HAVSTOVAN
FAROE MARINE RESEARCH INSTITUTE

Fiskaaling
Aquaculture Research Station of the Faroes

Fróðskaparsetur Føroya

# Current measurements in Sørvágsfjørður
# Deployment SORB1004

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**TECHNICAL REPORT**

# Contents

# Introduction

This report documents the SORB1004 deployment, which is one of two simultaneous deployments in Sørvágsfjørður. The aim of the deployments is to investigate current conditions in the fjord in relation to aquaculture.

Each of the deployments consists of a bottom frame with a current profiler. The instruments used are two Workhorse Sentinel (Teledyne RD Instruments) 600 kHz profilers, both equiped with temperature and pressure sensors. The profilers are set up with an interval of 10 minutes and the bin size is selected, depending on the bottom depth at the location, such that there are at least 10 useful bins. The exact details are listed on a page describing the deployment.

# Quality control and calibration

The profiler data have been quality controlled by a standard procedure based upon consideration of profiler 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 Faroe Marine Research Institute (FAMRI), based upon MATLAB. The editing has been done with a philosophy of minimal interference. Thus, only observations, which were considered clearly erroneous, were flagged. The series have been edited up to and including the surface layer, which is the uppermost layer considered not to be influenced by the sea surface according to the profiler manual. 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 meta data. The instrument depths are found using the data from the instrument pressure sensor.

The temperature and depth data are edited for spikes, but these data are not plotted in this report.

The Workhorse Sentinel data include intensity (average of the four beams) for each bin. These data have also been corrected, but only clear single spikes are error flagged.

# Report format

The report contains several pages with plots and tables of the profiler data. The first page has a figure of the deployment location and details of the deployment, while the second page has information on the the mooring details. After that, there are some pages describing the profiler data, beginning with a page with error statistics. The next one or two pages are Hovmüller diagrams of the east/west and north/south velocities. Then there is a page with timeseries of the speed at three selected layers (bins). These layers usually are the bottom and surface layers (i.e. the first and the last bin) and then a centre layer at approximately 15 meters depth, which is close to the bottom of the aquaculture nets. If the bottom depth at the mooring location is less than 25 meters, the centre layer is chosen to be halfway between the bottom and surface layers. The same three layers are highlighted several times in the report. After the timeseries page there are two pages, one with polar plots of direction and one with progressive vector diagrams, again for the three selected layers.

Then there are a number of pages with several tables. The first two tables are frequency distributions of speeds for each bin, which list the frequency (in parts per thousand) of high and low speeds (scalar), respectively. Then two tables list the duration (in hourly intervals) of high and low speed periods, respectively, for each of the three selected layers. Note, that in the calculation of these tables, error flagged velocities are ignored.

A tidal analysis is also performed on the data and the next three tables present the whole analysis (all constituents) for the three selected layers. Then five tables contain data for the constituents M2, S2, N2, O1, and K1, respectively, for all layers. Each table, containing tidal data, lists for each bin the amplitude and Greenwich phase lag for the east and north velocity components and lists also major and minor semiaxes of the tidal ellipse for the constituent as well as its inclination (Fig. 1) and sense of rotation (cyclonic = C, anticyclonic = A). The tidal constants were computed by an adapted version of the Foreman FORTRAN package.

Finally, there are three figures (one for each of the selected layers) showing the original currents and non-tidal currents in the east-west and north-south directions, respectively. Here, the tidal prediction is done in a Matlab package, which also is an adapted

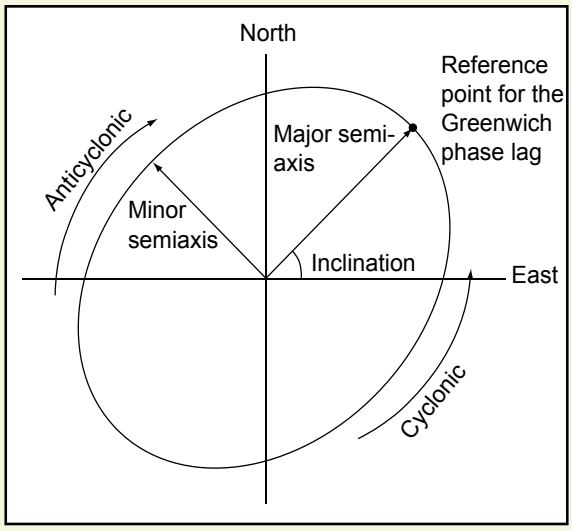



*Figure 1. Parameters of the tidal ellipse for a given constituent. The reference point for the Greenwich phase lag is always chosen to be above the east-west axis.*

version of the Foreman program (Pawlowicz, R., B. Beardsley, and S. Lentz, Classical Tidal Harmonic Analysis Including Error Estimates in MATLAB using T_TIDE, Computers and Geosciences, 28 (2002), 929-937). Only sicnificant constituents are included in the prediction of the tidal currents. The fraction of the predicted variance for each of the layers is indicated in the figure text.

All times in this report and in the data are in UTC.

