

ADCP deployments in Faroese Waters 2019 - 2020

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Introduction

This report documents three current meter deployments in Faroese waters in 2019 – 2020.

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. The moorings were located at standard (Nordic WOCE) sites.

At all sites RDI ADCPs (Acoustic Doppler Current Profiler) were placed in the top of single-point moorings. The ADCP's measure the velocity averaged over a number of depth layers (“bins”). At 20 minute intervals, the ADCP's record the data from all bins into “ensembles” as well as the instruments heading, pitch, roll and temperature.

In addition to ADCP's the moorings had other recorders attached as shown in Table 2. The MicroCat (SBE 37) at site NWFB recorded pressure, temperature, salinity and oxygen. The SBE39plus and SBE56 are temperature recorders only.

For more details see Tables 1 and 2.

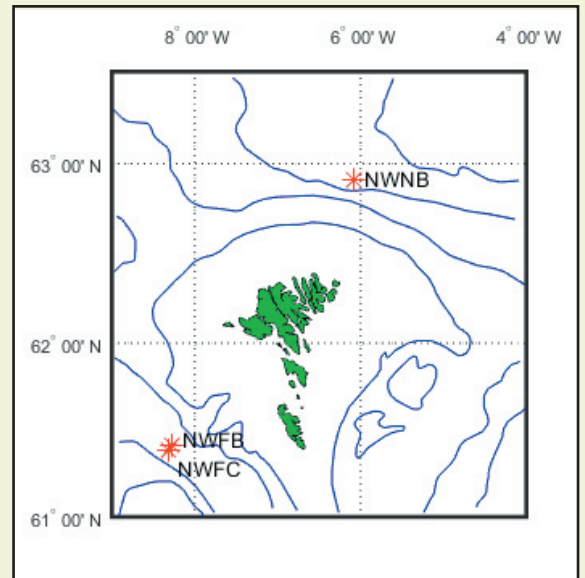


Figure 1. Mooring sites in Faroese waters 2019-2020 superposed on a map with the bottom topography. Each site is indicated by a four-letter label.

Table 1. List of deployments with information on instrument number, type and settings.

Deployment	Instr. No	Current Meter type	Freq. kHz	Pings per ens	Binlng. m
NWFB1906	1642	BB ADCP	75	1	25
NWFC1906	1285	BB ADCP	75	1	25
NWNB1906	19518	LR ADCP	75	10	10

Table 2. List of deployments with information on duration and range of valid data. All depths are in meters. The last column indicates whether other instruments were on the mooring.

Deployment	Bottom depth	Int. min.	Valid data period	Dur. days	No bins	Depthrange	Other instr.
NWFB1906	810	20	2019 06 09-2020 05 22	348	18	343- 768	Microcat
NWFC1906	842	20	2019 06 09-2020 05 22	347	23	250- 800	SBE39plus
NWNB1906	950	20	2019 06 08-2020 05 25	352	62	71- 681	SBE56

Quality control

ADCP data

The velocity data from the ADCPs have been quality controlled using a semi-automatic routine that error flags observations that are above/below specified thresholds or are identified by specific filters as elaborated below:

- i) A minimum threshold can be set for intensity and correlation.
- ii) In order to remove extremely large speed (spd) values, the mean speed is calculated for each bin and multiplied by a specified factor. The result is the maximum threshold for each bin.
- iii) A maximum threshold for absolute vertical velocity (w) can be set.
- iv) The ADCP data also include an error velocity and a maximum absolute threshold can be specified for this parameter. The final threshold is this threshold plus ten percent of the observed speed for the individual observations.
- v) A de-spiking filter for horizontal velocities u and v can be applied. Observations, where u and v deviate from a three point median filter by more than the standard deviation multiplied by a specified factor, are error flagged. The specified factor can be chosen to vary between bins. One factor can be specified for bin 1 and another for the uppermost bin. For the intermediate bins the factor varies exponentially from bin 1 to the uppermost bin, such that the “sensitivity” of the filter can decrease with increasing distance from the instrument.
- vi) A de-spiking filter similar to that described in v) can be selected that operates vertically between bins instead of temporally between ensembles, but here only one factor is specified.
- vii) A separate de-spiking filter (similar to that described in v)) can be set for the vertical velocity component, w . Also here only one factor is specified.
- viii) Finally, an absolute maximum threshold can be set for Pitch and Roll.

In the final process, all the thresholds and filters are combined and applied to the velocity components u , v and w . In the data files this corresponds to the Speed, Direction and Vertical velocity files. 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. Generally, the temperature recordings have been edited, but not the other ADCP sensor data nor intensity or correlation.

The instrument depth at site NWFB is found from the MicroCat pressure measurements. The instrument depth at site NWFC is found using the data from the echo sounding depth (corrected for change in sound velocity). The instrument depth at site NWNB is found from the ADCP pressure measurements.

Auxiliary data

In order to calibrate the data from the auxiliary sensors, these have been attached to a CTD and set to record data while on the CTD cast. Offsets have then been found by comparing the auxiliary data to the CTD recordings. Typically such calibrations have been performed just prior to or after the deployment, and if done this is indicated in the details for the deployment. Additionally, the data from the MicroCat SBE37 and the SBE39 and SBE56 instruments 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 FAMRI, based upon MATLAB.

The MicroCat on NWFB was originally funded by the EU-H2020 project AtlantOS. It is of the type SBE37 SMP-ODO and includes oxygen measurements. The oxygen recordings on this type of instrument appear to have some kind of hysteresis adaptation when deployed at great depths. The correction of these data are not final and we refer to the AtlantOS D3.18 deliverable report for more information (https://www.atlantos-h2020.eu/download/deliverables/D3.18_Report-on-the-observational-potential-of-the-TMAs_final.pdf) and future guidelines for correction of oxygen data from this type of instrument.

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 are some pages describing the ADCP data, beginning with a page with detailed error statistics and threshold settings for the deployment, and it 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. Then there are some pages listing tidal constituents. These pages contain five 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 semi-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.

The MicroCat data are presented on two pages, the first page showing plots of temperature, salinity, depth and oxygen time series, while the second is a T-S diagram of the recorded data.

The SBE39 and SBE56 temperature data are presented on one page.

On the following pages, the data descriptions from each deployment are presented in the same sequence as Tables 1 and 2. For each deployment, the ADCP data are presented first, followed by possible MicroCat or temperature recorder data.

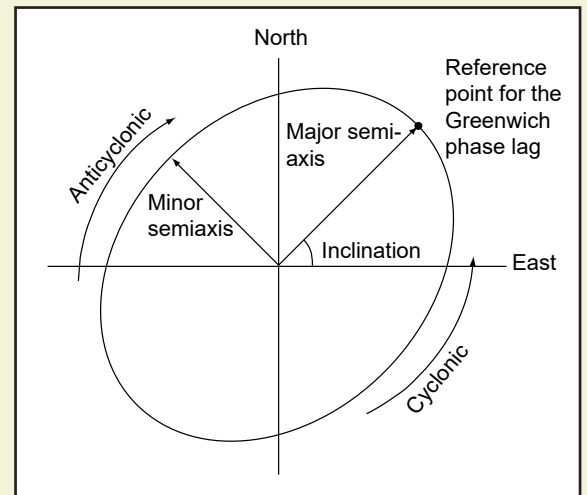


Figure 2. Parameters of the tidal ellipse for a given constituent. The reference point for the Greenwich phase lag is always chosen to be above the east-west axis.

NWFB1906

Latitude: 61°24.910'N
Longitude: 008°16.905'W
Echo sounding depth: 823 m
Bottom depth corr.: 810 m
Time of deployment: 9/6 - 2019 1518 UTC
Time of recovery: 22/5 - 2020 1643 UTC

ADCP:

Instrument no.: RDI ADCP 1642
Instrument frequency: 75 kHz
Height above bottom: 6 m
Depth: 804 m
Time of first data: 9/6 - 2019 1600 UTC
Time of last data: 22/5 - 2020 1620 UTC
Sample interval: 20 min
No. of ensembles: 25058
Pings per ens.: 1
Binlength: 25 m
Depth of first bin: 768 m
No. of bins: 18

MicroCat

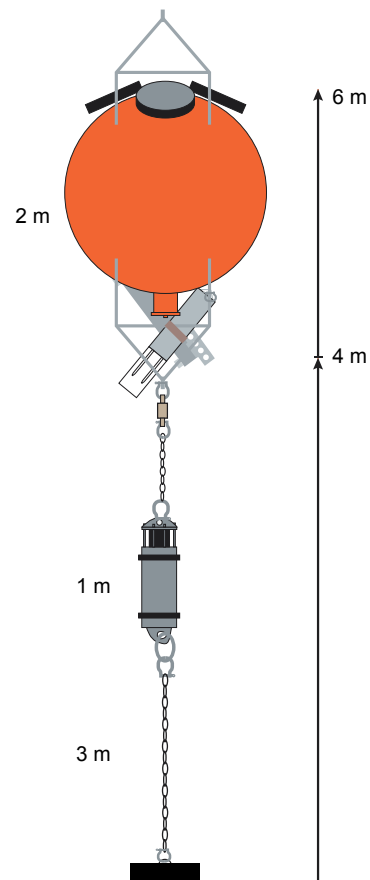
Instrument no.: 14007
Height above bottom: 4 m
Instrument depth: 806 m
Time of first data: 9/6 - 2019 1600 UTC
Time of last data: 22/5 - 2020 1601 UTC
Sample interval: 60 min
No. of ensembles: 8353

Data:

The MicroCat is calibrated against an SBE911+ prior to deployment. The MicroCat data will be finally calibrated after factory calibration.

