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Regional
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December 19th 2005

Cruise Report LANCE 18/2005

Ship:	RV LANCE
Cruise:	LA1805
Dates:	September 19th – October 11th 2005
Port Calls:	Tromsø/Norway
Institute:	ZMAW, Institut für Meereskunde, Universität Hamburg
Scientific crew:	8
Chief Scientist:	John Mortensen
Principal Project:	SFB 512 E2 (The East Greenland Current, an indicator of the low frequency variability of the outflow of the system Arctic Ocean/Nordic Seas)
Research area:	Nordic Seas
Working Time Zone:	UTC
Master:	Frits R. Johansen

Participants:

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Latarius, Katrin	CTD	IfM HH
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Scientific Objectives

The RV LANCE 18/2005 cruise (The East Greenland Current, an indicator of the low frequency variability of the outflow of the system Arctic Ocean/Nordic Seas) was conducted by the **ZMAW, Institut für Meereskunde, Universität Hamburg**, with the main objective of collecting hydrographic observations on the East Greenland continental shelf and slope in the Greenland Sea as part of the German project SFB 512, E2. The main goal of SFB 512, E2, is to understand how changes in the outflows of the Arctic Ocean/Nordic Seas system correlate with measured changes in the East Greenland Current. The LANCE 18/2005 cruise had the following aims:

1. to carry out hydrographic investigations along the 74°N latitude on the East Greenland continental shelf and slope and along sections in the Greenland Sea and adjacent Seas.

2. to service two tube moorings (in Tube18 and Tube19; out Tube22 and Tube23) and an ADCP (Acoustic Doppler Current Profiler) mooring on the East Greenland shelf.

3. to service two deep sea moorings (HH3-04 and HH5-04).

4. to collect underway ship-borne ADCP data (150kHz) along hydrographic transects.

5. to deploy 9 APEX-floats at four different sites in the Nordic Seas.

Narrative of the cruise

The scientific party from Germany arrived according to schedule at Tromsø, Norway, in the afternoon of Sunday September 18th 2005. The scientific equipment was loaded onto RV Lance, installed and made sea safe by early Monday evening, September 19th. RV Lance left the port of Tromsø Monday evening, September 19th at 1830 UTC (2030 hours local time). With an unfavourable weather forecast for the coast outside Tromsø, it was decided to steam with reduced speed during the night in the shelter of the estuary and await the passage of the low-pressure system.

Tuesday morning September 20th the low-pressure system had still to pass the area. Based on weather forecasts and reports from other ships to the south it was decided to leave the coast and seek shelter in the estuary and follow the development closely. By Tuesday evening weather had improved so much that course was set for the coast and the first of four planned APEX float deployment sites in the Nordic Seas near to 75°N and 0°W in the centre of the Greenland Sea. During Wednesday and Thursday RV Lance fought its way through heavy seas and strong winds with conditions only improving slowly. Before arriving at the first APEX float-deploying site in the Greenland Sea the next low-pressure system with a strong gale warning was approaching with alarming speed. The first APEX float was deployed Friday morning at 0614 UTC at 75°N and 0°W. A few hours later the third and last float for this site went into the water at 1023 UTC and course was now set for the ice and the inner CTD station of the 74°N section close to Greenland.

CTD winch. Photo: N. Verch.

In the late hours of Friday and early hours of Saturday September 24th wind increased to a gale. Later Saturday wind increased further into a strong gale with mean wind flipping around 25 m/s. During the steam towards East Greenland the pack ice was met at 11°W. A lower ice concentration was observed between 16°W and the compact pack ice belt near the coast. In the afternoon of Saturday, September 24th RV Lance settled down in the fast moving ice near the coast of East Greenland; southward ice drift velocities of 2 knots were observed. During the night between Saturday and Sunday swells had grown to a size which made it dangerous for the ship to stay in the ice and the ship was forced into more open waters. Sunday September 25th was used to steam towards the first CTD station on the 74°N section and for letting the elements calm down. During the steam a tube mooring was made ready for deployment. When arriving the 74°N latitude it became clear that the planned CTD stations nearest to Greenland were covered with very compact pack ice. Entering the pack ice was still out of question due to high swells. The ship now went into a waiting position using some time to test the CTD and polish the routines connected to a CTD cast.

Monday morning, September 26th at 0600 UTC, course was set into the pack ice towards Greenland and the first CTD station on the 74°N section. Progress was slow, as the pack ice was very compact after a longer period of strong northerly winds. Avoiding wasting too much time in navigating in the compact pack ice, the first and most westerly CTD station of the 74°N section was occupied at 19°W at 0731 UTC. The occupation of the 74°N section now continued eastward without any major problems except the path being filled with ice in changing concentration. In the afternoon Tube 22 was successfully deployed in an open lead at the 200m isobath near 18°W. The work along the 74°N section was first stopped in the early hours of Tuesday morning September 27th at 0438 UTC where course was set for the ADCP-04 mooring. Tuesday would be devoted to mooring work even though the weather forecast predicted the arrival of the next low-pressure system.

The ADCP-04 mooring was hooked up in the first dredging attempt and the ADCP was brought safely onboard at 0942 UTC Tuesday morning, September 27th 2005. A subsequent search for Tube 18 went on in the period 1015 UTC to 1125 UTC with no sign of the Tube mooring. Due to the approaching low pressure a dredging attempt was postponed, taking place some days later. Course was now set for Tube 19, which was successfully recovered at 1313 UTC and its replacement Tube 23 was safe in the water at 1514 UTC. Wind had now reached gale force. The sea state was still acceptable for mooring work, therefore course was set for the first deep mooring HH5-04. Recovery work on mooring HH5-04 started at 1636 UTC. When listening for the releaser, there was no sign of it. However, release order was given and the first floatation was observed breaking the surface a few minutes later. Only with minor problems was the mooring brought safely on deck at 1721 UTC. Course was now set for the last mooring to be recovered HH3-04. In the rapidly decreasing light and increasing waves release order was given at 1912 UTC. After over five minutes of tense waiting a group of floats was finally spotted. In strong wind and high waves the last instrument was finally brought on deck at 2029 UTC.

Wednesday September 28th was spent in shelter of the ice, waiting for the wind and sea to calm down. The day was used to make equipment and instruments ready for redeployment in the coming days. Thursday morning, September 29th, the wind had dropped below 10 m/s but heavy swells were still arriving from the east, making work difficult during the day. ADCP-05 was deployed at 0920 UTC. In the period 1032 UTC and 1123 UTC a search and one dredging attempt for Tube 18 was made without success. In the afternoon deep mooring HH5-05 was brought into the water with some problems. During a critical moment near the end of the last rope length to be deployed the rope was suddenly caught up in a block. The damage was so severe that the rope length had to be replaced by a new one. The anchor weight of deep mooring HH5-05 was released at 1655 UTC after nearly 2 hours of work. CTD work along the 74°N section was then resumed at 1857 UTC and continued to 0207 UTC the night between Thursday and Friday, when strong winds and heavy seas stopped all further work.

