Cruise report – AL433a

On board, 26.03.2014

Content

1. Basic information

Ship: FS Alkor
Cruise: AL433a
Date: 17.03. – 26.03. 2014
Chief scientist: Dr. Volker Mohrholz

Objectives

The Alkor cruise AL433a was carried out as a joined cruise of the environmental monitoring program of the Federal Maritime and Hydrographic Agency (BSH) and the Baltic Sea long term observation program of the Leibniz-Institute for Baltic Sea Research Warnemünde (IOW). It was the second cruise in a series of five expeditions performed annually.

The data acquired are used for the regular national and international assessments of the state of the Baltic Sea, and provide the scientific basis for measures to be taken for the protection of the ecosystem Baltic Sea.

Staff

	Name	***On board***	***Institution***	***Responsibility***
1	Volker Mohrholz	17.03.-26.03.2014	IOW Warnemünde	VMADCP, chief scientist
2	Christian Burmeister	17.03.-26.03.2014	IOW Warnemünde	Plankton sampling
3	Joachin Kuss	17.03.-26.03.2014	IOW Warnemünde	Hg Chemistry
4	Florian Cordes	17.03.-26.03.2014	Uni Rostock	Hg Chemistry
5	Ingo Schuffenhauer	17.03.-26.03.2014	IOW Warnemünde	CTD, ScanFish
6	Michael Pötzsch	17.03.-26.03.2014	IOW Warnemünde	Plankton sampling
7	Jan Donath	17.03.-26.03.2014	IOW Warnemünde	CTD
8	Susanne Laage	17.03.-26.03.2014	IOW Warnemünde	Nutrients
9	Antje Cordshagen	17.03.-26.03.2014	Uni Rostock	Nutrients
10	Ines Hand	17.03.-20.03.2014	IOW Warnemünde	Nutrients

Area of investigation

The cruise AL433a was dedicated to the Balitc monitoring programm. Data collection covered the western and central Baltic from the Kiel Bight to the northern Gotland Basin. The majority of stations is organized in a transect along the talweg of the Baltic Sea. Additionally, a number of CTD casts were carried out at stations aside the central transect. A second high resolution transect along the talweg in the western Baltic was performed, in order to repeat the measurements of the inflowing saline water bodies.
An overview of the location of CTD stations and the cruise track is given in Figure 1 and
Figure 2. A station list is given in Table 5.

Equipment

Data acquisition was carried out using the following devices and measuring platforms.

At stations and transects:

- CTD SBE 911+ with rosette water sampler
- Oceanographic mooring
- Towed CTD ScanFish (SF)
- Phytoplankton nets, Secci desk
- Zooplankton net (WP2)

Continuous measurements:

- Vessel mounted ADCP 600kHz BB (VMADCP) mounted at moon pool
- Underway measurements of surface water properties
- Ship weather station

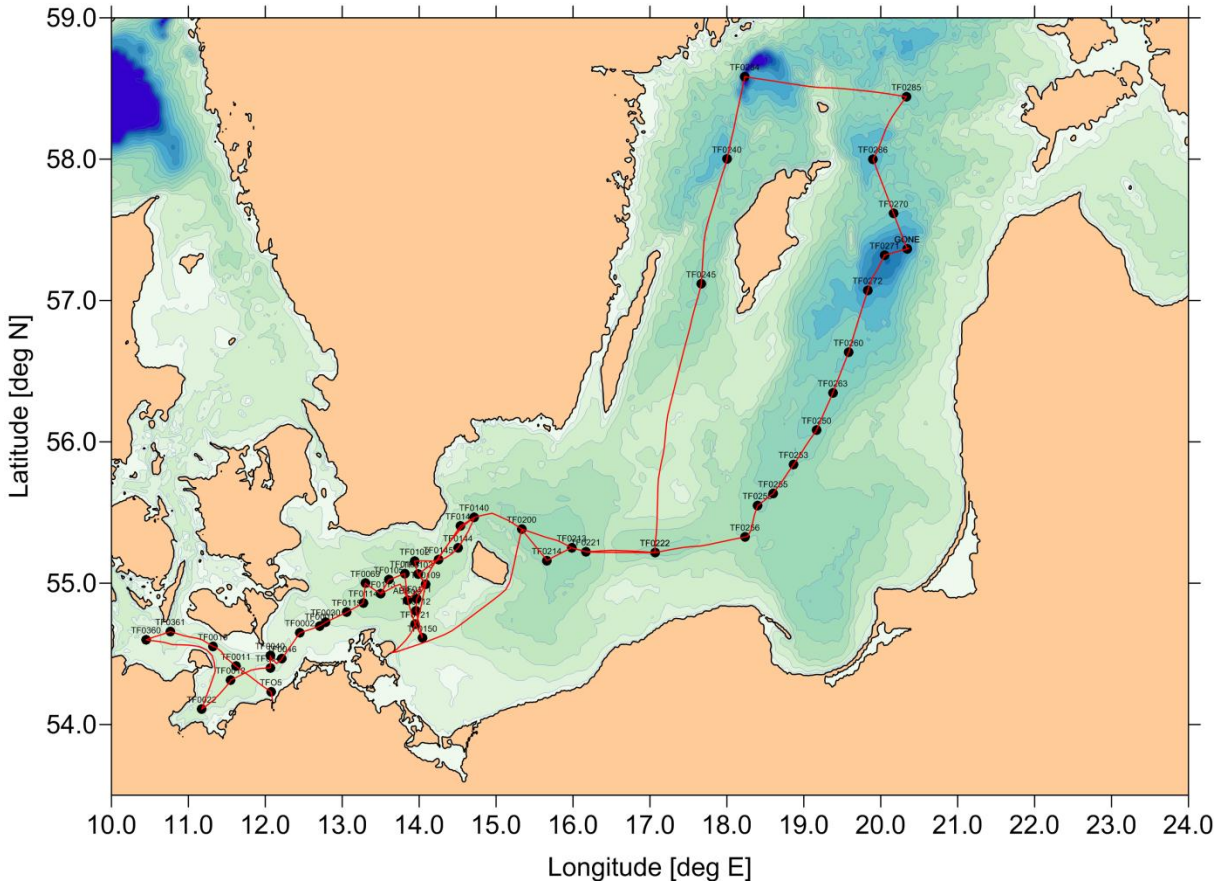

Figure 1: Map of stations and ship track of Alkor cruise AL433a from 17. – 24.03.2014. Black dots and labels indicate CTD stations.

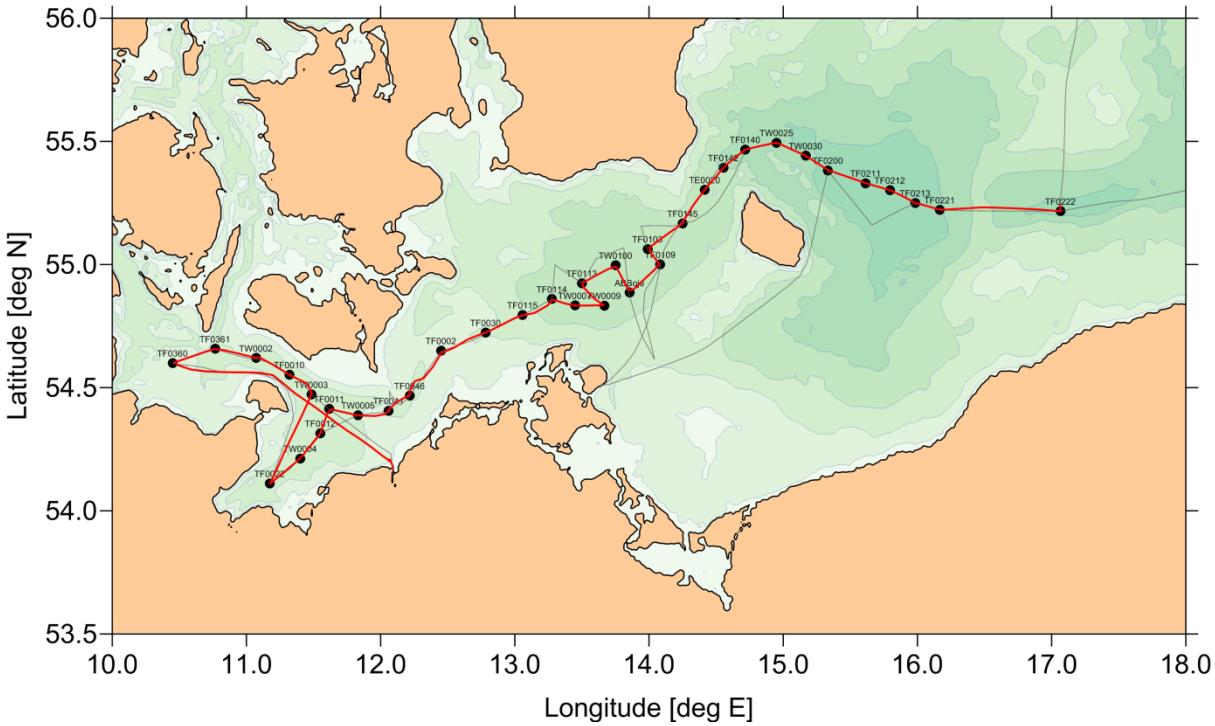

Figure 2: Map of stations and ship track of Alkor cruise AL433a at the high resolution CTD transect in the western Baltic from 24. – 26.03.2014. Black dots and labels indicate CTD stations.

Narrative of the cruise

Date	***Time***	***Task***
11.03.2014		loading of equipment, preparing devices for the cruise
15.03.2014		loading of equipment, preparing devices for the cruise
17.03.2014	80:00	Embarking of scientific crew
	08:30	Safety instructions
	09:30	Departure from port Warnemünde
	10:00	Start of station work in the western Baltic
	14:00	strong eastward current in Fehmarn belt up to 2kn, surface salinity appr. 21psu
18.03.2014		Continuation of station work in the western Baltic
19.03.2014		Continuation of station work in the western Baltic
	10:30	End of station work at BSH monitoring grid, interruption of work due to heavy winds
		Start transit to port Sassnitz
	16:30	Arrival of port Sassnitz
20.03.2014	07:00	Disembarking of one person from scientific crew
	08:00	Departure from port Sassnitz, Transit to western Bornholm Basin
	15:40	Start of station work in the central Baltic (Bornholm Basin)
21.03.2014		Continuation of station work in the in the central Baltic (Slupsk Furrow and eastern Gotland basin)
	21:30	Start station work at Gotland basin central station TF0271
22.03.2014	06:00	End station work at Gotland basin central station TF0271
	07:15	Start mooring maintenance at Gotland NE mooring
	08:00	Gotland NE mooring successful recovered
	10:00	Gotland NE mooring successful redeployed
	12:00	Continuation of station work in the in the central Baltic (eastern and western Gotland basin)
23.03.2014		Continuation of station work in the in the central Baltic (western Gotland basin)
	11:00	Test of ADP spire at station 250
	17:30	End of station work in the central Baltic, Transit to Slupsk Furrow

Date	*Time*	*Task*
24.03.2014	05:00	ScanFish deployment failed due to technical problems with the fish control, ScanFish deployment was rejected
	08:30	Start high resolution CTD grid from Bornholm basin towards the Fehmarn Belt
25.03.2014		Continuation of high resolution CTD grid from Bornholm basin towards the Fehmarn Belt
	22:30	End of scientific work, Transit to port Warnemuende
26.03.2014	07:00	Arrival at port Warnemünde
	08:00	Unloading of scientific equipment
	09:30	Disembarking of scientific crew, end of cruise Al433a

2. Data processing and quality assurance

Stations

A station name and a station number were assigned to all stations, where scientific equipment was used. The station name identifies a geographical position. The station number is an integer number that is increased by one for each new station. The station number was applied according the station number of the ship. For the cruise AL433a the first station number is 198.

CTD

The CTD-system "SBE 911plus", SN-09P43260-0853, (SEABIRD-ELECTRONICS, USA) was used to measure the variables:

- Pressure
- Temperature (2x SBE 3)
- Conductivity (2x SBE 4)
- Oxygen concentration (2x SBE 43)
- Chlorophyll-a fluorescence (683nm)
- Turbidity
- PAR
- SPAR

To minimise salinity spiking, temperature- (SBE 3), conductivity (SBE 4) and oxygen sensors (SBE 43) are arranged within a tube system, where seawater is pumped through with constant velocity. The CTD was equipped with a double sensor system for temperature, conductivity and oxygen. The temperature is given in ITS-90 temperature scale. Salinity is calculated from the Practical Salinity Scale (1978) equations. Fluorescence and turbidity are measured with a downward looking WET Labs fluorometer. Pressure is determined with a Paroscientific Digiquartz pressure sensor, maximum range 6800 dBar.