The ADCP temperature has been deleted due to conversion error. The ADCP pitch and roll have frequent measurements at 20°. Although the data seem unaffected, this might have an impact.

See TecRep 1502 (<http://www.hav.fo/PDF/Ritgerdir/2015/TecRep1502.pdf>) for more information.



NWFB1906 ADCP 1642

Error statistics for deployment: NWFB1906 updated 2020/11/13

 Temperature edited
 Surface distance not edited
 Heading, pitch and roll not edited
 Intensity not edited

Velocity (spd, dir, wel) is error flagged using these data filters:

Minimum Intensity threshold :57.0
 Minimum Correlation threshold:64.0
 Maximum Speed factor (Average speed for each bin times factor): 5.0
 Maximum Absolute Vertical Velocity threshold:150.0
 Maximum Absolute Error Velocity threshold (erv_tr+0.1*spd):150.0
 Std dev for de-spiking (u, v deviate from 3 point median by more than number of std dev, bin 1): 5.00
 Std dev for de-spiking (u, v deviate from 3 point median by more than number of std dev, bin 18): 3.86
 Std dev for de-spiking (u, v deviate from 3 point median by more than number of std dev, bin 32): 2.00
 Std dev for vertical de-spiking (u and v deviate from 3 point median by more than number of std dev): 4.0
 Std dev for de-spiking (w deviates from 3 point median by more than number of std dev): 4.0

Total number of ensembles: 25058
 Interval between ensembles: 20 min
 Original number of bins: 32
 Number of acceptable velocity bins: 18

Flagged values have been replaced by error codes: -999.99 for temperature and depth, -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: 25058

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	107	0	93	7	0	0	0	0	0	0	0	0
2	0	291	1	265	13	0	0	0	0	0	0	0	0
3	0	218	1	206	6	0	0	0	0	0	0	0	0
4	0	219	1	197	11	0	0	0	0	0	0	0	0
5	0	215	1	178	14	3	0	0	0	0	0	0	0
6	0	313	1	212	26	5	3	0	3	0	0	0	0
7	0	407	2	232	37	8	5	1	3	2	0	0	0
8	0	429	2	259	43	5	8	0	2	0	1	0	0
9	0	364	1	253	27	7	5	1	0	1	0	0	0
10	0	469	2	304	42	12	4	3	2	0	0	0	0
11	0	451	2	316	35	10	5	3	0	0	0	0	0
12	0	463	2	291	47	13	7	1	1	0	0	0	0
13	0	422	2	271	37	7	6	1	2	1	0	0	0
14	0	561	2	298	49	15	5	3	5	3	0	0	0
15	0	1059	4	368	71	33	12	7	19	9	2	1	0
16	0	2517	10	557	154	63	33	30	44	21	10	4	2
17	0	6032	24	871	288	135	75	47	130	66	25	16	6
18	0	11291	45	853	308	165	109	54	181	122	53	50	21

NWFB1906 ADCP 1642

Deployment: NWFB1906 updated 2020/11/13
 Instrument no.: 1642
 Instrument freq.: 75
 Latitude: 61 24.910 N
 Longitude: 08 16.905 W
 Bottom depth: 810
 Instrument depth: 804
 Center depth of first bin: 768
 Bin length: 25
 Number of bins: 18
 Number of first ensemble: 376
 Time of first ensemble: 2019 06 09 16 00
 Number of last ensemble: 25433
 Time of last ensemble: 2020 05 22 16 20
 Time between ensembles (min.): 20
 All directions have been corrected by adding: -5.0

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	768	42	972	965	305	996
2	743	67	1044	1038	307	988
3	718	92	1073	1067	309	991
4	693	117	1081	1075	311	991
5	668	142	1076	1070	311	991
6	643	167	1052	1045	312	988
7	618	192	992	982	314	984
8	593	217	886	869	316	983
9	568	242	736	705	319	985
10	543	267	562	512	323	981
11	518	292	408	334	326	982
12	493	317	305	201	329	982
13	468	342	249	112	334	983
14	443	367	223	58	346	978
15	418	392	214	35	21	958
16	393	417	212	42	61	900
17	368	442	216	61	78	759
18	343	467	224	84	85	549

NWFB1906 ADCP 1642

Frequency of high speeds.

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

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Bin Depth	Speed (cm/s)																	
no. m	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
1 768	996	996	996	996	995	988	958	872	700	440	191	51	9	1	0	0	0	0
2 743	988	988	988	988	988	985	972	928	825	643	372	133	26	2	0	0	0	0
3 718	991	991	991	991	991	989	979	942	857	709	465	200	42	5	0	0	0	0
4 693	991	991	991	991	991	989	978	945	864	727	495	216	48	6	0	0	0	0
5 668	991	991	991	991	991	987	974	936	854	713	486	208	49	5	0	0	0	0
6 643	987	987	986	985	982	971	950	898	806	664	442	188	45	6	0	0	0	0
7 618	983	980	974	963	947	920	881	812	710	562	354	149	37	5	0	0	0	0
8 593	976	960	934	908	873	828	764	676	554	402	229	95	23	3	0	0	0	0
9 568	966	920	865	811	750	676	583	465	335	217	116	45	9	1	0	0	0	0
10 543	945	857	752	645	542	435	327	232	152	89	41	13	2	0	0	0	0	0
11 518	918	768	586	424	299	209	143	89	50	24	10	1	0	0	0	0	0	0
12 493	888	656	409	238	144	85	46	24	12	5	1	0	0	0	0	0	0	0
13 468	854	566	295	136	65	29	13	6	2	0	0	0	0	0	0	0	0	0
14 443	821	506	233	92	33	9	2	0	0	0	0	0	0	0	0	0	0	0
15 418	800	475	207	71	18	3	0	0	0	0	0	0	0	0	0	0	0	0
16 393	753	444	187	58	15	3	1	0	0	0	0	0	0	0	0	0	0	0
17 368	644	391	164	51	14	3	1	0	0	0	0	0	0	0	0	0	0	0
18 343	469	290	131	47	14	3	1	0	0	0	0	0	0	0	0	0	0	0

NWFB1906 ADCP 1642

Harmonic constants for constituent M2 for deployment NWFB1906.

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	768	25	58	20	326	25	20	176	241	A
02	743	29	60	19	326	29	19	175	243	A
03	718	31	66	18	323	32	17	170	251	A
04	693	32	74	16	324	32	15	168	260	A
05	668	33	82	15	322	34	13	165	268	A
06	643	34	96	15	306	36	7	158	281	A
07	618	34	118	16	291	38	2	156	297	C
08	593	39	139	15	274	41	10	164	315	C
09	568	42	163	18	246	42	18	3	164	C
10	543	43	193	25	214	49	8	29	198	C
11	518	50	227	45	189	63	21	41	211	A
12	493	62	245	69	179	78	50	52	205	A
13	468	70	254	87	177	90	66	67	194	A
14	443	71	260	96	178	97	69	78	187	A
15	418	70	264	100	180	101	69	83	185	A
16	393	71	270	102	182	102	71	87	184	A
17	368	72	274	103	183	103	72	91	182	A
18	343	74	274	100	183	100	74	92	182	A

Harmonic constants for constituent S2 for deployment NWFB1906.

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	768	13	96	8	32	14	7	19	87	A
02	743	14	98	8	23	14	7	11	92	A
03	718	14	102	6	11	14	6	179	283	A
04	693	11	106	6	7	11	6	173	290	A
05	668	7	115	5	345	8	3	149	309	A
06	643	6	148	4	312	7	1	142	322	C
07	618	10	194	4	287	10	4	178	13	C
08	593	14	208	4	277	14	3	6	209	C
09	568	14	230	7	248	15	2	26	233	C
10	543	12	263	16	243	20	3	53	250	A
11	518	17	293	25	239	28	13	62	252	A
12	493	26	298	32	227	35	23	61	248	A
13	468	30	297	37	218	38	29	68	235	A
14	443	30	297	40	215	40	29	77	224	A
15	418	27	297	38	214	38	27	80	221	A
16	393	26	304	36	215	36	26	88	217	A
17	368	25	314	39	214	39	25	102	206	A
18	343	30	326	40	213	43	25	116	197	A

NWFB1906 ADCP 1642

Harmonic constants for constituent N2 for deployment NWFB1906.

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	768	7	76	1	197	7	1	174	256	C
02	743	7	65	2	165	7	2	178	244	C
03	718	8	62	2	202	8	1	169	240	C
04	693	8	43	3	231	9	0	158	224	A
05	668	9	36	3	251	10	2	163	219	A
06	643	9	40	3	245	10	1	164	222	A
07	618	8	61	2	247	9	0	164	241	A
08	593	9	73	5	255	10	0	150	254	A
09	568	10	82	11	247	15	2	133	254	C
10	543	6	111	16	229	16	5	102	233	C
11	518	6	204	16	200	17	0	68	201	A
12	493	11	229	17	167	18	9	66	180	A
13	468	12	234	20	154	20	12	81	159	A
14	443	12	239	20	154	20	12	85	156	A
15	418	12	230	20	154	20	11	78	161	A
16	393	11	222	20	154	20	10	74	163	A
17	368	14	218	19	150	21	12	65	165	A
18	343	16	221	19	154	21	13	56	177	A

Harmonic constants for constituent O1 for deployment NWFB1906.

