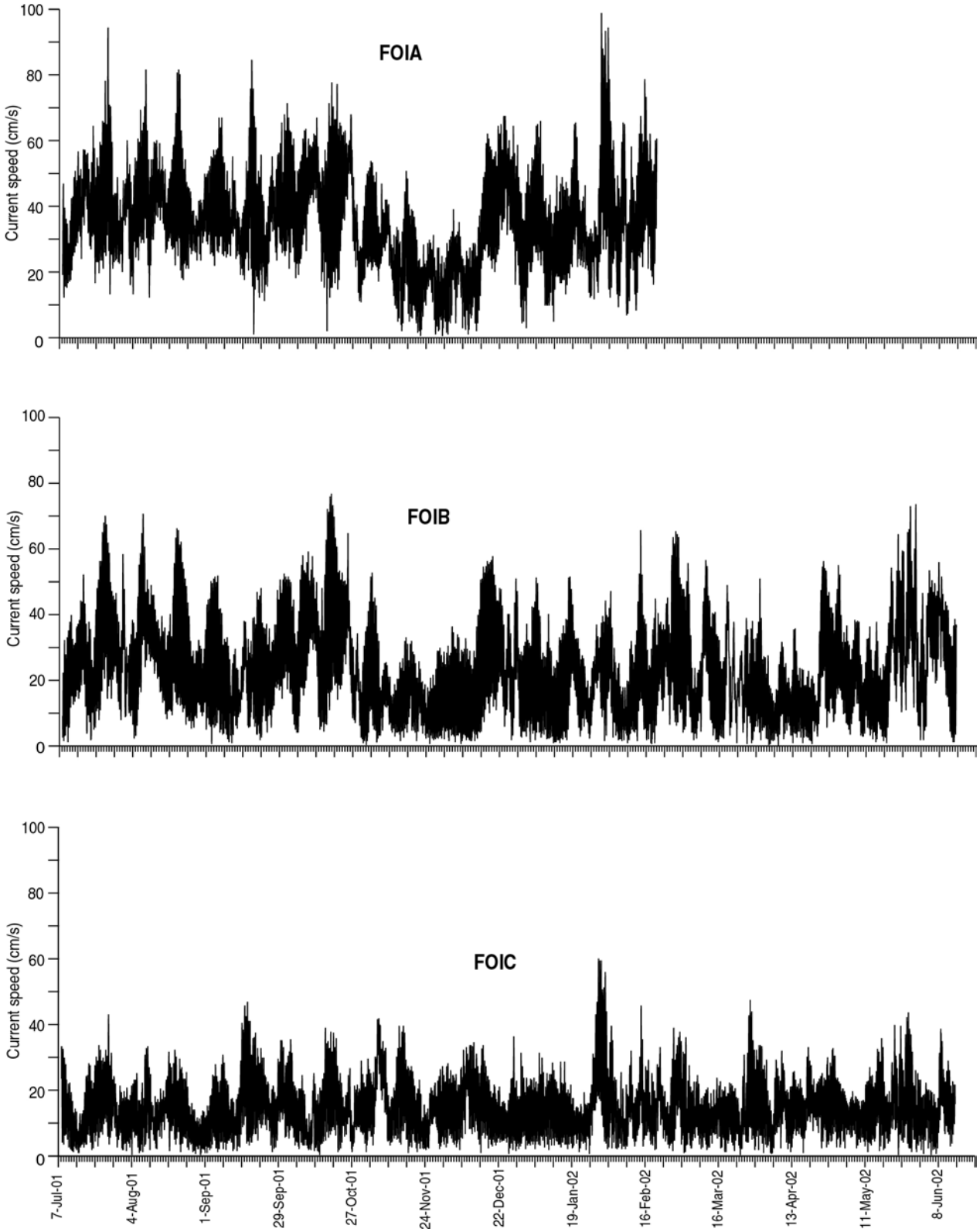


Figure 2. Current speed measured at sites FOIA, FOIB, and FOIC (Fig. 1 and Table 1) 4 m above the sea bed. Due to instrument malfunction, the measurements at FOIA were truncated.

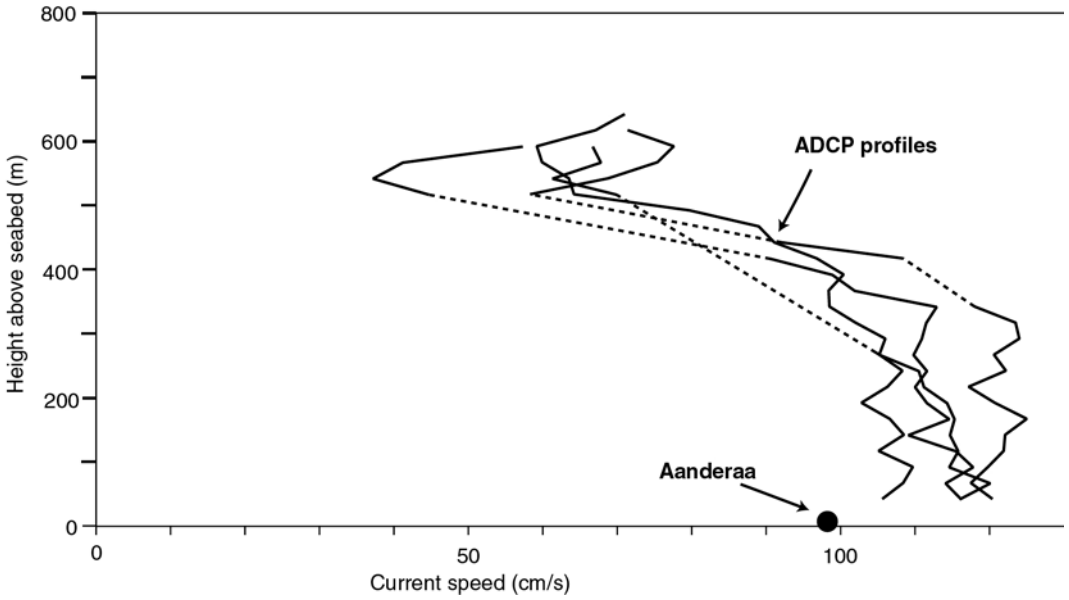


Figure 3. Current measurements at site FOIA (Fig. 1 and Table 1) during the hour: 15:00 to 16:00 on the 29th January 2002. The black circle shows the vectorially averaged speed 4 m above the sea bed measured by an Aanderaa current meter. The curves show 4 speed profiles measured by an ADCP, pinging once every 20 minutes during this hour. Dashed parts of the curves indicate error-flagged measurements.

In addition to the event shown in Figure 3, a number of other high velocity pulses can be identified in the Aanderaa record from FOIA. At this site, there were 11 pulses with speeds exceeding 80 cm/s, lasting for up to 4 hours (Table 2). During the high velocity pulses, the current directions, as measured both by Aanderaa meters and the ADCP, were consistent at each site, varying by only a few degrees from the typical values that are presumably determined by local bottom topography.

It may be seen in Table 2 that the high velocity pulses tend to cluster in specific periods, e.g. around the end of January – beginning of February 2002. This would seem to confirm the impression from Figure 2, that they occur as a superposition of slowly varying (timescale of one to a few days) with faster (e.g. tidal) pulses. The high velocity events in the Aanderaa records are also generally reflected in the ADCP data. Thus, Figure 4 shows 11 velocity profiles produced by combining the maximum speed record from each of the 11 events in Table 2 with simultaneous ADCP data. In contrast to Figure 3, the four ADCP profiles coinciding with each Aanderaa record have here been averaged.

Figure 4 would seem to indicate that the high velocity events close to the sea bed extend upwards and include most of the cold overflow water, flowing towards the Faroe Bank Channel. The ADCP data also include high velocity events after the Aanderaa started malfunctioning.

The combined Aanderaa and ADCP data from these five deployments clearly do give information on high velocity events in the deep waters of the Faroe-Shetland Channel. This data report is, however, not the appropriate place for a more thorough discussion on these events. The rest of the report will be confined to a description of the data.

Table 2. Aanderaa records from deployment FOIA0107 with current speed exceeding 80 cm/s, showing record number, time (middle of averaging interval), temperature, speed (in mm/s), direction, and turbidity.

RECNO	OBSERVATION TIME YYYY MM DD hh mm	TEMP Deg_C	SPD mm/s	DIR deg	TURB NTU
417	2001 07 25 05 29	-.782	909	205	.30
418	2001 07 25 06 29	-.782	944	209	.41
419	2001 07 25 07 29	-.782	880	208	.30
765	2001 08 08 17 29	-.791	816	202	.35
1052	2001 08 20 16 29	-.800	807	206	.22
1065	2001 08 21 05 29	-.791	816	204	.22
1077	2001 08 21 17 29	-.782	802	206	.26
1735	2001 09 18 03 29	-.800	846	204	.30
1736	2001 09 18 04 29	-.800	807	203	.30
4938	2002 01 29 14 29	-.800	860	207	.56
4939	2002 01 29 15 29	-.800	988	202	.43
4940	2002 01 29 16 29	-.800	880	200	.41
4950	2002 01 30 02 29	-.809	807	207	.30
4951	2002 01 30 03 29	-.800	880	201	.30
4952	2002 01 30 04 29	-.809	860	201	.30
4964	2002 01 30 16 29	-.773	860	204	.41
4975	2002 01 31 03 29	-.800	860	207	.30
4976	2002 01 31 04 29	-.800	934	205	.30
4977	2002 01 31 05 29	-.791	860	203	.30
4999	2002 02 01 03 29	-.818	846	207	.35
5000	2002 02 01 04 29	-.800	870	204	.41
5001	2002 02 01 05 29	-.782	944	206	.30
5002	2002 02 01 06 29	-.791	856	204	.39

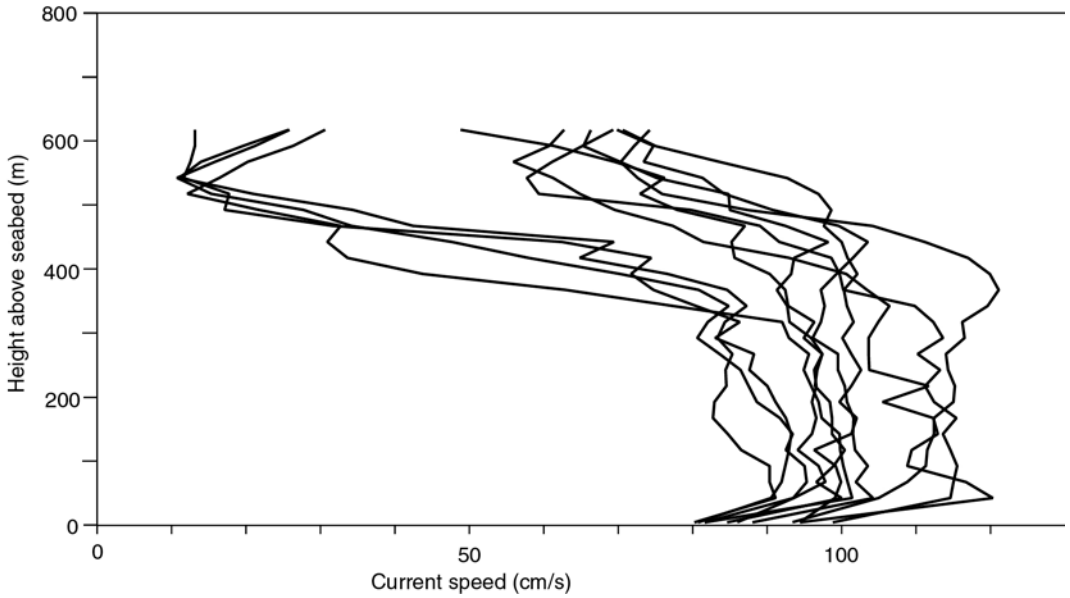


Figure 4. Current speed profiles from FOIA0107 for extreme events in the Aanderaa speed record, produced by combining the Aanderaa and the ADCP measurements.

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, for the deployments containing an ADCP, there are some pages describing the ADCP data beginning with a page with detailed error statistics for the deployment which indicates also how many "long" (i.e. several consecutive ensembles) error gaps are for each bin. On the next page there is for each bin listed the average speed (scalar average) and velocity magnitude and direction (vectorial average) as well as the fraction of "good" ensembles (in parts per thousand). 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, for the ADCP deployments, there are 3-5 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. 5) and sense of rotation (cyclonic = C, anticyclonic = A). The tidal constants were computed by an adapted version of the Foreman FORTRAN package.

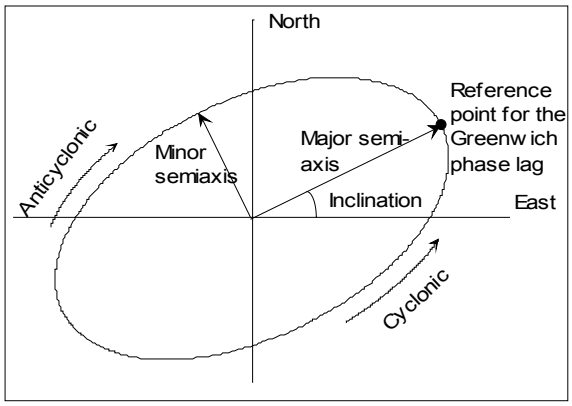


Figure 5. Parameters of the tidal ellipse for a given constituent. The reference point for the Greenwich phase lag is always chosen to be above the east-west axis.