Data were monitored during the casts and stored on hard disk with Seasave Version 7. For each station a configuration file (stationname.con) was written which contains the complete parameter set, especially sensor coefficients used for the conversion of raw data (frequencies) to standard output format.

Additionally the CTD-probe was equipped with a Rosette water sampler with 13 Free Flow bottles of 5l volume each. This design allows for closing of bottles automatically at predefined depth during down-casts. Closing depth and sensor values are aligned by appropriate choice of parameters of the CTD software generating the “bottle files”.

Sampling

A CTD cast was started below the sea surface with the pressure sensor usually at about 5m depth to prevent a contamination of the CTD pumping system with air bubbles. Data were collected down to 3-5m above the bottom at all stations. An attached altimeter was used to determine the bottom distance. Sampling rate of the CTD probe was 24Hz. Data were displayed online to determine appropriate sampling depth and stored on a PC hard drive.
The probe sheds water in its wake over a long distance. Hence, only downcast registration was reliable. Upcast registration was used only for water sampling, if the closing depth was determined during the downcast. At downcasts bottles were closed while fiering, for closing the bottles during upcasts the probe was stopped and bottles were closed after a time span of about 30s. When the device was back on deck oxygen samples were taken first, followed by water samples for salinity, nutrients and water for several biological and geochemical techniques.

Sensor check
The CTD sensors were checked during the cruise by comparison measurements.

At stations with well mixed water layers temperature was measured with a package of 4 RTM 40002X (SIS) reversing thermometers. After a 10 minutes equilibration period the thermometers where released to turn and temperature of the CTD sensors was recorded for other 10s.
Salinity samples were taken approximately once a day. The samples were stored in white glass bottles and will be analyzed after the cruise in by means of a salinometer AUTOSAL Model 8400B (accuracy of 0.001). Most samples were taken from near surface layers, only a few deep well mixed layers could be found.

Slope and offset of the oxygen sensors SBE 43 were determined by help of water samples. Oxygen content of the samples was determined with a titration set (Winkler method, accuracy of 0.02ml/l). Oxygen concentration is calculated using Seasoft, oxygen formula "1",

$$ox = Soc\,[V + V_{offset} + Tau] * oxsol(T,S) * F_t(T) * F_p(T,p)$$

The pressure sensor was checked by measuring depth on deck both before the cast.
Calibration measurements for the fluorometer data have not been done, since no quantitative phytoplankton analysis was performed during the cruise.

Table 1: Type and serial numbers of mounted CTD sensors

Sensor	*Type*	*SN*	*Last calibration*
Pressure	Digiquartz	100070	16.50.2006
Temperature 0	SBE 3	5491	19.03.2013
Temperature 1	SBE 3	5492	19.03.2013
Conductivity 0	SBE 4	4006	19.03.2013
Conductivity 1	SBE 4	4007	19.03.2013
Oxygen 0	SBE 43	1341	19.04.2013
Oxygen 1	SBE 43	2204	25.10.2012
Chl-a fluorescence / Turbidity	WET Labs - FLNTURTD	2029	28.09.2010
PAR sensor	Biospherical Licor Chelsea	70101	16.11.2006
SPAR		20364	12.08.2009

VMADCP 600kHz

A 600kHz Acoustic Doppler Current Profiler (VMADCP) Broad Band (frequency 600 kHz, beam angle 20deg), manufactured by RDInstruments, was mounted downward looking at the ships moon pool. The data output of the ADCP was merged online with the corresponding navigation data derived from DAVIS output, and stored on the hard disc using the program VMDAS. Additionally, heading information was provided by the gyro-compass. The VMADCP was operated continuously during the entire cruise. The following configuration was used for data acquisition.

Post-processing of the VMADCP data was carried out using the Matlab® ADCP toolbox of IOW. The final profiles are 120s and 300s averages of the single ping profiles.
At sections where bottom tracking was available the heading bias of the instrument was calculated. This value and the magnetic deviation of were applied during post processing.

Table 2: Configuration of 600kHz VMADCP

Command	***Parameter***	***Value***
WP001	Broad band pings	1 ping per ens
WN100	number of depth cells	60
WS0800	bin length	1m
WF0400	blank after transmit	1m
WV390	Ambigiuity velocity	3.9m/s
BP0001	bottom track	1 ping per ens
BX12000	max bottom distance	100m
WD111100000	data output	vel, corr, intensity, % good
TP000000	time between pings	As soon as possible
EZ1020001	sensor source	temperature
EX00000	co-ordinates	use beam co-ordinates
ED00050	transducer depth	5m
ES10	salinity	10
Data option dialog of VMDAS software	heading source	NMEA
	navigation source	NMEA
	time per ensemble	1s
	time between pings	1s
	heading alignment	45 deg
	heading bias	0 deg
	short term average	60s
	long term average	300s
	data screening	off

ScanFish towed CTD

The ScanFish towed CTD (SF) was used on several transects during the cruise. The platform consists of a Seabird 911+ CTD mounted on a wing shaped body undulating between sea surface and about 130m depth when towed behind the ship. Additionally to the usual CTD sensors, the probe is equipped with sensors for dissolved oxygen concentration. Hydrographic data are transmitted via a multi-conductor cable and stored in the lab on a computer disc. The instrument will be deployed over the stern of the ship. The cable is operated from a separate winch to be mounted at the aft deck. The cable is guided by a pulley block mounted below the A-crane. The A-crane will be used for deployment and recovery.
The device will be towed with 5-7 knots, the undulation depth is steered from the lab. Control commands are transmitted via the cable.
Due to technical problems with the ScanFish communication system, the first deployment was canceled on 24.03.2014.

Mooring

GONE (Long Term Mooring **Go**tland **N**orth**e**ast)
Main purpose of the GONE mooring is obtaining long term hydrographic time series of temperature, salinity and currents from the lower water column in the eastern Gotland Basin, the central basin of the Baltic Sea. The data are used for long tern observation of environmental conditions in the deep water of the Baltic and for detecting the impact of saline inflow events. The mooring consists of a bottom mounted ADCP 600kHz, 1 SeaCat thermosalinometers SBE16, three RBR TR1060 temperature recorder, an RBR TRD2050 temperature pressure recorder (Figure 3: Sketch of the GONE mooring deployment 26 (left) and deployment 27 (right)), and a PME oxygen optode.

On 22.03.2014 08:00 UTC the GONE mooring (26) successful recovered after six month of operation. All devices were saved. Two hours later the mooring (27) was redeployed after maintenance. The configuration is slightly changed.

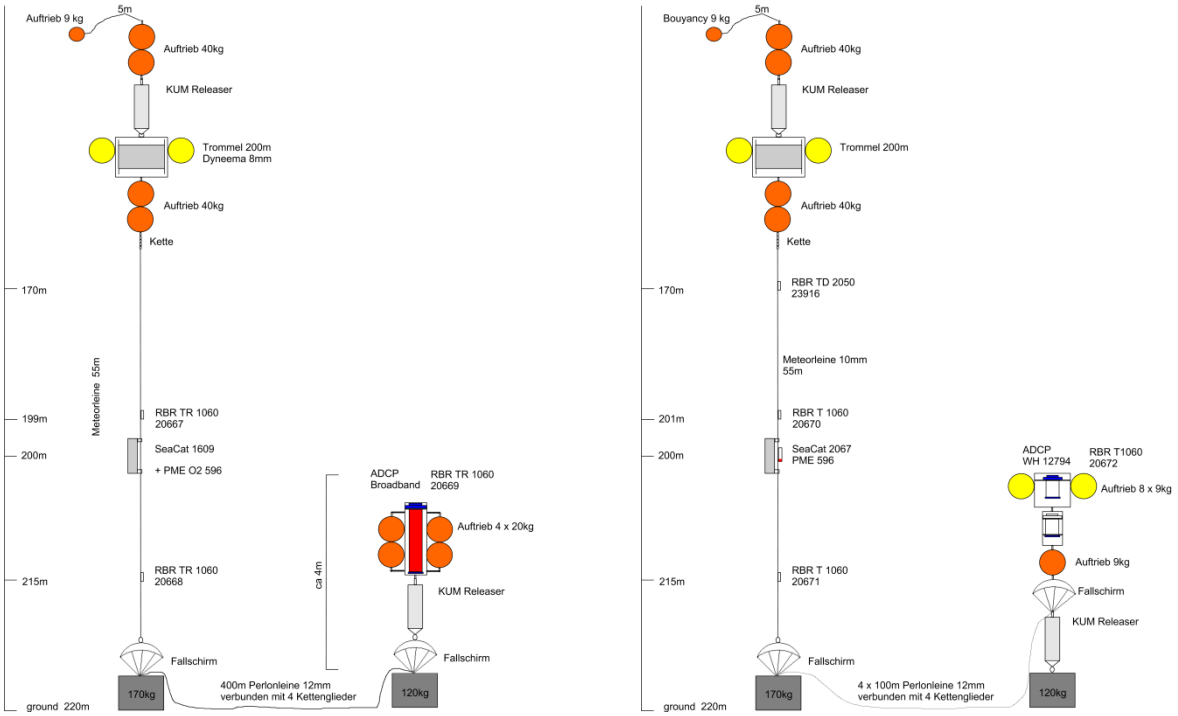

Figure 3: Sketch of the GONE mooring deployment 26 (left) and deployment 27 (right)

Underway measurements

The FS Alkor is equipped with numerous sensors, which continuously provide many important environmental parameters. This consists of weather parameters, surface water properties, navigation information, rope length, winch speed and more. The data are collected by a data acquisition system DAVIS manufactured by WERUM. All data are stored in a data base and can be extracted by a web interface. A description of all collected parameters is given in the ship specific DAVIS manual. All data are snapshots taken and stored every second. After the cruise the full data set was extracted.

This data set consists of:

- time (UTC)
- latitude and longitude
- ships heading
- depth
- speed made good (log through water)
- course made good
- rope length
- air pressure
- air temperature
- humidity
- global radiation
- infra red radiation
- Surface conductivity
- Surface salinity
- Surface water temperature
- Wind direction
- Wind speed

Plankton sampling

Plankton sampling was performed by means of a rosette sampler (combined with CTD) as well as with a small phytoplankton net and a zooplankton net (WP2). Samples were taken from different depths in order to get representative data from the euphotic zone. Additionally, samples for micro biological analyses were taken at two stations in the central Baltic.
The plankton sampling positions are indicated in the list of station (Table 5).

Determination of mercury species

On 20 selected monitoring stations between 2 to 8 samples from the surface to the bottom boundary layer (maximum of 430 m depth) were taken. Usually 3 replicates were sampled for the determination of methylmercury (MeHg) by using two different methods and for total-mercury (Hg-tot) analysis, respectively. Therefore seawater was first filtered through membrane filters and then acidified to stabilize mercury species in solution. The new analysis with the Tekran 2700 was used for the first time on a ship. The method requires ethylation of the mercury species, thus transforming methylmercury to volatile methylethylmercury, purging with argon, enrichment on adsorbent material, gas chromatographic separation from Hg0, dimethylmercury, and diethylmercury, subsequent pyrolisis and detection as Hg(0) by using cold vapour atomic fluorescence.
The mercury sampling positions are indicated in the list of station (Table 5).

3. Preliminary results

The results presented in the following section are preliminary, since they are based in most cases on unvalidated data! The aim of this section is to give a first impression on the collected data set. An advanced data analysis will follow after all validated data sets are available.

Meteorological conditions

During the first three days of the cruise a strong west to southwesterly winds forced an inflow of saline water through the Danish Straits, and caused high sea state in the investigation area. The mean wind speed was between 12 and 15m/s with gusts of 18m/s. Due to predicted stormy conditions the Alkor was going into the port of Sassnitz for the night from 19th to 20th March. On 20th of March the wind changed to more southerly directions with mean wind speed up to 13m/s. From evening of the 21st March onwards the wind speed decreased significantly. The following period with mean wind speed of about 5 to 8m/s lasted until the end of the cruise on 27th March.