# Meta data

## Deployment description:

**Deployment ID:** SORB1004

**Latitude:** 62°04.849´N

**Longitude:** 07°23.844´W

**Bottom depth:** 45 m

**Time of deployment:** 2010 04 13 09:00

**Time of recovery:** 2010 06 04 13:35

## Current profiler:

**Instrument type:** Workhorse Sentinel

**Serial no.:** 2664

**Instrument frequency:** 600 kHz

**Height above bottom:** 1 m

**Depth:** 44 m

**Time of first data:** 2010 04 13 09:20

**Time of last data:** 2010 06 04 13:20

**Sample interval:** 10 min

**No. of ensembles:** 7513

**Pings per ens.:** 50

**Binlength:** 2 m

**Depth of first bin:** 41 m

**No. of bins:** 25

**Magnetic deviation offset:** -7°

## Data:

**OK.**

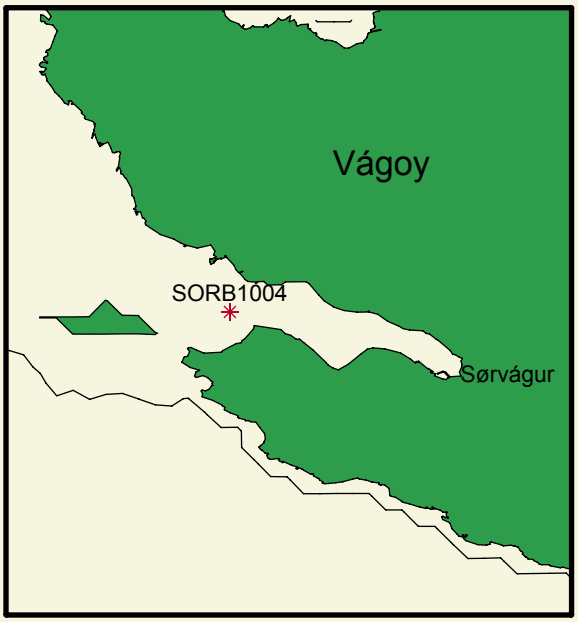



*Figure 2. Map showing the deployment position.*

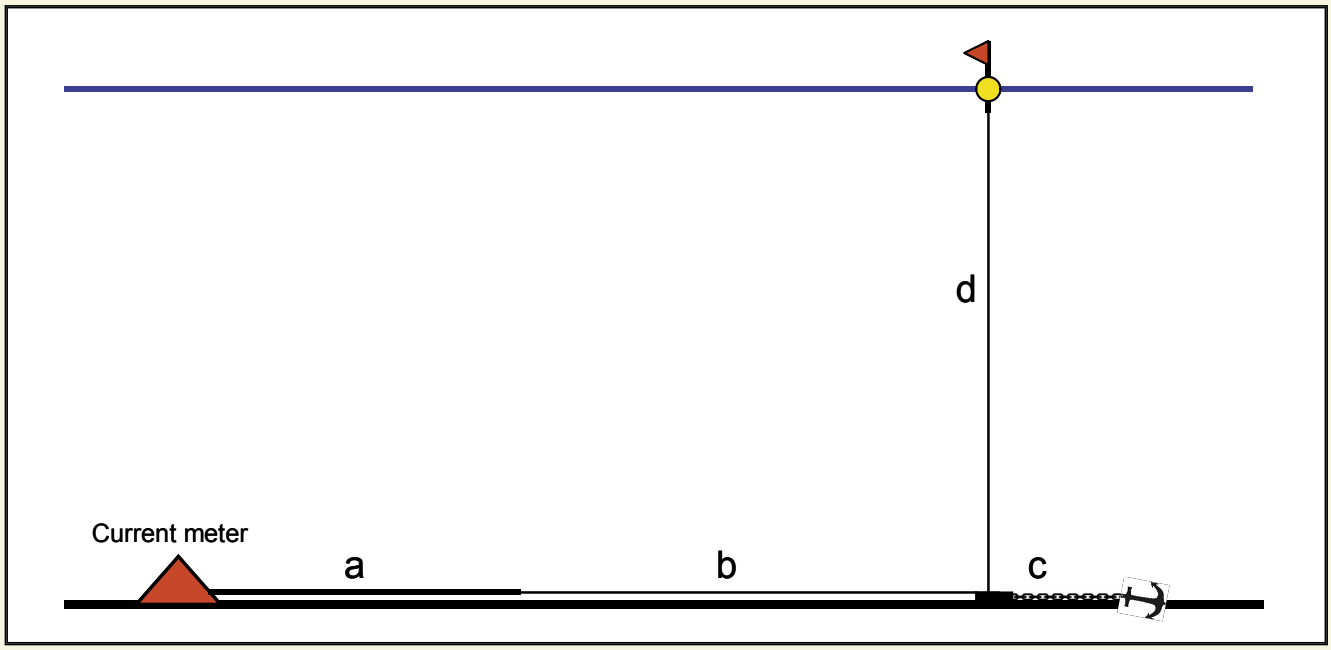



*Figure 3. Illustration of the mooring rig. Details of the mooring are given in the table below.*

```
Describtion of the mooring parts as given in Figure 3
=====================================================================
 a| 20 mm polysteel with continuous 3 kg/m weight, length 10 m
 b| 20 mm polysteel with continuous 3 kg weight per 5 m, length 70 m
 c| ~100 kg anchor assembly
 d| 16 mm polysteel, length 80 m
```

# Error statistics

Updated 2010/07/09

Depth edited by KMHL in Jul 2010
Heading, pitch and roll not edited
Temperature edited by KMHL in Jul 2010
Velocity edited up to and including bin 19 by KMHL in Jul 2010
Intensity edited up to and including bin 19 by KMHL in Jul 2010

Total number of ensembles: 7513
Interval between ensembles: 10 min
Original number of bins: 25
Number of acceptable velocity bins: 19
Number of acceptable intensity bins: 19

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: 5

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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 15 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 17 | 0 | 15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | 26 | 0 | 21 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 25 | 0 | 21 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 43 | 1 | 36 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 0 | 48 | 1 | 35 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 0 | 79 | 1 | 56 | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | 140 | 2 | 100 | 7 | 3 | 2 | 0 | 1 | 0 | 0 | 0 | 0 |
| 19 | 0 | 289 | 4 | 157 | 21 | 9 | 3 | 2 | 0 | 3 | 0 | 0 | 0 |

## Hovmüller diagrams of east/west velocities

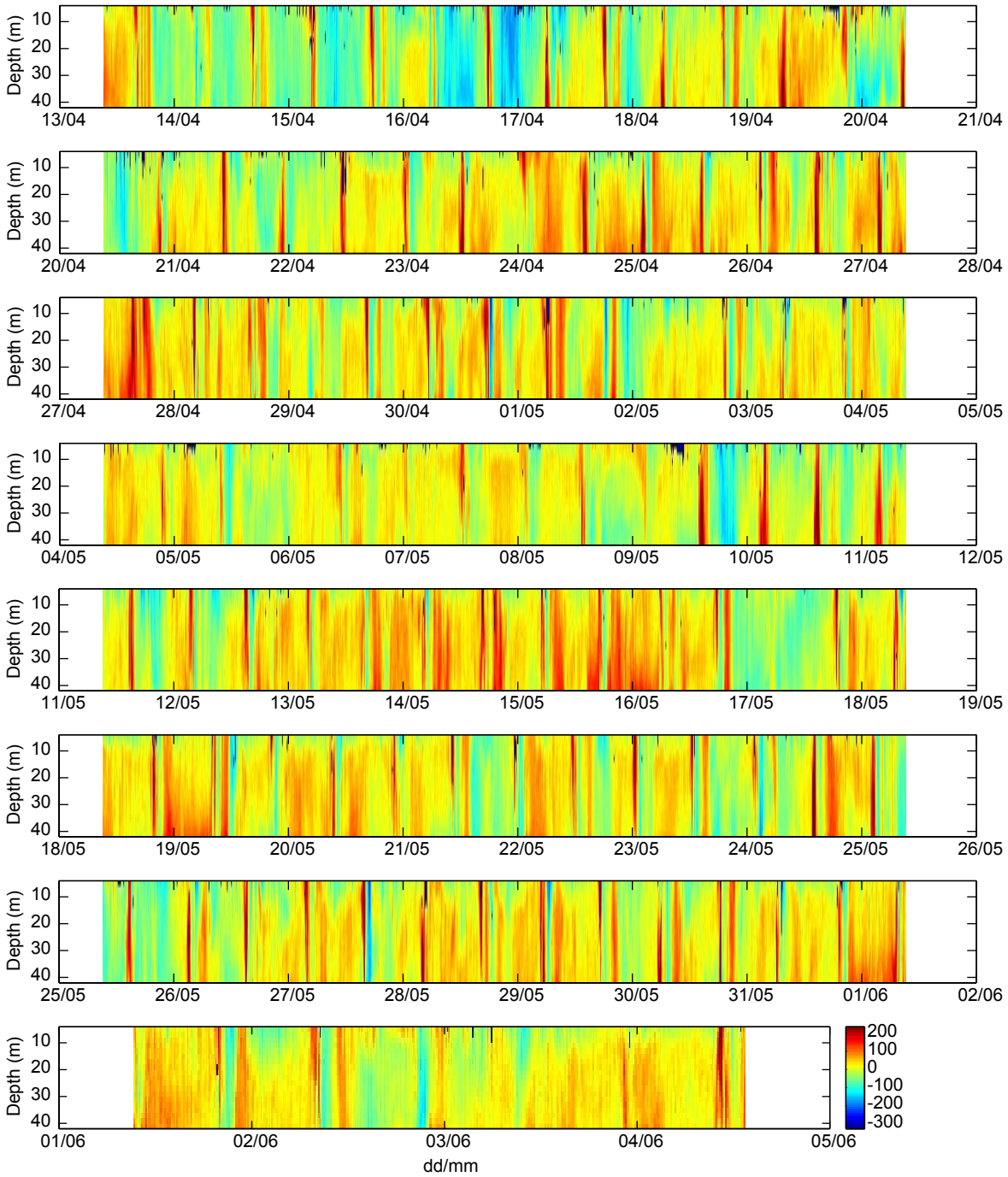



*Figure 4. Hovmüller diagram of east/west velocities for the whole deployment period. Note that the last panel may not have the same horizontal scale as the other panels. The velocity scale is in mm/s and is the same as in Figure 5.*