The description of the Aanderaa current meter data includes first a text page listing metadata information in the header and showing the list of parameters in the data file with a tally of the number of records flagged and not flagged for error in each parameter. Any comments to the data are then listed. The rest of the text page describes features of the velocity observations in the series. First is shown the residual current, defined as the vectorial average of all non-flagged records. Next are shown the results of tidal analysis on the series. The number of records interpolated before the analysis is listed as well the number that could not be interpolated (too large gap). Since all the deployments have 60 minutes intervals, all analyses are performed on unfiltered data. 15 of the dominant constituents are listed and for each constituent, amplitude and Greenwich phase lag are shown for the east (E-ampl and E-gpl) and the north (N-ampl and N-gpl) velocity components respectively, followed by the characteristics of the tidal ellipse, its major and minor semi-axes, the inclination (Incl) of the ellipse, its Greenwich phase lag (Grphl), and whether it rotates cyclonically (C) or anticyclonically (A). The definitions of

the tidal ellipse parameters are shown in Figure 5. The tidal constants were computed by an adapted version of the Foreman FORTRAN package.

Finally, on the text page, is a table listing the directional current distribution as relative numbers of observations in parts per thousand. The table also lists for each direction interval, the relative flux, the average speed and the maximum speed. Then 1-2 pages show plots of the listed parameters as a function of time. Finally, there is a page showing the progressive vector diagram.

On the following pages, the data descriptions from each deployment are presented in the same sequence as Table 1. Where a deployment includes both ADCP and Aanderaa data, the ADCP data are presented first.

Deployment Id: FOIA0107

Latitude: 60°25.248´N

Longitude: 005°18.735´W

Echo sounding depth: 1001 m

Bottom depth corr.: 986m

Time of deployment: 07/07 -2001 2040UTC

Time of recovery: 16/06 - 2002 0235UTC

ADCP:

Instrument no.: RDI ADCP 1285

Instrument frequence: 75kHz

Height above bottom: 6 m

Depth: 980m (corr.)

Time of first data: 07/07 – 2001 2120UTC

Time of last data: 16/06 – 2002 0220UTC

Sample interval: 20 min

No. of ensembles: 24712

Pings per ens.: 1

Binlength: 25 m

Depth of first bin: 944 m (corr.)

No. of bins: 28

Aanderaa:

Instrument no.: RCM9 196

Height above bottom: 4 m

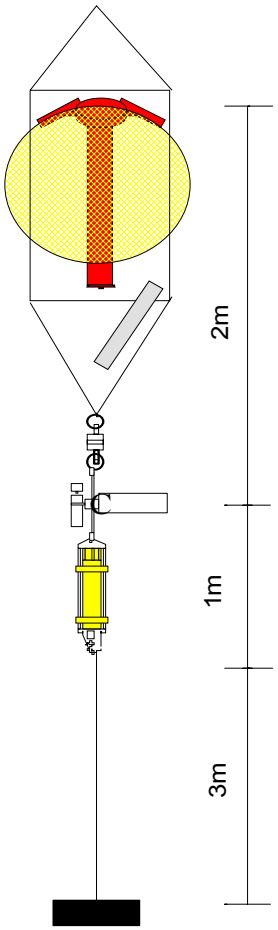
Depth: 982m (corr.)

Time of first data: 07/07 – 2001 2129UTC

Time of last data: 16/06 – 2002 0129UTC

No. of ensembles: 8237

Sample interval: 60 min



FOIA0107 ADCP 1285

Error statistics for deployment: FOIA0107 updated 2002/10/22
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Surface distance invalid due to range limitation
Heading, pitch and roll not edited
Temperature edited by MCN in Oct 2002
Velocity edited up to and including bin 28 by MCN in July 2002
Intensity edited up to and including bin 28 by MCN in Oct 2002

Total number of ensembles: 24712
Interval between ensembles: 20 min
Original number of bins: 28
Number of acceptable velocity bins: 28
Number of acceptable intensity bins: 28

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	0	535	2	514	9	1	0	0	0	0	0	0	0
2	1	426	2	402	12	0	0	0	0	0	0	0	0
3	1	337	1	312	11	1	0	0	0	0	0	0	0
4	1	417	2	383	14	2	0	0	0	0	0	0	0
5	0	366	1	338	11	2	0	0	0	0	0	0	0
6	0	290	1	282	4	0	0	0	0	0	0	0	0
7	0	310	1	285	11	1	0	0	0	0	0	0	0
8	0	341	1	306	9	3	2	0	0	0	0	0	0
9	1	595	2	501	31	4	5	0	0	0	0	0	0
10	4	776	3	665	33	8	1	1	2	0	0	0	0
11	0	804	3	659	41	12	4	1	1	0	0	0	0
12	1	780	3	625	43	12	2	1	3	0	0	0	0
13	1	1011	4	790	75	11	7	2	0	0	0	0	0
14	0	1062	4	792	86	22	5	0	2	0	0	0	0
15	0	1134	5	754	100	28	10	3	6	0	0	0	0
16	0	1088	4	755	80	22	11	4	4	1	0	0	0
17	0	1281	5	817	114	36	17	4	5	0	0	0	0
18	0	1207	5	827	85	33	13	6	3	1	0	0	0
19	0	1195	5	818	116	27	8	4	2	0	0	0	0
20	1	1271	5	820	108	40	11	2	9	0	0	0	0
21	0	1286	5	819	129	31	11	5	7	0	0	0	0
22	0	1397	6	904	127	37	10	8	7	0	0	0	0
23	0	1945	8	1165	151	54	26	16	17	1	0	0	0
24	2	1689	7	1005	139	45	14	11	19	2	0	0	0
25	1	1948	8	1188	168	48	20	11	17	2	0	0	0
26	2	2813	11	1261	203	93	44	22	34	23	0	0	0
27	3	5115	21	1469	270	118	60	40	90	60	15	9	1
28	5	13104	53	1505	547	273	174	99	229	157	59	40	20

FOIA0107 ADCP 1285

Deployment: FOIA0107 updated 2002/10/22
Instrument no.: 1285
Instrument freq.: 75
Latitude: 60 25.248 N
Longitude:05 18.735 W
Bottom depth: 986
Instrument depth: 980
Center depth of first bin: 944
Bin length: 25
Number of bins: 28
Number of first ensemble: 311
Time of first ensemble: 2001 07 07 21 20
Number of last ensemble: 25022
Time of last ensemble: 2002 06 16 02 20
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	944	42	424	391	206	978
2	919	67	428	395	208	983
3	894	92	425	393	209	986
4	869	117	420	388	210	983
5	844	142	415	383	211	985
6	819	167	411	378	212	988
7	794	192	407	371	213	987
8	769	217	403	364	215	986
9	744	242	398	356	216	976
10	719	267	393	346	217	969
11	694	292	387	334	219	967
12	669	317	380	320	220	968
13	644	342	372	304	222	959
14	619	367	363	287	224	957
15	594	392	351	266	227	954
16	569	417	340	243	231	956
17	544	442	328	217	234	948
18	519	467	319	192	238	951
19	494	492	310	167	242	952
20	469	517	303	146	247	949
21	444	542	297	129	254	948
22	419	567	296	118	260	943
23	394	592	295	110	268	921
24	369	617	293	105	275	932
25	344	642	291	102	282	921
26	319	667	289	99	286	886
27	294	692	286	92	289	793
28	269	717	270	52	303	470

FOIA0107 ADCP 1285

Deployment: FOIA0107

Frequency of high speeds.
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Frequency (in parts per thousand) of speeds equal to or exceeding specified vales.

Bin no.	Depth m	Speed (cm/s) 10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
1	944	947	851	699	517	333	186	87	32	12	4	1	.12	0	0	0	0	0	0
2	919	947	849	699	523	346	197	95	36	14	5	1	.12	0	0	0	0	0	0
3	894	945	842	692	519	346	200	98	39	15	5	1	.04	.04	0	0	0	0	0
4	869	935	826	674	506	343	202	98	39	15	5	1	.16	0	0	0	0	0	0
5	844	930	816	660	495	340	202	100	40	15	5	1	.20	0	0	0	0	0	0
6	819	929	806	648	488	337	203	102	40	15	5	1	.16	0	0	0	0	0	0
7	794	922	797	637	477	332	201	101	39	15	5	1	.12	0	0	0	0	0	0
8	769	917	786	628	470	327	197	99	40	16	5	1	.04	0	0	0	0	0	0
9	744	903	766	610	456	317	192	96	40	15	5	1	.04	0	0	0	0	0	0
10	719	895	752	595	445	305	181	92	39	15	4	1	.08	0	0	0	0	0	0
11	694	895	743	583	430	292	175	90	38	14	4	1	.12	0	0	0	0	0	0
12	669	895	736	568	420	281	166	85	35	12	3	1	.08	0	0	0	0	0	0
13	644	887	717	548	398	264	155	78	31	11	3	1	.12	0	0	0	0	0	0
14	619	881	708	528	377	246	146	69	27	10	3	1	.16	0	0	0	0	0	0
15	594	878	690	505	354	226	129	62	24	9	3	1	.04	0	0	0	0	0	0
16	569	874	677	486	333	208	115	52	20	8	3	1	.04	0	0	0	0	0	0
17	544	866	660	463	305	185	100	45	17	6	2	.45	0	0	0	0	0	0	0
18	519	863	655	450	286	169	87	36	13	4	1	.16	0	0	0	0	0	0	0
19	494	858	647	438	269	150	73	29	9	2	.36	0	0	0	0	0	0	0	0
20	469	853	642	426	254	134	62	21	6	1	.16	0	0	0	0	0	0	0	0
21	444	851	640	415	243	124	54	17	4	1	.12	0	0	0	0	0	0	0	0
22	419	851	637	409	238	121	48	15	3	.32	.04	0	0	0	0	0	0	0	0
23	394	829	621	403	231	116	44	11	2	.16	0	0	0	0	0	0	0	0	0
24	369	839	629	407	231	111	40	9	1	0	0	0	0	0	0	0	0	0	0
25	344	830	621	400	223	102	35	8	1	.12	.04	0	0	0	0	0	0	0	0
26	319	798	597	380	210	95	33	7	1	.12	0	0	0	0	0	0	0	0	0
27	294	717	531	330	177	80	28	8	1	.16	0	0	0	0	0	0	0	0	0
28	269	417	295	173	88	41	15	6	1	.24	.04	0	0	0	0	0	0	0	0

FOIA0107 ADCP 1285

Harmonic constants for constituent M2 for deployment FOIA0107.

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	944	160	239	117	259	195	33	36	246	C
02	919	162	242	123	255	202	23	37	247	C
03	894	160	245	132	252	207	12	40	248	C
04	869	159	248	143	249	214	2	42	248	C
05	844	158	251	155	247	222	8	44	249	A
06	819	160	254	165	246	230	17	46	250	A
07	794	164	256	174	245	238	23	47	250	A
08	769	170	258	181	245	247	29	47	251	A
09	744	175	260	189	245	255	34	47	252	A
10	719	182	261	195	245	265	38	47	253	A
11	694	190	263	201	245	273	43	47	253	A
12	669	196	263	203	244	279	47	46	254	A
13	644	204	264	202	244	283	50	45	254	A
14	619	208	263	197	243	282	50	43	254	A
15	594	211	263	189	243	279	50	42	254	A
16	569	215	264	181	242	276	52	40	255	A
17	544	218	264	175	240	273	55	38	255	A
18	519	219	263	165	238	268	58	36	254	A
19	494	219	262	156	236	262	57	35	253	A
20	469	213	259	143	233	250	55	33	251	A
21	444	203	256	127	232	235	45	31	249	A
22	419	193	253	115	234	222	33	30	248	A
23	394	181	250	105	236	208	22	30	247	A
24	369	165	248	94	243	190	7	30	247	A
25	344	148	247	91	252	174	7	32	249	C
26	319	133	248	94	259	162	16	35	251	C
27	294	123	248	102	265	158	23	40	255	C
28	269	96	247	135	266	163	25	55	260	C

FOIA0107 ADCP 1285

Harmonic constants for constituent S2 for deployment FOIA0107.

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	944	55	281	54	297	76	11	44	289	C
02	919	55	283	57	294	79	8	46	289	C
03	894	55	286	60	292	81	4	48	289	C
04	869	54	288	64	291	83	2	50	290	C
05	844	53	291	68	291	86	0	52	291	A
06	819	53	294	72	290	89	3	54	292	A
07	794	53	298	76	291	93	5	55	293	A
08	769	55	301	79	291	96	8	55	294	A
09	744	58	303	81	291	99	9	55	295	A
10	719	60	304	82	291	101	11	54	295	A
11	694	63	305	82	289	102	14	53	295	A
12	669	65	307	82	288	103	17	52	295	A
13	644	67	306	79	286	102	18	50	294	A
14	619	68	303	75	284	100	17	48	292	A
15	594	70	301	68	281	96	17	44	291	A
16	569	69	299	62	278	91	17	42	290	A
17	544	67	298	59	278	87	15	41	290	A
18	519	64	299	57	280	84	14	42	290	A
19	494	62	300	56	280	82	15	42	291	A
20	469	61	301	53	281	80	14	41	292	A
21	444	60	300	53	282	79	13	41	292	A
22	419	63	299	53	283	82	12	40	293	A
23	394	65	298	53	281	83	12	39	291	A
24	369	63	294	48	279	79	10	37	289	A
25	344	60	289	46	280	75	6	37	286	A
26	319	55	287	42	280	69	4	38	285	A
27	294	54	285	40	278	67	4	36	283	A
28	269	50	286	49	287	70	1	44	287	C

FOIA0107 ADCP 1285

Harmonic constants for constituent N2 for deployment FOIA0107.