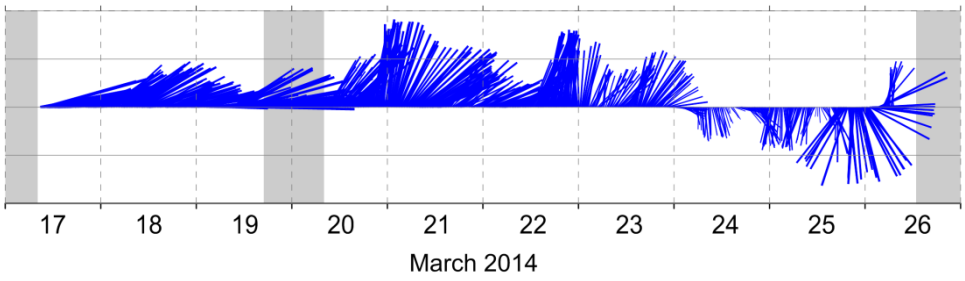

Figure 4: Stick plot of wind vector measured by the ship weather station of FS Alkor. The grey shaded areas indicate periods when the ship was in port.

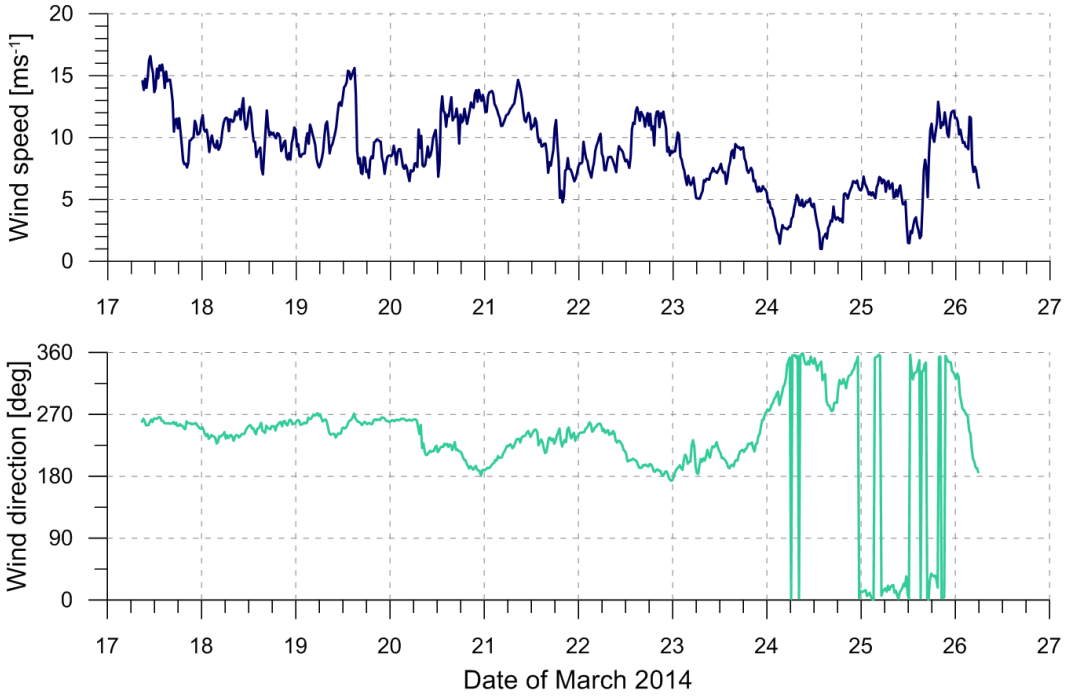

Figure 5: Wind speed and direction measured by the ship weather station of FS Alkor.

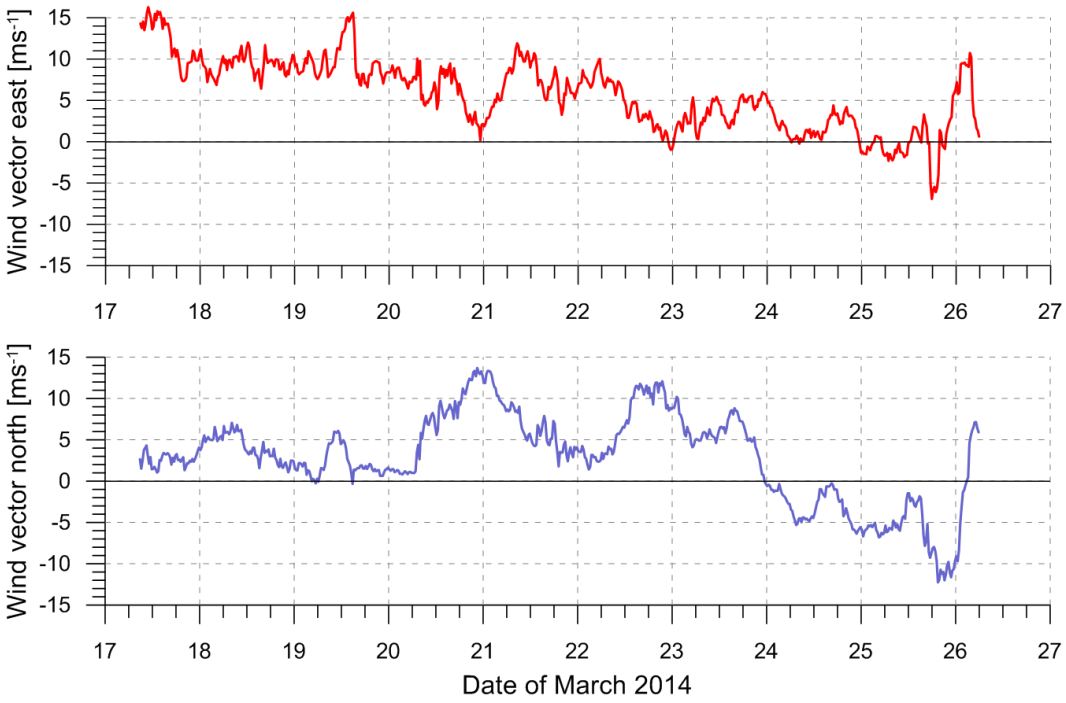

Figure 6: Wind vector east and north measured by the ship weather station of FS Alkor.

Until the 21st March the air temperature was at about 7°C later on the air temperature decreased to 3°C contemporary with decreasing air pressure. The air pressure variations show the typical time scale of passing low pressure systems of 2 to 3 days.
The humidity was relatively high, nearly at 100% during the entire cruise, with the exception of a short period around the 21st March. The global radiation was strongly related to the cloud coverage. Maximum values, at noon on sunny days, were about 600 Wm^{-2}.

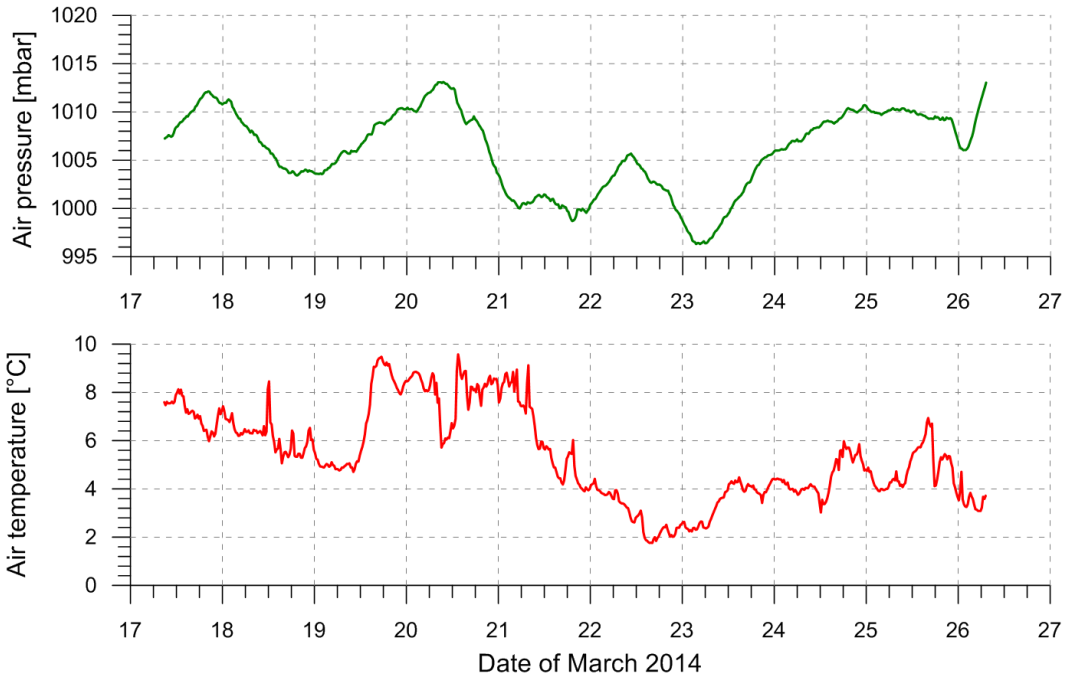

Figure 7: Air pressure and air temperature measured by the ship weather station of FS Alkor.

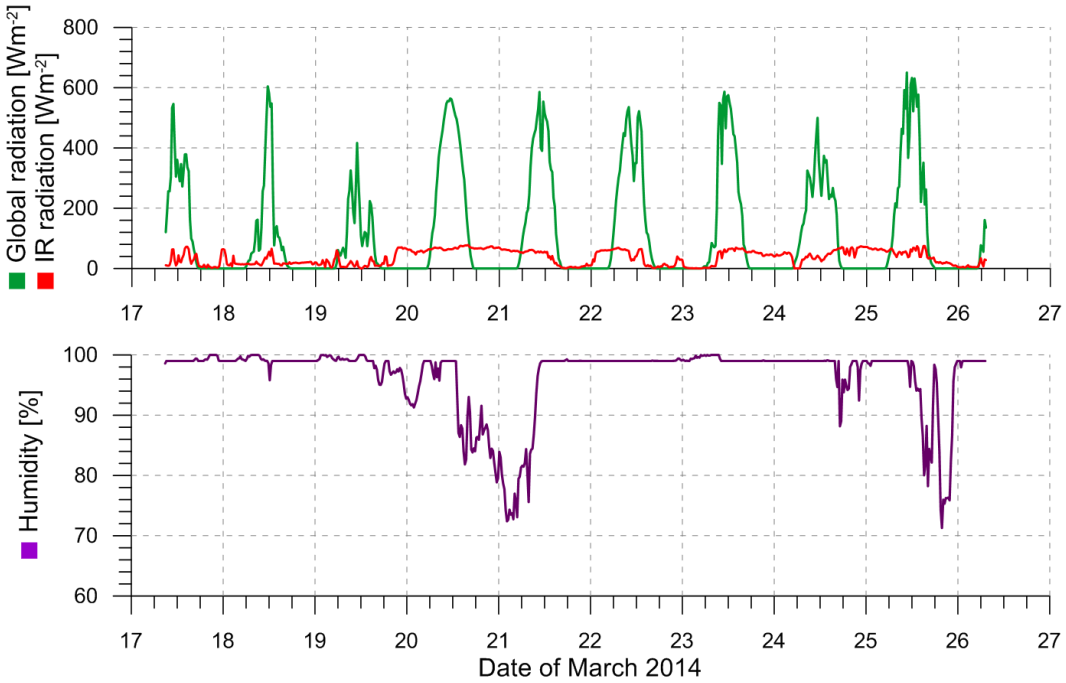

Figure 8: Global, infra radiation and humidity measured by the ship weather station of FS Alkor.

Sea surface temperature and salinity

Sea surface temperature distributions in the investigation area were compiled from data taken with the ships thermosalinograph. The distributions shown in Figure 9: Surface temperature (left) and surface salinity distribution (right) along the cruise track of AL433a in the western and central Baltic. and Figure 10 are based on unvalidated data.

In the Kiel Bight and the Mecklenburg Bight the warm and saline surface waters indicate the active inflow event during the first part of the cruise. Water with salinity above 17 was found at the surface up to the Darss sill, where it subducts to deeper layers. Generally, the sea surface temperature (SST) and salinity (SSS) decreases from west to east. In the Arkona Basin SSTs were about 3.7°C and SSS about 8.5 compared to values of 2.8°C and 6.8, respectively in the northern Gotland Basin. Due to the extremely mild winter the surface temperatures were well above the long term average and also above the density maximum, which is important for the onset of stratification during the following weeks.