## Hovmüller diagrams of north/south velocities

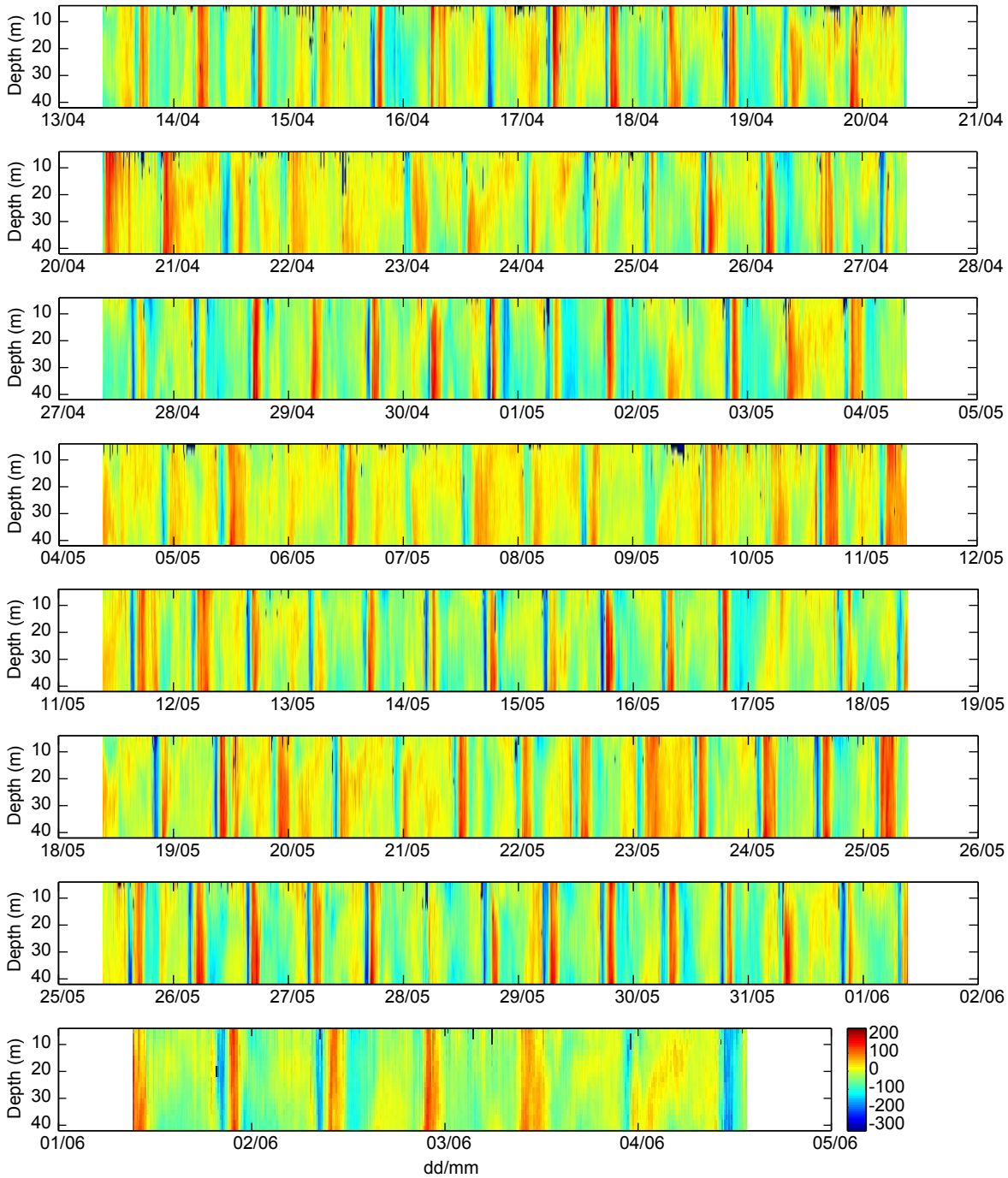



*Figure 5. Hovmüller diagram of north/south velocities for the whole deployment period. Note that the last panel may not have the same horizontal scale as the other panels. The velocity scale is in mm/s and is the same as in Figure 4.*

## Timeseries of speed at selected layers

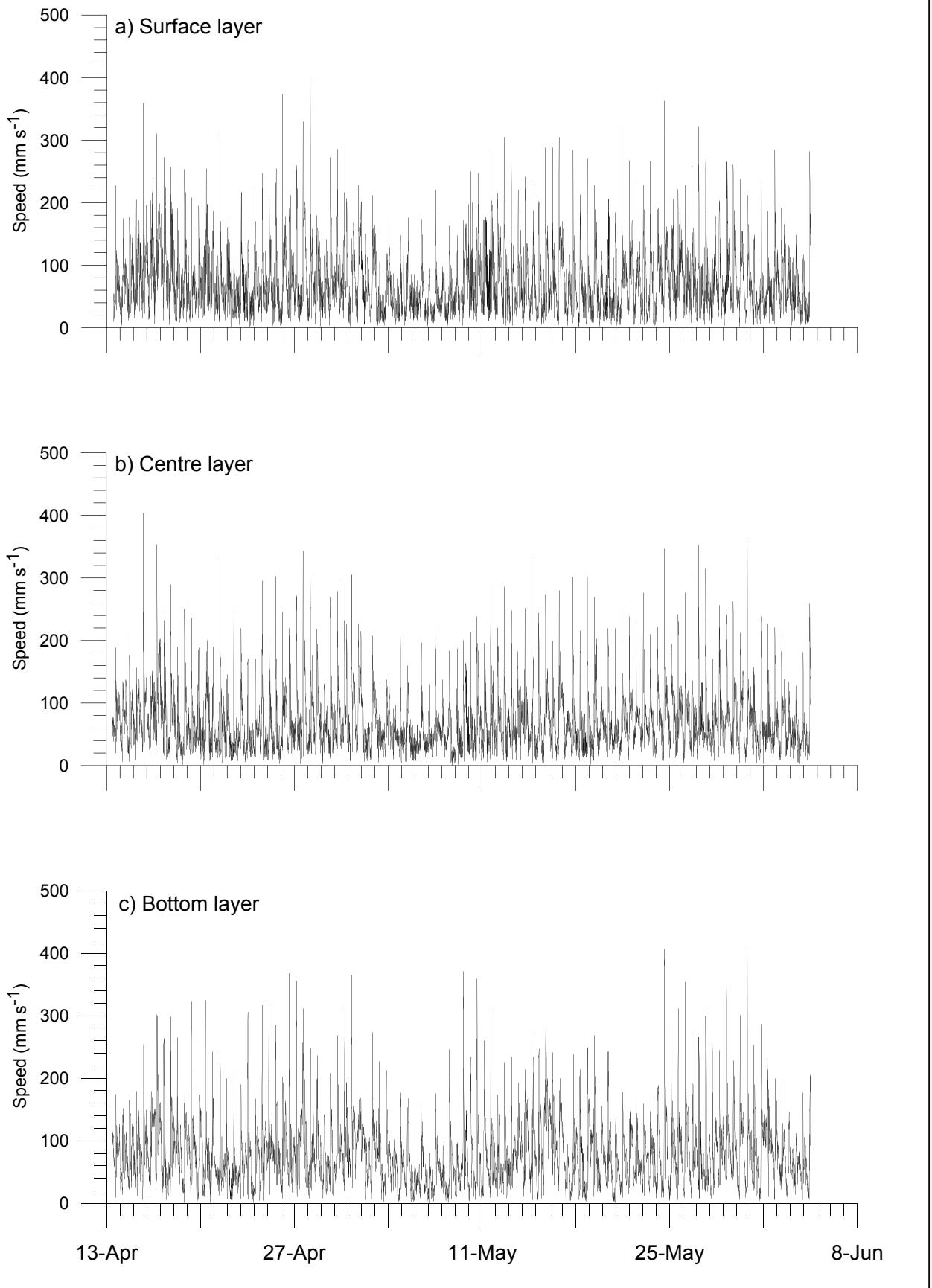



*Figure 6. Timeseries of speed at three selected bins: a) Bin 19 at 5 m depth, b) Bin 14 at 15 m depth, and c) Bin 1 at 41 m depth.*

## Rose diagrams at selected layers

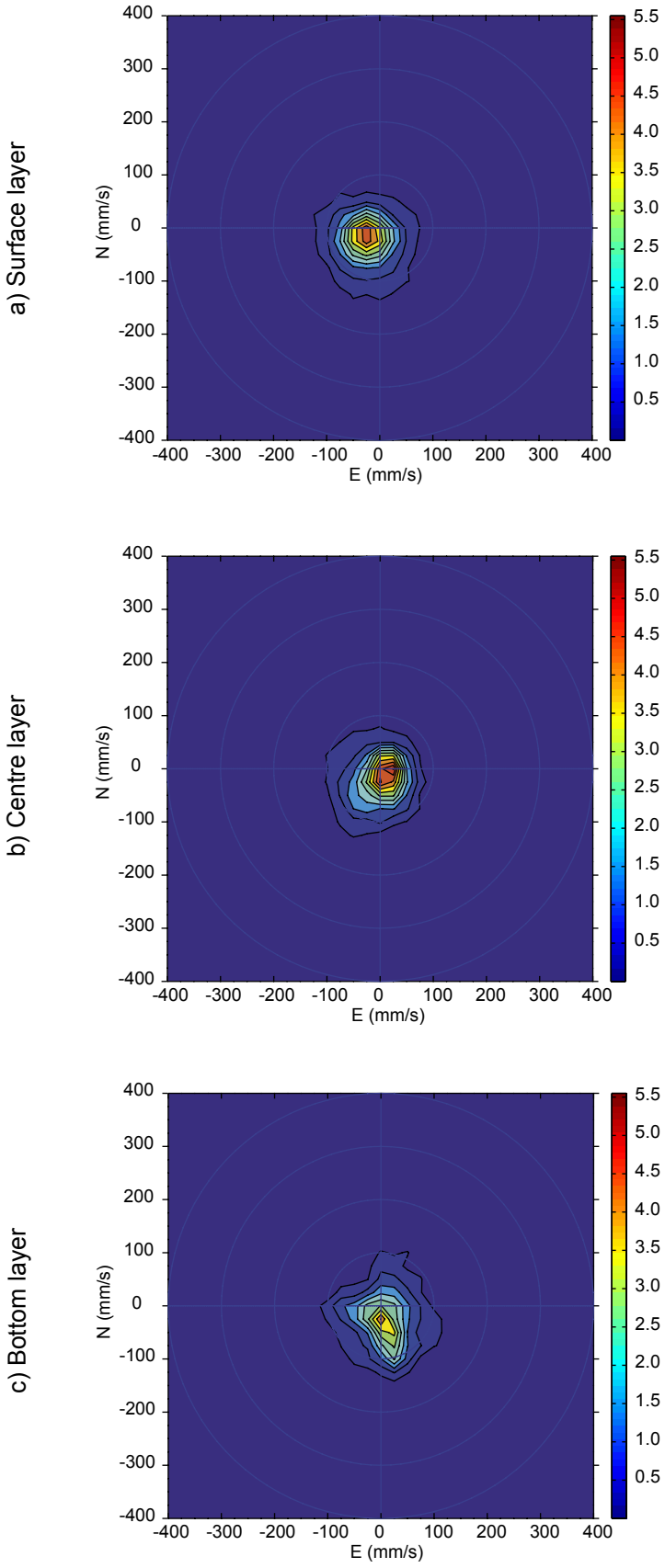



*Figure 7. Distribution (in % of good observations) of velocity vectors: a) Bin 19 at 5 m depth, b) Bin 14 at 15 m depth, and c) Bin 1 at 41 m depth.*