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	944	39	205	16	248	41	10	18	210	C
02	919	39	205	16	247	41	10	19	210	C
03	894	38	206	17	242	40	9	21	211	C
04	869	38	210	18	234	41	7	24	214	C
05	844	37	213	20	227	42	4	28	216	C
06	819	38	216	22	222	44	2	30	217	C
07	794	39	220	24	218	46	1	32	219	A
08	769	39	222	25	216	47	2	33	220	A
09	744	40	223	27	216	48	3	34	221	A
10	719	42	226	28	217	50	4	34	223	A
11	694	42	230	30	217	51	6	36	226	A
12	669	44	233	33	215	54	8	37	227	A
13	644	46	236	38	213	59	11	39	227	A
14	619	48	235	39	209	60	14	38	225	A
15	594	50	232	39	205	62	14	37	222	A
16	569	53	227	36	201	63	13	33	219	A
17	544	53	222	32	196	61	12	30	215	A
18	519	52	218	24	195	57	9	24	214	A
19	494	47	214	18	206	50	3	21	213	A
20	469	40	218	17	227	43	2	23	220	C
21	444	34	225	19	233	38	2	29	227	C
22	419	32	232	22	231	39	0	34	232	A
23	394	35	238	23	225	41	4	33	234	A
24	369	35	241	25	222	43	7	35	235	A
25	344	32	242	28	224	42	6	41	234	A
26	319	30	249	31	231	43	7	46	240	A
27	294	29	258	32	233	42	10	48	244	A
28	269	26	277	42	218	44	21	66	229	A

FOIA0107 ADCP 1285

Harmonic constants for constituent O1 for deployment FOIA0107.

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	944	10	43	14	61	18	3	54	55	C
02	919	11	45	14	59	17	2	51	53	C
03	894	11	48	13	57	17	1	51	53	C
04	869	11	49	13	57	17	1	50	53	C
05	844	12	46	13	57	18	2	49	52	C
06	819	12	46	13	56	18	2	46	51	C
07	794	13	47	13	57	19	2	45	52	C
08	769	14	48	14	56	20	1	46	52	C
09	744	14	48	14	56	20	1	46	52	C
10	719	14	48	13	54	20	1	43	51	C
11	694	15	50	13	53	20	1	41	51	C
12	669	15	48	13	51	20	0	42	49	C
13	644	15	46	13	50	20	1	41	48	C
14	619	15	44	11	52	19	1	36	47	C
15	594	16	45	10	60	19	2	31	49	C
16	569	16	41	10	63	19	3	32	47	C
17	544	16	38	9	61	18	3	29	44	C
18	519	17	34	7	61	18	3	23	38	C
19	494	20	32	6	48	21	2	17	34	C
20	469	20	38	7	17	21	2	17	36	A
21	444	17	33	6	29	18	0	18	33	A
22	419	14	25	6	52	15	2	20	28	C
23	394	14	18	7	73	15	6	20	25	C
24	369	13	17	7	65	14	5	22	24	C
25	344	14	26	6	56	15	3	22	31	C
26	319	14	35	5	34	15	0	21	35	A
27	294	11	35	7	49	13	2	32	39	C
28	269	8	54	7	76	10	2	42	64	C

FOIA0107 ADCP 1285

Harmonic constants for constituent K1 for deployment FOIA0107.

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	944	8	245	10	283	12	4	53	269	C
02	919	8	253	11	279	13	3	54	270	C
03	894	7	258	11	275	13	2	56	270	C
04	869	7	258	10	271	12	1	53	266	C
05	844	8	260	10	268	13	1	54	265	C
06	819	8	256	10	273	13	2	51	266	C
07	794	9	249	10	275	13	3	48	263	C
08	769	9	249	10	274	13	3	47	262	C
09	744	9	246	9	274	13	3	43	259	C
10	719	10	249	8	278	13	3	38	260	C
11	694	11	251	7	276	13	3	31	257	C
12	669	12	248	6	275	13	2	25	253	C
13	644	11	248	4	266	12	1	21	250	C
14	619	11	246	4	267	12	1	18	248	C
15	594	11	247	4	301	11	3	12	250	C
16	569	9	239	4	313	9	4	8	242	C
17	544	7	240	4	334	7	4	176	57	C
18	519	7	235	5	7	8	3	149	41	C
19	494	8	227	4	40	9	0	152	46	C
20	469	10	232	4	68	11	1	157	55	A
21	444	8	239	4	94	9	2	159	64	A
22	419	6	237	2	139	6	2	177	58	A
23	394	7	231	0	79	7	0	179	51	A
24	369	5	215	2	46	6	0	158	37	A
25	344	1	186	1	74	1	1	119	55	A
26	319	2	206	3	103	3	2	108	91	A
27	294	9	207	3	95	9	3	173	29	A
28	269	20	179	1	344	20	0	178	359	C

FOIA0107 Aanderaa 196

Deployment: FOIA0107 analyzed from beginning to end
Instrument no.: 196
Instrument type: Aanderaa
Latitude: 60 25.248 N
Longitude:05 18.735 W
Bottom depth: 986
Instrument depth: 982
Number of records: 8237
Time of first record: 2001 07 07 21 29
Time of last record : 2002 06 16 01 29
Time between records (min.): 60.000

Parameters	Records OK	Records flagged
Column 1 : Recno		
Column 2- 4: Date		
Column 5- 6: Time		
Column 7 : Temp	8237	0
Column 8 : Speed	5446	2791
Column 9 : Direct	5446	2791
Column 10 : Salt	8237	0
Column 11 : Turb	8237	0

Comments: Because of a malfunction in the instrument, the last four months of the speed
-------- data are error flagged.

Residual current: 328 mm/sec towards: 201 degrees

TIDAL ANALYSIS

Error flagged records interpolated for velocity: 0, records not int.: 0
Tidal analysis performed on unfiltered data

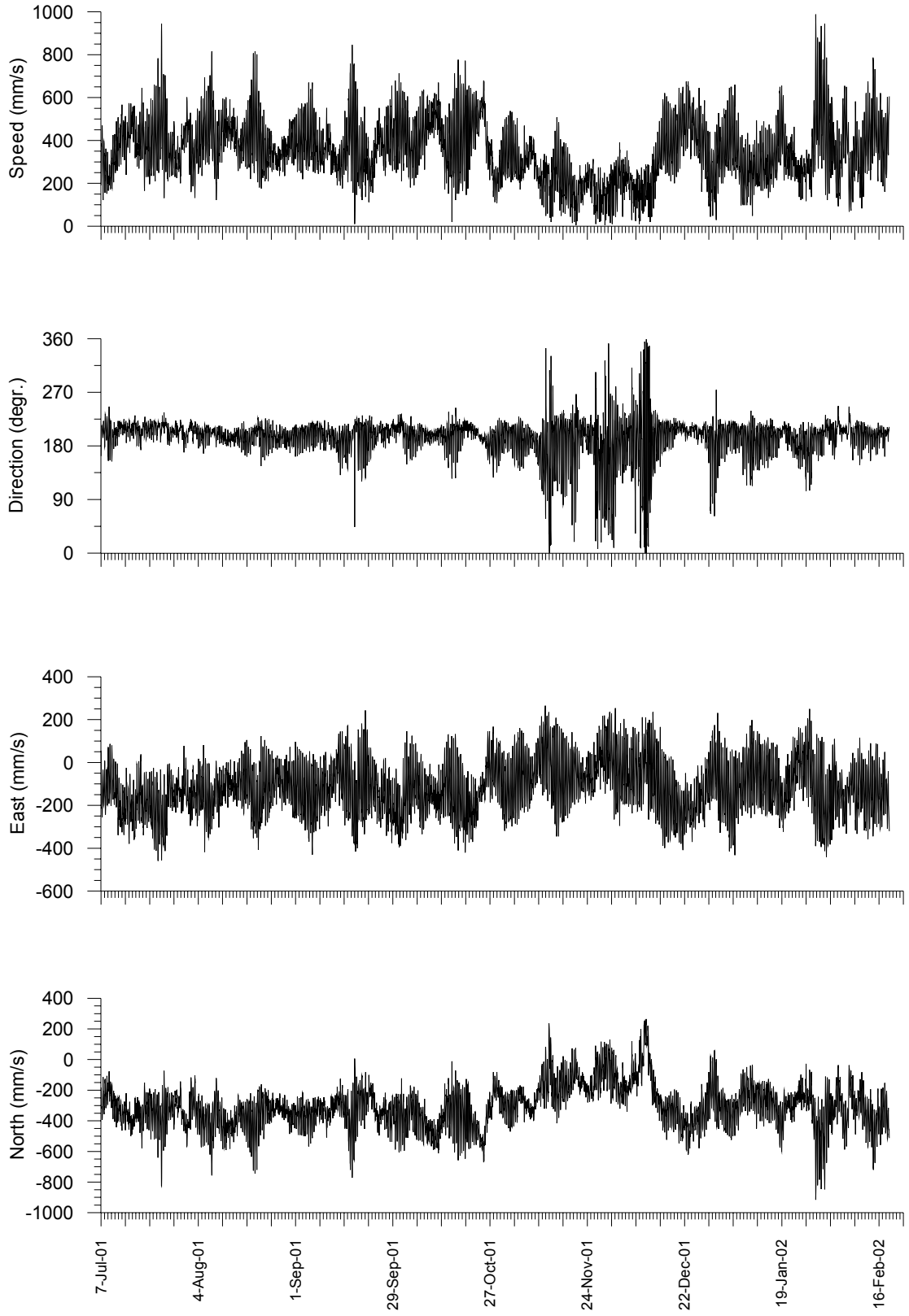
Const	Freq c/hr	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
MM	.00151215	13	341	26	73	26	13	91	73	C
MSF	.00282193	27	297	27	324	37	9	45	310	C
Q1	.03721850	4	358	4	33	5	2	52	19	C
O1	.03873065	8	42	12	66	14	3	57	58	C
NO1	.04026859	2	65	0	19	2	0	9	63	A
P1	.04155259	3	296	3	50	3	2	124	73	C
K1	.04178075	7	244	8	279	10	3	49	264	C
N2	.07899925	28	198	14	249	29	10	20	205	C
M2	.08051140	124	233	89	263	147	38	34	242	C
L2	.08202355	6	235	8	170	8	5	62	187	A
S2	.08333334	44	276	46	299	62	12	47	288	C
K2	.08356149	15	289	15	288	21	0	45	288	A
MK3	.12229210	1	111	2	330	2	1	120	320	A
M4	.16102280	10	104	9	344	11	6	141	309	A
MS4	.16384470	8	171	6	46	9	4	146	10	A

DIRECTIONAL CURRENT DISTRIBUTION (for all nonflagged observations in series)

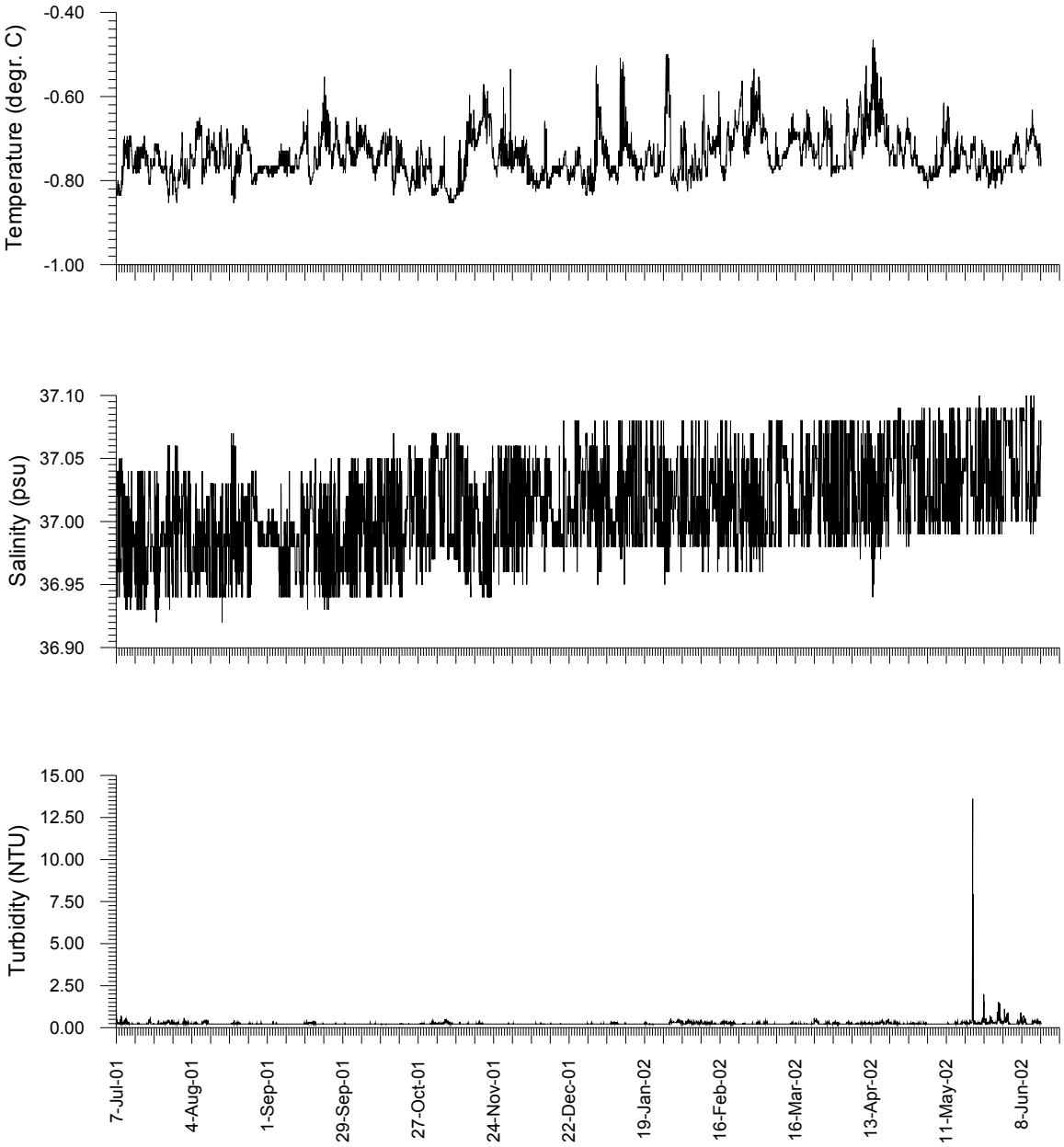
Relative number of observations in parts per thousand (ppt) grouped into speed and
direction intervals (of 30 degree width centred around the directions shown)