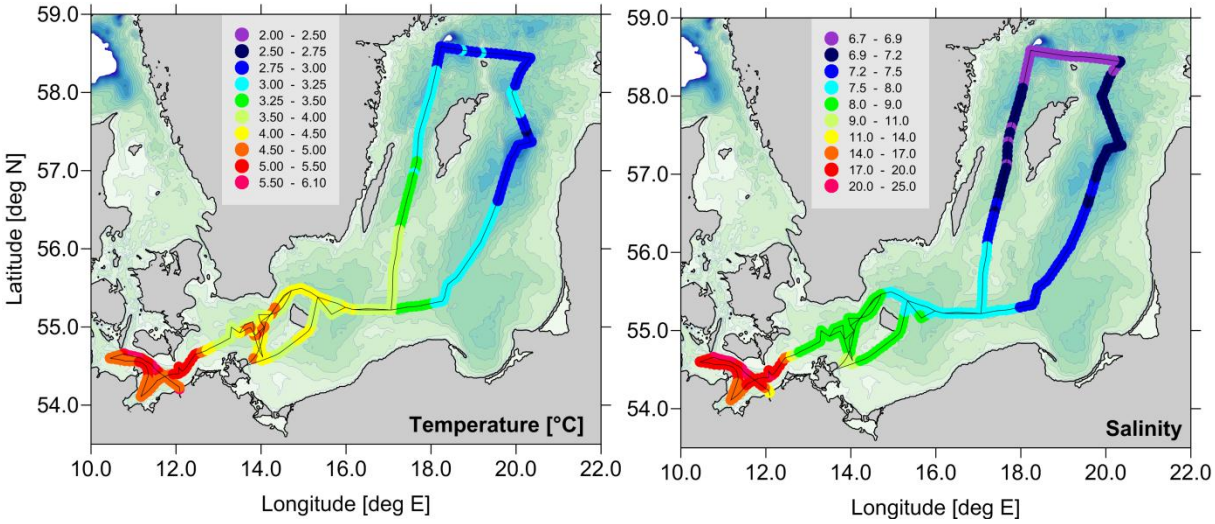

Figure 9: Surface temperature (left) and surface salinity distribution (right) along the cruise track of AL433a in the western and central Baltic.

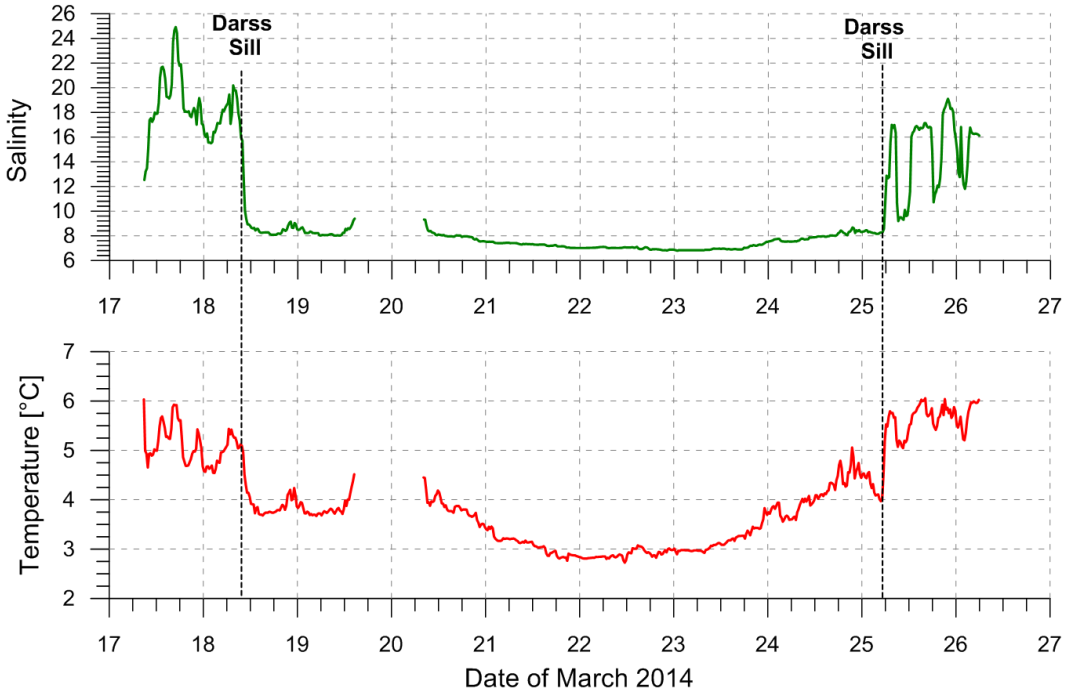

Figure 10: Salinity and temperature measured with the ship thermosalinograph of FS Alkor.

Observations at main stations

The following tables list the surface and bottom values of the most important parameters measured at the main stations of the monitoring program.
For position of the particular stations refer to Figure 1 and Table 5. Negative values in the oxygen column are hydrogen sulfide concentrations. The oxygen values in brackets are unvalidated readings of the CTD oxygen sensor 0. The nutrient samples of the central Baltic stations were frozen and not analysed on board. Thus, they are not available yet and are indicated in the tables as "to be analysed" (tba).

Table 3: Surface values of main hydrographic parameters at the main stations.

Area *Date*	*St. name* *St. no.*	*Depth [m]*	*Temp [°C]*	*Sal*	*O_2 [ml/l]*	*PO_4 [µmol]*	*NO_3 [µmol]*	*SiO_4 [µmol]*
Kiel Bight 17.03.2014	TF0360 202	2	4.67	17.99	8.09 (7.73)	0.1	1.0	3.6
Meckl. Bight 18.03.2014	TF0012 204	2	4.75	17.09	7.97 (7.71)	0.7	0.66	2.1
Lübeck Bight 18.03.2014	TF0022 203	2	4.62	15.53	8.51 (8.13)	0.8	0.07	1.1
Darss Sill 18.03.2014	TF0030 210	2	4.12	8.90	9.06 (8.74)	0.12	0.01	1.6
Arkona Basin 18.03.2014	TF0113 214	2	3.72	8.27	9.27 (8.89)	0.14	0.02	1.4
Bornholm Deep 20.03.2014	TF0213 231	2	3.79	7.95	8.61 (8.29)	*tba*	*tba*	*tba*
Slupsk Furrow 20.03.2014	TF0222 233	2	3.50	7.55	8.73 (8.37)	*tba*	*tba*	*tba*
SE Gotland Basin 21.03.2014	TF0259 235	2	3.20	7.42	8.62 (8.29)	*tba*	*tba*	*tba*
Gotland Deep 21.03.2014	TF0271 242	2	2.86	7.00	8.72 (8.32)	*tba*	*tba*	*tba*
Farö Deep 22.03.2014	TF0286 247	2	3.04	6.92	8.79 (8.25)	*tba*	*tba*	*tba*
Landsort Deep 23.03.2014	TF0284 249	2	2.97	6.82	8.82 (8.25)	*tba*	*tba*	*tba*
Karlsö Deep 23.03.2014	TF0245 251	2	3.25	6.88	8.85 (8.27)	*tba*	*tba*	*tba*

Table 4: Bottom values of main hydrographic parameters at the main stations.

Area *Date*	*St. name* *St. no.*	*Depth [m]*	*Temp [°C]*	*Sal*	*O_2 [ml/l]*	*PO_4 [µmol]*	*NO_3 [µmol]*	*SiO_4 [µmol]*
Kiel Bight 17.03.2014	TF0360 202	17	4.89	19.48	7.96 (7.46)	0.1	0.93	4.1
Meckl. Bight 18.03.2014	TF0012 204	23	5.31	20.46	7.43 (7.14)	0.18	1.55	2.9
Lübeck Bight 18.03.2014	TF0022 203	22	3.86	21.16	6.20 (6.00)	0.49	5.79	9.3
Darss Sill 18.03.2014	TF0030 210	22	4.58	16.12	8.02 (7.70)	0.18	1.54	3.3
Arkona Basin 18.03.2014	TF0113 214	45	4.35	20.84	6.42 (5.56)	0.8	7.17	17.4
Bornholm Deep 20.03.2014	TF0213 231	87	6.27	16.67	2.30 (3.21)	*tba*	*tba*	*tba*
Slupsk Furrow 20.03.2014	TF0222 233	88	7.49	13.14	2.65 (2.51)	*tba*	*tba*	*tba*

Area *Date*	*St. name* *St. no.*	*Depth* *[m]*	*Temp* *[°C]*	*Sal*	*O_2* *[ml/l]*	*PO_4* *[µmol]*	*NO_3* *[µmol]*	*SiO_4* *[µmol]*
SE Gotland Basin 21.03.2014	TF0259 235	87	7.29	12.60	0.54 (1.47)	*tba*	*tba*	*tba*
Gotland Deep 21.03.2014	TF0271 242	232	6.71	12.28	-1.58 (0.02)	*tba*	*tba*	*tba*
Farö Deep 22.03.2014	TF0286 247	187	5.70	11.38	-2.56 (0.02)	*tba*	*tba*	*tba*
Landsort Deep 23.03.2014	TF0284 249	431	5.33	10.34	-1.33 (0.01)	*tba*	*tba*	*tba*
Karlsö Deep 23.03.2014	TF0245 251	105	4.99	9.49	-0.26 (0.05]	*tba*	*tba*	*tba*

Baltic transect

The majority of the stations worked during the cruise AL433a was arranged along the talweg transect from the Danish straits, through the western Baltic Sea, and further towards the northern Gotland basin. This transect supplies a good overview about the hydrographic and environmental state of the entire Baltic Sea. The transect was worked from 17th to 22nd of March and depict the typical patterns of late spring conditions. Additionally, the signatures of at least three subsequent inflow events of saline water were found in the Danish Straits and the western Baltic (Figure 11 and Figure 12).

An active saline inflow, driven by the strong westerly winds prior and in the beginning of the cruise, has transported saline water with salinities up to 25 and temperatures of about 5.5°C into the Kiel Bight and the Fehmarn Belt. The tip of this inflow has reached the Darss Sill, where surface salinities of 17 were observed. A second water body from an former small inflow covered the deeper layers of the Arkona Basin and started to enter the Bornholm Basin via the Bornholm gat. This water body is characterized by low temperatures of about 3.5°C and salinities up to 17. Its low temperature points to an inflow period in January/February. It is the coldest water body found in the western Baltic during the cruise.

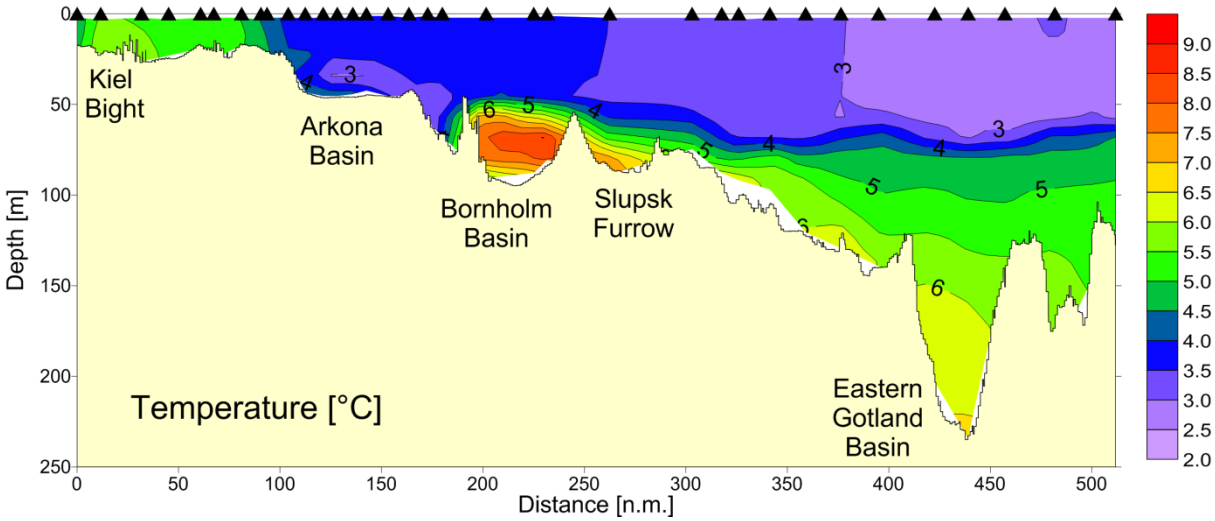

Figure 11: Distribution of temperature along the talweg of the Baltic Sea from the Kiel bight to the eastern Gotland Basin. The figure is based on the preliminary CTD data gathered from 17.03. - 22.03.2014.

A hint to a third older inflow is visible at the bottom of the Bornholm Basin. Here the temperature is lower and the oxygen concentration is higher than in the overlaying deep water. Especially the higher oxygen concentration points to a younger water body.

The temperatures in the surface layer decreases from west to east. The thickness of the well mixed upper water layer increases eastward from 20 to 30 m in the Arkona Basin to nearly 70m in the central Baltic. Accordingly, also the halocline depth of the Baltic increases from west to east.

Below the halocline the temperatures increases with depth in the central Baltic. Maximum values of 6.7°C were observed near the bottom of the eastern Gotland basin. The bottom salinity at this location was 12.27.