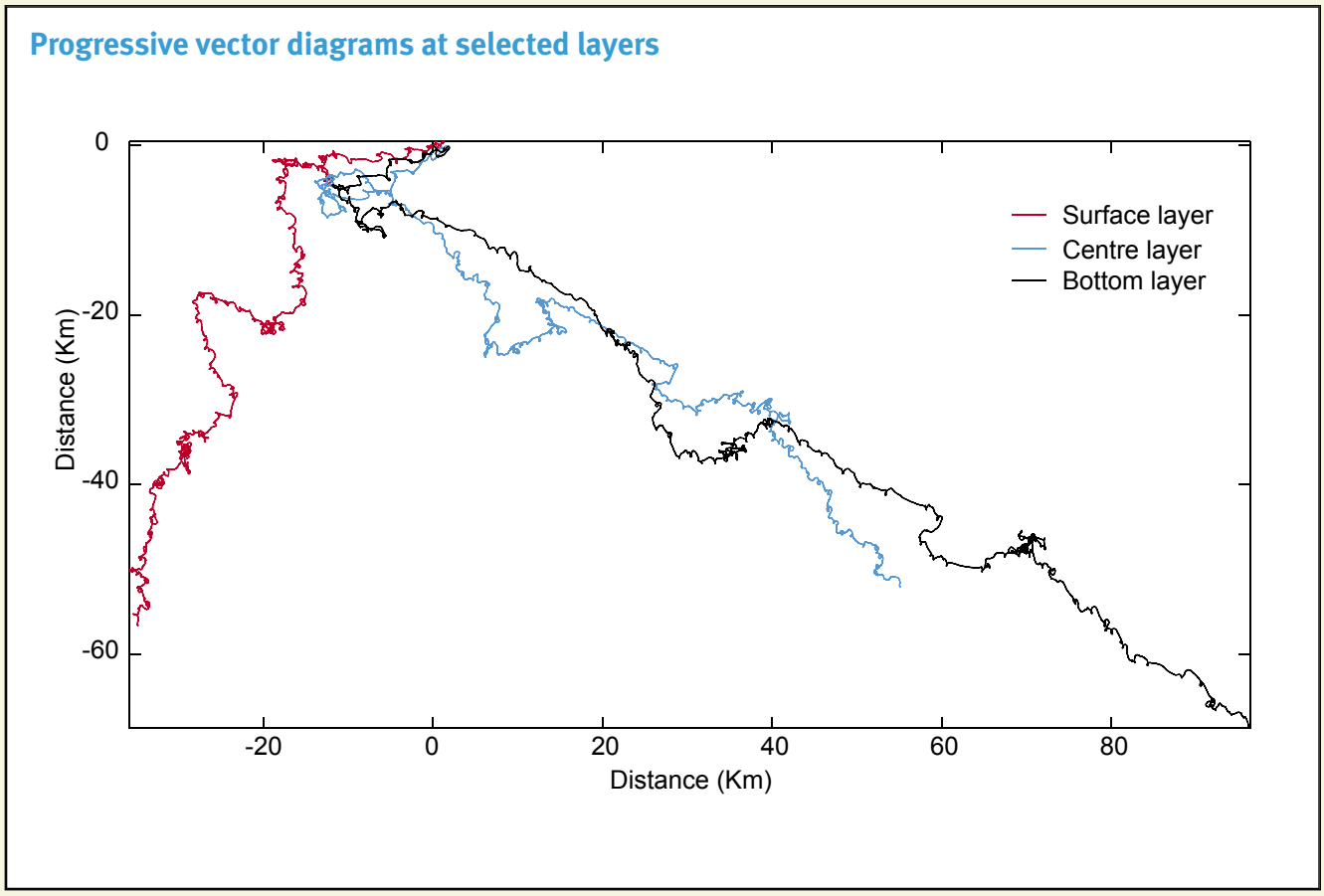



*Figure 8. Progressive vector diagrams at three selected layers: Surface (Bin 19 at 5 m depth), centre (Bin 14 at 15 m depth), and bottom layer (Bin 1 at 41 m depth).*

## Frequency of high speeds

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

| Bin no. | Depth m | Speed (mm/s) 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 600 | 700 | 800 | 900 | 1000 | 1500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 41 | 689 | 286 | 79 | 28 | 12 | 5 | 1 | 0.27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 39 | 682 | 282 | 79 | 28 | 13 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 37 | 680 | 271 | 76 | 29 | 13 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 35 | 671 | 259 | 72 | 27 | 13 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 33 | 668 | 248 | 66 | 27 | 13 | 4 | 0.67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 31 | 661 | 234 | 65 | 27 | 12 | 4 | 0.53 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 29 | 655 | 222 | 61 | 27 | 11 | 4 | 0.67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 27 | 645 | 218 | 60 | 25 | 12 | 4 | 0.67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 25 | 638 | 207 | 60 | 24 | 11 | 3 | 0.80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 23 | 628 | 206 | 61 | 26 | 10 | 3 | 0.67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 21 | 613 | 204 | 60 | 25 | 9 | 3 | 0.40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 19 | 608 | 203 | 62 | 27 | 9 | 3 | 0.67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 17 | 598 | 202 | 65 | 26 | 9 | 2 | 0.27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 15 | 595 | 202 | 65 | 26 | 8 | 3 | 0.53 | 0.13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 13 | 585 | 203 | 66 | 23 | 8 | 2 | 0.40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 11 | 577 | 209 | 69 | 24 | 7 | 2 | 0.40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 9 | 567 | 214 | 69 | 23 | 7 | 2 | 0.67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 7 | 573 | 225 | 74 | 24 | 7 | 2 | 0.41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 5 | 598 | 242 | 78 | 25 | 8 | 2 | 0.55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Frequency of low speeds

Frequency (in parts per thousand) of speeds less than specified values.

| Bin no. | Depth m | Speed (mm/s) 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 600 | 700 | 800 | 900 | 1000 | 1500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 41 | 311 | 714 | 921 | 972 | 988 | 995 | 999 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 2 | 39 | 318 | 718 | 921 | 972 | 987 | 995 | 999 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 3 | 37 | 320 | 729 | 924 | 971 | 987 | 995 | 999 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 4 | 35 | 329 | 741 | 928 | 973 | 987 | 996 | 999 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 5 | 33 | 332 | 752 | 934 | 973 | 987 | 996 | 999 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 6 | 31 | 339 | 766 | 935 | 973 | 988 | 996 | 999 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 7 | 29 | 345 | 778 | 939 | 973 | 989 | 996 | 999 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 8 | 27 | 355 | 782 | 940 | 975 | 988 | 996 | 999 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 9 | 25 | 362 | 793 | 940 | 976 | 989 | 997 | 999 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 10 | 23 | 372 | 794 | 939 | 974 | 990 | 997 | 999 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 11 | 21 | 387 | 796 | 940 | 975 | 991 | 997 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 12 | 19 | 392 | 797 | 938 | 973 | 991 | 997 | 999 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 13 | 17 | 402 | 798 | 935 | 974 | 991 | 998 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 14 | 15 | 405 | 798 | 935 | 974 | 992 | 997 | 999 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 15 | 13 | 415 | 797 | 934 | 977 | 992 | 998 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 16 | 11 | 423 | 791 | 931 | 976 | 993 | 998 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 17 | 9 | 433 | 786 | 931 | 977 | 993 | 998 | 999 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 18 | 7 | 427 | 775 | 926 | 976 | 993 | 998 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 19 | 5 | 402 | 758 | 922 | 975 | 992 | 998 | 999 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |

## Duration of high speed periods

Occurrence (in parts per thousand) of contiguous periods longer than or equal to specified duration with speeds equal to or exceeding specified threshold values (Speed). Flagged ensembles are ignored.