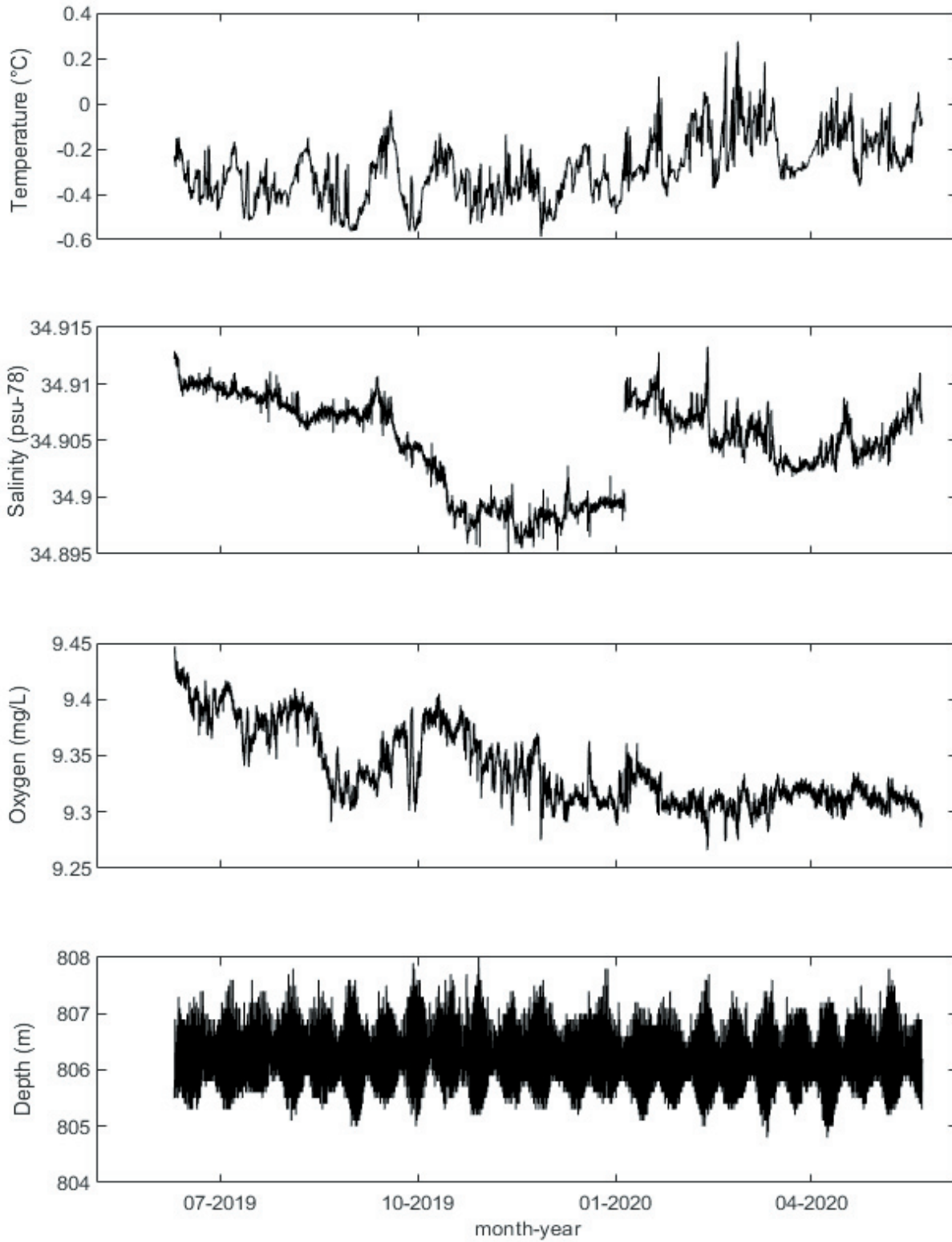
Bin	Depth m	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
01	768	18	317	10	136	21	0	150	137	C
02	743	19	317	10	134	22	0	152	136	C
03	718	21	316	12	142	25	1	150	138	A
04	693	21	319	13	139	25	0	149	139	C
05	668	21	325	14	139	25	1	147	143	C
06	643	25	332	16	144	30	2	147	150	C
07	618	32	337	20	152	38	2	149	156	C
08	593	37	341	27	153	46	3	144	158	C
09	568	36	348	34	152	49	6	137	161	C
10	543	29	354	32	154	43	7	132	163	C
11	518	23	6	27	160	35	8	130	171	C
12	493	22	12	23	169	31	6	133	180	C
13	468	18	10	20	171	27	4	131	180	C
14	443	15	15	19	178	25	3	128	185	C
15	418	15	24	18	184	23	4	129	192	C
16	393	12	28	18	190	21	3	124	195	C
17	368	10	31	17	192	20	3	120	197	C
18	343	11	4	18	183	21	0	120	183	C

NWFB1906 ADCP 1642

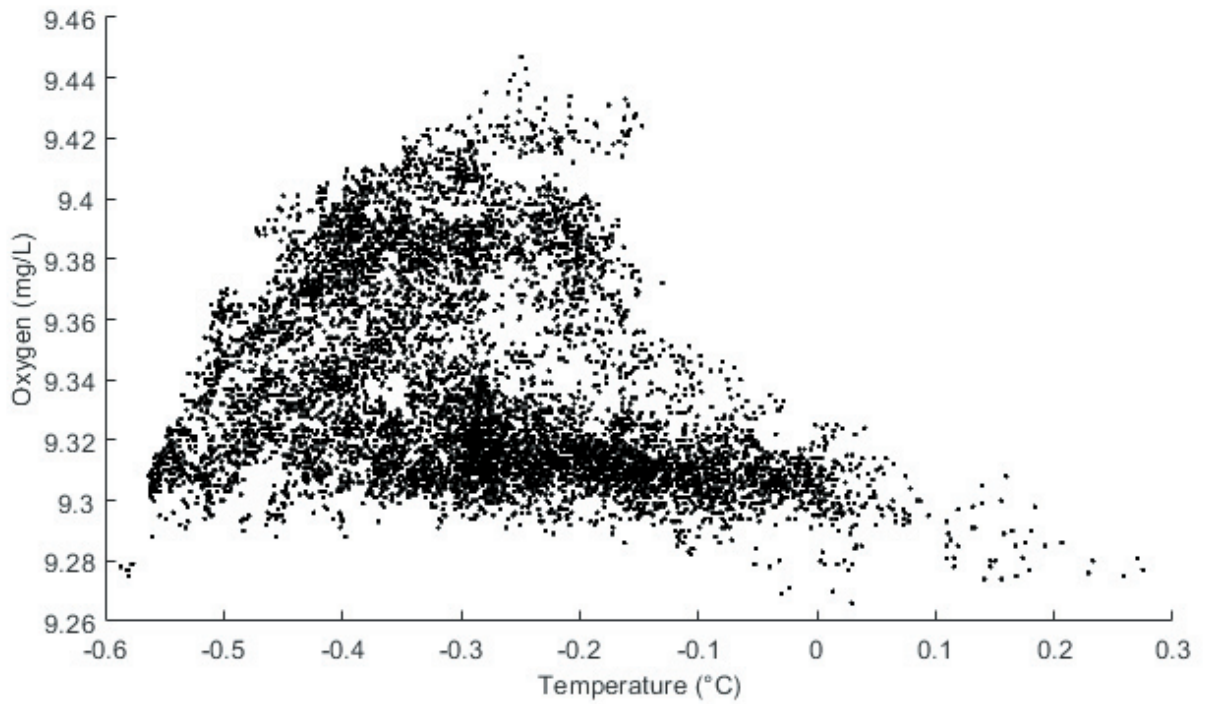
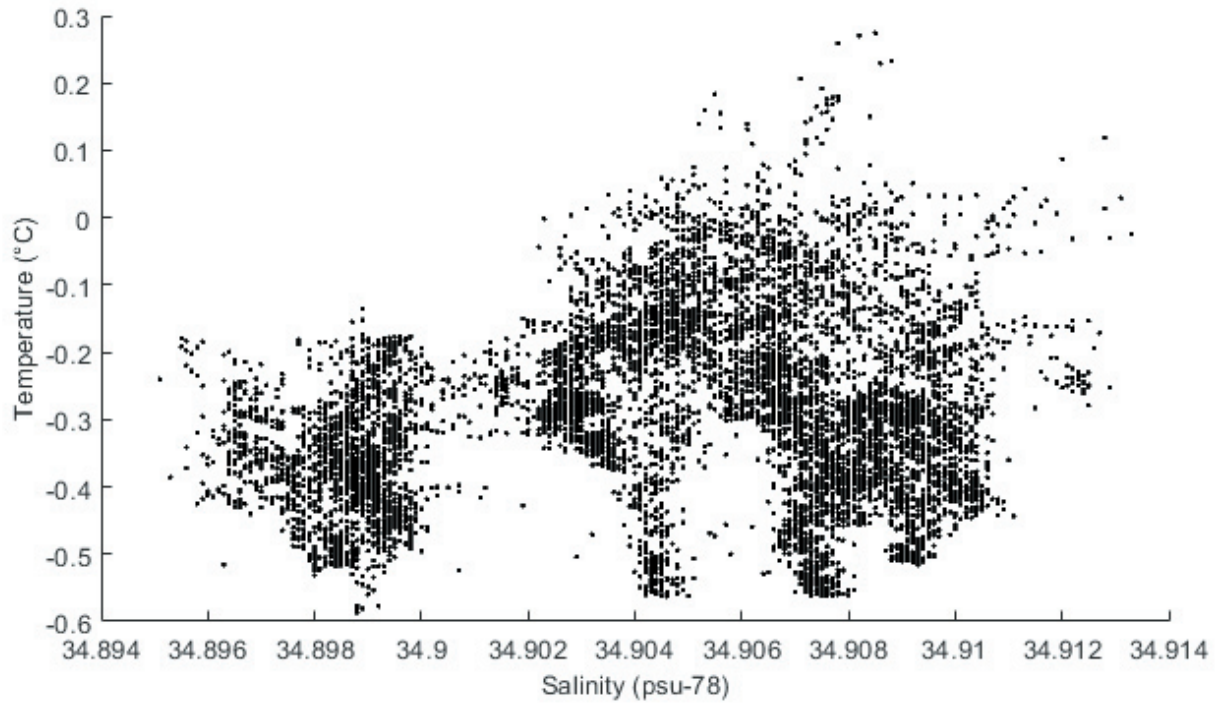
Harmonic constants for constituent K1 for deployment NWFB1906.