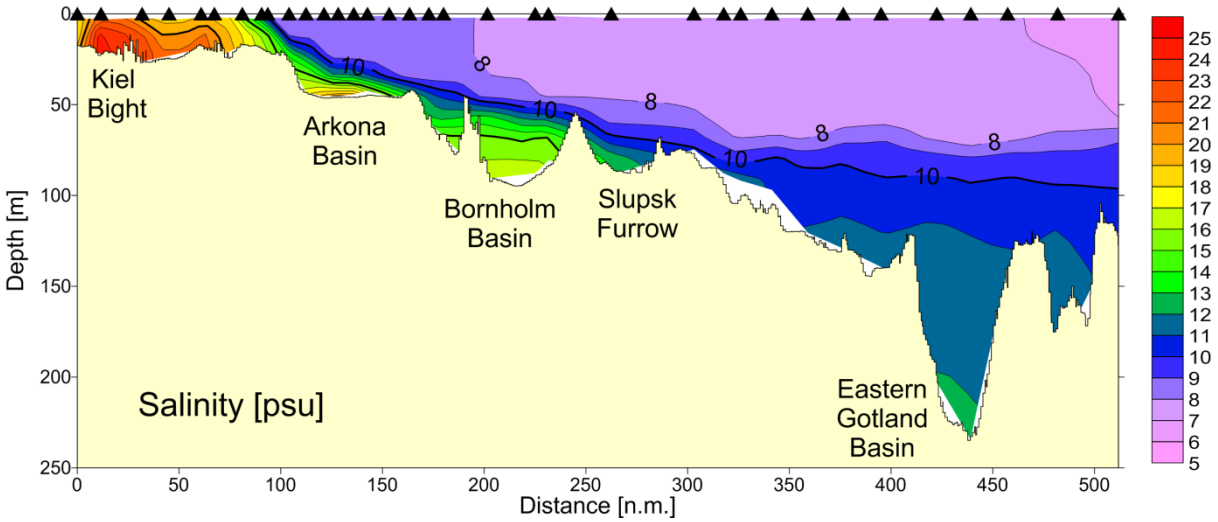

Figure 12: Distribution of salinity along the talweg of the Baltic Sea from the Kiel bight to the eastern Gotland Basin. The figure is based on the preliminary CTD data gathered from 17.03. - 22.03.2014.

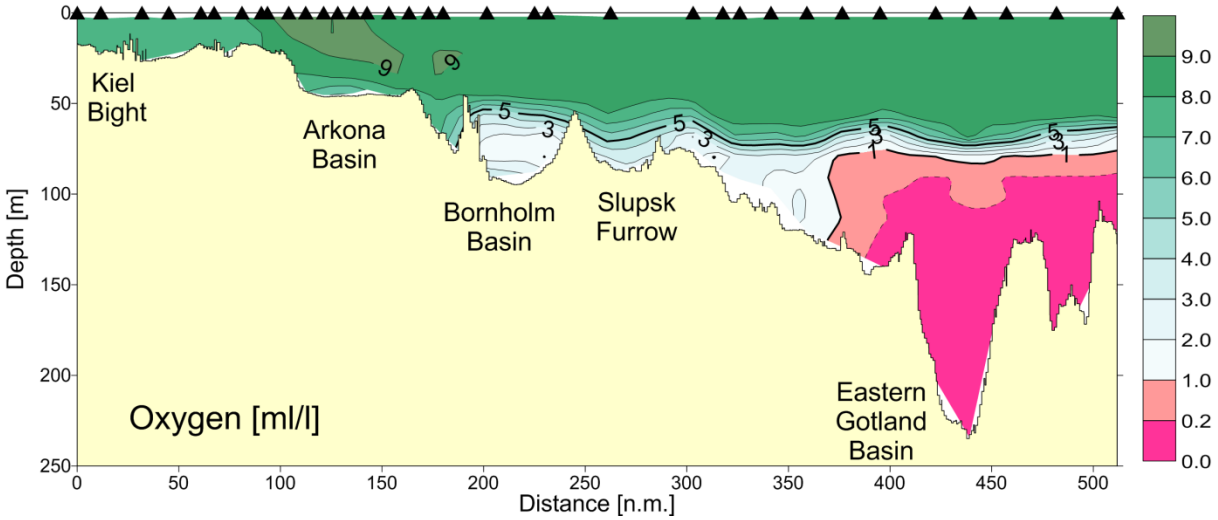

Figure 13: Distribution of oxygen concentration along the talweg of the Baltic Sea from the Kiel bight to the eastern Gotland Basin. The figure is based on the preliminary CTD data gathered from 17.03. - 22.03.2014.

The oxygen distribution along the central transect is shown in Figure 13. Due to the several inflow events the western Baltic and also the western part of the central Baltic is well ventilated. However, in the eastern Gotland basin the oxygen concentrations decreased in, and close to zero below the halocline. This situation is typical for longer stagnation periods. The deep water of the eastern Gotland basin is anoxic and hydrogensulfide is present. The surface layer of the Baltic is well ventilated mainly due to wind induced deep mixing. Since the temperature is well above the temperature of maximum density the typical early spring convection will not happen in this year. Instead, an early onset of thermal stratification is expected.

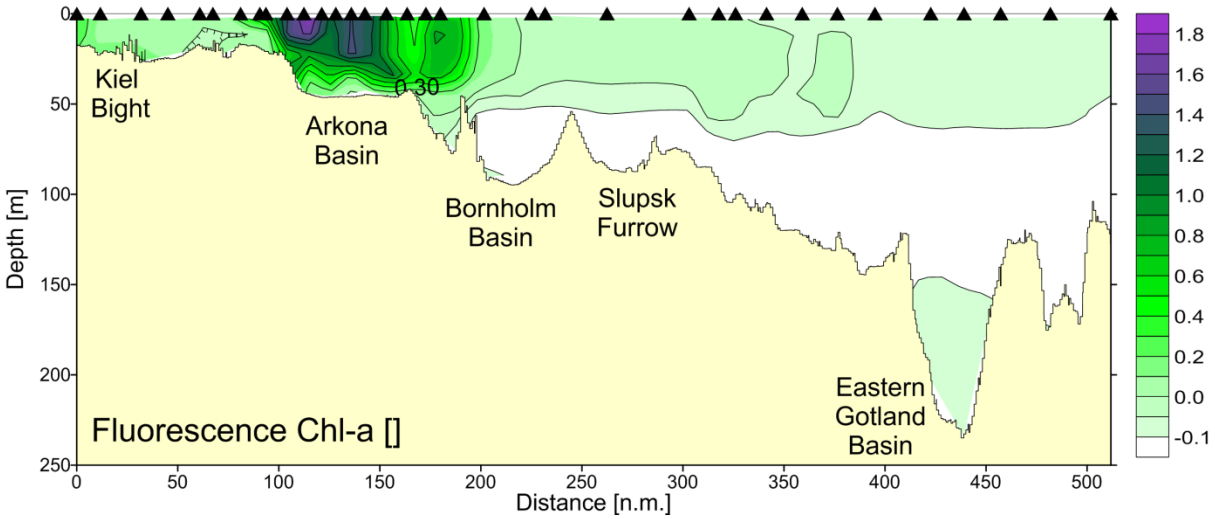

Figure 14: Distribution of Chlorophyll-a fluorescence along the talweg of the Baltic Sea from the Kiel bight to the eastern Gotland Basin. The figure is based on the preliminary CTD data gathered from 17.03. - 22.03.2014.

The chlorophyll-a fluorescence data of the CTD indicate that the spring bloom has already started in the western Baltic (Figure 14). The entire surface layer of the Arkona Basin show high fluorescence values. Also in the western part of the Bornholm Basin the chlorophyll-a fluorescence is enhanced. The low chlorophyll-a fluorescence in the Kiel Bight is caused by the inflow of saline water. This water body depicts high turbidity values. Also the previous inflow waters can be traced along the bottom of the western Baltic with their enhanced turbidity (Figure 15).

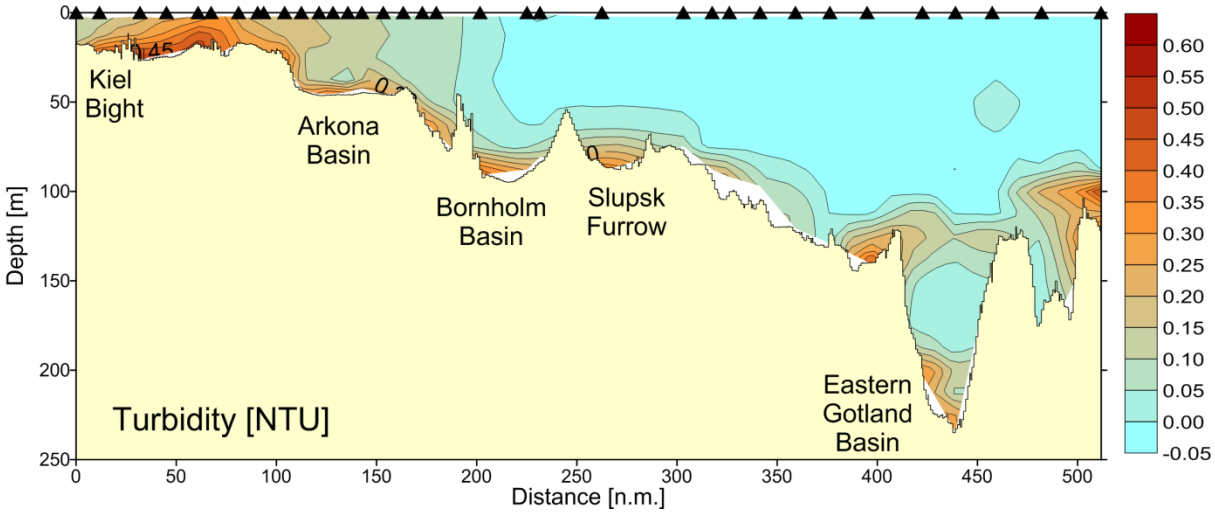

Figure 15: Distribution of turbidity along the talweg of the Baltic Sea from the Kiel bight to the eastern Gotland Basin. The figure is based on the preliminary CTD data gathered from 17.03. - 22.03.2014.

The different water masses observed during the cruise can be clearly identified using its temperature, salinity and oxygen signature. Figure 16 gives an overview about the different water masses in a TS-O diagram. The following water bodies were identified and depicted in the figure:

A – Bottom water in the Arkona Basin from a small inflow event before the cruise
B – Actual saline inflow water west of Darss Sill
C – Intermediate water in the Arkona Basin from an inflow event in January/February?
D – Surface water in the Arkona Basin
E – Bottom water of Bornholm Basin
F – Oxygen depleted sub halocline water in the Bornholm Basin, originating from a late summer/autumn inflow in 2013
G – Slupsk Furrow bottom water

H – sub halocline and bottom water in the eastern Gotland Basin
I – Surface water in the central Baltic

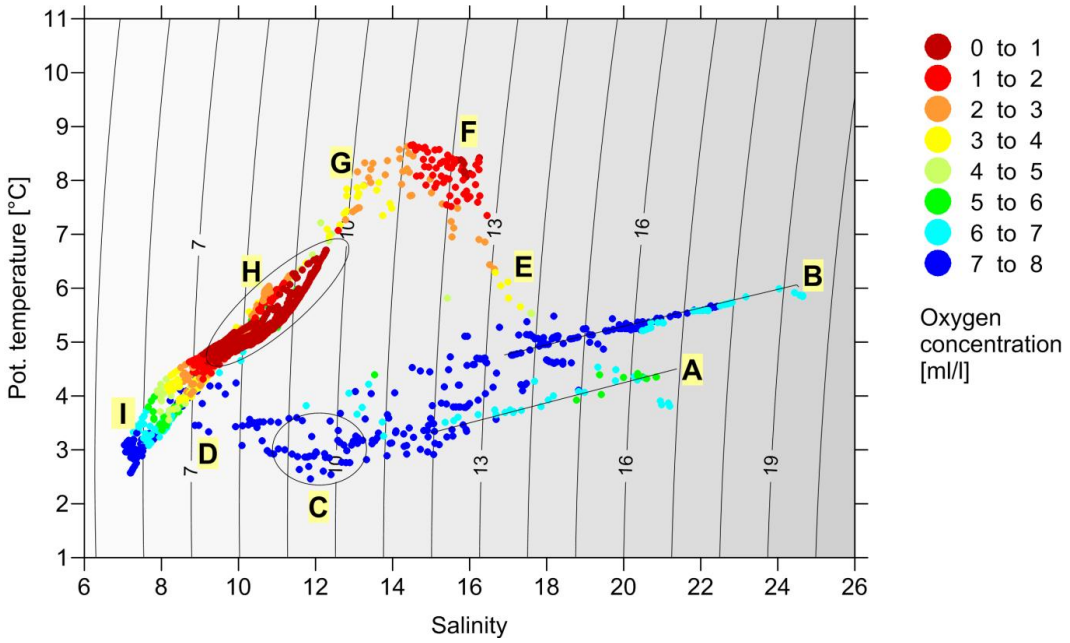

Figure 16: TS-diagram of the Baltic transect. The capital letters indicate the different water masses (see text).