Speed intervals (mm/s)	Direction intervals 15	45	75	105	135	165	195	225	255	285	315	345	All dir. Tot	Acc
0 - 50	1	.37	1	1	2	.37	1	1	1	1	.37	1	10	10
50 - 100	1	1	1	2	3	2	3	2	1	1	0	.18	18	28
100 - 150	1	1	2	3	5	10	9	5	1	.37	1	1	38	66
150 - 200	1	2	2	3	9	17	23	11	2	.37	1	1	71	137
200 - 300	1	2	1	1	18	70	120	39	2	1	.18	1	257	394
300 - 400	0	0	0	0	1	28	172	59	0	0	0	0	260	654
400 - 500	0	0	0	0	0	3	118	68	0	0	0	0	189	843
500 - 600	0	0	0	0	0	.37	64	44	0	0	0	0	108	951
600 - 700	0	0	0	0	0	0	22	15	0	0	0	0	37	988
700 - 800	0	0	0	0	0	0	5	3	0	0	0	0	8	996
800 - 900	0	0	0	0	0	0	3	0	0	0	0	0	3	999
900 - 1000	0	0	0	0	0	0	1	0	0	0	0	0	1	1000
Total (ppt)	5	6	8	10	39	131	540	246	7	3	2	3		
Rel.flux (ppt)	2	3	3	4	21	94	584	283	3	1	1	1		
Avg.spd (mm/s)	142	156	140	137	189	252	380	404	159	130	136	127		
Max.spd (mm/s)	279	293	249	298	328	523	988	787	298	244	240	254		

FOIA0107
Instrument: Aanderaa 196

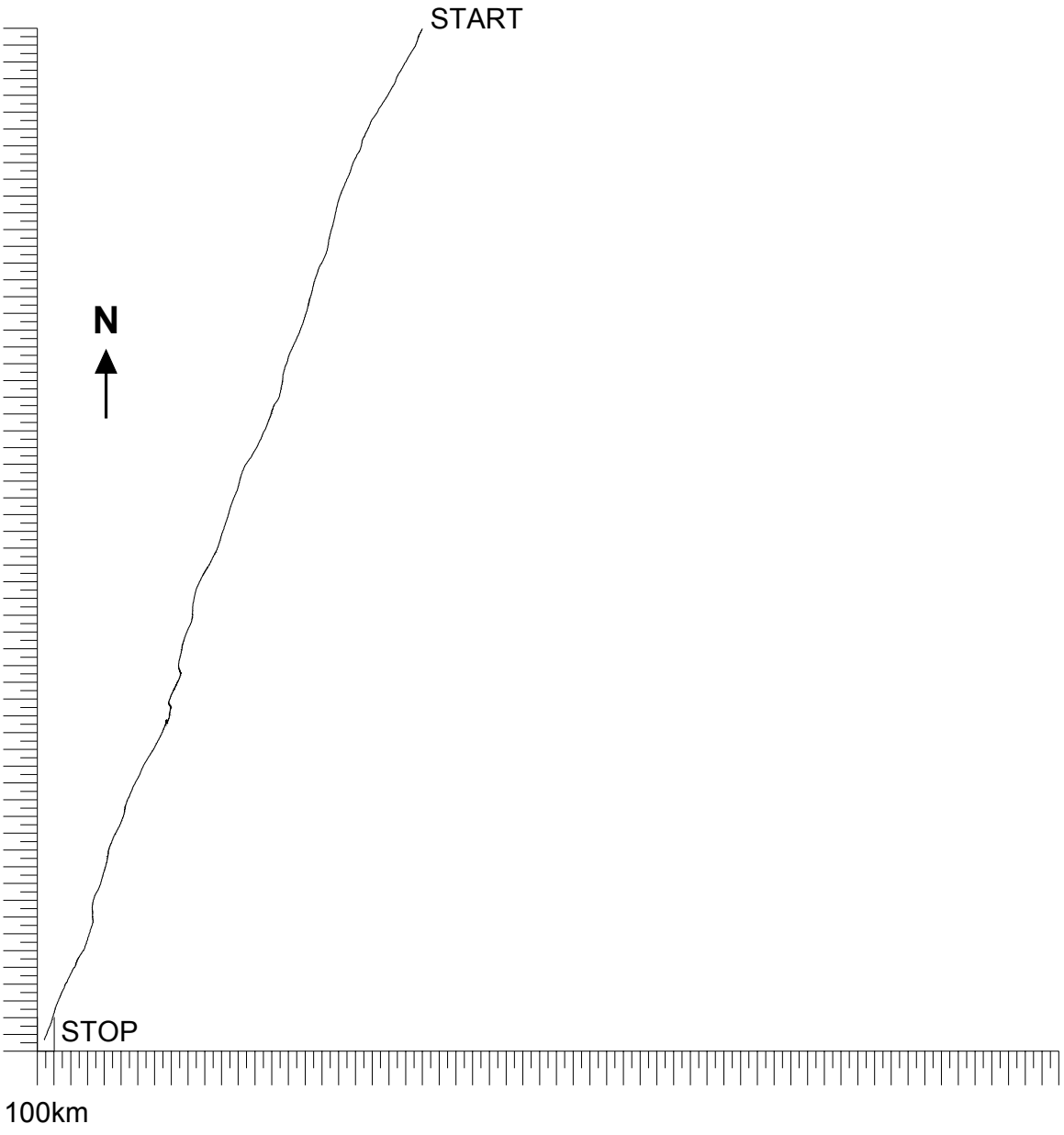


FOIA0107
Instrument: Aanderaa 196



FOIA0107 Aanderaa 196

Progressive vector diagram
FOIA0107



Deployment Id: FOIB0107

Latitude: 60°25.512´N

Longitude: 005°00.424´W

Echo sounding depth: 945m

Bottom depth corr.: 932m

Time of deployment: 07/07 -2001 1935UTC

Time of recovery: 16/06 - 2002 1643UTC

Aanderaa:

Instrument no.: RCM9 721

Height above bottom: 4 m

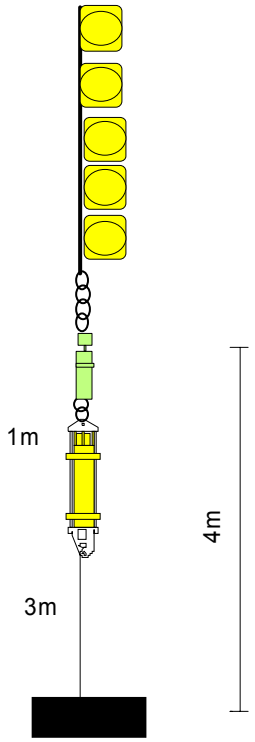
Depth: 928 m (corr.)

Time of first data: 07/07 – 2001 2030 UTC

Time of last data: 16/06 – 2002 0130 UTC

Sample interval: 60 min

No. of records: 8238



FOIB0107 Aanderaa 721

Deployment: FOIB0107 analyzed from beginning to end
Instrument no.: 721
Instrument type: Aanderaa
Latitude: 60 25.512 N
Longitude:05 00.424 W
Bottom depth: 932
Instrument depth: 928
Number of records: 8238
Time of first record: 2001 07 07 20 30
Time of last record : 2002 06 16 01 30
Time between records (min.): 60.000

Parameters	Records OK	Records flagged
Column 1 : Recno		
Column 2- 4: Date		
Column 5- 6: Time		
Column 7 : Temp	0	8238
Column 8 : Speed	8238	0
Column 9 : Direct	8238	0

Comments: The temperature observations from the instrument could not be used.

Residual current: 168 mm/sec towards: 252 degrees

TIDAL ANALYSIS

Error flagged records interpolated for velocity: 0, records not int.: 0
Tidal analysis performed on unfiltered data

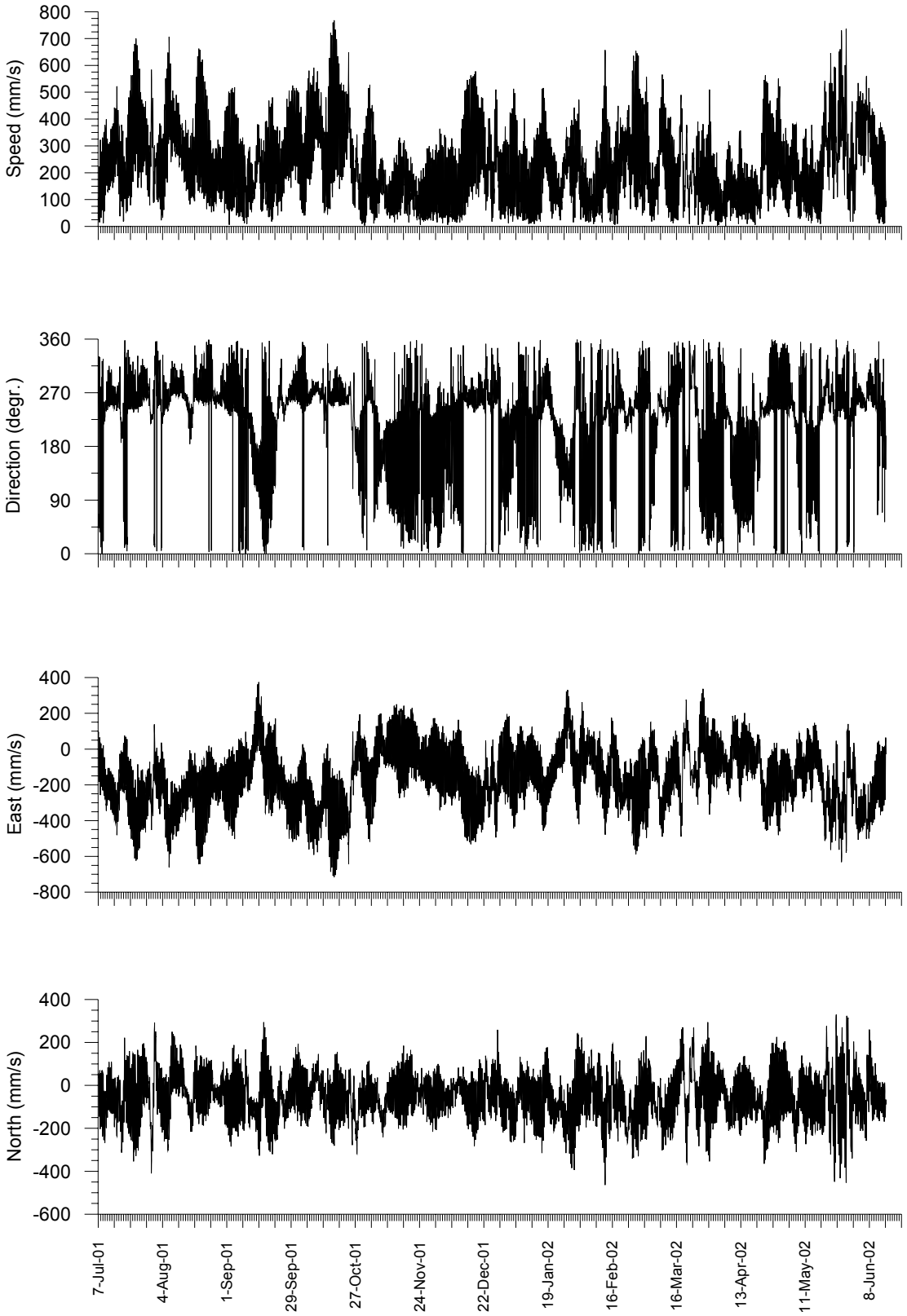
Const	Freq c/hr	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
MM	.00151215	25	336	4	110	25	3	173	155	C
MSF	.00282193	12	288	14	138	17	5	130	125	A
Q1	.03721850	0	30	5	4	5	0	88	4	A
O1	.03873065	7	33	8	55	11	2	46	44	C
NO1	.04026859	1	99	1	143	2	1	34	113	C
P1	.04155259	3	266	2	251	3	0	40	260	A
K1	.04178075	6	246	6	268	8	2	42	256	C
N2	.07899925	33	205	12	206	35	0	19	205	C
M2	.08051140	135	246	104	244	170	2	38	245	A
L2	.08202355	11	295	11	209	12	10	66	231	A
S2	.08333334	37	285	43	293	57	4	49	290	C
K2	.08356149	13	288	14	279	19	2	45	283	A
MK3	.12229210	1	218	0	106	1	0	174	39	A
M4	.16102280	5	62	5	345	5	4	49	20	A
MS4	.16384470	2	103	2	24	2	2	55	54	A