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	768	17	224	10	44	20	0	151	44	A
02	743	19	222	10	44	22	0	152	43	A
03	718	21	221	12	49	24	1	150	43	A
04	693	21	222	13	49	25	1	149	44	A
05	668	22	225	14	45	26	0	148	45	A
06	643	24	232	16	44	29	2	147	50	C
07	618	28	236	20	55	34	0	144	56	C
08	593	30	241	27	62	41	0	138	61	A
09	568	32	242	33	59	46	2	134	60	C
10	543	29	246	35	61	45	2	130	63	C
11	518	18	251	31	68	36	1	121	69	C
12	493	14	265	25	74	28	2	119	76	C
13	468	11	271	20	77	23	2	118	80	C
14	443	10	286	18	78	20	4	119	85	C
15	418	12	294	16	78	19	6	124	89	C
16	393	15	291	14	74	19	6	138	94	C
17	368	20	286	11	69	23	6	154	99	C
18	343	25	282	12	81	28	4	155	98	C

NWFB1906 MicroCat 14007



NWFB1906 MicroCat 14007



NWFC1906

Latitude: 61°23.500'N

Longitude: 008°19.025'W

Echo sounding depth: 848 m

Bottom depth corr.: 842 m

Time of deployment: 9/6 - 2019 1600 UTC

Time of recovery: 22/5 - 2020 1512 UTC

ADCP:

Instrument no.: RDI ADCP 1285

Instrument frequency: 75 kHz

Height above bottom: 6 m

Depth: 836 m

Time of first data: 9/6 - 2019 1640 UTC

Time of last data: 22/5 - 2020 1500 UTC

Sample interval: 20 min

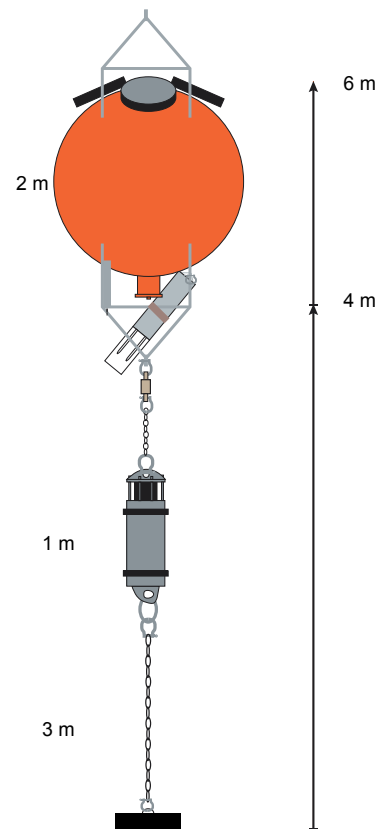
No. of ensembles: 25052

Pings per ens.: 1

Binlength: 25 m

Depth of first bin: 800 m

No. of bins: 23



SBE39plus

Instrument no.: 7752

Height above bottom: 4 m

Instrument depth: 838 m

Time of first data: 9/6 - 2019 1610 UTC

Time of last data: 22/5 - 2020 1512 UTC

Sample interval: 1 min

No. of ensembles: 501063

Data:

All data ok.

The SBE39plus is calibrated against an SBE911+ prior to deployment.

NWFC1906 ADCP 1285

Error statistics for deployment: NWFC1906 updated 2020/11/20

 Temperature edited
 Surface distance not edited
 Heading, pitch and roll not edited
 Intensity not edited

Velocity (spd, dir, wel) is error flagged using these data filters:

Minimum Intensity threshold: 32.0

Minimum Correlation threshold: 64.0

Maximum Speed factor (Average speed for each bin times factor): 4.0

Maximum Absolute Vertical Velocity threshold: 150.0

Maximum Absolute Error Velocity threshold (erv_tr+0.1*spd): 200.0

Std dev for de-spiking (u, v deviate from 3 point median by more than number of std dev, bin 1): 4.00

Std dev for de-spiking (u, v deviate from 3 point median by more than number of std dev, bin 23): 2.82

Std dev for de-spiking (u, v deviate from 3 point median by more than number of std dev, bin 32): 2.00

Std dev for vertical de-spiking (u and v deviate from 3 point median by more than number of std dev): 4.0

Std dev for de-spiking (w deviates from 3 point median by more than number of std dev): 4.0

Total number of ensembles: 25052

Interval between ensembles: 20 min

Original number of bins: 32

Number of acceptable velocity bins: 23

Flagged values have been replaced by error codes: -999.99 for temperature and depth, -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	423	2	302	39	9	1	0	2	0	0	0	0
2	0	1053	4	840	74	20	0	1	0	0	0	0	0
3	0	852	3	666	60	19	1	1	0	0	0	0	0
4	0	1104	4	782	98	24	8	3	1	0	0	0	0
5	0	1578	6	984	169	45	13	10	3	0	0	0	0
6	0	1847	7	1096	200	73	14	10	4	0	0	0	0
7	0	1693	7	1068	190	50	12	3	5	0	0	0	0
8	0	1529	6	937	177	43	11	5	6	0	0	0	0
9	0	1260	5	744	151	45	12	3	2	0	0	0	0
10	0	1099	4	649	110	41	16	5	1	1	0	0	0
11	0	954	4	584	80	36	10	3	1	1	1	0	0
12	0	732	3	515	62	16	3	4	0	1	0	0	0
13	0	699	3	518	57	13	3	2	1	0	0	0	0
14	0	711	3	535	53	14	3	2	1	0	0	0	0
15	0	740	3	552	56	16	2	4	0	0	0	0	0
16	0	799	3	574	65	11	10	3	1	0	0	0	0
17	0	855	3	628	81	13	3	0	2	0	0	0	0
18	0	1041	4	684	93	23	5	6	7	0	0	0	0
19	0	2010	8	766	144	45	21	12	37	20	5	0	0
20	0	4025	16	864	194	77	34	25	68	48	28	10	0
21	0	6600	26	999	239	97	51	34	87	75	41	31	6
22	0	9825	39	1059	350	149	85	67	151	125	48	42	17
23	0	13681	55	971	279	163	90	72	194	165	102	51	33

NWFC1906 ADCP 1285

Deployment: NWFC1906 updated 2020/11/20
 Instrument no.: 1285
 Instrument freq.: 75
 Latitude: 61 23.500 N
 Longitude: 08 19.025 W
 Bottom depth: 842
 Instrument depth: 836
 Center depth of first bin: 800
 Bin length: 25
 Number of bins: 23
 Number of first ensemble: 378
 Time of first ensemble: 2019 06 09 16 40
 Number of last ensemble: 25429
 Time of last ensemble: 2020 05 22 15 00
 Time between ensembles (min.): 20
 All directions have been corrected by adding: -5.0

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	800	42	1021	1014	305	983
2	775	67	1108	1103	308	958
3	750	92	1116	1111	311	966
4	725	117	1094	1089	312	956
5	700	142	1051	1045	312	937
6	675	167	959	948	312	926
7	650	192	792	760	314	932
8	625	217	590	520	317	939
9	600	242	414	287	322	950
10	575	267	294	111	338	956
11	550	292	238	45	55	962
12	525	317	218	69	102	971
13	500	342	211	88	114	972
14	475	367	208	100	119	972
15	450	392	208	105	122	970
16	425	417	208	107	124	968
17	400	442	209	109	125	966
18	375	467	210	111	127	958
19	350	492	212	110	127	920
20	325	517	212	112	128	839
21	300	542	211	110	128	737
22	275	567	210	106	127	608
23	250	592	209	105	128	454

NWFC1906 ADCP 1285

Frequency of high speeds.

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

=====

Bin Depth	Speed (cm/s)																	
no. m	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
1 800	983	983	983	981	978	971	942	876	749	555	336	151	47	11	2	0	0	0
2 775	958	958	957	956	953	950	942	915	853	729	539	297	105	21	3	0	0	0
3 750	966	965	965	964	961	958	950	926	871	758	572	317	107	19	1	0	0	0
4 725	955	954	953	951	949	944	932	899	834	712	524	273	86	14	1	0	0	0
5 700	935	933	929	924	914	900	876	826	750	629	453	235	70	12	0	0	0	0
6 675	919	903	885	867	844	812	770	708	622	497	347	181	58	10	1	0	0	0
7 650	907	859	812	768	722	666	594	508	412	310	206	108	38	8	1	0	0	0
8 625	889	788	684	595	515	439	362	283	210	148	96	48	17	4	0	0	0	0
9 600	865	690	516	385	291	222	168	121	86	58	34	16	6	1	0	0	0	0
10 575	836	581	354	215	133	86	56	37	23	13	5	1	0	0	0	0	0	0
11 550	815	515	259	123	55	26	13	7	3	0	0	0	0	0	0	0	0	0
12 525	811	485	221	81	28	10	3	1	0	0	0	0	0	0	0	0	0	0
13 500	808	471	201	65	19	6	1	0	0	0	0	0	0	0	0	0	0	0
14 475	803	464	189	61	17	5	1	0	0	0	0	0	0	0	0	0	0	0
15 450	805	462	188	61	16	4	0	0	0	0	0	0	0	0	0	0	0	0
16 425	805	455	191	61	16	3	1	0	0	0	0	0	0	0	0	0	0	0
17 400	801	460	193	64	17	3	1	0	0	0	0	0	0	0	0	0	0	0
18 375	796	461	199	68	19	3	0	0	0	0	0	0	0	0	0	0	0	0
19 350	765	443	192	69	20	4	0	0	0	0	0	0	0	0	0	0	0	0
20 325	693	401	179	66	20	4	1	0	0	0	0	0	0	0	0	0	0	0
21 300	605	348	151	59	17	5	1	0	0	0	0	0	0	0	0	0	0	0
22 275	498	283	122	48	16	4	1	0	0	0	0	0	0	0	0	0	0	0
23 250	370	210	92	36	13	4	1	0	0	0	0	0	0	0	0	0	0	0

NWFC1906 ADCP 1285

Harmonic constants for constituent M2 for deployment NWFC1906.