The inflow of dense water into the Bornholm Basin can be illustrated by two profiles subsequently taken at station TF0221 on 20th and on 24th March 2014. The profile gathered on 20th March showed undisturbed conditions, usually found after longer periods without saline inflows (dark lines in Figure 17). The halocline is found at 55m the sill depth on Slupsk Sill. The bottom layer is well mixed and oxygen depleted. The vertical temperature and oxygen gradients are smooth. The profile taken four days later depicts the inflow of dense water into the bottom layer (A) and in the halocline layer (B) at about 60m depth. Temperature is decreasing and oxygen concentration increases. Contemporary the halocline is lifted up by 5m (C) due to the increasing volume of saline water in the basin. The uplift of the halocline above the sill depth of the Slupsk sill will force an overflow of saline water towards the Slupsk Furrow.

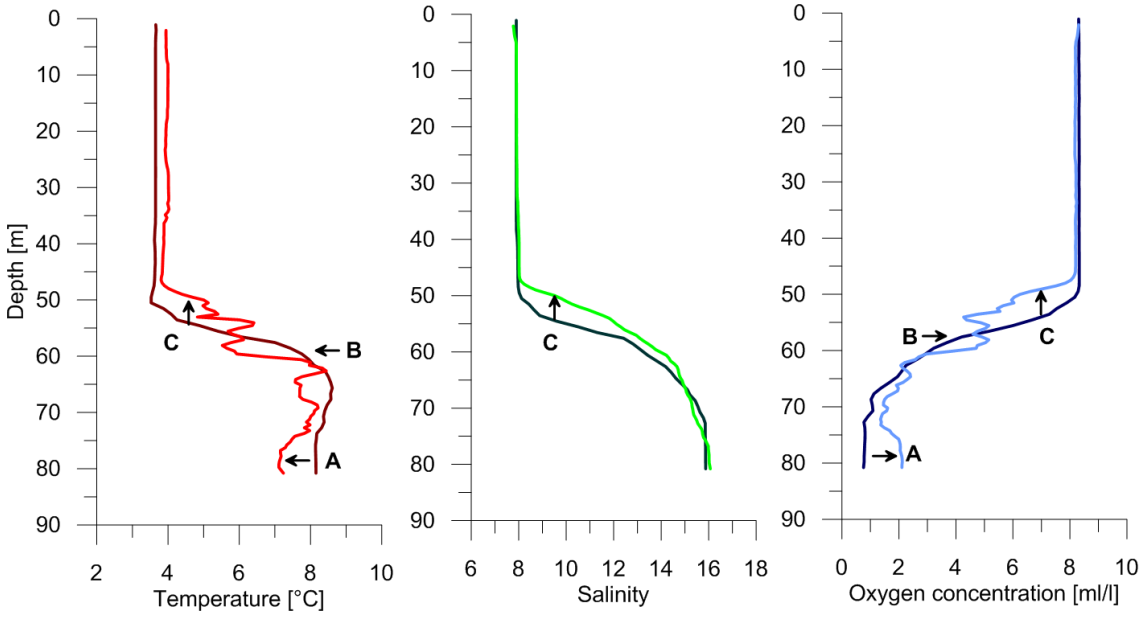

Figure 17: Vertical profiles of CTD data taken on station TF0221 on 20.03.2014 (dark color) and four days later on 24.03.2014 (bright color).

Western Baltic transect

In order to obtain data about the temporal development of the inflow activity in the Danish Straits and the western Baltic Sea, in the last two days of the cruise the western part of the Baltic transect was repeated with an increased station density. The two data sets have a temporal distance of about one week.
The change in surface distributions of temperature and salinity is displayed in Figure 18. The SST ins increased in the Kiel bight, Fehmarn Belt and the Mecklenburg Bight. The surface salinity decreased in the same area due to an westward flow of brackish Baltic surface water after the active inflow has stopped.

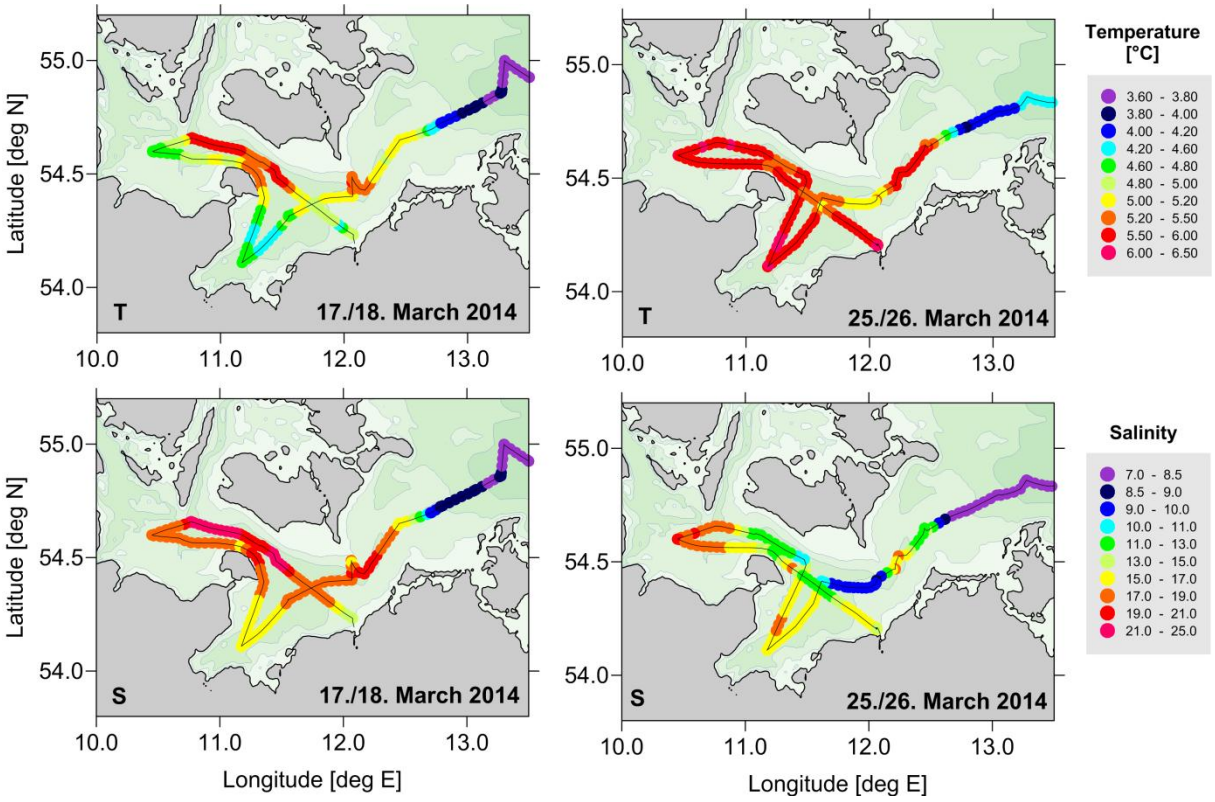

Figure 18: Surface temperature (top) and surface salinity distribution (bottom) along the cruise track of AL433a in the western Baltic observed on 17./18. March (left) and one week later on 25./26. March 2014 (right).

The vertical sections of temperature, salinity and turbidity illustrate the eastward spreading of the saline water along the talweg of the western Baltic (Figure 19, Figure 20 and Figure 23).

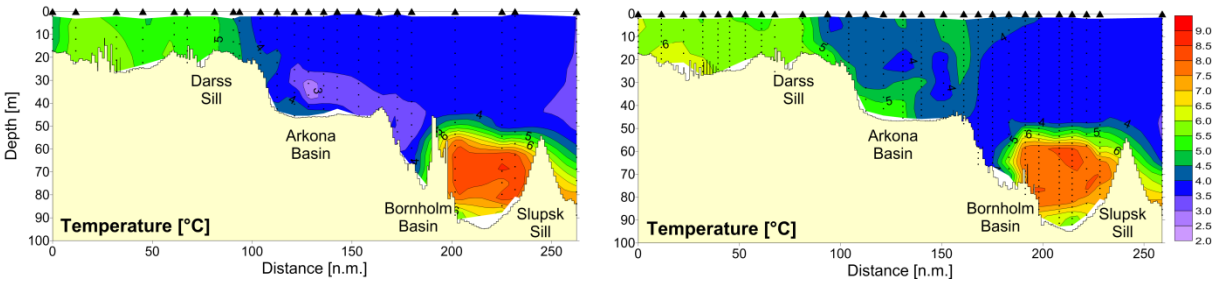

Figure 19: Distribution of temperature along the talweg of the western Baltic Sea from the Kiel bight to the Slupsk Sill. The figure is based on the preliminary CTD data gathered from 17/18 March (left) and from 24/25 March 2014 (right).

The cold water body in the deeper layer of the Arkona Basin was displaced by the inflowing saline waters. The bottom layer in the western part of the Basin is covered with warm >5°C and saline (>20) water. The halocline

in the Arkona Basin was lifted up from 30m to 15m depth. The former bottom water has now reached the Bornholm Basin, seen as cool water body at the bottom. The older deep and bottom water in the Bornholm basin is hoisted by about 5m. Thus the halocline depth in this Basin raised from 55m to 50m depth, and exceeds now the sill depth of the Slupsk Sill.

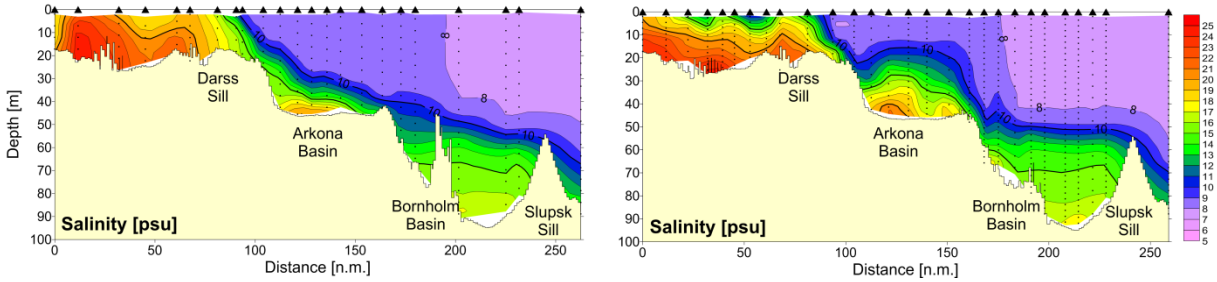

Figure 20: Distribution of salinity along the talweg of the western Baltic Sea from the Kiel bight to the Slupsk Sill. The figure is based on the preliminary CTD data gathered from 17/18 March (left) and from 24/25 March 2014 (right).

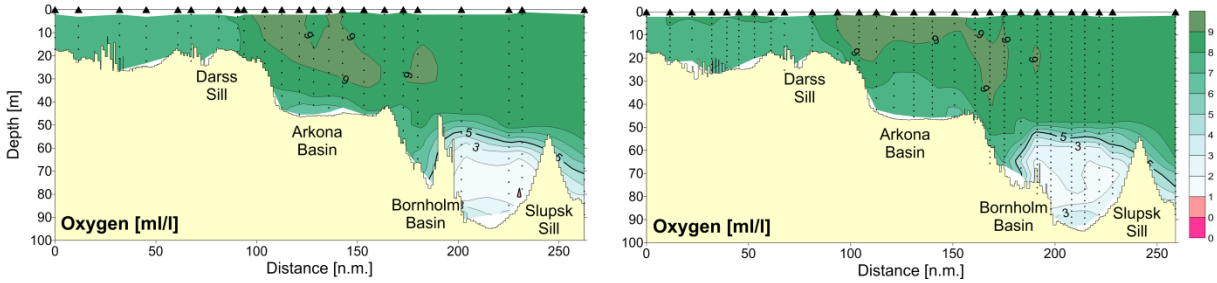

Figure 21: Distribution of oxygen concentration along the talweg of the western Baltic Sea from the Kiel bight to the Slupsk Sill. The figure is based on the preliminary CTD data gathered from 17/18 March (left) and from 24/25 March 2014 (right).