Friday September 30th was again spent in shelter of the ice, waiting for the wind and sea to calm down. In the afternoon equipment and instruments were made ready for the deployment of the last deep mooring HH3-05 on one of the coming days. During the work on deck the temperature and wind speed were observed to be –8.5°C and 14 m/s, respectively, the "equivalent temperature" was calculated to be –27.5°C.

Scientific crew. Photo: K. Rolle

Work was resumed Saturday noon October 1st with the deployment of last deep mooring HH3-05 at 1238 UTC. CTD work along the 74°N section was resumed at 1349 UTC. With decreasing winds and falling seas CTD work ran relative smoothly during the last part of the day. The 74°N section was finished at 1955 UTC Sunday afternoon October 2nd. A CTD section towards Jan Mayen took over and CTD work progress along this line was finished at 0524 UTC Tuesday morning, October 4th. A disturbing factor during the CTD work was the never ending row of sizable swells stressing the sea cable to a high degree and seen as pressure spikes in the last 100m of each CTD cast. After another passage of a low pressure system, CTD work was resumed at 0941 UTC Wednesday October 5th along a section from Jan Mayen into the central parts of the Iceland Sea. Though swells were a disturbing factor in the beginning of the day, work continued and the section was finished at 0856 UTC Thursday morning October 6th. APEX floats were deployed in connection with the occupation of the last two stations of the section. With an unfavourable weather forecast, it was decided to set course for Tromsø. During the transit to

Tromsø three APEX floats were deployed. After a rolling transit Tromsø was reached Monday morning October 10th at 0715 CET.

CTD (SBE 911plus CTD system) Sensor Status

Sensor	Serial no.	Calibration date
Temperature	4022	31.Mar. 2004
Conductivity	2433	08.Apr. 2004
Pressure	86555	17.Jul. 2001

For the control of the temperature and pressure SIS GmbH digital reversing thermometers and pressure sensor, RTM4002X and RPM6000X were applied. Additionally a Benthos Altimeter Model PSA-916 was mounted on the rosette.

Preliminary Results

CTD (Conductivity, Temperature and Depth) profiles were obtained along three sections. The first section had end points near the coast of East Greenland and in the deeper part of the Greenland Sea Gyre, thus crossing the East Greenland Current. The second section went from the deeper part of the Greenland Sea to Jan Mayen crossing the Jan Mayen Polar Current. The third section went from Jan Mayen into the central parts of the Iceland Sea. For locations of sections and stations see Figure 1 and the list of stations below. Limited cruise time and especially weather made it impossible to fulfil all wishes concerning station occupation. The evaluation of the CTD data given below is based on a preliminary data set. Therefore, post-cruise calibration might result in some changes; especially the measured salinity seems to be some thousandth too low.

Potential temperature and salinity distribution along a composite transect made up by the three sections mentioned above are shown below in Figure 2. Over the East Greenland Shelf and the upper part of the continental slope we have the East Greenland Current. To the south near Jan Mayen a low saline surface layer indicates the presence of the Jan Mayen Polar Current. To the south of Jan Mayen warm and saline surface water is brought into the Iceland Sea by a current which we tentatively will refer to as the Jan Mayen Atlantic Current.

Figure 3 shows schematically the different water masses transported by the East Greenland Current and the Greenland Sea Gyre. Water masses which have Greenland Sea in their definition name are formed in and participate mainly in the internal circulation of the Greenland Sea Gyre. The remaining water masses are of Polar, Atlantic and even Pacific origin. The exchange taking place between these two domains is not yet understood. The water masses have in some detail been discussed by e.g. Rudels et al. (2002) and in the Cruise Report Lance 15/2004. It should be pointed out here that Polar Water (PW) is made up of several distinct water masses of either Pacific or Atlantic origin (e.g. Falck et al., 2005).

The recent near surface changes which have taken place along the 74°N section are illustrated in Figure 4, 5 and 6. 2005 is characterized by record high surface salinities over both the shelf and deeper parts of the section. The same tendency is observed in the intermediate water mass, Re-circulating Atlantic Water (RAW), where salinity values over 35.05 were observed in 2005. High salinity values in the RAW have been observed earlier e.g. during a joint Danish-Icelandic Greenland Sea Project cruise in September 1991 (Malmberg et al., 1996). Figure 6 shows that the amount of saline RAW has increased considerably during the period 2002 to 2005 and that the increase is not only limited to the East Greenland Current is seen in Figure 2. Thus we observe that a significant amount of warm and saline RAW has entered the Greenland Sea Gyre between September 2004 and September 2005. A similar transport of PW into the interior of the Greenland Sea Gyre in the upper layer was not observed.

The volumetric changes which have taken place in the PW domain (S<34.5) are shown in Figure 5. Unfortunately, no nutrient measurements were obtained during the cruises. We therefore lack the relationship between nitrate and phosphate to distinguish between water of Pacific and Atlantic origin. Below, we try to use the fact that PW of Pacific origin has low salinities which lie in the range 32.0-33.1 and PW of Atlantic origin is observed in the opposite end of the range 34.0-34.4. From Figure 5 we get the impression that Pacific Water was present in 2002 and 2005 and with hardly any signal in 2004. That there were low amounts of Pacific Water in 2004 was also reported by Falck et al. (2005) from the northwestern Fram Strait. In 2002 the observed Pacific Water was relatively fresh whereas in 2005 it was more saline (as also observed in 2003 but not showed). The Pacific Water observed in 2005 with salinity of ~33.1 is likely Upper Halocline Water (UHW e.g. Steele and Boyd 1998, Falck et al., 2005). It is also believed that the water observed in 2002 was UHW. PW of Atlantic origin was very distinct in 2002 and 2004 with highest salinity observed in 2002. These waters fall into the category usually referred to as Lower Halocline Water (e.g. Steele and Boyd 1998); the high salinities observed in 2002 even point towards the source area as the Nansen Basin. In 2005 the low salinities suggest that the source area has changed toward the Amundsen Basin or even further. On the distribution of LHW or more precise convective LHW in the eastern Arctic Ocean see e.g. Kikuchi et al. (2004).

We can state here that the Pacific Water has likely reappeared in 2005 on the East Greenland shelf after a short disappearance in 2004.

Results from the just recovered Tube 19 are shown in Figure 7 and 8. Figure 7 shows TS-diagrams showing the property changes experienced by the upper instrument of Tube 19 in the depth range 12m to 30m (based on a preliminary data set). The undisturbed measuring depth was app. 12m and knockdown or excursion to greater depths can mainly be related to increase in currents. Some statistics are given in Table 1 and 2. At the time of the deployment of Tube 19 winter cooling had not started and temperatures up to 3°C were observed as late as October. First evidence of winter cooling was first observed in the end of October.