DIRECTIONAL CURRENT DISTRIBUTION (for all nonflagged observations in series)

Relative number of observations in parts per thousand (ppt) grouped into speed and direction intervals (of 30 degree width centred around the directions shown)

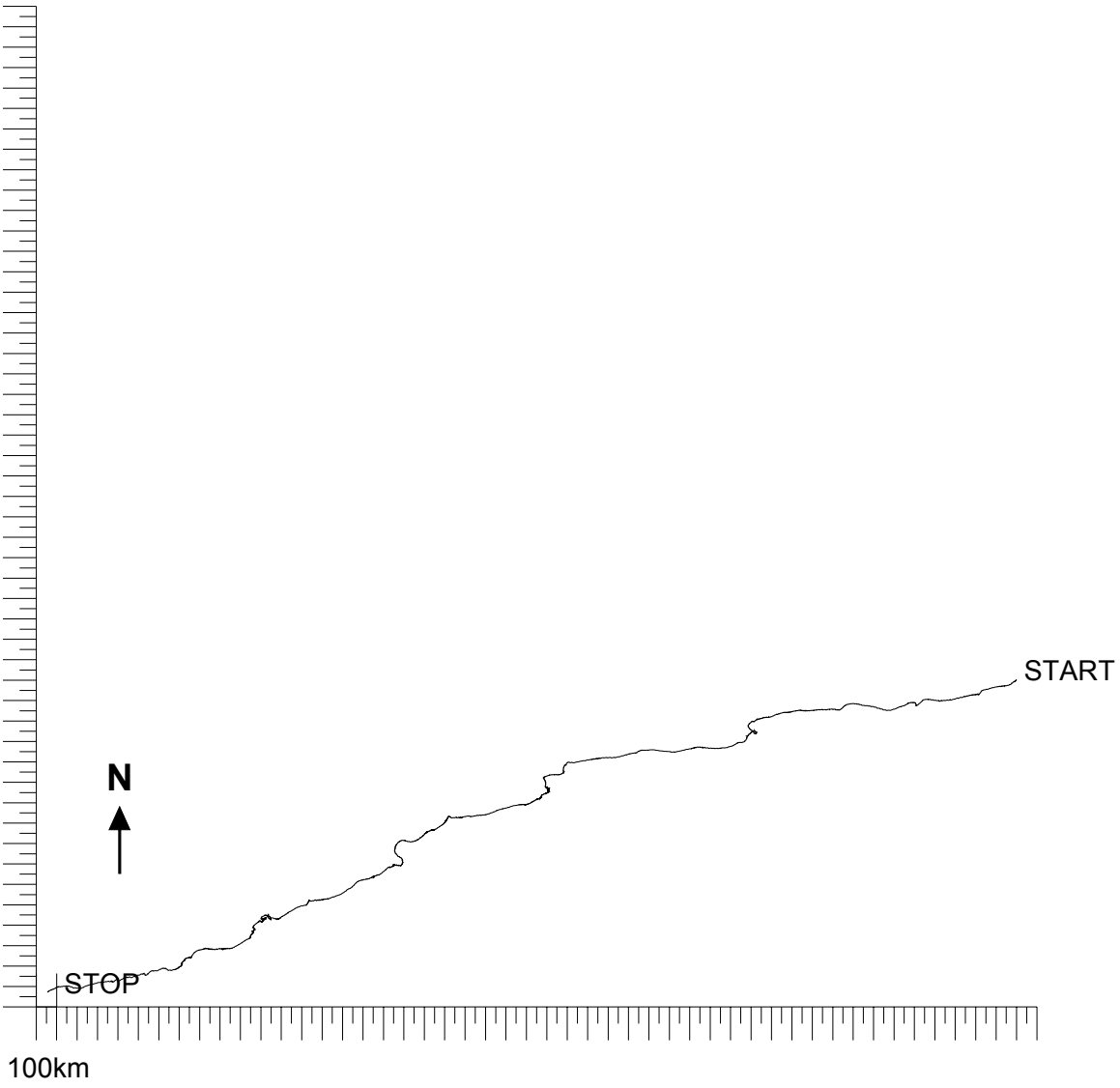
Speed intervals (mm/s)	Direction intervals 15	45	75	105	135	165	195	225	255	285	315	345	All dir. Tot	Acc
0 - 50	5	6	6	3	5	6	6	6	6	5	4	6	63	63
50 - 100	10	12	13	8	6	8	11	16	16	15	10	7	130	194
100 - 150	8	10	10	5	4	5	15	25	27	20	13	7	150	344
150 - 200	5	6	8	4	2	4	9	35	36	21	10	4	145	489
200 - 300	3	5	5	3	4	4	6	66	85	37	15	4	239	727
300 - 400	1	.49	1	2	1	1	2	40	78	21	4	.12	150	877
400 - 500	0	0	0	0	0	0	.24	15	57	8	1	0	81	958
500 - 600	0	0	0	0	0	0	0	8	24	.49	0	0	32	990
600 - 700	0	0	0	0	0	0	0	2	7	0	0	0	9	998
700 - 800	0	0	0	0	0	0	0	.36	1	0	0	0	2	1000
Total (ppt)	33	40	42	25	22	28	49	213	337	126	57	28		
Rel.flux (ppt)	17	21	23	15	11	16	30	234	454	121	42	15		
Avg.spd (mm/s)	121	120	124	135	118	127	141	251	306	217	168	119		
Max.spd (mm/s)	346	358	381	381	370	378	443	736	768	578	452	334		

FOIB0107
Instrument: Aanderaa 721



FOIB0107 Aanderaa 721

Progressive vector diagram
FOIB0107



Deployment Id: FOIC0107

Latitude: 60°38.629´N

Longitude: 005°04.489´W

Echo sounding depth: 923m

Bottom depth corr.: 910m

Time of deployment: 07/07 -2001 2220UTC

Time of recovery: 16/06 - 2002 0652UTC

Aanderaa:

Instrument no.: RCM9 718

Height above bottom: 4 m

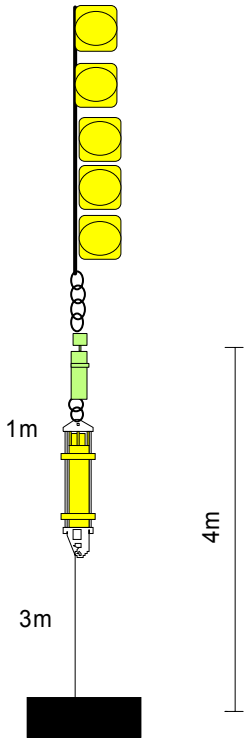
Depth: 906 m (corr.)

Time of first data: 07/07 – 2001 2331 UTC

Time of last data: 16/06 – 2002 0431 UTC

Sample interval: 60 min

No. of records: 8238



FOIC0107 Aanderaa 718

Deployment: FOIC0107 analyzed from beginning to end
Instrument no.: 718
Instrument type: Aanderaa
Latitude: 60 38.629 N
Longitude:05 04.489 W
Bottom depth: 910
Instrument depth: 906
Number of records: 8238
Time of first record: 2001 07 07 23 31
Time of last record : 2002 06 16 04 31
Time between records (min.): 60.000

Parameters	Records OK	Records flagged
Column 1 : Recno		
Column 2- 4: Date		
Column 5- 6: Time		
Column 7 : Temp	8238	0
Column 8 : Speed	8238	0
Column 9 : Direct	8238	0

Comments

Residual current: 19 mm/sec towards: 178 degrees

TIDAL ANALYSIS

Error flagged records interpolated for velocity: 0, records not int.: 0
Tidal analysis performed on unfiltered data

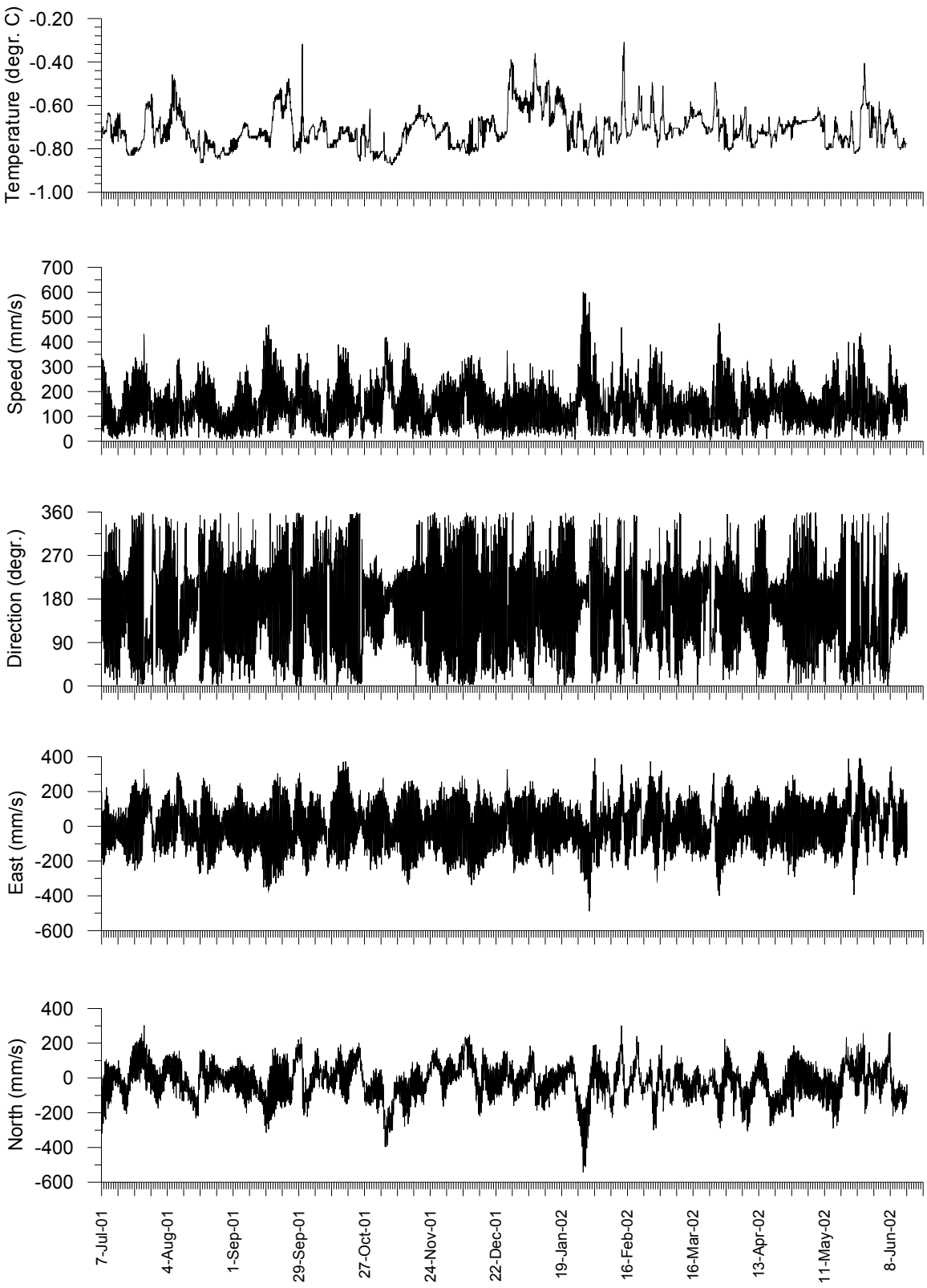
Const	Freq c/hr	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
MM	.00151215	10	163	24	122	25	6	71	127	A
MSF	.00282193	7	148	15	182	16	3	69	177	C
Q1	.03721850	5	310	5	354	6	3	45	332	C
O1	.03873065	10	357	9	43	12	5	41	17	C
NO1	.04026859	1	73	1	116	2	1	50	98	C
P1	.04155259	2	213	1	259	2	1	22	220	C
K1	.04178075	7	221	3	245	8	1	24	226	C
N2	.07899925	35	205	5	171	35	3	7	205	A
M2	.08051140	148	241	61	226	159	14	22	239	A
L2	.08202355	6	271	4	172	6	3	173	95	A
S2	.08333334	45	279	26	279	52	0	30	279	C
K2	.08356149	14	277	8	279	16	0	28	278	C
MK3	.12229210	1	131	0	38	1	0	179	311	A
M4	.16102280	2	26	2	292	2	2	150	234	A
MS4	.16384470	0	159	1	339	1	0	99	339	C

DIRECTIONAL CURRENT DISTRIBUTION (for all nonflagged observations in series)

Relative number of observations in parts per thousand (ppt) grouped into speed and direction intervals (of 30 degree width centred around the directions shown)