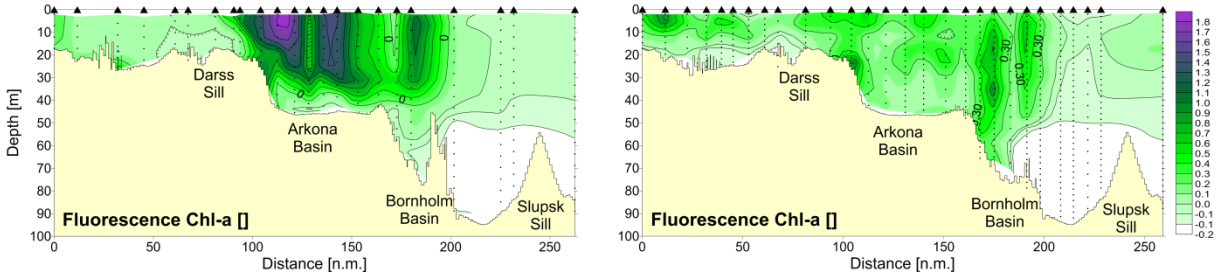

Figure 22: Distribution of chlorophyll-a fluorescence along the talweg of the western Baltic Sea from the Kiel bight to the Slupsk Sill. The figure is based on the preliminary CTD data gathered from 17/18 March (left) and from 24/25 March 2014 (right).

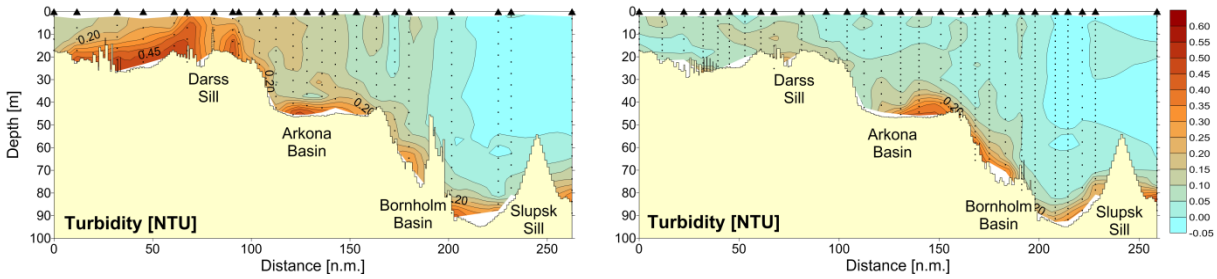

Figure 23: Distribution of turbidity along the talweg of the western Baltic Sea from the Kiel bight to the Slupsk Sill. The figure is based on the preliminary CTD data gathered from 17/18 March (left) and from 24/25 March 2014 (right).

Determination of mercury species in the Baltic Sea

About 50 samples for determination of mercury species were already analyzed on board according to the method of Munson et al. (2014). The method is based on the release of the mercury species from the seawater matrix by application of conc. sulfuric acid and ascorbic acid. The usually applied method “EPA 1630” relies on distillation of the mercury species for separation from the seawater matrix. For comparison of the new versus the old method, parallel samples were acidified for quantification according to the EPA recipe in the IOW lab. The dissolved total-mercury will be determined after tin(II)chloride reduction and cold vapour atomic fluorescence detection.

Preliminary results indicate that from the Belt Sea to the northern Gotland Sea elevated concentration of MeHg are present in the Gotland Sea near the bottom and especially in turbid intermediate layers. In the Belt Sea elevated concentrations were observed in surface waters.

A rain water sample was also analysed on board showing clearly higher concentrations of MeHg and reactive Hg compared to seawater. The analysis of 12 air samples didn’t show any presence of dimethylmercury.

4. Stations and deployments

Table 5: List of stations, CTD casts, net samplings and additional samplings

Stat No.	Stat.Name (Depth)		Date	Time [UTC]	Latitude	Longitude	CTD cast(s)	Nets & samples
198	TFO5 (12.5m)	Begin	17.03.2014	09:00	54° 13.88'N	12° 04.53' E	V0001F01	
		End	17.03.2014	09:15	54° 13.91'N	12° 04.51' E		
199	TF0011 (24.8m)	Begin	17.03.2014	11:54	54° 24.76' N	11° 37.04' E	V0002F01	Hg
		End	17.03.2014	12:06	54° 24.75' N	11° 37.05' E		
200	TF0010 (27.5m)	Begin	17.03.2014	14:28	54° 33.11' N	11° 19.23' E	V0003F01	
		End	17.03.2014	14:42	54° 33.10' N	11° 19.23' E		
201	TF0361 (22.7m)	Begin	17.03.2014	17:35	54° 39.49' N	10° 46.02' E	V0004F01 V0004K02 V0004K03	Hg
		End	17.03.2014	18:15	54° 39.45' N	10° 45.90' E		
202	TF0360 (17.8m)	Begin	17.03.2014	19:32	54° 35.99' N	10° 27.06' E	V0005F01	Bio Hg
		End	17.03.2014	19:51	54° 35.95' N	10° 27.04' E		
203	TF0022 (23.2m)	Begin	18.03.2014	01:13	54° 06.57' N	11° 10.44' E	V0006F01 V0006F02 V0006F03	Bio
		End	18.03.2014	01:48	54° 06.55' N	11° 10.47' E		
204	TF0012 (24.5m)	Begin	18.03.2014	03:41	54° 18.88' N	11° 33.02' E	V0007F01 V0007F02	Bio Hg
		End	18.03.2014	04:07	54° 18.89' N	11° 32.98' E		
205	TF0041 (20.0m)	Begin	18.03.2014	05:56	54° 24.06' N	12° 04.06' E	V0008F01	
		End	18.03.2014	06:05	54° 24.05' N	12° 04.10' E		
206	TF0040 (10.0m)	Begin	18.03.2014	06:48	54° 29.29' N	12° 03.89' E	V0009F01	
		End	18.03.2014	06:55	54° 29.26' N	12° 03.88' E		
207	TF0046 (26.7m)	Begin	18.03.2014	07:52	54° 28.03' N	12° 13.00' E	V0010F01	Bio
		End	18.03.2014	08:15	54° 28.04' N	12° 12.99' E		
208	TF0002 (18.1m)	Begin	18.03.2014	09:30	54° 39.00' N	12° 27.04' E	V0011F01	
		End	18.03.2014	09:40	54° 39.04' N	12° 27.06' E		
209	TF0001 (21.1m)	Begin	18.03.2014	10:32	54° 41.81' N	12° 42.44' E	V0012F01	
		End	18.03.2014	10:40	54° 41.83' N	12° 42.45' E		
210	TF0030 (22.5m)	Begin	18.03.2014	11:08	54° 43.49' N	12° 47.10' E	V0013F01	Bio
		End	18.03.2014	11:28	54° 43.46' N	12° 47.11' E		
211	TF0115 (30.1m)	Begin	18.03.2014	12:29	54° 47.67' N	13° 03.58' E	V0014F01	
		End	18.03.2014	12:40	54° 47.66' N	13° 03.58' E		
212	TF0114 (44.5m)	Begin	18.03.2014	13:32	54° 51.58' N	13° 16.52' E	V0015F01	
		End	18.03.2014	13:45	54° 51.57' N	13° 16.52' E		
213	TF0069 (46.5m)	Begin	18.03.2014	14:41	54° 59.98' N	13° 18.06' E	V0016F01	
		End	18.03.2014	14:53	54° 59.95' N	13° 18.02' E		
214	TF0113 (47.0m)	Begin	18.03.2014	15:52	54° 55.49' N	13° 30.00' E	V0017F01 V0017F02	Bio
		End	18.03.2014	16:26	54° 55.49' N	13° 29.96' E		
215	TF0105 (46.5m)	Begin	18.03.2014	17:17	55° 01.52' N	13° 36.39' E	V0018F01 V0018K02 V0018K03	
		End	18.03.2014	17:48	55° 01.46' N	13° 36.26' E		
216	TF0104 (46.4m)	Begin	18.03.2014	18:45	55° 04.08' N	13° 48.82' E	V0019F01	Hg
		End	18.03.2014	19:00	55° 04.07' N	13° 48.76' E		
217	ABBoje (45.7m)	Begin	18.03.2014	20:16	54° 52.80' N	13° 51.09' E	V0020F01	
		End	18.03.2014	20:30	54° 52.79' N	13° 51.06' E		
218	TF0121 (29.8m)	Begin	18.03.2014	21:34	54° 42.60' N	13° 56.91' E	V0021F01	
		End	18.03.2014	21:45	54° 42.55' N	13° 56.85' E		
219	TF0150 (21.9m)	Begin	18.03.2014	22:29	54° 36.70' N	14° 02.61' E	V0022F01	Hg
		End	18.03.2014	22:40	54° 36.67' N	14° 02.58' E		
220	TF0112 (40.6m)	Begin	18.03.2014	23:59	54° 48.20' N	13° 57.49' E	V0023F01	
		End	19.03.2014	00:10	54° 48.19' N	13° 57.46' E		

Stat No.	*Stat.Name (Depth)*		*Date*	*Time [UTC]*	*Latitude*	*Longitude*	*CTD cast(s)*	*Nets & samples*
221	TF0111 (44.8m)	Begin	19.03.2014	00:50	54° 53.43' N	13° 58.13' E	V0024F01	Hg
		End	19.03.2014	01:00	54° 53.43' N	13° 58.11' E		
222	TF0109 (48.0m)	Begin	19.03.2014	01:49	54° 59.47' N	14° 05.05' E	V0025F01	Bio
		End	19.03.2014	02:22	54° 59.45' N	14° 05.04' E	V0025F02	
223	TF0103 (47.3m)	Begin	19.03.2014	02:58	55° 03.81' N	13° 59.29' E	V0026F01	
		End	19.03.2014	03:10	55° 03.77' N	13° 59.26' E		
224	TF0102 (45.3m)	Begin	19.03.2014	03:58	55° 09.31' N	13° 56.46' E	V0027F01	
		End	19.03.2014	04:10	55° 09.27' N	13° 56.45' E		
225	TF0145 (47.1m)	Begin	19.03.2014	05:33	55° 09.99' N	14° 15.05' E	V0028F01	
		End	19.03.2014	05:45	55° 09.99' N	14° 14.95' E		
226	TF0144 (46.8m)	Begin	19.03.2014	06:54	55° 14.98' N	14° 30.41' E	V0029F01	
		End	19.03.2014	07:08	55° 14.94' N	14° 30.42' E		
227	TF0140 (69.7m)	Begin	19.03.2014	08:24	55° 27.98' N	14° 43.02' E	V0030F01	Hg
		End	19.03.2014	08:38	55° 27.96' N	14° 42.97' E		
228	TF0142 (60.7m)	Begin	19.03.2014	09:21	55° 24.31' N	14° 32.26' E	V0031F01	
		End	19.03.2014	09:33	55° 24.23' N	14° 32.25' E		
229	TF0200 (91.6m)	Begin	20.03.2014	14:41	55° 22.95' N	15° 20.06' E	V0032F01	Hg
		End	20.03.2014	14:55	55° 22.90' N	15° 20.10' E		
230	TF0214 (93.8m)	Begin	20.03.2014	16:48	55° 09.58' N	15° 39.63' E	V0033F01	Hg
		End	20.03.2014	17:00	55° 09.60' N	15° 39.64' E		
231	TF0213 (89.5m)	Begin	20.03.2014	18:20	55° 15.00' N	15° 58.97' E	V0034F01	Bio
		End	20.03.2014	19:03	55° 14.99' N	15° 59.05' E	V0034F02	Hg
232	TF0221 (82.7m)	Begin	20.03.2014	19:50	55° 13.34' N	16° 09.98' E	V0035F01	
		End	20.03.2014	20:05	55° 13.31' N	16° 10.12' E		
233	TF0222 (91.4m)	Begin	20.03.2014	23:00	55° 13.02' N	17° 04.03' E	V0036F01	
		End	20.03.2014	23:15	55° 13.01' N	17° 04.09' E		
234	TF0256 (78.2m)	Begin	21.03.2014	03:01	55° 19.62' N	18° 14.14' E	V0037F01	Hg
		End	21.03.2014	03:15	55° 19.56' N	18° 14.21' E		
235	TF0259 (90.3m)	Begin	21.03.2014	04:59	55° 33.00' N	18° 24.03' E	V0038F01	Bio
		End	21.03.2014	05:42	55° 32.90' N	18° 24.09' E	V0038F02	
236	TF0255 (96.3m)	Begin	21.03.2014	06:44	55° 37.99' N	18° 36.04' E	V0039F01	Hg
		End	21.03.2014	07:18	55° 38.02' N	18° 36.02' E	V0039F02	
237	TF0253 (101.2m)	Begin	21.03.2014	08:53	55° 50.39' N	18° 52.00' E	V0040F01	
		End	21.03.2014	09:05	55° 50.38' N	18° 52.03' E		
238	TF0250 (124.9m)	Begin	21.03.2014	10:54	56° 04.97' N	19° 10.03' E	V0041_01	Hg
		End	21.03.2014	11:19	56° 04.94' N	19° 09.93' E	V0041F02	
							V0041F03	
239	TF0263 (134.0m)	Begin	21.03.2014	13:30	56° 20.77' N	19° 22.66' E	V0042F01	
		End	21.03.2014	13:45	56° 20.73' N	19° 22.61' E		
240	TF0260 (144.2m)	Begin	21.03.2014	15:41	56° 37.99' N	19° 35.03' E	V0043F01	Hg
		End	21.03.2014	16:13	56° 37.93' N	19° 35.06' E	V0043F02	
241	TF0272 (206.9m)	Begin	21.03.2014	18:52	57° 4.31' N	19° 49.85' E	V0044F01	
		End	21.03.2014	19:44	57° 4.29' N	19° 49.78' E	V0044F02	
							V0044K03	
							V0044K04	
242	TF0271 (238.1m)	Begin	21.03.2014	21:32	57° 19.18' N	20° 03.08' E	V0045F01	Bio
		End	22.03.2014	05:51	57° 19.20' N	20° 02.96' E	V0045F02	MolBio
							V0045F03	Hg
							V0045F04	
							V0045F05	
							V0045F06	
							V0045F07	
243	GONE (215.0m)	Begin	22.03.2014	07:17	57° 21.94' N	20° 20.82' E	V0046F01	
		End	22.03.2014	07:33	57° 21.96' N	20° 20.76' E		