We believe that the increase in salinity along the freezing point curve is caused by the new ice formation, though changes related to frontal movements cannot be ruled out. Obvious horizontal/frontal movements were observed as increases in both the temperature and salinity at the same time as observed in November, December 2004 and January 2005 (Figure 7). At the same time the number of observations with depth greater than 30m were observed to increase (Table 1).

In the period February to April 2005 we observed very small property changes although not as small as those observed in 2004. The water mass present in this period is the coldest version of LHW mentioned above but with salinities not as high as those observed in 2004, again suggesting that the source of cLHW have changed between 2004 and 2005. The beginning of the summer heating season was first observed at the end of May when temperatures started to leave near freezing conditions. Maximum temperature was found in September 2005 (3.11°C).

Table 1 shows the percentage of excursion to depths greater than 30m. Low percentage was observed in October 2004 and June 2005 and significantly higher values were found from November 2004 to February 2005. Table 2 shows that for the deployment period of Tube 19 positive temperatures were found in 6 out of 13 months.

In Table 3 we show that there is a general increase in the percentage of observations observed in depths greater than 30m over the years. Whether this reflects a general increase of the mean current or an eventual decrease in buoyancy of the flotation still remains to be checked against the ADCP measurements made during three periods (Sep01-Sep02, Oct03-Sep04 and Sep04-Sep05). Related to this issue are the findings of Table 4, which shows a decrease of the numbers of positive temperature observations to 2004 for then showing an increase in 2005.

Figure 8 shows the longest continuous time series existing from the near surface PW on the East Greenland Shelf. Both the upper and lower instrument reveal a seasonal signal in both temperature and salinity. With the Tube positioned near the East Greenland continental break the water we are most likely observing is LHW of some type. With the inclusion of the data from Tube 19 in the time series we observe that the properties of the LHW are changing towards a fresher type, likely meaning a source area shift already mentioned above.

With the successful recovery rate of moorings and data retrieval in 2005 (see Table 5) we are now able to present velocity observations from the East Greenland Current at 74°N. Annual mean northward velocity for a composite of instruments are shown in Figure 9, overlaid with the salinity distribution along the 74°N section in 2005. Note that observations are from three different years. At first glance the velocity observations presented here seem very similar to those found at 75°N by Woodgate et al. (1999). At the shelf break our ADCP-03 reveals higher velocities than those presented by Woodgate et al. (1999), and our values from the interior of the Greenland Sea are somewhat lower.

When going through the pressure records of the two deep moorings it became apparent that the moored instruments experienced a lot of knockdowns by currents. During one occasion the upper instrument on mooring HH3-04 experienced a downward excursion of around 400m (Figure 10). At the same time current speeds increased to around 72cm/s. A stick plot for daily filtered current data for the same period, Figure 11, shows no clear sign of eddy activity during the knockdown. Contrary to this, at the mooring HH1-01 outside the swift East Greenland Current knockdowns of instruments are associated with the passage of eddies.

For the upper RCM on HH3-04 we note that in ca. 16% of the deployment time there was knockdown to depths greater than 90m. During the knockdown northward average velocity was found to be –28cm/s. Therefore the velocities shown in Figure 9 give an underestimate and the real velocity can easily be 25% higher or even more.

Table 1. Percentage of depth observations greater than 30 dbar (~m) observed in a month by the upper instrument in Tube 19 (September 25th 2004 to September 27th 2005).

Sep04	Oct04	Nov04	Dec04	Jan05	Feb05	Mar05
0.00	9.01	58.56	42.05	72.38	44.17	22.74
Apr05	May05	Jun05	Jul05	Aug05	Sep05	
16.64	37.50	0.39	21.33	12.75	36.99	

Table 2. Percentage of temperature observations greater than 0°C in the depth range 12m to 30m observed in a month by the upper instrument in Tube 19 (September 25th 2004 to September 27th 2005).

Sep04	Oct04	Nov04	Jun05	Aug05	Sep05
77.7	36.0	0.2	0.7	22.0	2.9

Table 3. Percentage of depth observations greater than 30 dbar observed by the upper instrument during four different Tube deployments (deployments and recoveries usually took place in late September) in the same location.

Tube 6	2001/2002	8.50%
Tube 9	2002/2003	12.86%
Tube14	2003/2004	25.20%
Tube19	2004/2005	28.97%

Table 4. Percentage (or hours) of temperature observations greater than 0°C in water shallower than 30 dbar observed by the upper instrument during four different Tube deployments (deployments and recoveries usually took place in late September) in the same location.

Tube 6	2001/2002	7.89%	647 hours
Tube 9	2002/2003	6.24%	493 hours
Tube 14	2003/2004	6.64%	424 hours
Tube 19	2004/2005	8.04%	503 hours

References

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Further Remarks

We would like to thank Captain Johansen and his crew of RV Lance for good seamanship and co-operation during the LA1805 cruise. Sincere thanks go to the authorities of Greenland/Denmark, Iceland and Norway for research permissions. We also send our regards to the persons at the Greenland Commando. Financial support came from the Deutsche Forschungsgemeinschaft (SFB 512), Bonn.

Table 5. Mooring recoveries during Lance 18/2005

Mooring	Latitude Longitude	Water depth (m)	Date and time of first record	Instrument Type	Serial Number	Instr. Depth Nom. (m)	Record Length (days)
ADCP	74°02.645N 15°38.127W	202	25.09.04	RDI ADCP 153 kHz	603	202	368
Tube 19	74°01.648N 15°31.513W	341.5	25.09.04	SBE 37 P	2967	**12**	368
				SBE 37	2942	50	368
				AR 861 B1S	209	337	
Tube 18	74°04.339N 15°47.315W	200	27.09.04	SBE 37 P	1399	20	1)
				SBE 37	2937	60	
				AR 861 B1S	210	197	
HH3-04	73°59.979N 14°02.463W	2088	29.09.04	SBE 16	2407	**43**	364
				RCM 8 P	12301	44	364
				SBE 37 P	2804	**203**	364
				RCM 7	11297	204	364
				SBE 37	2940	480	364
				RCM 8	9815	481	364
				SBE 37 P	1401	**714**	364
				RCM 11	81	715	364
				SBE 16	3024	**994**	364 [3)]
				RCM 11	171	995	328
				RT 661 B1S	200	1600	
HH5-04	73°59.891N 15°00.240W	1188	29.09.04	SBE 16	2412	**89**	364
				RCM 8	12303	90	364
				SBE 37 P	2863	**250**	364
				RCM 7	11294	251	364
				SBE 37	2941	485	364
				RCM 7	11295	486	364
				SBE 16	3025	**734**	364
				RCM 9 OP	1025	735	2)
				AR 861 B1S	206	980	

1) Tube could not be recovered during the RV Lance 2005 cruise.
2) No data, due to a leak.
3) Conductivity sensor didn´t work during deployment.