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	800	13	105	13	295	19	2	135	290	A
02	775	12	90	14	285	19	2	130	279	A
03	750	14	86	17	282	22	3	129	276	A
04	725	15	81	21	287	25	5	124	279	A
05	700	18	86	29	300	33	9	120	291	A
06	675	30	104	40	313	48	12	125	303	A
07	650	54	120	50	319	73	12	138	309	A
08	625	70	131	47	324	84	9	147	315	A
09	600	64	150	19	327	67	1	163	330	C
10	575	49	185	20	151	51	10	19	181	A
11	550	50	223	51	154	59	41	46	187	A
12	525	56	240	70	159	71	54	72	173	A
13	500	61	250	79	165	79	60	80	173	A
14	475	62	258	83	172	84	62	82	178	A
15	450	63	264	87	178	87	62	85	182	A
16	425	63	269	89	182	89	63	86	185	A
17	400	65	274	90	186	90	65	86	189	A
18	375	66	279	93	190	93	66	88	191	A
19	350	67	282	96	192	96	67	90	192	A
20	325	69	285	100	194	100	69	90	194	A
21	300	68	284	101	195	101	68	88	197	A
22	275	71	284	98	197	98	71	85	200	A
23	250	70	284	95	200	96	69	80	208	A

Harmonic constants for constituent S2 for deployment NWFC1906.

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	800	5	112	4	341	6	3	141	312	A
02	775	5	112	5	327	7	2	133	310	A
03	750	6	109	6	319	8	2	139	302	A
04	725	5	112	6	322	8	2	133	308	A
05	700	5	159	7	345	8	0	125	343	A
06	675	9	198	10	12	14	1	132	14	C
07	650	19	189	14	23	23	3	145	14	A
08	625	24	190	10	40	26	5	159	14	A
09	600	22	204	4	106	22	4	178	24	A
10	575	19	243	15	188	22	11	34	224	A
11	550	25	277	28	190	28	25	76	203	A
12	525	25	286	30	196	30	25	90	197	A
13	500	24	292	31	201	31	24	91	201	A
14	475	24	297	32	206	32	24	91	206	A
15	450	24	303	32	214	32	24	89	214	A
16	425	23	311	32	219	32	23	92	217	A
17	400	22	315	34	223	34	22	93	221	A
18	375	22	319	34	225	34	22	95	222	A
19	350	21	324	33	227	33	21	98	222	A
20	325	23	324	31	231	31	23	95	227	A
21	300	21	321	30	231	30	21	90	231	A
22	275	21	318	30	235	31	21	81	241	A
23	250	21	308	27	237	29	19	64	255	A

NWFC1906 ADCP 1285

Harmonic constants for constituent N2 for deployment NWFC1906.

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	800	2	13	4	216	5	1	116	211	A
02	775	2	1	4	206	5	1	111	202	A
03	750	3	19	5	221	6	1	118	216	A
04	725	4	23	6	232	7	2	121	224	A
05	700	5	63	6	254	8	1	129	250	A
06	675	8	94	9	287	12	1	132	281	A
07	650	17	100	14	296	22	3	141	286	A
08	625	22	90	13	283	25	3	149	274	A
09	600	19	109	6	283	20	1	163	288	C
10	575	14	150	6	130	15	2	21	148	A
11	550	14	181	11	125	16	8	33	163	A
12	525	13	198	14	135	16	10	50	162	A
13	500	13	213	16	144	17	11	61	163	A
14	475	12	224	17	154	18	11	68	168	A
15	450	12	233	17	161	18	11	71	172	A
16	425	11	240	18	165	18	10	77	172	A
17	400	10	247	18	166	18	10	82	170	A
18	375	10	250	18	168	18	10	84	171	A
19	350	10	252	18	168	19	10	85	171	A
20	325	12	256	18	170	18	12	85	173	A
21	300	12	254	18	169	18	12	84	173	A
22	275	11	255	17	178	17	10	78	185	A
23	250	14	265	16	183	16	13	69	200	A

Harmonic constants for constituent O1 for deployment NWFC1906.

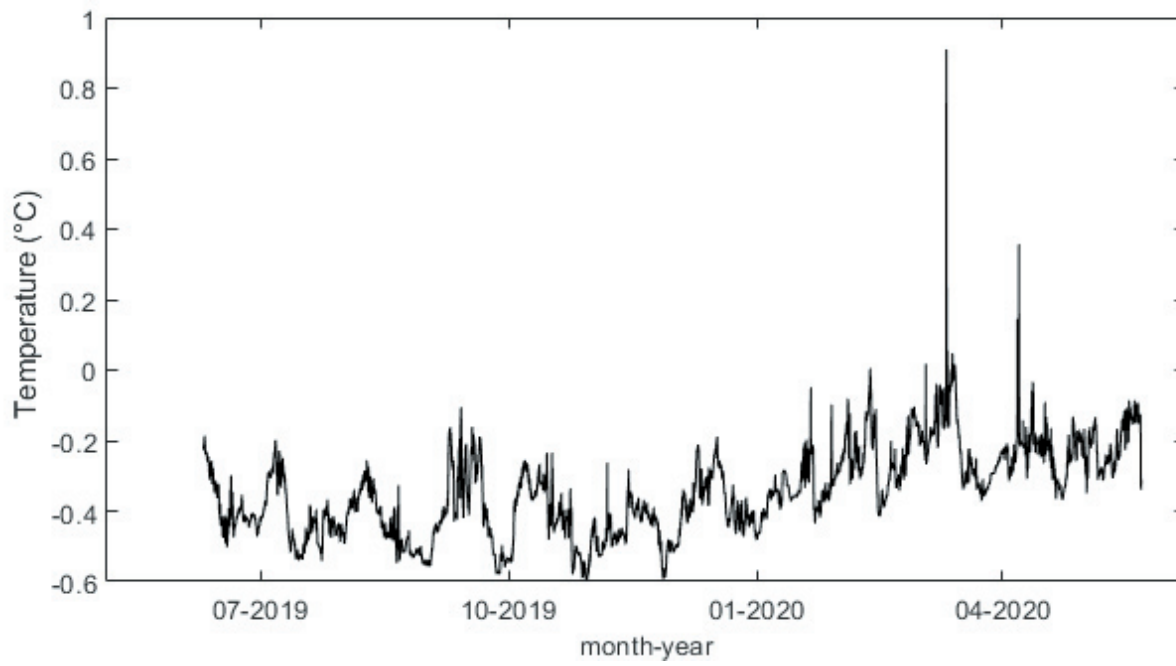
Bin	Depth m	E-ampl mm/sec	E-gpl deg	N-ampl mm/sec	N-gpl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
01	800	13	332	13	146	18	1	137	149	C
02	775	13	332	13	154	19	0	135	153	A
03	750	15	336	14	153	21	0	136	155	C
04	725	16	342	16	159	22	1	135	160	C
05	700	21	345	21	170	29	1	136	168	A
06	675	32	350	29	175	43	2	137	172	A
07	650	40	356	36	177	53	0	138	176	A
08	625	42	1	37	182	56	0	139	182	A
09	600	37	8	35	190	51	1	137	189	A
10	575	29	19	30	196	42	1	134	198	C
11	550	21	25	23	194	31	3	132	199	C
12	525	16	21	19	191	25	2	129	195	C
13	500	15	15	19	184	24	2	129	188	C
14	475	14	17	18	186	23	2	128	190	C
15	450	16	20	18	186	24	3	130	192	C
16	425	16	20	17	187	23	3	133	193	C
17	400	16	24	17	186	24	4	133	194	C
18	375	16	22	19	188	24	3	130	194	C
19	350	16	22	20	191	25	3	129	195	C
20	325	17	20	20	201	26	0	130	200	A
21	300	17	22	21	202	27	0	128	202	A
22	275	17	20	20	196	26	1	131	198	C
23	250	17	31	21	197	27	3	129	203	C

NWFC1906 ADCP 1285

Harmonic constants for constituent K1 for deployment NWFC1906.