Surface layer, bin no: 19

| Speed mm/s | Duration (minutes) 60 | 120 | 180 | 240 | 300 | 360 | 420 | 480 | 540 | 600 | 660 | 720 | 780 | 840 | 900 | 960 | 1020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | 401 | 289 | 196 | 128 | 89 | 67 | 56 | 37 | 17 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 100 | 115 | 28 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150 | 15 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 200 | 0.83 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 600 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Centre layer, bin no: 14

| Speed mm/s | Duration (minutes) 60 | 120 | 180 | 240 | 300 | 360 | 420 | 480 | 540 | 600 | 660 | 720 | 780 | 840 | 900 | 960 | 1020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | 464 | 365 | 284 | 230 | 181 | 130 | 89 | 60 | 46 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 100 | 116 | 31 | 8 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150 | 19 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 200 | 0.80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 600 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Bottom layer, bin no: 1

| Speed mm/s | Duration (minutes) 60 | 120 | 180 | 240 | 300 | 360 | 420 | 480 | 540 | 600 | 660 | 720 | 780 | 840 | 900 | 960 | 1020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | 627 | 528 | 464 | 392 | 342 | 295 | 255 | 183 | 142 | 119 | 86 | 59 | 49 | 38 | 38 | 14 | 14 |
| 100 | 199 | 91 | 50 | 26 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150 | 24 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 200 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 600 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Duration of low speed periods

Occurrence (in parts per thousand) of contiguous periods longer than or equal to specified duration with speeds less than specified threshold values (Speed). Flagged ensembles are ignored.

Surface layer, bin no: 19

| Speed\| | Duration (minutes) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm/s\| | 60 | 120 | 180 | 240 | 300 | 360 | 420 | 480 | 540 | 600 | 660 | 720 | 780 | 840 | 900 | 960 | 1020 |
| 50\| | 217 | 131 | 79 | 51 | 30 | 12 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 100\| | 668 | 594 | 538 | 505 | 480 | 395 | 316 | 236 | 201 | 154 | 103 | 93 | 83 | 72 | 72 | 72 | 72 |
| 150\| | 889 | 864 | 833 | 813 | 802 | 797 | 760 | 692 | 615 | 607 | 468 | 316 | 254 | 244 | 244 | 231 | 217 |
| 200\| | 969 | 963 | 957 | 946 | 942 | 942 | 937 | 931 | 909 | 894 | 832 | 680 | 536 | 524 | 524 | 524 | 524 |
| 300\| | 998 | 998 | 998 | 998 | 998 | 998 | 998 | 998 | 998 | 998 | 998 | 998 | 988 | 988 | 988 | 988 | 988 |
| 400\| | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 500\| | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 600\| | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 800\| | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 1000\| | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |

Centre layer, bin no: 14

| Speed\| | Duration (minutes) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm/s\| | 60 | 120 | 180 | 240 | 300 | 360 | 420 | 480 | 540 | 600 | 660 | 720 | 780 | 840 | 900 | 960 | 1020 |
| 50\| | 260 | 158 | 111 | 54 | 32 | 6 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 100\| | 729 | 683 | 655 | 644 | 615 | 538 | 481 | 427 | 367 | 306 | 164 | 110 | 60 | 60 | 60 | 60 | 47 |
| 150\| | 922 | 901 | 891 | 888 | 882 | 882 | 872 | 854 | 787 | 756 | 630 | 366 | 277 | 256 | 233 | 233 | 233 |
| 200\| | 970 | 970 | 967 | 961 | 957 | 957 | 957 | 952 | 945 | 930 | 912 | 727 | 550 | 528 | 528 | 528 | 528 |
| 300\| | 997 | 997 | 997 | 997 | 997 | 997 | 997 | 997 | 997 | 997 | 997 | 988 | 968 | 968 | 968 | 968 | 968 |
| 400\| | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 500\| | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 600\| | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 800\| | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 1000\| | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |

Bottom layer, bin no: 1

| Speed\| | Duration (minutes) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm/s\| | 60 | 120 | 180 | 240 | 300 | 360 | 420 | 480 | 540 | 600 | 660 | 720 | 780 | 840 | 900 | 960 | 1020 |
| 50\| | 224 | 156 | 109 | 63 | 42 | 12 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 100\| | 642 | 584 | 544 | 519 | 459 | 369 | 323 | 252 | 200 | 162 | 130 | 93 | 83 | 83 | 83 | 83 | 83 |
| 150\| | 900 | 867 | 852 | 838 | 831 | 817 | 801 | 772 | 745 | 646 | 529 | 366 | 248 | 216 | 216 | 216 | 216 |
| 200\| | 966 | 960 | 958 | 958 | 958 | 958 | 958 | 958 | 951 | 929 | 887 | 740 | 554 | 533 | 533 | 533 | 533 |
| 300\| | 995 | 995 | 995 | 995 | 995 | 995 | 995 | 995 | 995 | 995 | 995 | 967 | 948 | 937 | 937 | 937 | 937 |
| 400\| | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 500\| | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 600\| | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 800\| | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 1000\| | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |

## Tidal analysis for selected depths

SURFACE LAYER, Bin 19

Error flagged ensembles interpolated for velocity: 248, ensembles not int.: 41
Tidal analysis on data passed through 3 filters: A6, A6, and A7

| 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 | 8 | 89 | 9 | 240 | 11 | 3 | 130 | 252 | C | |
| MSF | .00282193 | 2 | 206 | 14 | 223 | 14 | 0 | 84 | 223 | C | |
| Q1 | .03721850 | 2 | 134 | 4 | 29 | 4 | 2 | 97 | 26 | A | |
| O1 | .03873065 | 5 | 79 | 3 | 303 | 5 | 2 | 148 | 272 | A | |
| NO1 | .04026859 | 3 | 194 | 1 | 355 | 4 | 0 | 164 | 12 | C | |
| P1 | .04155259 | 0 | 270 | 1 | 312 | 1 | 0 | 77 | 310 | C | I |
| K1 | .04178075 | 1 | 273 | 4 | 326 | 4 | 1 | 81 | 324 | C | |
| N2 | .07899925 | 6 | 156 | 7 | 31 | 8 | 4 | 126 | 10 | A | |
| M2 | .08051140 | 24 | 126 | 6 | 98 | 25 | 3 | 12 | 125 | A | |
| L2 | .08202355 | 5 | 196 | 5 | 27 | 7 | 1 | 136 | 21 | A | |
| S2 | .08333334 | 11 | 133 | 7 | 157 | 13 | 2 | 29 | 139 | C | |
| K2 | .08356149 | 3 | 133 | 2 | 157 | 4 | 1 | 29 | 139 | C | I |
| MK3 | .12229210 | 4 | 174 | 3 | 204 | 5 | 1 | 37 | 185 | C | |
| M4 | .16102280 | 3 | 221 | 15 | 66 | 15 | 1 | 101 | 65 | A | |
| MS4 | .16384470 | 4 | 194 | 13 | 54 | 14 | 2 | 102 | 52 | A | |

CENTRE LAYER, Bin 14

Error flagged ensembles interpolated for velocity: 25, ensembles not int.: 0
Tidal analysis on data passed through 3 filters: A6, A6, and A7

| 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 | 67 | 9 | 250 | 14 | 0 | 139 | 248 | A | |
| MSF | .00282193 | 2 | 256 | 18 | 218 | 18 | 1 | 86 | 218 | A | |
| Q1 | .03721850 | 4 | 183 | 1 | 68 | 4 | 1 | 169 | 7 | A | |
| O1 | .03873065 | 4 | 71 | 6 | 305 | 7 | 3 | 121 | 289 | A | |
| NO1 | .04026859 | 3 | 170 | 1 | 131 | 3 | 0 | 11 | 169 | A | |
| P1 | .04155259 | 2 | 306 | 2 | 313 | 2 | 0 | 46 | 310 | C | I |
| K1 | .04178075 | 4 | 320 | 5 | 327 | 7 | 0 | 51 | 324 | C | |
| N2 | .07899925 | 3 | 171 | 5 | 44 | 6 | 2 | 112 | 35 | A | |
| M2 | .08051140 | 19 | 122 | 5 | 159 | 19 | 3 | 13 | 124 | C | |
| L2 | .08202355 | 6 | 194 | 8 | 48 | 10 | 3 | 126 | 36 | A | |
| S2 | .08333334 | 9 | 124 | 8 | 179 | 11 | 5 | 43 | 150 | C | |
| K2 | .08356149 | 2 | 124 | 2 | 179 | 3 | 1 | 43 | 150 | C | I |
| MK3 | .12229210 | 4 | 145 | 2 | 224 | 4 | 2 | 11 | 152 | C | |
| M4 | .16102280 | 5 | 240 | 18 | 69 | 19 | 1 | 105 | 69 | A | |
| MS4 | .16384470 | 3 | 188 | 14 | 55 | 14 | 2 | 99 | 53 | A | |