Note: **Bold numbers** in the instrument depth column yields minimum depths measured by the individual instruments pressure sensor.

Table 6. Mooring deployments during Lance 18/2005

Mooring	Latitude Longitude	Water depth (m)	Date and time of first record	Instrument Type	Serial Number	Instr. Depth (m)	Record Length (days)
ADCP	74°02.63N 15°38.53W	201	29.09.05	RDI ADCP 153 kHz	585	201	
Tube 23	74°01.628N 15°31.253W	348	27.09.05	SBE 37 P SBE 37 P AR 861 B1S	4049 4048 207	24 62 346	
Tube 22	74°00.035N 17°59.192W	202	26.09.05	SBE 37 P SBE 37 RCM 8 P AR 861 B1S	4052 3529 10336 127	17 55 97 200	
HH3-05	74°00.208N 14°02.806W	2069	01.10.05	SBE 16 RCM 8 P SBE 37 P RCM 8 P SBE 37 P RCM 8 P SBE 37 P RCM 8 P SBE 16 RCM 11 RT 661 B1S	2412 9835 4053 12321 3523 10335 2967 12322 2406 502 201	100 100 250 250 500 500 750 750 1000 1000 1400	
HH5-05	73°59.433N 15°12.285W	1064	29.09.05	SBE 16 RCM 8 P SBE 37 P RCM 8 P SBE 37 RCM 8 P SBE 16 RCM 11 RT 661 B1S	2407 9870 4050 12334 2942 9836 2404 503 204	97 98 251 252 485 486 729 730 862	

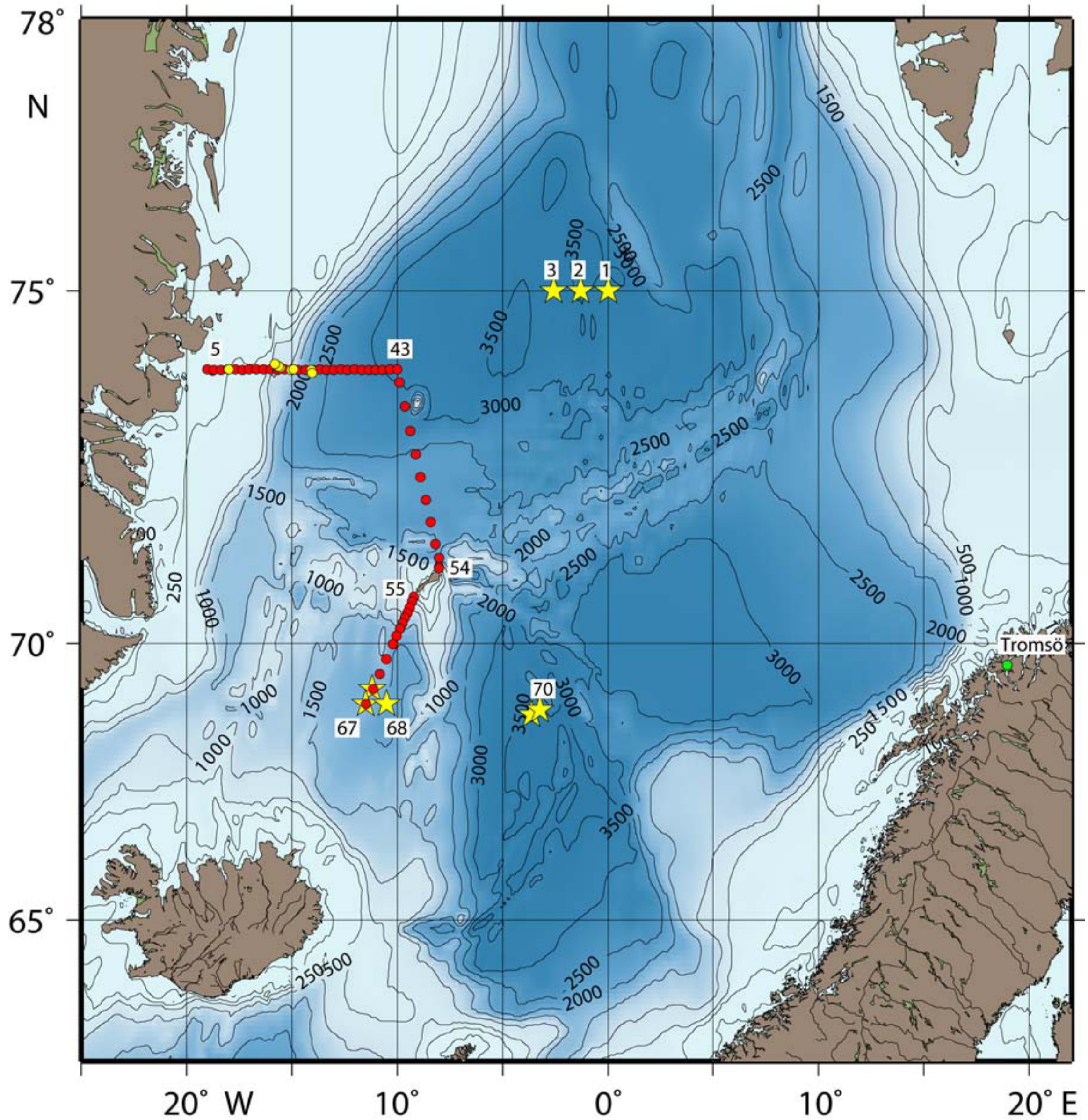


Figure 1. The Nordic Seas and the positions of RV Lance sections and stations occupied in September/October 2005. Red and yellow dots indicates location of CTD stations and moorings, respectively. Yellow stars show the deployment site of the APEX floats. Numbers designate the station numbers.