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	800	14	240	13	56	19	1	137	58	C
02	775	15	234	15	57	21	1	135	56	A
03	750	15	232	17	58	23	1	131	56	A
04	725	14	238	18	62	23	1	128	60	A
05	700	16	251	19	69	24	0	130	70	C
06	675	24	260	25	73	35	2	134	77	C
07	650	34	254	32	75	47	0	137	75	A
08	625	37	249	37	72	52	1	135	70	A
09	600	29	246	33	75	44	3	131	71	A
10	575	19	239	25	72	31	3	127	67	A
11	550	15	249	22	72	26	1	124	71	A
12	525	12	259	20	76	23	0	121	77	C
13	500	12	269	19	83	23	1	121	85	C
14	475	12	272	19	88	23	1	121	89	C
15	450	11	272	19	86	22	1	120	88	C
16	425	10	276	20	85	22	2	117	87	C
17	400	10	283	21	78	23	4	113	82	C
18	375	9	280	23	74	24	4	110	77	C
19	350	9	269	21	70	22	3	112	72	C
20	325	9	264	17	68	20	2	118	72	C
21	300	10	266	13	80	16	1	127	82	C
22	275	13	276	13	80	18	3	133	88	C
23	250	13	286	11	81	17	4	141	96	C

NWFC1906 SBE39plus 7752



NWNB1906

Latitude: 62°54.912'N
Longitude: 006°05.307'W
Echo sound depth: 955 m
Bottom depth corr.: 950 m
Time of deployment: 8/6 - 2019 1053 UTC
Time of recovery: 25/5 - 2020 1736 UTC

ADCP:

Instrument no.: RDI ADCP 19518
Instrument frequency: 75 kHz
Height above bottom: 250 m
Depth: 700 m
Time of first data: 8/6 - 2019 1120 UTC
Time of last data: 25/5 - 2020 1700 UTC
Sample interval: 20 min
No. of ensembles: 25362
Pings per ens.: 10
Binlength: 10 m
Depth of first bin: 681 m
No. of bins: 62

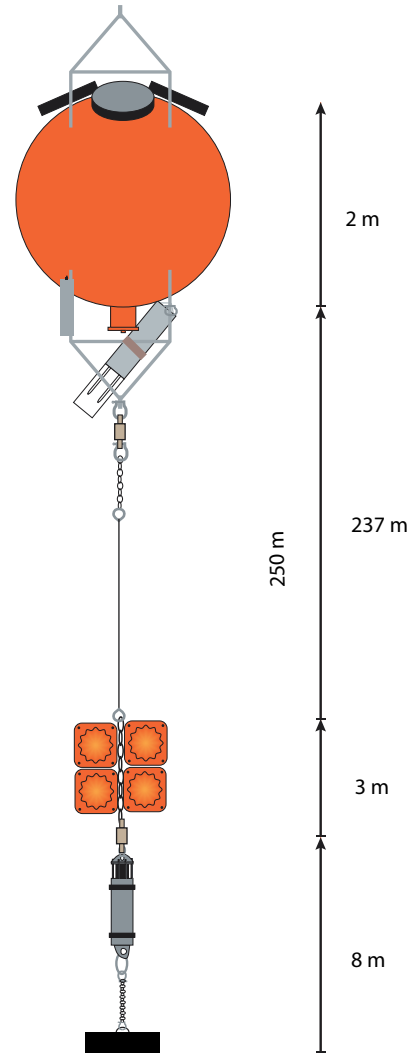
SBE56

Instrument no.: 06504
Height above bottom: 248 m
Instrument depth: 702 m
Time of first data: 8/6 - 2019 1114 UTC
Time of last data: 25/5 - 2020 1736 UTC
Sample interval: 1 min
No. of ensembles: 507263

Data:

All data ok.

The SBE56 is calibrated against an SBE911+ prior to deployment.



NWNB1906 ADCP 19518

Error statistics for deployment: NWNB1906 updated 2020/11/24

 Temperature edited
 Depth edited
 Surface distance not edited
 Heading, pitch and roll not edited
 Intensity not edited

Velocity (spd, dir, vel) is error flagged using these data filters:
 Minimum Correlation threshold: 64.0
 Maximum Speed factor (Average speed for each bin times factor): 5.0
 Std dev for de-spiking (u, v deviate from 3 point median by more than number of std dev, bin 1): 5.00
 Std dev for de-spiking (u, v deviate from 3 point median by more than number of std dev, bin 62): 2.59
 Std dev for de-spiking (u, v deviate from 3 point median by more than number of std dev, bin 70): 2.00
 Std dev for vertical de-spiking (u and v deviate from 3 point median by more than number of std dev): 4.0

Total number of ensembles: 25362
 Interval between ensembles: 20 min
 Original number of bins: 70
 Number of acceptable velocity bins: 62

Flagged values have been replaced by error codes: -999.99 for temperature and depth, -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 depth ens. flagged: 0
 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	8	0	8	0	0	0	0	0	0	0	0	0	0	0
2	0	19	0	17	1	0	0	0	0	0	0	0	0	0	0
3	0	15	0	15	0	0	0	0	0	0	0	0	0	0	0
4	0	15	0	15	0	0	0	0	0	0	0	0	0	0	0
5	0	13	0	13	0	0	0	0	0	0	0	0	0	0	0
6	0	12	0	12	0	0	0	0	0	0	0	0	0	0	0
7	0	17	0	17	0	0	0	0	0	0	0	0	0	0	0
8	0	21	0	19	1	0	0	0	0	0	0	0	0	0	0
9	0	20	0	18	1	0	0	0	0	0	0	0	0	0	0
10	0	20	0	20	0	0	0	0	0	0	0	0	0	0	0
11	0	13	0	13	0	0	0	0	0	0	0	0	0	0	0
12	0	17	0	17	0	0	0	0	0	0	0	0	0	0	0
13	0	11	0	11	0	0	0	0	0	0	0	0	0	0	0
14	0	18	0	18	0	0	0	0	0	0	0	0	0	0	0
15	0	21	0	21	0	0	0	0	0	0	0	0	0	0	0
16	0	29	0	27	1	0	0	0	0	0	0	0	0	0	0
17	0	27	0	25	1	0	0	0	0	0	0	0	0	0	0
18	0	40	0	40	0	0	0	0	0	0	0	0	0	0	0
19	0	34	0	32	1	0	0	0	0	0	0	0	0	0	0
20	0	34	0	30	2	0	0	0	0	0	0	0	0	0	0
21	0	33	0	33	0	0	0	0	0	0	0	0	0	0	0
22	0	40	0	36	2	0	0	0	0	0	0	0	0	0	0
23	0	34	0	32	1	0	0	0	0	0	0	0	0	0	0
24	0	48	0	38	5	0	0	0	0	0	0	0	0	0	0
25	0	55	0	53	1	0	0	0	0	0	0	0	0	0	0
26	0	71	0	63	4	0	0	0	0	0	0	0	0	0	0
27	0	53	0	46	2	1	0	0	0	0	0	0	0	0	0
28	0	61	0	57	2	0	0	0	0	0	0	0	0	0	0
29	0	62	0	56	3	0	0	0	0	0	0	0	0	0	0
30	0	81	0	69	6	0	0	0	0	0	0	0	0	0	0
31	0	83	0	71	6	0	0	0	0	0	0	0	0	0	0
32	0	99	0	75	12	0	0	0	0	0	0	0	0	0	0
33	0	97	0	87	5	0	0	0	0	0	0	0	0	0	0
34	0	107	0	94	5	1	0	0	0	0	0	0	0	0	0
35	0	119	0	100	8	1	0	0	0	0	0	0	0	0	0
36	0	113	0	97	5	2	0	0	0	0	0	0	0	0	0
37	0	129	1	104	11	1	0	0	0	0	0	0	0	0	0
38	0	141	1	129	6	0	0	0	0	0	0	0	0	0	0
39	0	154	1	123	11	3	0	0	0	0	0	0	0	0	0
40	0	171	1	131	14	4	0	0	0	0	0	0	0	0	0
41	0	198	1	158	14	0	0	1	1	0	0	0	0	0	0
42	0	250	1	164	15	5	2	0	1	0	1	0	0	0	0
43	0	344	1	156	18	4	4	0	5	4	1	0	0	0	0
44	0	473	2	126	21	7	3	4	7	5	4	1	0	0	0
45	0	633	2	118	21	13	4	4	5	7	5	4	0	0	0
46	0	886	3	130	27	15	6	3	8	12	5	7	0	0	0
47	0	1144	5	134	25	13	5	7	18	16	6	9	0	0	0
48	0	1483	6	113	30	20	12	10	25	19	6	13	1	0	0
49	0	1855	7	100	36	23	15	11	34	24	11	14	1	0	0
50	0	2325	9	118	44	30	14	17	32	33	14	18	1	0	0
51	0	2817	11	141	50	33	19	9	35	43	13	27	1	0	0
52	0	3409	13	147	56	41	18	8	47	44	28	27	2	0	0
53	0	4075	16	185	63	28	26	22	51	52	34	30	4	0	0
54	0	4819	19	154	57	40	31	17	44	69	45	37	5	0	0
55	0	5459	22	179	60	41	26	13	61	72	45	46	6	0	0
56	0	6078	24	208	70	40	29	24	53	66	50	50	13	0	0
57	0	6643	26	187	83	42	32	19	65	63	51	61	14	0	0
58	0	7248	29	239	84	40	35	30	67	61	54	66	18	0	0
59	0	8042	32	264	91	60	38	25	66	63	50	76	26	0	0
60	0	8874	35	292	92	58	50	21	80	64	55	83	29	0	0
61	0	9898	39	325	84	56	37	26	72	64	56	89	41	0	0
62	0	10975	43	369	103	59	32	25	76	62	62	84	53	0	0

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Deployment: NWNB1906 updated 2020/11/24
 Instrument no.: 19518
 Instrument freq.: 75
 Latitude: 62 54.912 N
 Longitude: 06 05.307 W
 Bottom depth: 950
 Instrument depth: 700
 Center depth of first bin: 681
 Bin length: 10
 Number of bins: 62
 Number of first ensemble: 287
 Time of first ensemble: 2019 06 08 11 20
 Number of last ensemble: 25648
 Time of last ensemble: 2020 05 25 17 00
 Time between ensembles (min.): 20
 All directions have been corrected by adding: -4.0