BOTTOM LAYER, Bin  1

Error flagged ensembles interpolated for velocity:  0, ensembles not int.:  0
Tidal analysis on data passed through 3 filters: A6, A6, and A7

| 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 | 11 | 60 | 9 | 246 | 14 | 1 | 142 | 243 | A | |
| MSF | .00282193 | 4 | 53 | 19 | 225 | 20 | 0 | 101 | 226 | C | |
| Q1 | .03721850 | 4 | 193 | 4 | 99 | 4 | 4 | 158 | 32 | A | |
| O1 | .03873065 | 4 | 135 | 5 | 306 | 7 | 1 | 128 | 309 | C | |
| NO1 | .04026859 | 0 | 257 | 1 | 218 | 1 | 0 | 82 | 219 | A | |
| P1 | .04155259 | 3 | 273 | 1 | 299 | 4 | 1 | 18 | 275 | C | I |
| K1 | .04178075 | 10 | 287 | 4 | 309 | 11 | 2 | 22 | 290 | C | |
| N2 | .07899925 | 4 | 212 | 7 | 91 | 7 | 3 | 107 | 84 | A | |
| M2 | .08051140 | 12 | 154 | 18 | 182 | 21 | 5 | 58 | 174 | C | |
| L2 | .08202355 | 8 | 228 | 6 | 60 | 10 | 1 | 146 | 52 | A | |
| S2 | .08333334 | 9 | 131 | 11 | 191 | 13 | 7 | 56 | 170 | C | |
| K2 | .08356149 | 3 | 131 | 3 | 191 | 3 | 2 | 56 | 170 | C | I |
| MK3 | .12229210 | 5 | 187 | 4 | 180 | 6 | 0 | 37 | 184 | A | |
| M4 | .16102280 | 2 | 25 | 19 | 61 | 19 | 1 | 86 | 61 | C | |
| MS4 | .16384470 | 1 | 35 | 17 | 67 | 17 | 0 | 88 | 67 | C | |

## Tidal variation with depth

Harmonic constants for constituent M2

| 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 | 41 | 12 | 154 | 18 | 182 | 21 | 5 | 58 | 174 | C |
| 02 | 39 | 12 | 143 | 17 | 184 | 20 | 7 | 58 | 172 | C |
| 03 | 37 | 12 | 137 | 16 | 185 | 19 | 8 | 57 | 170 | C |
| 04 | 35 | 13 | 132 | 16 | 186 | 18 | 9 | 54 | 166 | C |
| 05 | 33 | 13 | 129 | 14 | 187 | 17 | 9 | 49 | 162 | C |
| 06 | 31 | 14 | 127 | 14 | 189 | 17 | 10 | 44 | 157 | C |
| 07 | 29 | 14 | 125 | 13 | 191 | 16 | 10 | 36 | 150 | C |
| 08 | 27 | 15 | 124 | 12 | 192 | 16 | 10 | 28 | 143 | C |
| 09 | 25 | 15 | 124 | 11 | 192 | 16 | 9 | 22 | 137 | C |
| 10 | 23 | 16 | 123 | 9 | 190 | 16 | 8 | 18 | 133 | C |
| 11 | 21 | 16 | 123 | 8 | 187 | 17 | 7 | 15 | 130 | C |
| 12 | 19 | 17 | 122 | 7 | 182 | 17 | 6 | 13 | 127 | C |
| 13 | 17 | 18 | 123 | 6 | 173 | 18 | 5 | 13 | 126 | C |
| 14 | 15 | 19 | 122 | 5 | 159 | 19 | 3 | 13 | 124 | C |
| 15 | 13 | 20 | 122 | 5 | 140 | 20 | 1 | 13 | 123 | C |
| 16 | 11 | 21 | 124 | 5 | 126 | 22 | 0 | 13 | 124 | C |
| 17 | 9 | 22 | 124 | 5 | 119 | 23 | 1 | 14 | 124 | A |
| 18 | 7 | 24 | 125 | 6 | 113 | 24 | 1 | 14 | 125 | A |
| 19 | 5 | 24 | 126 | 6 | 98 | 25 | 3 | 12 | 125 | A |

Harmonic constants for constituent S2

| 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 | 41 | 9 | 131 | 11 | 191 | 13 | 7 | 56 | 170 | C |
| 02 | 39 | 9 | 123 | 11 | 191 | 12 | 8 | 59 | 170 | C |
| 03 | 37 | 9 | 119 | 11 | 191 | 12 | 8 | 62 | 171 | C |
| 04 | 35 | 9 | 116 | 11 | 192 | 12 | 9 | 61 | 170 | C |
| 05 | 33 | 9 | 115 | 11 | 190 | 12 | 8 | 63 | 170 | C |
| 06 | 31 | 9 | 114 | 11 | 191 | 11 | 9 | 61 | 168 | C |
| 07 | 29 | 9 | 113 | 10 | 190 | 11 | 8 | 62 | 168 | C |
| 08 | 27 | 9 | 113 | 10 | 189 | 11 | 8 | 62 | 167 | C |
| 09 | 25 | 9 | 115 | 10 | 188 | 10 | 8 | 53 | 160 | C |
| 10 | 23 | 9 | 115 | 9 | 188 | 10 | 7 | 52 | 158 | C |
| 11 | 21 | 8 | 118 | 9 | 184 | 10 | 7 | 50 | 155 | C |
| 12 | 19 | 8 | 119 | 9 | 185 | 10 | 7 | 48 | 154 | C |
| 13 | 17 | 9 | 123 | 9 | 181 | 11 | 6 | 44 | 151 | C |
| 14 | 15 | 9 | 124 | 8 | 179 | 11 | 5 | 43 | 150 | C |
| 15 | 13 | 9 | 126 | 8 | 177 | 11 | 5 | 38 | 146 | C |
| 16 | 11 | 10 | 126 | 7 | 172 | 11 | 5 | 35 | 142 | C |
| 17 | 9 | 10 | 129 | 7 | 168 | 12 | 4 | 34 | 141 | C |
| 18 | 7 | 10 | 131 | 7 | 162 | 12 | 3 | 32 | 140 | C |
| 19 | 5 | 11 | 133 | 7 | 157 | 13 | 2 | 29 | 139 | C |

Harmonic constants for constituent N2

| 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 | 41 | 4 | 212 | 7 | 91 | 7 | 3 | 107 | 84 | A |
| 02 | 39 | 4 | 225 | 7 | 91 | 7 | 2 | 113 | 83 | A |
| 03 | 37 | 4 | 235 | 6 | 89 | 7 | 2 | 118 | 81 | A |
| 04 | 35 | 3 | 239 | 5 | 87 | 6 | 1 | 120 | 80 | A |
| 05 | 33 | 3 | 240 | 5 | 86 | 6 | 1 | 124 | 78 | A |
| 06 | 31 | 3 | 245 | 4 | 85 | 5 | 1 | 123 | 79 | A |
| 07 | 29 | 2 | 245 | 4 | 84 | 5 | 1 | 120 | 80 | A |
| 08 | 27 | 2 | 242 | 4 | 80 | 4 | 1 | 119 | 76 | A |
| 09 | 25 | 2 | 227 | 4 | 74 | 4 | 1 | 113 | 70 | A |
| 10 | 23 | 1 | 211 | 3 | 68 | 3 | 1 | 109 | 64 | A |
| 11 | 21 | 2 | 182 | 4 | 58 | 4 | 1 | 106 | 52 | A |
| 12 | 19 | 2 | 176 | 4 | 52 | 4 | 2 | 108 | 45 | A |
| 13 | 17 | 2 | 175 | 5 | 45 | 5 | 2 | 112 | 37 | A |
| 14 | 15 | 3 | 171 | 5 | 44 | 6 | 2 | 112 | 35 | A |
| 15 | 13 | 3 | 169 | 6 | 43 | 6 | 2 | 110 | 35 | A |
| 16 | 11 | 3 | 170 | 7 | 39 | 7 | 2 | 111 | 31 | A |
| 17 | 9 | 4 | 169 | 7 | 35 | 8 | 3 | 117 | 24 | A |
| 18 | 7 | 5 | 160 | 7 | 32 | 7 | 3 | 120 | 18 | A |
| 19 | 5 | 6 | 156 | 7 | 31 | 8 | 4 | 126 | 10 | A |