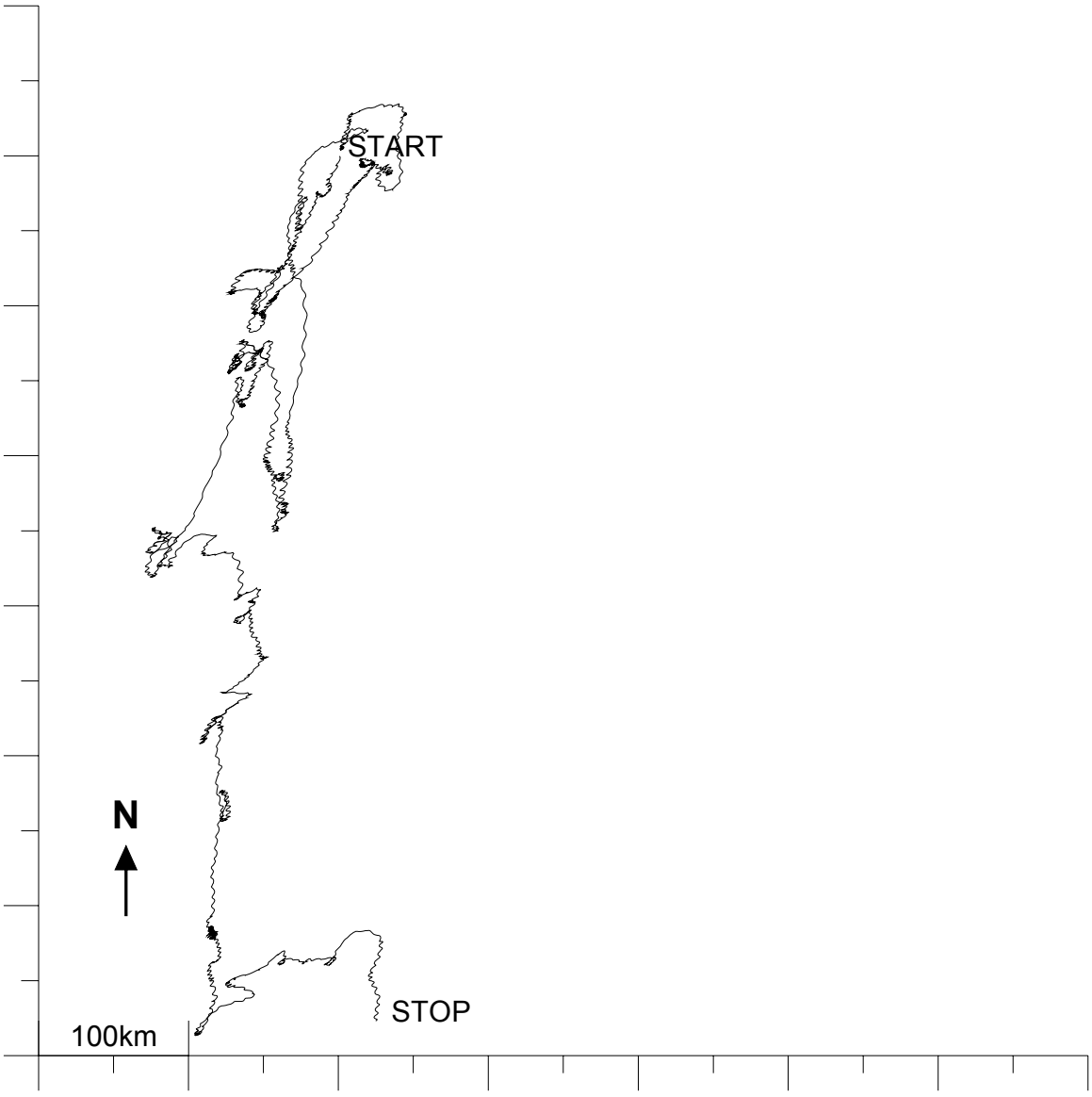
Speed intervals (mm/s)	Direction intervals 15	45	75	105	135	165	195	225	255	285	315	345	All dir. Tot	Acc
0 - 50	8	7	9	9	8	6	7	7	9	6	6	5	87	87
50 - 100	14	23	22	23	21	17	17	23	20	18	12	12	222	308
100 - 150	12	27	41	28	17	14	19	38	34	20	7	7	262	570
150 - 200	7	28	38	15	6	6	14	48	31	11	2	2	208	779
200 - 300	3	31	35	8	3	4	15	45	26	6	2	1	178	956
300 - 400	0	7	9	.36	.24	1	5	11	2	1	.36	0	36	992
400 - 500	0	1	.24	0	0	0	1	3	.36	0	0	0	6	998
500 - 600	0	0	0	0	0	0	.49	1	.12	0	0	0	1	1000
600 - 700	0	0	0	0	0	0	.12	0	0	0	0	0	.12	1000
Total (ppt)	43	123	153	84	56	48	78	176	123	61	29	26		
Rel.flux (ppt)	32	138	170	69	39	37	84	216	127	51	20	16		
Avg.spd (mm/s)	109	166	165	122	105	113	159	181	153	123	102	90		
Max.spd (mm/s)	270	458	437	311	320	343	601	595	560	346	337	238		

FOIC0107
Instrument: Aanderaa 718



FOIC0107 Aanderaa 718

Progressive vector diagram
FOIC0107



Deployment Id: NWSB0107

Latitude: 60°47.100´N

Longitude: 005°18.800´W

Echo sounding depth: 789m

Bottom depth corr.: 775m

Time of deployment: 07/07 -2001 2339UTC

Time of recovery: 15/06 - 2002 2215UTC

ADCP:

Instrument no.: RDI ADCP 1644

Instrument frequency: 75kHz

Height above bottom: 108m

Depth: 667m (corr.)

Time of first data: 08/07 - 2001 0040UTC

Time of last data: 15/06 - 2002 2140UTC

Sample interval: 20 min

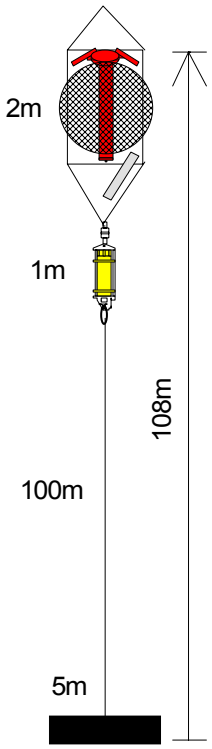
No. of ensembles: 24688

Pings per ens.: 1

Binlength: 25m

Depth of first bin: 631 (corr.)

No. of bins: 28



NWSB0107 ADCP 1644

Error statistics for deployment: NWSB0107 updated 2002/10/22
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Surface distance not edited
Heading, pitch and roll not edited
Temperature edited by MCN in Oct 2002
Velocity edited up to and including bin 22 by MCN in Oct 2002
Intensity edited up to and including bin 28 by MCN in Oct 2002

Total number of ensembles: 24688
Interval between ensembles: 20 min
Original number of bins: 28
Number of acceptable velocity bins: 22
Number of acceptable intensity bins: 22

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	2	204	1	177	12	1	0	0	0	0	0	0	0
2	1	159	1	149	5	0	0	0	0	0	0	0	0
3	1	148	1	140	4	0	0	0	0	0	0	0	0
4	1	150	1	136	4	2	0	0	0	0	0	0	0
5	1	137	1	127	5	0	0	0	0	0	0	0	0
6	0	165	1	153	3	2	0	0	0	0	0	0	0
7	0	229	1	187	14	2	2	0	0	0	0	0	0
8	1	257	1	221	16	0	1	0	0	0	0	0	0
9	3	294	1	265	11	1	1	0	0	0	0	0	0
10	0	361	1	316	18	3	0	0	0	0	0	0	0
11	0	379	2	316	26	2	0	1	0	0	0	0	0
12	0	375	2	306	25	5	1	0	0	0	0	0	0
13	0	368	1	293	28	5	1	0	0	0	0	0	0
14	0	638	3	339	47	10	3	2	8	6	0	0	0
15	1	1178	5	482	71	22	8	3	12	13	7	0	0
16	1	1749	7	597	102	33	28	9	22	21	8	1	0
17	0	2314	9	741	160	53	31	26	37	16	12	1	0
18	3	3932	16	820	231	79	48	35	65	53	21	4	1
19	1	6014	24	807	197	96	52	41	75	69	60	25	1
20	0	8622	35	687	217	104	72	57	96	86	52	74	7
21	0	11118	45	584	180	92	49	36	91	94	43	108	30
22	0	14077	57	528	160	64	38	36	68	65	47	81	75

NWSB0107 ADCP 1644

Deployment: NWSB0107 updated 2002/10/22
Instrument no.: 1644
Instrument freq.: 75
Latitude: 60 47.100 N
Longitude:05 18.800 W
Bottom depth: 775
Instrument depth: 667
Center depth of first bin: 631
Bin length: 25
Number of bins: 22
Number of first ensemble: 321
Time of first ensemble: 2001 07 08 00 40
Number of last ensemble: 25008
Time of last ensemble: 2002 06 15 21 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	631	144	213	32	187	992
2	606	169	209	29	186	994
3	581	194	206	26	184	994
4	556	219	203	23	182	994
5	531	244	200	19	175	994
6	506	269	199	15	166	993
7	481	294	197	12	153	991
8	456	319	197	11	130	990
9	431	344	195	13	129	988
10	406	369	198	15	133	985
11	381	394	203	18	126	985
12	356	419	207	18	121	985
13	331	444	211	18	117	985
14	306	469	214	18	122	974
15	281	494	219	20	134	952
16	256	519	227	22	132	929
17	231	544	238	24	127	906
18	206	569	247	23	119	841
19	181	594	255	23	114	756
20	156	619	262	22	113	651
21	131	644	271	23	103	550
22	106	669	281	29	94	430

NWSB0107 ADCP 1644

Deployment: NWSB0107

Frequency of high speeds.

Frequency (in parts per thousand) of speeds equal to or exceeding specified vales.

Bin no.	Depth m	Speed (cm/s) 10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
1	631	829	495	216	66	13	3	.45	0	0	0	0	0	0	0	0	0	0	0
2	606	828	479	207	61	13	3	.36	.04	0	0	0	0	0	0	0	0	0	0
3	581	820	469	195	55	10	2	.36	.04	0	0	0	0	0	0	0	0	0	0
4	556	812	457	189	51	9	2	1	.12	0	0	0	0	0	0	0	0	0	0
5	531	806	449	186	49	9	2	1	.04	0	0	0	0	0	0	0	0	0	0
6	506	797	439	181	53	10	2	1	.04	0	0	0	0	0	0	0	0	0	0
7	481	797	429	172	52	12	2	.32	0	0	0	0	0	0	0	0	0	0	0
8	456	794	429	171	50	11	2	.12	0	0	0	0	0	0	0	0	0	0	0
9	431	785	421	172	49	13	2	.24	.04	0	0	0	0	0	0	0	0	0	0
10	406	782	423	176	57	15	3	1	0	0	0	0	0	0	0	0	0	0	0
11	381	790	442	190	63	19	4	1	0	0	0	0	0	0	0	0	0	0	0
12	356	790	455	204	73	22	6	1	.16	0	0	0	0	0	0	0	0	0	0
13	331	789	461	217	84	27	7	2	.32	0	0	0	0	0	0	0	0	0	0
14	306	785	462	222	90	31	9	3	1	0	0	0	0	0	0	0	0	0	0
15	281	773	465	229	98	35	11	3	.49	.04	0	0	0	0	0	0	0	0	0
16	256	767	467	242	111	45	15	3	1	.08	0	0	0	0	0	0	0	0	0
17	231	760	478	259	125	58	22	7	2	.36	0	0	0	0	0	0	0	0	0
18	206	711	459	260	130	62	27	9	3	1	0	0	0	0	0	0	0	0	0
19	181	644	427	246	128	65	31	11	4	1	.36	0	0	0	0	0	0	0	0
20	156	558	375	222	116	64	30	12	4	2	.49	0	0	0	0	0	0	0	0
21	131	476	328	197	108	59	29	13	5	2	1	.04	0	0	0	0	0	0	0
22	106	377	264	163	93	51	27	13	5	2	.49	.12	0	0	0	0	0	0	0

NWSB0107 ADCP 1644

Harmonic constants for constituent M2 for deployment NWSB0107.

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	631	238	250	123	205	255	82	22	243	A
02	606	231	252	124	210	251	76	24	244	A
03	581	224	254	124	215	246	70	26	246	A
04	556	216	255	126	220	241	66	28	247	A
05	531	208	257	128	225	237	59	30	249	A
06	506	198	259	131	231	232	51	32	251	A
07	481	188	259	132	236	226	43	34	252	A
08	456	176	259	131	241	217	33	36	253	A
09	431	162	259	130	247	207	22	39	255	A
10	406	148	261	131	254	197	12	41	258	A
11	381	140	262	135	258	195	7	44	260	A
12	356	135	262	138	259	193	5	46	261	A
13	331	132	262	140	260	192	3	47	261	A
14	306	127	263	143	262	191	1	48	262	A
15	281	124	264	147	263	192	1	50	264	A
16	256	126	265	150	263	196	4	50	264	A
17	231	130	266	156	262	203	6	50	264	A
18	206	133	267	160	263	208	8	50	264	A
19	181	138	266	168	263	217	5	50	264	A
20	156	139	266	169	264	219	3	51	265	A
21	131	142	269	165	263	217	10	49	265	A
22	106	149	272	178	263	232	17	50	267	A

Harmonic constants for constituent S2 for deployment NWSB0107.