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	681	269	130	12	86	1000
2	671	279	124	8	85	999
3	661	289	124	7	81	999
4	651	299	124	5	71	999
5	641	309	123	5	64	999
6	631	319	123	4	48	1000
7	621	329	123	3	36	999
8	611	339	123	3	9	999
9	601	349	123	4	354	999
10	591	359	123	4	344	999
11	581	369	123	4	335	999
12	571	379	123	4	323	999
13	561	389	124	4	321	1000
14	551	399	125	4	322	999
15	541	409	126	4	317	999
16	531	419	126	3	312	999
17	521	429	128	2	313	999
18	511	439	130	1	334	998
19	501	449	132	1	37	999
20	491	459	134	2	94	999
21	481	469	135	4	113	999
22	471	479	138	7	114	998
23	461	489	140	10	115	999
24	451	499	144	15	116	998
25	441	509	147	20	116	998
26	431	519	150	26	116	997
27	421	529	155	33	115	998
28	411	539	160	40	115	998
29	401	549	165	47	115	998
30	391	559	171	55	115	997
31	381	569	176	63	115	997
32	371	579	182	72	115	996
33	361	589	187	80	115	996
34	351	599	193	88	114	996
35	341	609	199	97	114	995
36	331	619	206	106	114	996
37	321	629	214	116	114	995
38	311	639	221	123	114	994
39	301	649	228	132	115	994
40	291	659	235	140	115	993
41	281	669	242	147	115	992
42	271	679	249	155	115	990
43	261	689	255	161	115	986
44	251	699	261	167	115	981
45	241	709	266	173	115	975
46	231	719	272	177	115	965
47	221	729	277	181	115	955
48	211	739	282	185	115	942
49	201	749	287	188	115	927
50	191	759	291	191	115	908
51	181	769	295	193	116	889
52	171	779	298	194	117	866
53	161	789	300	195	117	839
54	151	799	302	196	118	810
55	141	809	304	196	118	785
56	131	819	305	196	118	760
57	121	829	305	195	119	738
58	111	839	307	195	119	714
59	101	849	309	192	119	683
60	91	859	309	191	119	650
61	81	869	313	192	119	610
62	71	879	316	192	119	567

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Harmonic constants for constituent M2 for deployment NWNB1906.

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	681	65	261	43	111	75	19	148	90	A
02	671	63	261	41	112	73	18	149	90	A
03	661	63	262	41	114	73	19	149	90	A
04	651	64	263	40	115	73	19	150	91	A
05	641	64	263	39	116	73	19	151	91	A
06	631	65	264	38	119	73	19	152	92	A
07	621	66	265	38	119	74	19	153	92	A
08	611	67	266	37	122	74	20	154	94	A
09	601	68	267	37	126	75	21	155	94	A
10	591	70	267	37	129	76	23	156	94	A
11	581	71	268	37	132	77	24	157	95	A
12	571	74	269	36	136	79	25	159	95	A
13	561	77	269	37	140	81	27	161	96	A
14	551	80	270	38	143	83	29	162	97	A
15	541	82	271	38	147	85	30	163	97	A
16	531	83	271	39	152	86	33	165	97	A
17	521	86	273	39	155	88	33	166	98	A
18	511	89	274	41	159	91	36	167	99	A
19	501	93	275	42	164	95	38	169	100	A
20	491	96	276	43	168	97	41	170	100	A
21	481	100	278	44	174	101	42	173	101	A
22	471	102	280	45	181	102	44	175	102	A
23	461	104	282	46	187	105	46	177	103	A
24	451	107	284	50	192	107	50	179	104	A
25	441	110	285	52	196	110	52	0	285	A
26	431	113	287	54	200	113	53	2	286	A
27	421	115	289	55	204	115	55	3	287	A
28	411	118	291	57	209	118	57	5	288	A
29	401	120	293	60	214	120	59	7	290	A
30	391	120	296	62	219	121	60	9	292	A
31	381	120	299	64	223	122	61	10	294	A
32	371	122	301	66	227	124	63	12	295	A
33	361	121	303	68	230	124	64	12	297	A
34	351	122	304	70	232	125	65	14	297	A
35	341	123	306	73	234	126	67	15	298	A
36	331	125	308	73	236	128	68	15	300	A
37	321	126	309	75	238	129	69	16	300	A
38	311	126	310	76	240	130	70	16	301	A
39	301	126	311	78	241	130	71	18	301	A
40	291	126	311	78	242	130	70	18	302	A
41	281	126	312	79	243	131	71	18	302	A
42	271	125	313	79	244	130	71	19	303	A
43	261	125	314	79	247	130	70	20	303	A
44	251	123	315	79	248	129	70	20	304	A
45	241	122	316	80	249	128	70	21	304	A
46	231	122	316	81	251	129	70	22	304	A
47	221	122	318	82	252	129	71	23	305	A
48	211	123	319	84	254	131	71	23	305	A
49	201	125	319	84	254	132	72	23	306	A
50	191	127	320	86	254	135	74	23	307	A
51	181	129	319	87	255	137	73	24	305	A
52	171	130	319	86	256	138	71	23	306	A
53	161	130	319	87	257	139	73	24	307	A
54	151	129	320	86	257	137	72	24	307	A
55	141	127	320	85	257	136	72	24	307	A
56	131	127	320	86	257	136	72	24	306	A
57	121	124	320	85	259	134	70	25	306	A
58	111	124	321	85	258	133	71	25	307	A
59	101	125	321	84	259	133	70	24	308	A
60	91	121	321	84	260	130	69	25	307	A
61	81	119	322	82	261	128	67	26	308	A
62	71	120	322	82	262	130	66	26	308	A

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Harmonic constants for constituent S2 for deployment NWNB1906.

Bin	Depth m	E-ampl mm/sec	E-gphl deg	N-ampl mm/sec	N-gphl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
01	681	28	295	20	167	32	14	150	129	A
02	671	28	296	20	169	31	14	150	131	A
03	661	28	295	19	170	31	14	153	128	A
04	651	28	296	19	172	31	15	152	130	A
05	641	29	296	19	174	32	15	155	128	A
06	631	30	298	20	176	32	15	154	131	A
07	621	30	299	20	178	32	16	155	131	A
08	611	31	300	19	179	33	16	156	131	A
09	601	31	301	20	179	33	16	156	133	A
10	591	30	301	19	181	32	16	157	133	A
11	581	31	303	19	186	32	16	160	133	A
12	571	30	306	18	188	32	15	160	136	A
13	561	31	309	17	193	32	15	163	137	A
14	551	30	311	17	199	31	15	165	138	A
15	541	29	314	16	205	30	14	167	140	A
16	531	31	317	15	212	31	15	171	141	A
17	521	32	319	16	217	32	16	172	143	A
18	511	33	321	16	224	33	16	176	143	A
19	501	35	322	17	231	35	17	180	142	A
20	491	36	325	18	235	36	18	0	324	A
21	481	37	326	17	241	37	17	3	325	A
22	471	37	329	18	248	37	17	6	326	A
23	461	37	331	18	252	37	17	7	328	A
24	451	37	334	18	260	37	17	10	329	A
25	441	37	337	20	268	38	18	14	330	A
26	431	38	340	20	273	39	18	15	334	A
27	421	38	343	20	276	39	18	15	336	A
28	411	38	343	19	279	40	17	15	337	A
29	401	38	344	19	285	40	16	17	338	A
30	391	38	345	20	289	40	16	19	338	A
31	381	39	348	22	291	41	18	21	339	A
32	371	40	351	25	294	42	19	24	340	A
33	361	41	354	26	293	43	21	23	342	A
34	351	41	352	25	292	43	21	23	340	A
35	341	40	351	25	292	43	21	23	340	A
36	331	41	351	24	288	43	20	20	341	A
37	321	40	351	24	289	42	20	21	341	A
38	311	39	351	24	290	41	20	22	340	A
39	301	37	351	24	290	40	20	23	339	A
40	291	37	349	24	292	40	19	25	337	A
41	281	36	349	22	294	39	17	24	338	A
42	271	35	348	22	295	38	16	26	336	A
43	261	33	349	23	298	37	16	29	336	A
44	251	34	352	23	299	37	17	29	338	A
45	241	33	355	24	301	37	17	31	339	A
46	231	36	354	25	302	40	18	30	340	A
47	221	37	355	25	303	41	18	29	341	A
48	211	38	356	26	302	42	19	28	342	A
49	201	38	357	26	303	42	19	28	344	A
50	191	39	356	26	301	42	19	27	343	A
51	181	41	357	26	294	43	22	22	345	A
52	171	41	1	26	292	43	24	19	350	A
53	161	42	358	26	290	44	24	18	348	A
54	151	44	359	25	288	45	23	15	351	A
55	141	44	0	28	292	46	25	19	350	A
56	131	47	1	31	295	49	27	23	348	A
57	121	49	358	30	293	52	26	20	348	A
58	111	51	357	30	295	54	25	20	347	A
59	101	56	357	31	293	58	27	17	349	A
60	91	60	356	29	289	61	26	13	350	A
61	81	64	351	28	280	64	26	10	347	A
62	71	69	353	26	269	69	26	2	352	A

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Harmonic constants for constituent N2 for deployment NWNB1906.