Harmonic constants for constituent O1

| 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 | 41 | 4 | 135 | 5 | 306 | 7 | 1 | 128 | 309 | C |
| 02 | 39 | 4 | 127 | 5 | 307 | 7 | 0 | 126 | 307 | A |
| 03 | 37 | 4 | 120 | 5 | 310 | 7 | 0 | 124 | 307 | A |
| 04 | 35 | 4 | 116 | 6 | 311 | 7 | 1 | 122 | 307 | A |
| 05 | 33 | 4 | 107 | 6 | 312 | 7 | 1 | 121 | 305 | A |
| 06 | 31 | 4 | 101 | 6 | 310 | 7 | 2 | 121 | 302 | A |
| 07 | 29 | 3 | 93 | 6 | 310 | 6 | 2 | 118 | 301 | A |
| 08 | 27 | 4 | 87 | 6 | 310 | 6 | 2 | 119 | 299 | A |
| 09 | 25 | 4 | 83 | 6 | 310 | 6 | 2 | 119 | 298 | A |
| 10 | 23 | 4 | 80 | 6 | 310 | 6 | 3 | 119 | 298 | A |
| 11 | 21 | 4 | 76 | 6 | 308 | 7 | 3 | 118 | 295 | A |
| 12 | 19 | 4 | 73 | 6 | 307 | 7 | 3 | 117 | 294 | A |
| 13 | 17 | 4 | 70 | 6 | 305 | 7 | 3 | 120 | 290 | A |
| 14 | 15 | 4 | 71 | 6 | 305 | 7 | 3 | 121 | 289 | A |
| 15 | 13 | 4 | 72 | 6 | 305 | 6 | 3 | 125 | 286 | A |
| 16 | 11 | 4 | 73 | 5 | 303 | 6 | 3 | 132 | 281 | A |
| 17 | 9 | 5 | 76 | 4 | 300 | 6 | 2 | 139 | 275 | A |
| 18 | 7 | 5 | 78 | 4 | 302 | 6 | 2 | 144 | 274 | A |
| 19 | 5 | 5 | 79 | 3 | 303 | 5 | 2 | 148 | 272 | A |

Harmonic constants for constituent K1

| 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 | 41 | 10 | 287 | 4 | 309 | 11 | 2 | 22 | 290 | C |
| 02 | 39 | 10 | 290 | 5 | 316 | 11 | 2 | 25 | 295 | C |
| 03 | 37 | 10 | 292 | 5 | 316 | 11 | 2 | 28 | 297 | C |
| 04 | 35 | 10 | 295 | 6 | 316 | 11 | 2 | 31 | 300 | C |
| 05 | 33 | 9 | 298 | 6 | 317 | 11 | 2 | 33 | 303 | C |
| 06 | 31 | 8 | 301 | 6 | 316 | 11 | 1 | 37 | 307 | C |
| 07 | 29 | 8 | 301 | 7 | 318 | 10 | 2 | 39 | 308 | C |
| 08 | 27 | 8 | 302 | 7 | 319 | 10 | 1 | 41 | 310 | C |
| 09 | 25 | 7 | 302 | 7 | 320 | 10 | 1 | 43 | 310 | C |
| 10 | 23 | 7 | 304 | 6 | 320 | 9 | 1 | 45 | 312 | C |
| 11 | 21 | 6 | 309 | 6 | 322 | 9 | 1 | 48 | 316 | C |
| 12 | 19 | 5 | 312 | 6 | 322 | 8 | 1 | 49 | 318 | C |
| 13 | 17 | 5 | 315 | 6 | 324 | 8 | 1 | 50 | 320 | C |
| 14 | 15 | 4 | 320 | 5 | 327 | 7 | 0 | 51 | 324 | C |
| 15 | 13 | 4 | 319 | 5 | 332 | 6 | 1 | 53 | 327 | C |
| 16 | 11 | 3 | 317 | 5 | 333 | 6 | 1 | 57 | 328 | C |
| 17 | 9 | 3 | 296 | 4 | 334 | 5 | 1 | 61 | 324 | C |
| 18 | 7 | 2 | 290 | 4 | 332 | 4 | 1 | 65 | 324 | C |
| 19 | 5 | 1 | 273 | 4 | 326 | 4 | 1 | 81 | 324 | C |

## Tidal and non-tidal currents

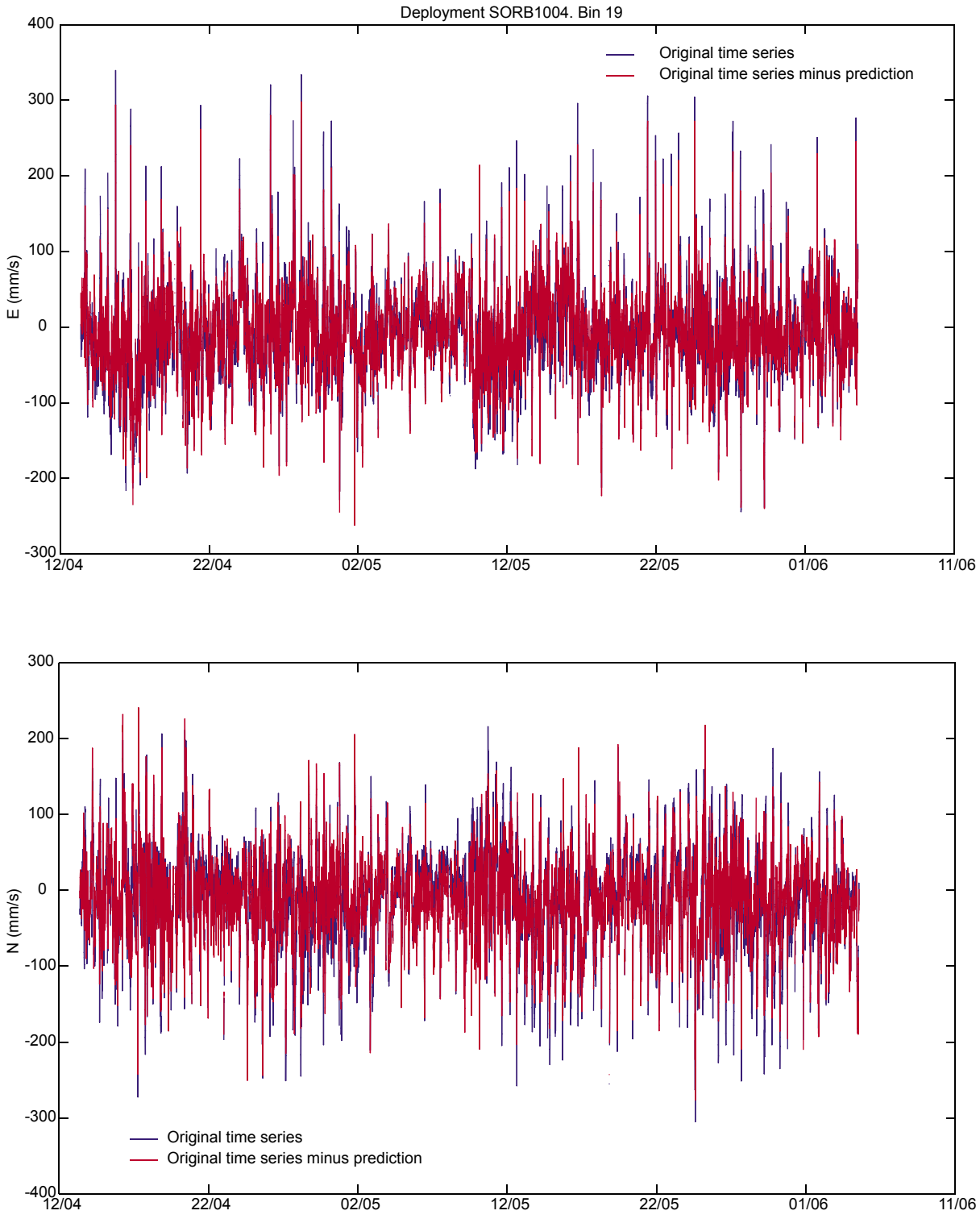



*Figure 9. Timeseries of original time series (blue) and non-tidal currents (red), i.e. original serie - tidal predicted serie, for the surface layer (bin 19 at 5 meters depth). The tidal predicted variance makes up 17% of the original variance. Upper panel: east/west velocity. Lower panel: north/south velocity.*