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	631	87	287	46	243	94	30	23	279	A
02	606	85	289	47	248	93	28	25	281	A
03	581	82	290	47	252	91	26	27	282	A
04	556	78	292	47	257	88	24	29	284	A
05	531	75	295	48	263	86	22	31	286	A
06	506	71	297	48	268	83	19	33	288	A
07	481	66	296	47	275	80	14	35	289	A
08	456	59	294	44	283	73	7	36	291	A
09	431	54	292	43	290	69	1	39	291	A
10	406	51	292	45	295	68	2	41	293	C
11	381	49	293	47	298	68	3	44	295	C
12	356	47	294	50	297	69	2	47	295	C
13	331	45	293	53	297	70	2	50	295	C
14	306	42	290	54	296	68	3	52	294	C
15	281	42	292	56	297	70	3	53	295	C
16	256	43	300	58	300	72	0	54	300	C
17	231	47	306	62	303	77	2	53	304	A
18	206	50	307	65	307	82	0	52	307	A
19	181	51	309	67	306	85	2	53	307	A
20	156	50	311	66	307	83	3	53	308	A
21	131	55	315	74	310	93	3	53	312	A
22	106	62	319	81	312	102	6	53	314	A

NWSB0107 ADCP 1644

Harmonic constants for constituent N2 for deployment NWSB0107.

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	631	57	212	22	147	58	20	10	209	A
02	606	55	216	22	158	56	18	13	211	A
03	581	52	219	23	169	54	17	17	213	A
04	556	51	222	23	175	53	16	19	216	A
05	531	51	227	25	181	54	17	21	220	A
06	506	52	231	28	190	56	17	24	224	A
07	481	48	235	29	198	54	15	28	226	A
08	456	40	234	26	213	47	8	32	228	A
09	431	32	235	26	231	41	1	38	233	A
10	406	29	237	25	235	38	1	41	236	A
11	381	28	242	27	240	39	1	44	241	A
12	356	28	248	30	241	41	3	48	244	A
13	331	26	249	30	242	40	2	50	245	A
14	306	24	250	32	246	40	1	53	248	A
15	281	23	251	36	247	43	1	57	248	A
16	256	23	259	38	248	44	4	59	251	A
17	231	26	270	41	249	48	8	58	255	A
18	206	27	273	44	248	51	10	59	254	A
19	181	27	270	42	240	48	11	59	248	A
20	156	30	272	48	244	55	12	59	252	A
21	131	32	269	46	239	54	13	57	248	A
22	106	34	272	47	240	56	15	55	250	A

Harmonic constants for constituent O1 for deployment NWSB0107.

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	631	30	350	17	40	33	12	23	359	C
02	606	30	348	16	39	32	12	22	357	C
03	581	29	347	15	37	31	11	22	355	C
04	556	30	347	16	37	32	11	22	355	C
05	531	29	346	16	38	31	12	21	355	C
06	506	27	345	15	40	28	12	22	354	C
07	481	26	345	15	37	28	11	24	355	C
08	456	25	342	14	36	26	11	22	351	C
09	431	25	339	12	43	26	11	15	346	C
10	406	25	337	10	47	25	10	9	340	C
11	381	25	334	10	47	25	9	8	337	C
12	356	23	335	10	53	24	10	7	338	C
13	331	23	334	9	56	23	9	4	335	C
14	306	22	329	6	53	22	6	2	330	C
15	281	22	323	5	63	22	5	178	143	C
16	256	22	320	6	72	23	6	174	138	C
17	231	21	326	7	76	21	7	172	143	C
18	206	19	322	9	70	19	9	169	137	C
19	181	22	323	12	45	22	12	6	326	C
20	156	24	317	11	41	24	11	4	319	C
21	131	21	315	8	50	21	8	178	134	C
22	106	20	328	11	64	20	11	175	145	C

NWSB0107 ADCP 1644

Harmonic constants for constituent K1 for deployment NWSB0107.

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	631	17	209	7	273	18	6	11	213	C
02	606	17	209	6	276	17	6	10	213	C
03	581	16	209	6	275	17	6	10	213	C
04	556	17	206	6	279	17	6	8	209	C
05	531	16	207	7	280	16	7	9	211	C
06	506	15	205	8	276	15	7	12	210	C
07	481	14	202	7	275	14	6	10	206	C
08	456	14	194	5	278	14	5	3	195	C
09	431	15	189	4	285	15	4	178	8	C
10	406	14	188	4	265	14	4	4	189	C
11	381	13	183	4	287	13	4	176	1	C
12	356	11	166	2	350	11	0	169	347	A
13	331	10	151	3	55	10	3	178	332	A
14	306	9	136	6	81	10	4	28	123	A
15	281	9	132	8	81	11	5	38	111	A
16	256	11	140	10	79	13	7	39	115	A
17	231	13	147	10	82	14	8	27	131	A
18	206	14	153	7	68	14	7	3	152	A
19	181	16	163	1	103	16	1	2	163	A
20	156	19	165	8	166	21	0	23	165	C
21	131	24	162	18	160	31	0	37	161	A
22	106	26	176	21	163	33	4	38	171	A

Deployment Id: NWSC0107

Latitude: 60°34.150´N

Longitude: 004°46.772´W

Echo sounding depth: 1083m

Bottom depth corr.: 1073m

Time of deployment: 07/07 -2001 1820UTC

Time of recovery: 16/06 - 2002 0501UTC

ADCP:

Instrument no.: RDI ADCP 1245

Instrument frequency: 75kHz

Height above bottom: 414m (corr.)

Depth: 659m (corr.)

Time of first data: 07/07 - 2001 1900UTC

Time of last data: 16/06 - 2002 0440UTC

Sample interval: 20 min

No. of ensembles: 24726

Pings per ens.: 1

Binlength: 25m

Depth of first bin: 623 m (corr.)

No. of bins: 28

Aanderaa:

Instrument no.: RCM8 9912

Height above bottom: 308m

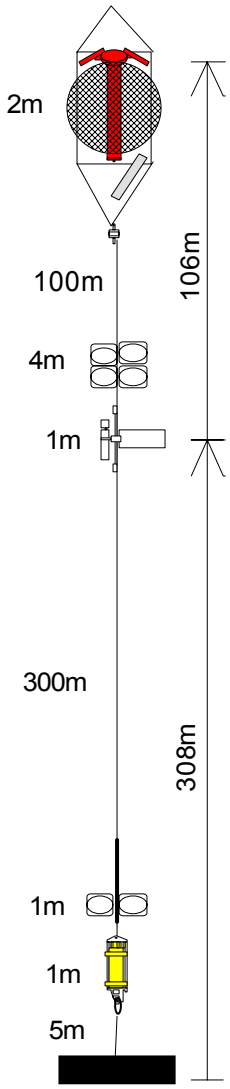
Depth: 765m (corr.)

Time of first data: 07/07 – 2001 1930 UTC

Time of last data: 16/06 – 2002 0330 UTC

Sample interval: 60 min

No. of records: 8241



NWSC0107 ADCP 1245

Error statistics for deployment: NWSC0107 updated 2002/10/22
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Surface distance not edited
Heading, pitch and roll not edited
Temperature edited by MCN in Oct 2002
Velocity edited up to and including bin 23 by MCN in Oct 2002
Intensity edited up to and including bin 27 by MCN in Oct 2002

Total number of ensembles: 24726
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	0	554	2	483	29	3	1	0	0	0	0	0	0
2	1	459	2	410	23	1	0	0	0	0	0	0	0
3	0	440	2	386	24	2	0	0	0	0	0	0	0
4	0	396	2	344	23	2	0	0	0	0	0	0	0
5	0	397	2	333	29	2	0	0	0	0	0	0	0
6	0	403	2	331	30	4	0	0	0	0	0	0	0
7	0	413	2	342	28	2	1	1	0	0	0	0	0
8	3	500	2	420	37	2	0	0	0	0	0	0	0
9	0	562	2	443	42	9	2	0	0	0	0	0	0
10	0	680	3	549	48	9	2	0	0	0	0	0	0
11	0	636	3	539	41	5	0	0	0	0	0	0	0
12	0	697	3	548	53	10	2	1	0	0	0	0	0
13	1	633	3	517	42	9	0	1	0	0	0	0	0
14	2	750	3	513	60	8	1	4	7	2	0	0	0
15	1	1067	4	549	76	20	5	3	12	11	1	0	0
16	0	1346	5	697	89	20	11	7	18	5	5	0	0
17	0	1719	7	762	113	37	32	7	21	10	6	0	0
18	0	2777	11	915	213	53	31	31	41	17	14	3	0
19	1	3908	16	783	182	70	47	25	40	43	28	15	0
20	6	5766	23	893	186	62	46	28	54	55	47	41	1
21	2	7299	30	863	214	78	46	35	43	48	36	81	5
22	4	9258	37	822	229	83	43	36	67	51	39	98	16
23	3	13496	55	848	286	133	94	58	112	46	20	87	60

NWSC0107 ADCP 1245

Deployment: NWSC0107 updated 2002/10/22
Instrument no.: 1245
Instrument freq.: 75
Latitude: 60 34.150 N
Longitude:04 46.772 W
Bottom depth: 1073
Instrument depth: 659
Center depth of first bin: 623
Bin length: 25
Number of bins: 23
Number of first ensemble: 304
Time of first ensemble: 2001 07 07 19 00
Number of last ensemble: 25029
Time of last ensemble: 2002 06 16 04 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	623	450	193	63	226	978
2	598	475	195	58	225	981
3	573	500	197	53	225	982
4	548	525	198	48	225	984
5	523	550	200	43	224	984
6	498	575	203	37	220	984
7	473	600	208	28	217	983
8	448	625	214	20	214	980
9	423	650	220	11	204	977
10	398	675	228	8	151	972
11	373	700	236	10	106	974
12	348	725	243	14	76	972
13	323	750	250	18	64	974
14	298	775	257	21	57	970
15	273	800	264	25	53	957
16	248	825	272	29	54	946
17	223	850	278	31	57	930
18	198	875	285	31	57	888
19	173	900	294	32	56	842
20	148	925	303	37	57	767
21	123	950	311	44	56	705
22	98	975	319	54	58	626
23	73	1000	319	76	64	454

NWSC0107 ADCP 1245

Deployment: NWSC0107

Frequency of high speeds.

Frequency (in parts per thousand) of speeds equal to or exceeding specified vales.

Bin no.	Depth m	Speed (cm/s) 10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
1	623	757	396	166	59	19	5	1	0	0	0	0	0	0	0	0	0	0	0
2	598	771	403	171	63	18	5	1	0	0	0	0	0	0	0	0	0	0	0
3	573	771	409	175	64	21	6	1	.04	0	0	0	0	0	0	0	0	0	0
4	548	778	415	176	67	23	5	.36	.04	0	0	0	0	0	0	0	0	0	0
5	523	782	429	178	67	21	6	.28	.04	.04	0	0	0	0	0	0	0	0	0
6	498	794	441	183	70	22	5	.20	0	0	0	0	0	0	0	0	0	0	0
7	473	808	458	195	72	23	5	.49	0	0	0	0	0	0	0	0	0	0	0
8	448	814	474	212	78	26	6	1	.08	0	0	0	0	0	0	0	0	0	0
9	423	820	486	231	90	30	8	2	.28	0	0	0	0	0	0	0	0	0	0
10	398	827	505	252	104	35	10	3	1	.04	0	0	0	0	0	0	0	0	0
11	373	839	532	269	117	41	12	3	1	.08	0	0	0	0	0	0	0	0	0
12	348	844	548	292	128	46	14	4	1	.16	0	0	0	0	0	0	0	0	0
13	323	847	567	317	145	54	16	5	1	.12	0	0	0	0	0	0	0	0	0
14	298	853	580	334	160	60	19	6	2	.20	.04	0	0	0	0	0	0	0	0
15	273	845	589	348	175	68	22	7	2	1	.20	0	0	0	0	0	0	0	0
16	248	843	598	360	187	78	26	8	3	1	.12	0	0	0	0	0	0	0	0
17	223	835	599	368	196	87	31	11	3	2	.40	0	0	0	0	0	0	0	0
18	198	803	583	364	199	88	36	12	3	1	.28	0	0	0	0	0	0	0	0
19	173	764	570	365	202	96	39	15	5	2	1	.12	0	0	0	0	0	0	0
20	148	698	530	347	200	98	43	18	7	3	1	.32	0	0	0	0	0	0	0
21	123	645	495	329	193	102	46	20	7	3	2	1	.20	0	0	0	0	0	0
22	98	575	449	302	181	99	46	20	8	4	2	1	.32	.08	.04	0	0	0	0
23	73	417	322	219	133	72	33	14	6	3	2	1	.44	.24	.08	.04	.04	0	0

NWSC0107 ADCP 1245

Harmonic constants for constituent M2 for deployment NWSC0107.

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	623	145	255	118	251	187	7	39	253	A
02	598	143	255	120	252	187	5	40	254	A
03	573	140	256	122	254	186	3	41	255	A
04	548	138	256	125	255	186	1	42	256	A
05	523	135	256	126	257	185	1	43	257	C
06	498	132	257	129	258	184	2	44	258	C
07	473	127	258	130	259	182	2	46	258	C
08	448	124	257	129	261	179	6	46	259	C
09	423	121	256	130	263	178	11	47	260	C
10	398	117	255	132	266	176	16	48	261	C
11	373	113	254	129	268	170	21	49	262	C
12	348	108	253	129	271	167	26	50	263	C
13	323	102	254	134	272	167	26	53	266	C
14	298	98	256	139	274	168	24	55	268	C
15	273	96	258	143	275	171	24	57	270	C
16	248	95	260	146	276	173	22	57	271	C
17	223	95	262	149	275	175	18	58	272	C
18	198	95	263	151	276	178	18	58	272	C
19	173	96	262	151	276	177	21	58	272	C
20	148	97	263	156	276	182	19	58	273	C
21	123	97	264	156	277	183	18	59	274	C
22	98	97	266	158	277	184	16	59	274	C
23	73	95	265	159	276	185	17	59	273	C

Harmonic constants for constituent S2 for deployment NWSC0107.