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	681	11	234	9	70	14	2	141	61	A
02	671	12	237	10	70	15	2	140	63	A
03	661	12	233	11	74	16	3	138	62	A
04	651	13	233	12	73	17	3	138	62	A
05	641	13	231	12	75	17	4	137	62	A
06	631	13	227	13	75	18	5	135	61	A
07	621	13	224	13	76	18	5	135	60	A
08	611	13	224	14	76	18	5	133	61	A
09	601	14	221	14	80	19	7	133	61	A
10	591	14	223	14	81	18	6	133	63	A
11	581	14	224	14	82	19	6	136	63	A
12	571	15	227	14	88	19	7	138	65	A
13	561	15	227	14	89	19	7	138	66	A
14	551	15	230	13	95	18	7	141	68	A
15	541	15	231	12	96	18	7	145	66	A
16	531	16	233	12	103	18	8	147	69	A
17	521	17	236	12	109	19	9	151	70	A
18	511	17	240	11	116	18	9	155	72	A
19	501	17	242	11	116	19	8	155	74	A
20	491	19	242	11	119	20	9	157	73	A
21	481	20	243	12	123	21	10	159	73	A
22	471	21	244	13	134	22	12	163	74	A
23	461	22	245	14	142	23	13	168	72	A
24	451	24	248	15	148	24	15	170	74	A
25	441	24	250	15	153	24	15	172	75	A
26	431	24	252	15	153	24	15	171	78	A
27	421	24	251	14	155	24	14	174	74	A
28	411	22	251	12	158	22	12	178	72	A
29	401	21	255	11	164	21	11	180	75	A
30	391	21	256	11	173	21	11	4	254	A
31	381	22	260	12	178	22	12	6	257	A
32	371	24	262	14	177	24	14	4	260	A
33	361	25	263	15	177	25	15	4	261	A
34	351	26	266	16	178	26	16	2	265	A
35	341	25	268	16	184	25	16	7	263	A
36	331	25	270	16	190	26	15	10	264	A
37	321	26	272	17	195	26	16	14	263	A
38	311	26	273	18	197	27	17	16	263	A
39	301	27	276	18	205	28	17	21	263	A
40	291	26	280	19	209	27	17	23	265	A
41	281	25	281	20	212	27	17	28	262	A
42	271	25	283	21	212	27	18	29	262	A
43	261	27	287	21	213	28	19	24	270	A
44	251	27	287	21	212	28	19	21	272	A
45	241	26	291	22	215	28	20	26	272	A
46	231	27	291	22	216	28	20	25	273	A
47	221	27	294	23	219	28	21	30	272	A
48	211	27	298	24	220	28	22	30	273	A
49	201	27	300	24	224	29	22	30	277	A
50	191	30	300	24	225	31	22	24	282	A
51	181	30	299	25	227	32	22	29	277	A
52	171	31	300	25	226	32	23	28	280	A
53	161	32	299	26	229	35	23	30	278	A
54	151	33	301	26	228	35	23	24	284	A
55	141	34	303	27	233	36	24	29	283	A
56	131	32	300	25	232	35	22	28	282	A
57	121	33	300	27	230	35	23	30	278	A
58	111	31	299	26	228	34	23	30	277	A
59	101	31	300	29	229	35	24	38	271	A
60	91	31	302	30	225	34	27	42	266	A
61	81	34	305	31	232	37	27	38	275	A
62	71	31	304	33	234	37	26	50	264	A

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Harmonic constants for constituent O1 for deployment NWNB1906.

Bin	Depth m	E-ampl mm/sec	E-gphl deg	N-ampl mm/sec	N-gphl deg	Major mm/sec	Minor mm/sec	Incl deg	Grphl deg	R
01	681	5	49	5	273	6	3	131	254	A
02	671	5	48	4	271	6	2	139	247	A
03	661	5	54	5	276	6	2	132	257	A
04	651	4	54	5	276	6	2	127	260	A
05	641	5	54	5	281	7	3	130	261	A
06	631	5	48	6	277	7	3	128	258	A
07	621	5	46	6	275	7	3	126	257	A
08	611	5	42	6	278	7	3	125	258	A
09	601	5	41	6	276	7	4	126	256	A
10	591	4	39	6	274	6	3	120	258	A
11	581	4	31	6	271	6	3	119	255	A
12	571	5	31	6	264	7	3	122	248	A
13	561	5	29	7	264	7	3	119	249	A
14	551	5	31	6	266	7	3	123	248	A
15	541	4	32	6	256	7	3	122	242	A
16	531	5	34	6	256	7	3	125	242	A
17	521	5	34	6	257	7	3	132	238	A
18	511	6	24	7	268	8	5	128	243	A
19	501	6	31	7	269	8	4	124	249	A
20	491	7	22	6	265	8	5	143	226	A
21	481	7	23	6	266	8	5	148	223	A
22	471	8	31	6	270	9	5	146	231	A
23	461	8	33	6	276	9	5	150	231	A
24	451	8	34	6	274	9	5	147	234	A
25	441	8	27	7	278	9	6	149	230	A
26	431	8	36	7	267	10	4	146	233	A
27	421	9	41	7	272	10	5	147	237	A
28	411	8	44	7	277	9	4	143	244	A
29	401	8	38	6	273	9	4	148	235	A
30	391	9	32	6	266	10	4	156	222	A
31	381	11	33	6	262	12	4	156	223	A
32	371	12	36	7	269	13	5	157	226	A
33	361	12	31	7	272	13	6	160	221	A
34	351	13	31	6	278	13	6	166	218	A
35	341	13	33	7	281	13	7	164	221	A
36	331	12	31	6	283	13	6	169	216	A
37	321	12	34	6	282	12	6	167	220	A
38	311	12	28	6	282	12	6	168	214	A
39	301	13	25	7	276	13	6	167	211	A
40	291	12	18	6	276	12	6	173	201	A
41	281	12	18	7	274	12	7	166	206	A
42	271	13	15	7	275	13	7	172	199	A
43	261	12	14	8	273	12	8	167	203	A
44	251	12	21	8	272	13	7	164	210	A
45	241	11	19	8	272	12	8	159	213	A
46	231	11	18	8	275	11	8	160	212	A
47	221	11	19	9	282	11	9	166	211	A
48	211	12	23	9	288	12	9	171	210	A
49	201	12	31	9	288	12	9	160	225	A
50	191	13	34	9	300	13	9	174	218	A
51	181	11	23	10	308	12	9	30	360	A
52	171	11	19	8	311	12	7	20	8	A
53	161	11	18	8	307	12	7	21	5	A
54	151	9	353	8	313	11	4	42	335	A
55	141	7	354	8	313	10	4	51	329	A
56	131	7	354	10	319	12	3	54	332	A
57	121	5	351	11	320	12	3	67	325	A
58	111	6	6	10	313	10	4	65	324	A
59	101	7	348	9	315	10	3	54	326	A
60	91	8	2	8	325	11	4	47	342	A
61	81	8	22	10	295	10	8	83	300	A
62	71	12	11	10	280	12	10	175	195	A

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Harmonic constants for constituent K1 for deployment NWNB1906.

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	681	5	261	6	125	7	3	124	110	A
02	671	5	264	6	125	7	3	125	111	A
03	661	5	263	7	125	8	3	123	111	A
04	651	6	256	6	125	8	4	129	105	A
05	641	6	261	7	124	9	3	124	110	A
06	631	6	262	7	126	9	3	125	111	A
07	621	5	265	8	126	9	3	123	113	A
08	611	5	262	7	119	8	2	120	109	A
09	601	4	260	7	112	8	2	121	103	A
10	591	5	255	7	112	8	3	125	99	A
11	581	5	260	6	115	8	2	127	103	A
12	571	5	265	6	123	7	2	128	109	A
13	561	4	280	6	120	7	1	127	113	A
14	551	4	278	5	120	7	1	127	112	A
15	541	5	284	6	126	7	1	130	116	A
16	531	6	282	6	134	8	2	135	118	A
17	521	6	280	6	145	8	3	135	122	A
18	511	7	271	6	148	8	4	138	117	A
19	501	6	272	7	149	8	4	131	124	A
20	491	6	270	7	140	8	4	128	120	A
21	481	6	266	8	137	9	4	126	119	A
22	471	7	266	8	136	9	4	129	115	A
23	461	7	271	8	139	10	4	132	117	A
24	451	9	266	7	137	10	5	141	107	A
25	441	9	261	8	134	11	5	144	100	A
26	431	10	264	7	137	11	5	150	98	A
27	421	10	266	7	142	11	5	152	100	A
28	411	11	264	8	144	12	6	154	98	A
29	401	12	265	8	140	13	6	152	99	A
30	391	12	262	9	134	14	6	147	99	A
31	381	12	256	10	129	14	7	144	95	A
32	371	13	256	11	125	15	7	144	94	A
33	361	14	258	11	122	16	6	144	93	A
34	351	14	258	10	130	16	7	149	93	A
35	341	13	259	10	134	15	7	146	97	A
36	331	12	258	9	134	13	7	147	96	A
37	321	11	259	9	135	12	6	147	97	A
38	311	11	257	8	131	13	6	150	93	A
39	301	12	260	9	129	14	6	148	95	A
40	291	13	260	9	122	15	5	147	93	A
41	281	12	261	9	125	14	5	149	94	A
42	271	12	263	9	130	14	6	146	98	A
43	261	11	266	8	141	12	6	152	100	A
44	251	11	266	8	151	12	7	156	100	A
45	241	10	269	8	157	10	7	151	108	A
46	231	9	260	7	171	9	7	2	259	A
47	221	8	251	7	171	8	7	34	222	A
48	211	7	250	6	181	8	5	31	229	A
49	201	3	229	6	187	6	2	66	195	A
50	191	3	209	4	169	5	2	56	182	A
51	181	4	148	5	169	7	1	49	160	C
52	171	8	111	5	181	8	5	20	122	C
53	161	11	93	5	191	11	5	175	271	C
54	151	19	103	4	214	19	4	175	282	C
55	141	21	102	6	224	22	5	171	280	C
56	131	23	102	8	230	24	6	167	278	C
57	121	25	102	9	227	25	7	167	278	C
58	111	27	99	10	226	28	8	166	275	C
59	101	26	101	10	233	27	8	164	276	C
60	91	31	107	11	237	32	8	166	284	C
61	81	37	105	14	236	38	10	164	280	C
62	71	41	106	16	231	42	13	166	282	C

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