Stat No.	*Stat.Name (Depth)*		*Date*	*Time [UTC]*	*Latitude*	*Longitude*	*CTD cast(s)*	*Nets & samples*
244	GONE (216.0m)	Begin	22.03.2014	08:30	57° 21.95' N	20° 20.73' E	Mooring GotlandNE	
		End	22.03.2014	10:14	57° 21.94' N	20° 20.78' E		
245	GONE (215.0m)	Begin	22.03.2014	10:23	57° 21.90' N	20° 20.59' E	V0046F02	
		End	22.03.2014	10:39	57° 21.87' N	20° 20.60' E		
246	TF0270 (144.1m)	Begin	22.03.2014	12:12	57° 36.97' N	20° 10.02' E	V0047F01 V0047F02	
		End	22.03.2014	12:43	57° 36.99' N	20° 10.04' E		
247	TF0286 (193.8m)	Begin	22.03.2014	15:02	57° 59.99' N	19° 53.97' E	V0048F01 V0048F02	Hg
		End	22.03.2014	15:48	57° 59.98' N	19° 54.02' E		
248	TF0285 (123.2m)	Begin	22.03.2014	18:41	58° 26.51' N	20° 20.05' E	V0049F01 V0049F02	Hg
		End	22.03.2014	19:15	58° 26.52' N	20° 20.04' E		
249	TF0284 (443.4m)	Begin	23.03.2014	01:45	58° 35.03' N	18° 14.02' E	V0050F01 V0050F02 V0050F03 V0050F04 V0050F05	MolBio Hg
		End	23.03.2014	06:40	58° 35.01' N	18° 14.01' E		
250	TF0240 (166.0m)	Begin	23.03.2014	10:25	58° 00.01' N	18° 00.07' E	V0051F01	
		End	23.03.2014	11:10	58° 00.09' N	18° 00.16' E		
251 252	TF0245 (110.7m)	Begin	23.03.2014	16:13	57° 07.02' N	17° 39.98' E	V0052F01 V0052F02 V0052K03 V0052K04	
		End	23.03.2014	17:10	57° 06.92' N	17° 40.11' E		
253	TF0222 (91.8m)	Begin	24.03.2014	04:51	55° 13.00' N	17° 04.00' E	V0053_01	
		End	24.03.2014	05:05	55° 13.00' N	17° 03.92' E		
254	TF0222 (92.2m)	Begin	24.03.2014	05:13	55° 13.02' N	17° 03.16' E	ScanFish deployment (rejected)	
		End	24.03.2014	05:52	55° 13.14' N	17° 00.09' E		
255	TF0221 (83.1m)	Begin	24.03.2014	08:30	55° 13.28' N	16° 09.98' E	V0054_01	
		End	24.03.2014	08:40	55° 13.31' N	16° 10.06' E		
256	TF0213 (91.4m)	Begin	24.03.2014	09:19	55° 14.98' N	15° 59.00' E	V0055F01 V0055F02	Bio
		End	24.03.2014	10:05	55° 15.03' N	15° 58.98' E		
257	TF0212 (95.5m)	Begin	24.03.2014	10:48	55° 18.11' N	15° 47.71' E	V0056_01	
		End	24.03.2014	11:00	55° 18.11' N	15° 47.69' E		
258	TF0211 (98.6m)	Begin	24.03.2014	11:38	55° 19.80' N	15° 36.87' E	V0057_01	
		End	24.03.2014	11:50	55° 19.82' N	15° 36.90' E		
259	TF0200 (91.8m)	Begin	24.03.2014	12:48	55° 22.93' N	15° 19.98' E	V0058_01	
		End	24.03.2014	13:00	55° 22.93' N	15° 19.98' E		
260	TW0030 (83.1m)	Begin	24.03.2014	13:42	55° 26.47' N	15° 10.04' E	V0059_01	Bio
		End	24.03.2014	13:55	55° 26.52' N	15° 10.05' E		
261	TW0025 (73.9m)	Begin	24.03.2014	14:41	55° 29.67' N	14° 56.99' E	V0060F01	
		End	24.03.2014	14:55	55° 29.67' N	14° 56.99' E		
262	TF0140 (69.8m)	Begin	24.03.2014	15:43	55° 28.01' N	14° 43.00' E	V0061_01	
		End	24.03.2014	15:55	55° 27.93' N	14° 43.00' E		
263	TF0142 (70.5m)	Begin	24.03.2014	16:35	55° 23.58' N	14° 33.30' E	V0062_01	
		End	24.03.2014	16:47	55° 23.63' N	14° 33.38' E		
264	TW0020 (49.8m)	Begin	24.03.2014	17:31	55° 18.21' N	14° 24.92' E	V0063_01	
		End	24.03.2014	17:44	55° 18.23' N	14° 24.78' E		
265	TF0145 (47.0m)	Begin	24.03.2014	18:43	55° 10.00' N	14° 15.05' E	V0064F01	
		End	24.03.2014	18:55	55° 09.97' N	14° 14.98' E		
266	TF0103 (47.3m)	Begin	24.03.2014	19:53	55° 03.77' N	13° 59.38' E	V0065_01	
		End	24.03.2014	20:04	55° 03.77' N	13° 59.31' E		
267	TF0109 (48.3m)	Begin	24.03.2014	20:32	55° 00.00' N	14° 05.04' E	V0066_01	Bio
		End	24.03.2014	20:42	55° 00.00' N	14° 05.01' E		
268	ABBoje (47.0m)	Begin	24.03.2014	21.39	54° 53.14' N	13° 51.36' E	V0067_01	
		End	24.03.2014	21:50	54° 53.20' N	13° 51.34' E		

Stat No.	Stat.Name (Depth)		Date	Time [UTC]	Latitude	Longitude	CTD cast(s)	Nets & samples
269	TW0010 (47.2m)	Begin	24.03.2014	22:29	54° 59.80' N	13° 45.08' E	V0068_01	
		End	24.03.2014	22:40	54° 59.80' N	13° 45.02' E		
270	TF0113 (47.3m)	Begin	24.03.2014	23:32	54° 55.42' N	13° 29.99' E	V0069F01	Bio
		End	24.03.2014	23:59	54° 55.44' N	13° 29.97' E	V0069F02	
271	TW0009 (45.2m)	Begin	25.03.2014	00:50	54° 49.99' N	13° 39.99' E	V0070_01	
		End	25.03.2014	01:00	54° 50.03' N	13° 39.98' E		
272	TW0007 (m)	Begin	25.03.2014	01:45	54° 50.00' N	13° 26.88' E	V0071_01	
		End	25.03.2014	01:55	54° 50.00' N	13° 26.86' E		
273	TF0114 (45.2m)	Begin	25.03.2014	02:31	54° 51.56' N	13° 16.60' E	V0072F01	
		End	25.03.2014	02:38	54° 51.57' N	13° 16.57' E		
274	TF0115 (30.4m)	Begin	25.03.2014	03:30	54° 47.69' N	13° 03.49' E	V0073_01	
		End	25.03.2014	03:40	54° 47.70' N	13° 03.51' E		
275	TF0030 (23.2m)	Begin	25.03.2014	04:39	54° 43.41' N	12° 46.99' E	V0074F01	Bio
		End	25.03.2014	05:00	54° 43.45' N	12° 46.91' E		
276	TF0002 (18.1m)	Begin	25.03.2014	06:17	54° 39.00' N	12° 27.00' E	V0075_01	
		End	25.03.2014	06:23	54° 39.00' N	12° 27.01' E		
277	TF0046 (28.1m)	Begin	25.03.2014	08:02	54° 28.03' N	12° 12.98' E	V0076F01	Bio
		End	25.03.2014	08:22	54° 28.06' N	12° 12.83' E		
278	TF0041 (19.4m)	Begin	25.03.2014	09:12	54° 24.38' N	12° 03.62' E	V0077_01	
		End	25.03.2014	09:31	54° 24.27' N	12° 03.41' E	V0077K02 V0077K03	
279	TW0005 (22.3m)	Begin	25.03.2014	11:00	54° 23.29' N	11° 49.94' E	V0078_01	
		End	25.03.2014	11:10	54° 23.28' N	11° 49.87' E		
280	TF0011 (25.4m)	Begin	25.03.2014	11:53	54° 24.84' N	11° 36.99' E	V0079_01	
		End	25.03.2014	12:00	54° 24.87' N	11° 36.99' E		
281	TF0012 (25.0m)	Begin	25.03.2014	12:43	54° 18.87' N	11° 33.01' E	V0080F01	Bio
		End	25.03.2014	13:03	54° 18.88' N	11° 33.03' E		
282	TW0004 (22.6m)	Begin	25.03.2014	13:56	54° 12.75' N	11° 24.07' E	V0081F01	
		End	25.03.2014	14:07	54° 12.76' N	11° 24.02' E		
283	TF0022 (23.6m)	Begin	25.03.2014	15:08	54° 6.62' N	11° 10.47' E	V0082F01	Hg
		End	25.03.2014	15:16	54° 6.62' N	11° 10.50' E		
284	TW0003 (26.9m)	Begin	25.03.2014	17:40	54° 28.32' N	11° 29.05' E	V0083_01	
		End	25.03.2014	17:50	54° 28.35' N	11° 28.96' E		
285	TF0010 (28.5m)	Begin	25.03.2014	18:40	54° 33.14' N	11° 19.20' E	V0084_01	
		End	25.03.2014	18:50	54° 33.14' N	11° 19.15' E		
286	TW0002 (23.9m)	Begin	25.03.2014	19:40	54° 37.21' N	11° 4.29' E	V0085F01	
		End	25.03.2014	19:50	54° 37.25' N	11° 4.08' E		
287	TF0361 (23.6m)	Begin	25.03.2014	20:44	54° 39.45' N	10° 45.97' E	V0086_01	
		End	25.03.2014	20:53	54° 39.48' N	10° 45.90' E		
288	TF0360 (18.8m)	Begin	25.03.2014	21:53	54° 35.97' N	10° 27.00' E	V0087_01	
		End	25.03.2014	22:03	54° 36.02' N	10° 26.97' E		

Table 6: Mooring positions in the eastern Gotland Basin

Name	Depth	Latitude	Longitude	deployed	recovered	Comment
GONE (NE26)	220	57°21.960'S	20°20.530'E	*07.11.2013*	22.03.2014 08:00	Main station
	220	57°21.880'S	20°20.630'E			ADCP, end of ground rope
GLNE (NE27)	214.9	57°21.942'S	20°20.782'E	22.03.2014 10:00	*Nov 2014*	Main station
	216.0	57°21.968'S	20°20.545'E			ADCP, end of ground rope