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	623	45	293	46	298	64	3	46	295	C
02	598	46	294	47	297	65	2	46	295	C
03	573	45	293	47	297	65	2	47	295	C
04	548	45	293	46	296	64	2	46	295	C
05	523	46	291	45	295	64	2	44	293	C
06	498	46	292	46	295	65	2	45	294	C
07	473	45	295	48	298	66	2	47	297	C
08	448	47	297	50	298	69	1	47	297	C
09	423	47	295	49	298	68	2	46	296	C
10	398	47	295	48	295	67	0	46	295	A
11	373	47	294	48	294	67	0	45	294	C
12	348	47	291	48	294	67	2	45	292	C
13	323	48	290	48	293	68	1	45	291	C
14	298	49	291	47	292	68	1	43	291	C
15	273	50	292	46	292	68	0	43	292	A
16	248	51	296	45	293	68	2	41	294	A
17	223	51	297	46	294	68	2	42	296	A
18	198	51	298	45	297	68	1	41	298	A
19	173	53	303	48	299	72	2	42	301	A
20	148	58	308	47	296	74	7	39	303	A
21	123	55	311	50	297	74	9	43	305	A
22	98	56	311	48	297	73	9	41	305	A
23	73	57	305	49	291	74	9	41	299	A

NWSC0107 ADCP 1245

Harmonic constants for constituent N2 for deployment NWSC0107.

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	623	35	219	19	217	40	0	29	218	A
02	598	34	220	21	218	40	1	32	220	A
03	573	34	223	23	224	41	0	34	223	C
04	548	30	227	25	228	39	0	39	228	C
05	523	28	227	27	235	39	3	44	231	C
06	498	26	229	27	240	37	4	46	235	C
07	473	27	236	29	241	40	2	47	239	C
08	448	28	240	33	236	44	2	50	238	A
09	423	27	244	37	242	46	1	54	243	A
10	398	25	248	38	244	45	1	57	246	A
11	373	24	249	36	245	44	2	57	246	A
12	348	27	251	39	242	47	3	56	245	A
13	323	28	253	40	241	49	5	55	245	A
14	298	27	255	42	242	50	5	57	246	A
15	273	25	262	45	244	51	7	61	248	A
16	248	26	265	46	246	52	8	61	250	A
17	223	26	270	45	248	52	9	61	253	A
18	198	24	275	46	250	51	9	64	255	A
19	173	25	279	47	252	52	10	63	258	A
20	148	31	282	52	255	59	12	60	262	A
21	123	32	283	52	251	59	15	60	259	A
22	98	25	279	51	251	56	11	66	256	A
23	73	20	287	50	259	53	9	70	263	A

Harmonic constants for constituent O1 for deployment NWSC0107.

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	623	11	10	10	32	14	3	42	20	C
02	598	11	13	9	36	14	3	39	22	C
03	573	10	15	11	38	14	3	48	27	C
04	548	9	10	10	42	13	4	50	29	C
05	523	9	1	10	42	13	5	49	24	C
06	498	9	359	10	31	13	4	49	17	C
07	473	7	3	10	35	12	3	58	26	C
08	448	8	13	9	48	12	4	50	33	C
09	423	8	5	10	48	12	4	55	33	C
10	398	7	352	8	51	9	5	56	31	C
11	373	7	358	9	51	10	5	52	30	C
12	348	8	5	11	48	13	5	55	33	C
13	323	9	4	9	52	12	5	47	29	C
14	298	10	351	9	62	11	8	35	17	C
15	273	10	351	10	68	11	9	45	30	C
16	248	10	353	10	70	12	9	44	31	C
17	223	11	1	11	77	12	10	42	36	C
18	198	11	348	10	72	12	10	26	11	C
19	173	11	334	8	68	11	8	175	151	C
20	148	12	320	7	85	12	5	157	130	C
21	123	12	313	9	109	15	3	143	125	C
22	98	10	336	10	95	12	7	134	125	C
23	73	14	332	4	26	14	3	9	334	C

NWSC0107 ADCP 1245

Harmonic constants for constituent K1 for deployment NWSC0107.

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	623	5	232	3	273	5	2	25	240	C
02	598	5	235	3	244	5	0	27	237	C
03	573	5	234	2	236	5	0	23	235	C
04	548	5	227	1	273	5	1	10	228	C
05	523	5	223	1	293	5	1	6	224	C
06	498	6	227	1	254	6	1	13	228	C
07	473	6	236	2	252	6	1	19	238	C
08	448	6	226	3	242	7	1	24	229	C
09	423	7	213	2	273	7	2	11	216	C
10	398	7	205	2	250	7	2	13	208	C
11	373	6	197	3	159	6	2	22	191	A
12	348	3	179	4	141	5	2	47	159	A
13	323	2	153	3	127	3	1	54	136	A
14	298	3	152	5	142	6	0	59	145	A
15	273	4	150	6	167	8	1	56	162	C
16	248	7	149	7	159	10	1	43	154	C
17	223	8	156	6	149	10	1	38	153	A
18	198	9	161	4	127	10	2	23	156	A
19	173	11	161	3	164	11	0	17	161	C
20	148	14	178	4	233	14	4	11	181	C
21	123	17	195	10	262	17	8	17	204	C
22	98	19	201	7	256	19	6	14	205	C
23	73	10	198	7	247	12	5	30	211	C

NWSC0107 Aanderaa 9912

Deployment: NWSC0107 analyzed from beginning to end
Instrument no.: 9912
Instrument type: Aanderaa
Latitude: 60 34.150 N
Longitude:04 46.772 W
Bottom depth: 1073
Instrument depth: 765
Number of records: 8241
Time of first record: 2001 07 07 19 30
Time of last record : 2002 06 16 03 30
Time between records (min.): 60.000

Parameters	Records OK	Records flagged
Column 1 : Recno		
Column 2- 4: Date		
Column 5- 6: Time		
Column 7 : Temp	8241	0
Column 8 : Speed	8241	0
Column 9 : Direct	8241	0
Column 10 : Salt	0	8241
Column 11 : N-temp	8241	0

Comments: The Salinity data were erroneous throughout the deployment.

Residual current: 70 mm/sec towards: 216 degrees

TIDAL ANALYSIS

Error flagged records interpolated for velocity: 0, records not int.: 0
Tidal analysis performed on unfiltered data

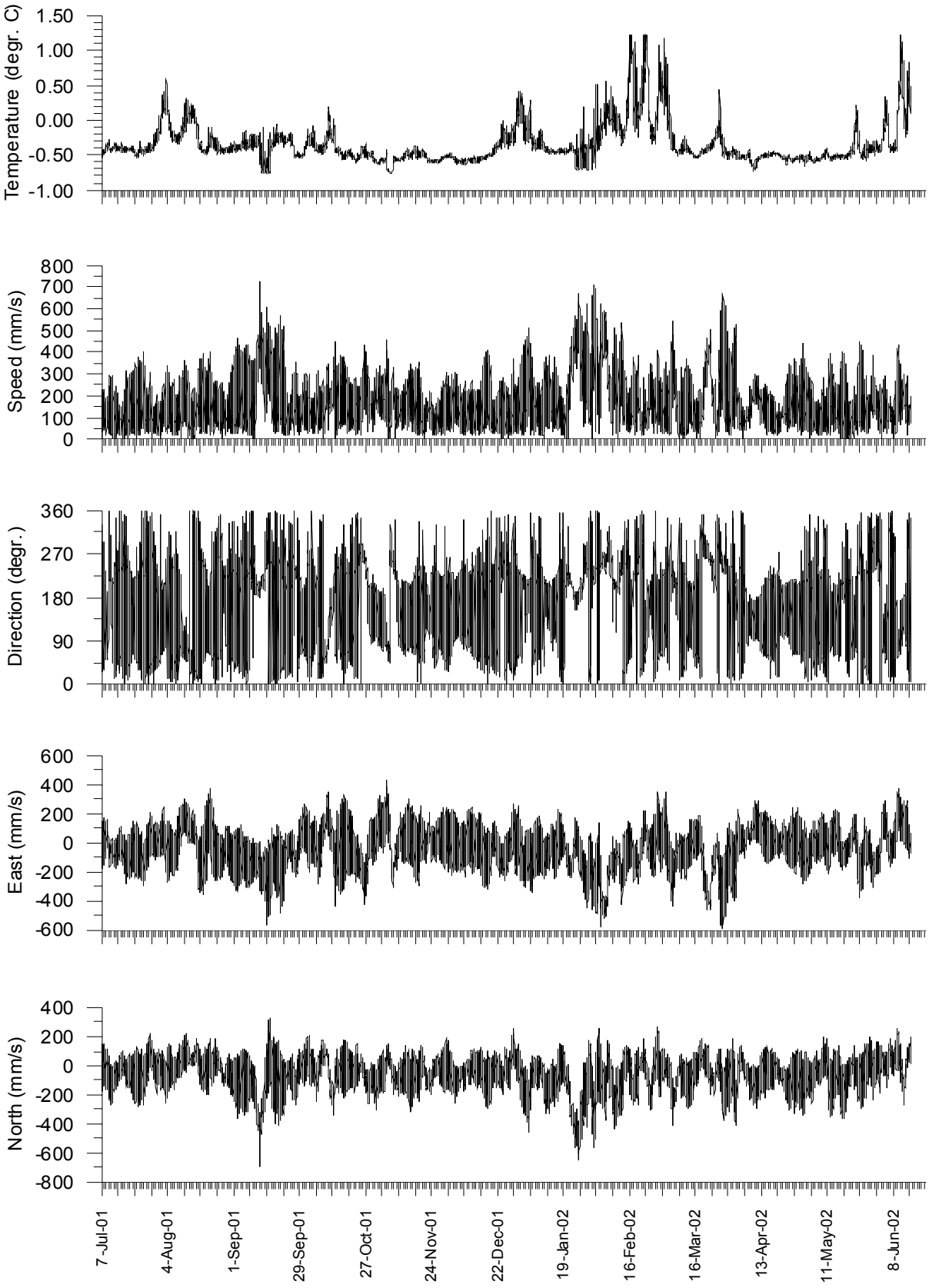
Const	Freq c/hr	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
MM	.00151215	30	241	11	204	31	6	17	238	A
MSF	.00282193	16	17	13	129	17	11	150	177	C
Q1	.03721850	4	310	4	353	6	2	49	334	C
O1	.03873065	9	2	9	33	12	3	48	19	C
NO1	.04026859	1	77	1	128	1	0	15	82	C
P1	.04155259	2	245	1	204	2	1	32	233	A
K1	.04178075	5	238	3	274	6	2	28	247	C
N2	.07899925	34	211	14	214	36	1	23	211	C
M2	.08051140	137	254	112	247	177	11	39	251	A
L2	.08202355	7	309	10	238	10	6	70	251	A
S2	.08333334	37	290	43	299	57	5	49	295	C
K2	.08356149	14	292	12	287	19	1	41	290	A
MK3	.12229210	0	170	1	295	1	0	131	319	C
M4	.16102280	1	310	4	288	4	1	72	290	A
MS4	.16384470	1	287	2	360	2	1	85	358	C

DIRECTIONAL CURRENT DISTRIBUTION (for all nonflagged observations in series)

Relative number of observations in parts per thousand (ppt) grouped into speed and direction intervals (of 30 degree width centred around the directions shown)

Speed intervals (mm/s)	Direction intervals 15	45	75	105	135	165	195	225	255	285	315	345	All dir. Tot	Acc
0 - 50	11	12	10	7	8	7	8	10	8	11	4	8	103	103
50 - 100	16	27	23	21	15	16	18	20	16	13	6	8	198	301
100 - 150	10	22	29	14	8	11	23	31	18	11	6	4	187	488
150 - 200	5	24	25	7	4	5	23	38	23	5	2	2	164	652
200 - 300	2	18	33	6	1	6	30	69	34	5	1	1	207	858
300 - 400	.24	4	6	.12	0	2	14	40	17	4	0	.12	88	946
400 - 500	0	1	1	0	0	2	6	16	11	1	0	0	37	983
500 - 600	0	0	0	0	0	.36	3	6	4	0	0	0	13	996
600 - 700	0	0	0	0	0	0	1	2	1	0	0	0	3	1000
700 - 800	0	0	0	0	0	0	.12	.12	0	0	0	0	.24	1000
Total (ppt)	44	108	127	55	36	49	125	233	130	49	21	23		
Rel.flux (ppt)	23	88	115	35	19	39	146	312	165	36	12	11		
Avg.spd (mm/s)	92	143	160	112	92	138	205	236	222	128	102	83		
Max.spd (mm/s)	327	438	456	304	228	571	729	708	661	417	262	304		

NWSC0107
Instrument: Aanderaa 9912



NWSC0107 Aanderaa 9912

Progressive vector diagram
NWSC0107