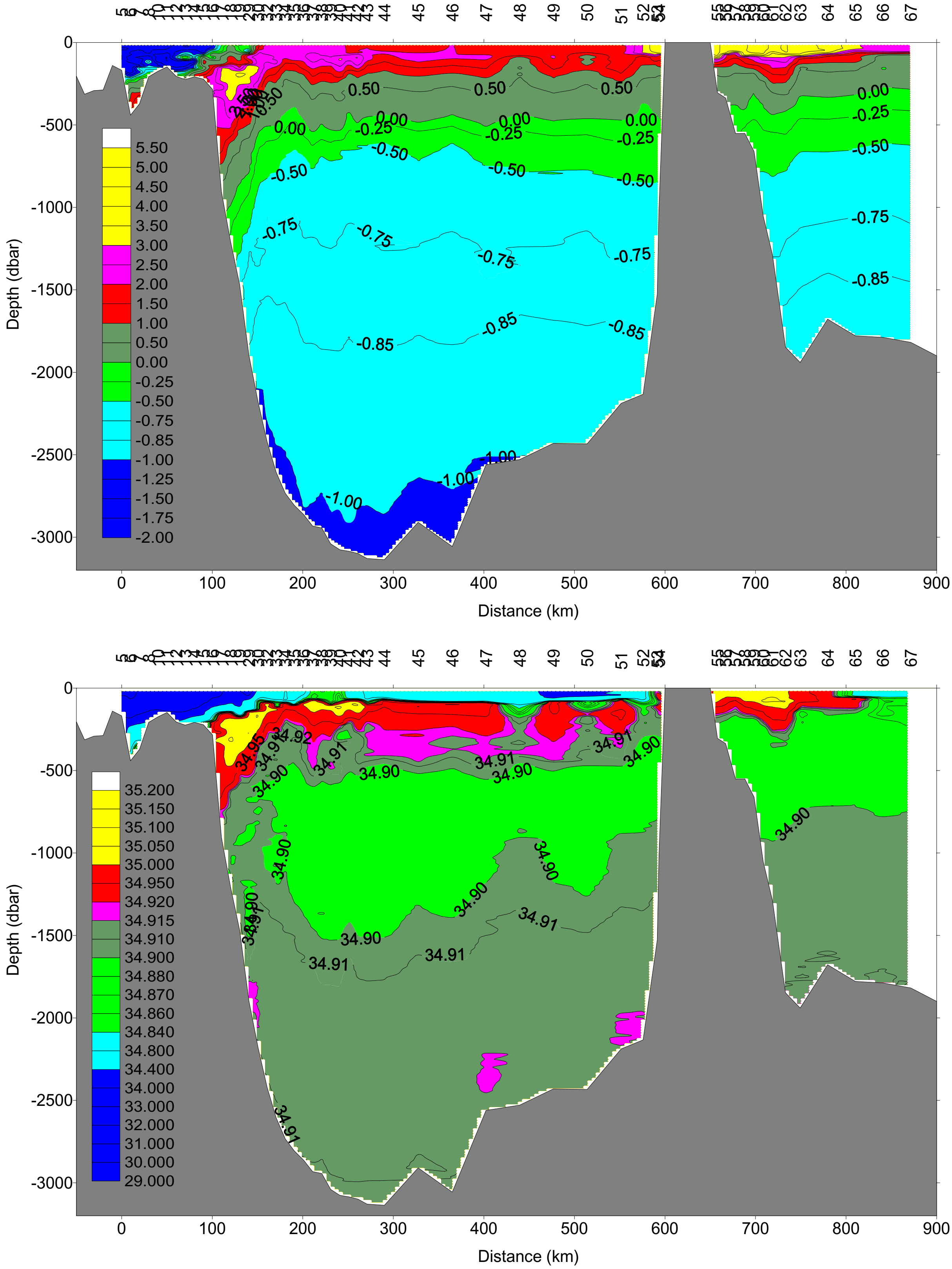


Figure 2. Provisional potential temperature (upper) and salinity (lower) distribution along the hydrographic transect in September/October 2005. For location of the single stations see Figure 1. Greenland is found to the left in the Figure and the island seen between 600km and 700km is Jan Mayen. The basin to the left of Jan Mayen is the Greenland Sea. Whereas the plateau to the right is the Iceland Sea. The East Greenland Current is found over the East Greenland continental slope and there is some evidence of the Jan Mayen Polar Current centred around 100km north of Jan Mayen. To the south of Jan Mayen we will refer to the warm and saline surface layer as the Jan Mayen Atlantic Current.

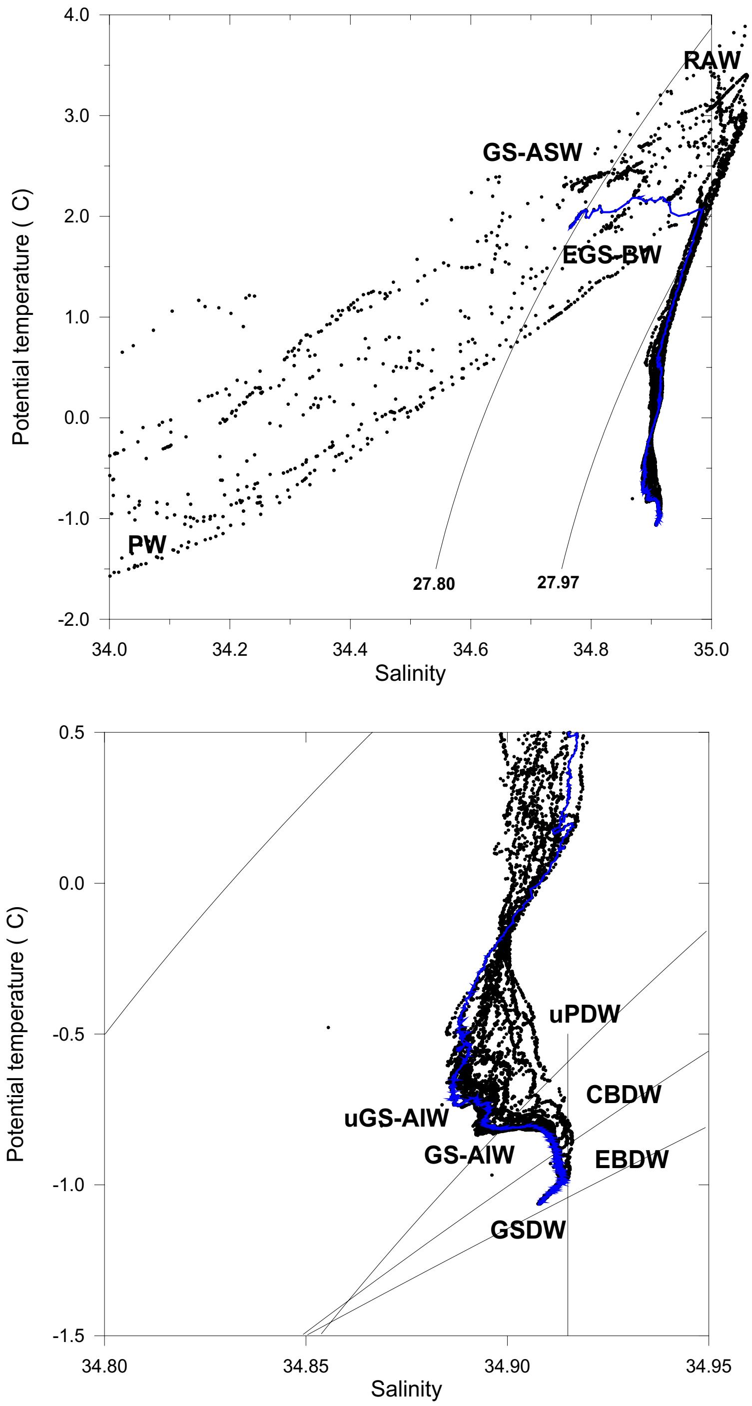


Figure 3. TS-diagrams for the 74°N section, September/October 2005 (upper and lower). The water mass distribution is schematic shown in the both Figures. Polar Water (PW) ,Greenland Sea Arctic Surface Water (GS-ASW), East Greenland Shelf Bottom Water (EGS-BW), Re-circulating Atlantic Water (RAW), upper Greenland Sea Arctic Intermediate Water (uGS-AIW), upper Polar Deep Water (uPDW), Greenland Sea Arctic Intermediate Water (GS-AIW), Canadian Basin Deep Water (CBDW), Euasian Basin Deep Water (EBDW) and Greenland Sea Deep Water (GSDW). Only every third data point are shown. Blue curve is the profile of st. 43 (74°N, 10°W). For values of isopycnals used see Rudels et al. (2002).