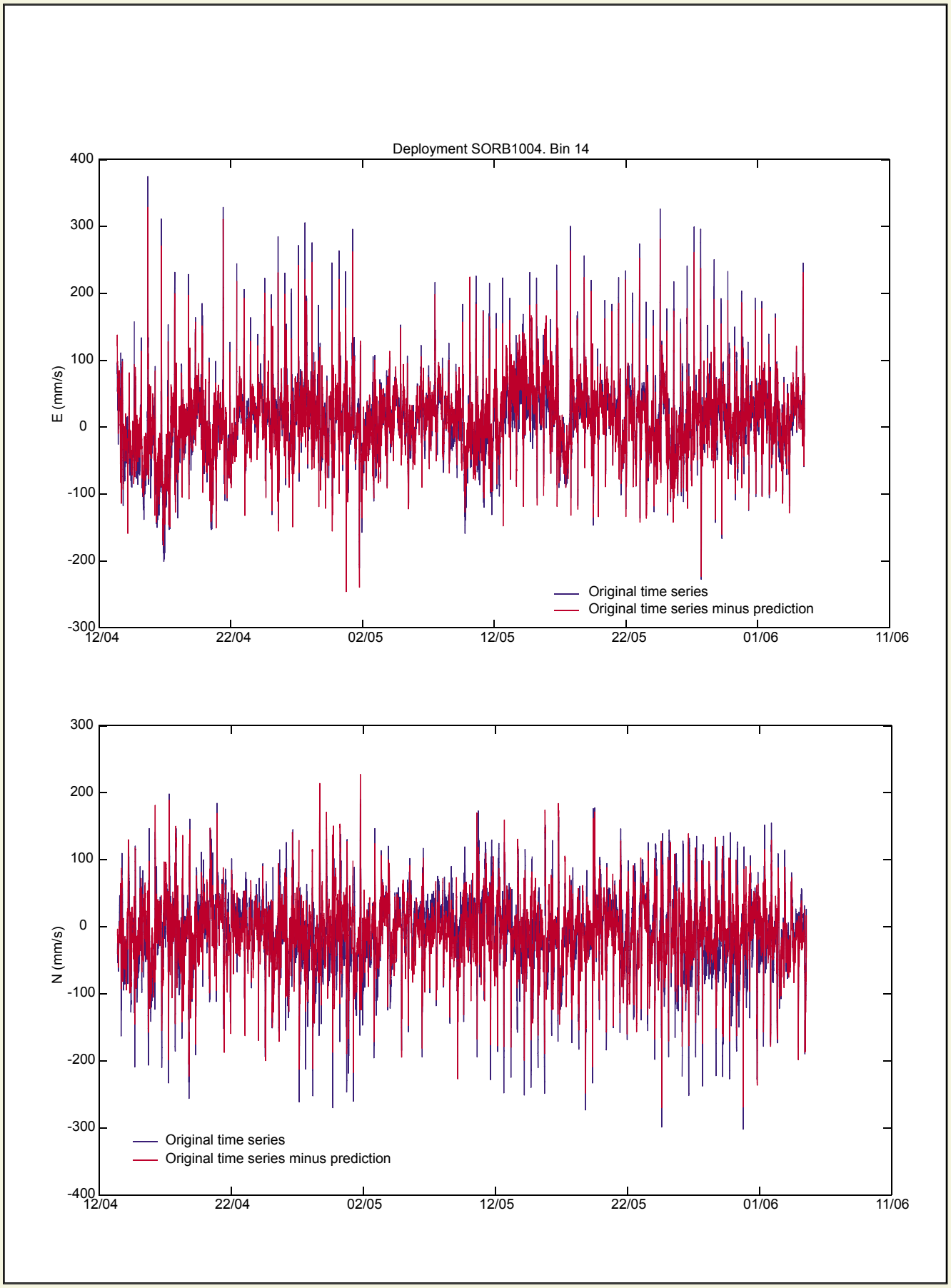
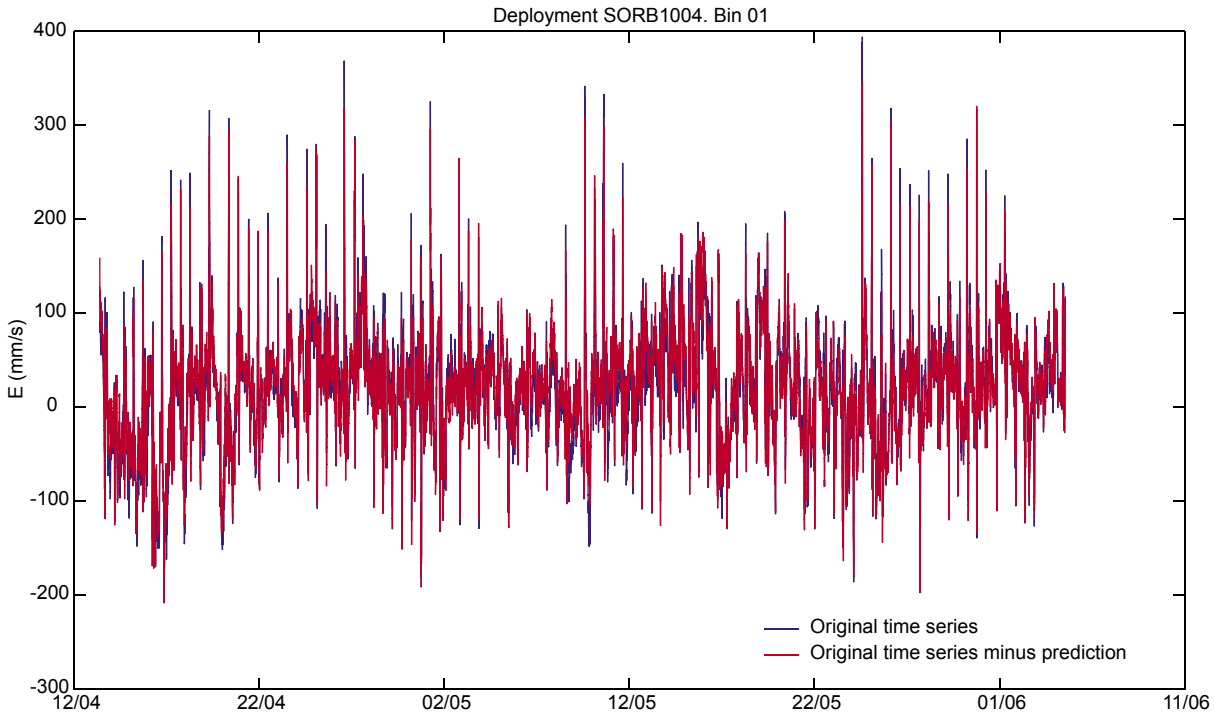



*Figure 10. Timeseries of original time series (blue) and non-tidal currents (red), i.e. original serie - tidal predicted serie, for the centre layer (bin 14 at 15 meters depth). The tidal predicted variance makes up 20% of the original variance. Upper panel: east/west velocity. Lower panel: north/south velocity.*



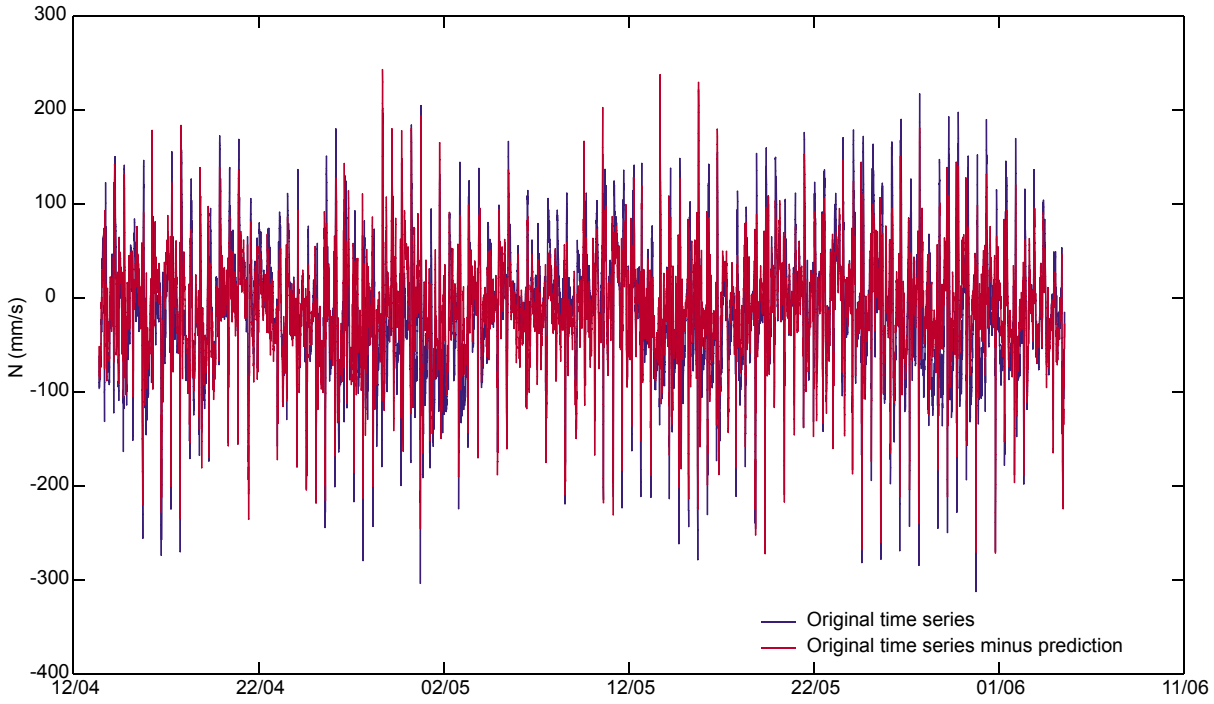




*Figure 11. Timeseries of original time series (blue) and non-tidal currents (red), i.e. original serie - tidal predicted serie, for the bottom layer (bin 1 at 41 meters depth). The tidal predicted variance makes up 18% of the original variance. Upper panel: east/west velocity. Lower panel: north/south velocity.*

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