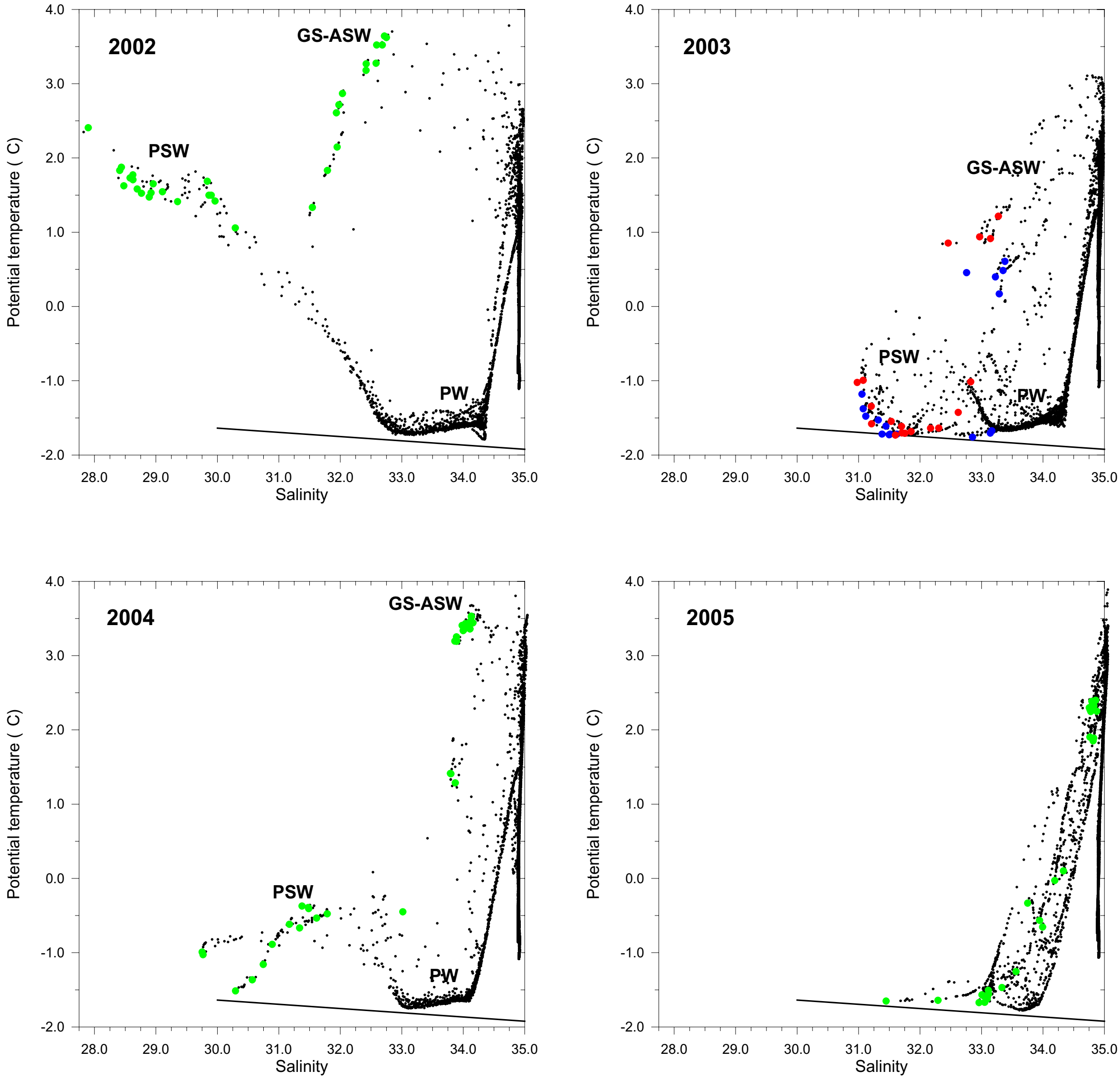


Figure 4. TS-diagrams for the 74°N section, September 2002 (19.9-24.9)(upper left), October 2003 (5/10-7/10 and 12/10-13/10) (upper right), September/October 2004 (30/9-2/10) (lower left), and September/October 2005 (26/9-2/10)(lower right). Also shown is the five meter values of each station (green points for 2002, 2004, 2005, red points for (5/10-7/10) 2003 and blue points for (12/10-13/10) 2003. The surface water mass distribution is schematically shown. Polar Surface Water (PSW), Polar Water (PW) and Greenland Sea Arctic Surface Water (GS-ASW). Only every third data point is shown. Also shown is the freezing point curve.

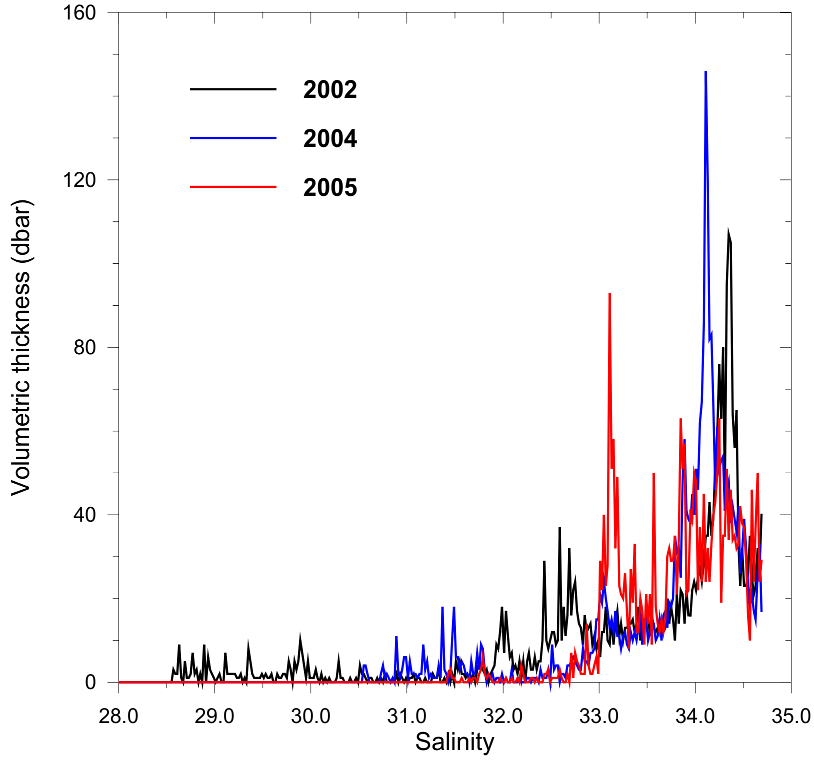


Figure 5. One dimensional volumetric analysis showing the thickness of salinity bins of 0.02 for measurements in the depth range 0-500m along the 74°N section. Data for salinity above 34.7 are not shown.

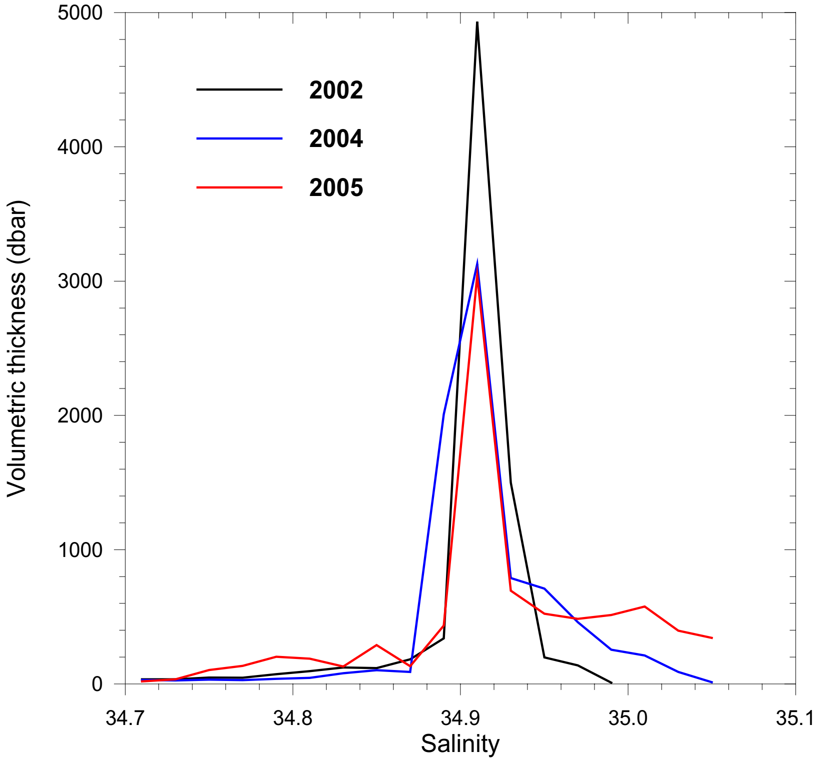


Figure 6. One dimensional volumetric analysis showing the thickness of salinity bins of 0.02 for measurements in the depth range 0-500m along the 74°N section. Data for salinity below 34.7 are not shown.

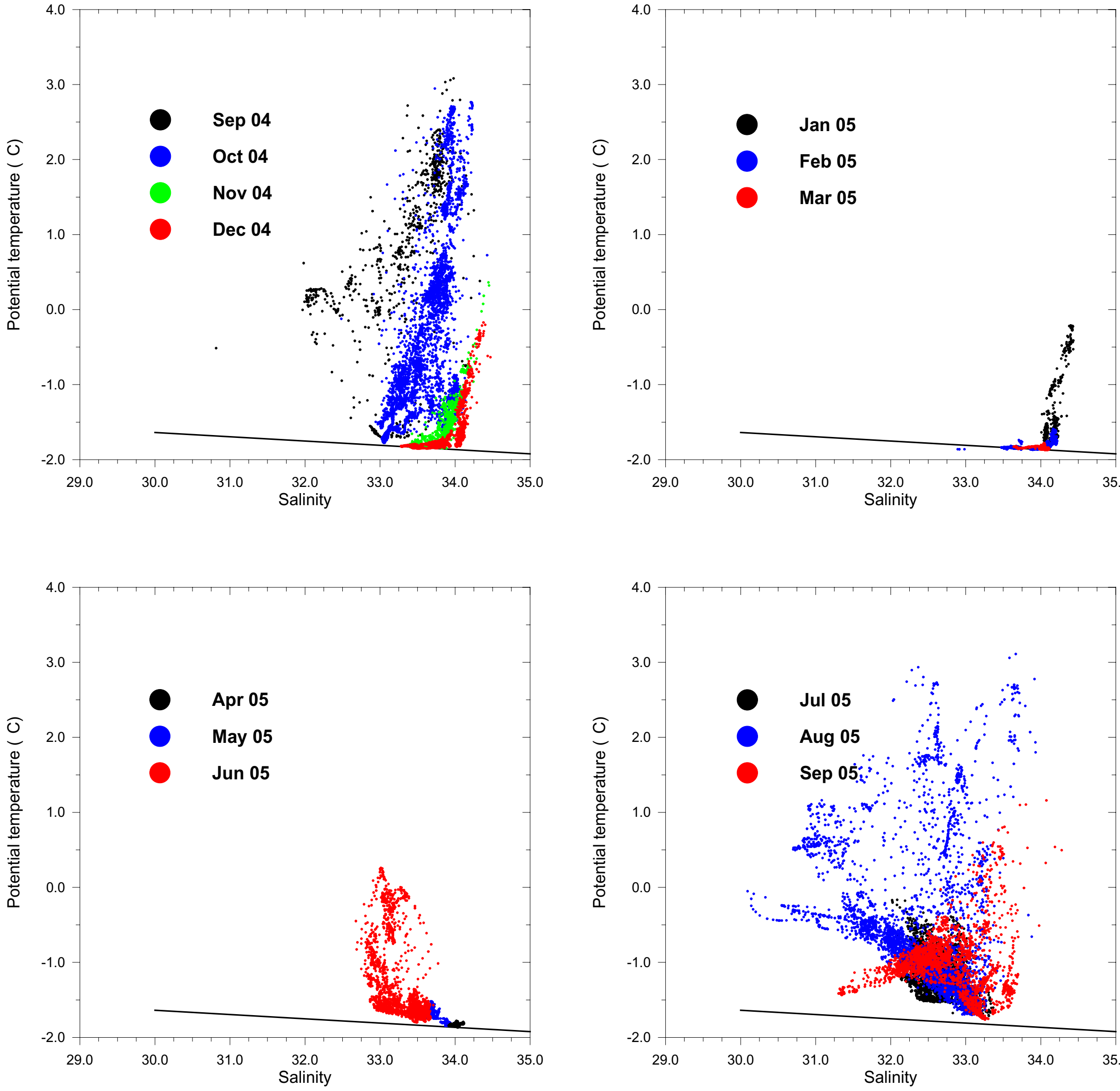
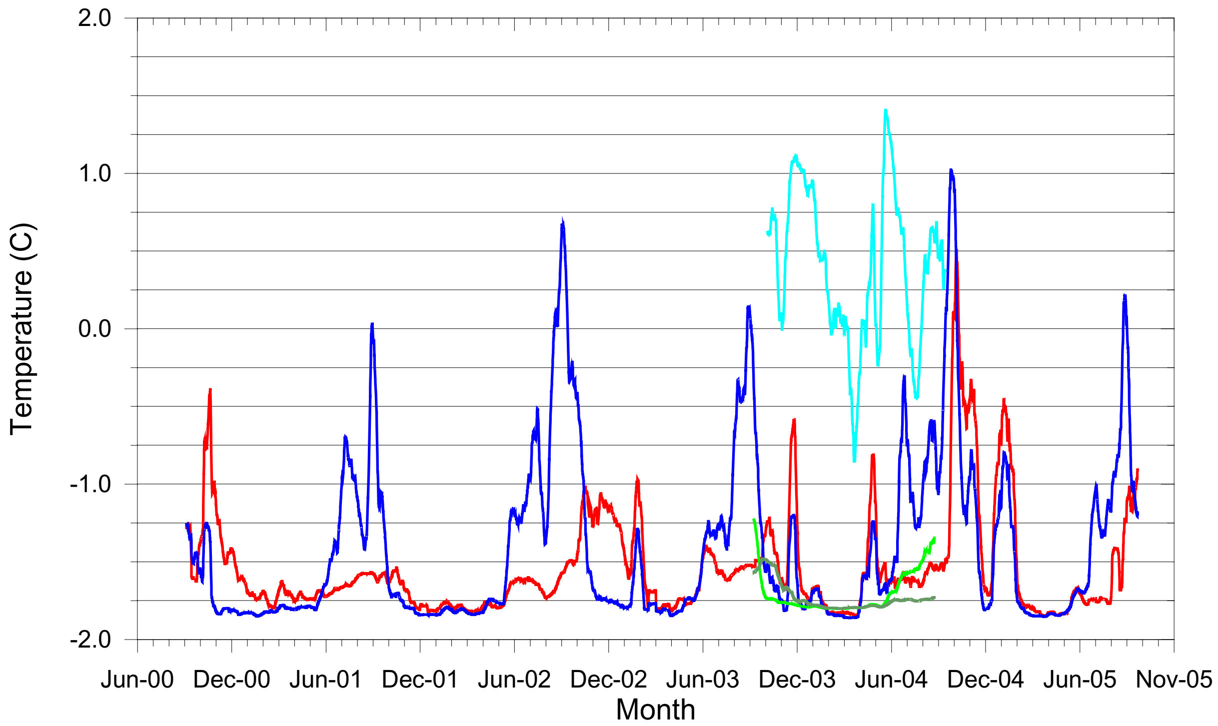


Figure 7. TS-diagrams showing the property changes experienced by the upper instrument (microcat) of Tube 19 in the depth range 12m to 30m. The undisturbed measuring depth was approximately 12m. The microcat time series have been divided into a monthly colour coding. Also shown is the freezing point curve.



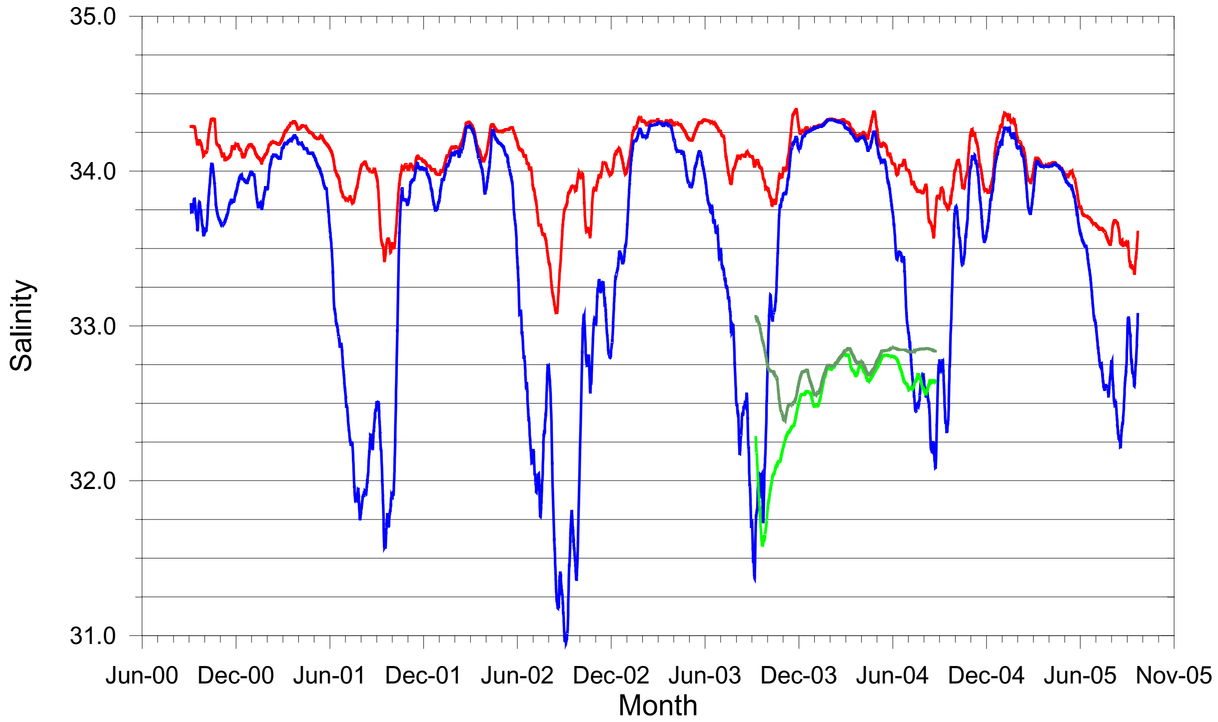


Figure 8. 14 days boxcar filtered composite time series of five Tubes time series from September 2000 to September 2005. The time series are representative for the Tube at (74°02N; 15°31W) in the nominal depth of ~16m (blue) and ~46m (red). During the first deployment instruments were found somewhat deeper (~40m and ~80m) and in the second deployment the tube was located a little closer to Greenland. Only hourly observations were used by the boxcar filter. Also shown are values from a nearby bottom mounted ADCP (cyan) and from a tube deployed and recovered at the East Greenland Shelf at 78°50N by the Norwegian Polar Institute (in greenish).

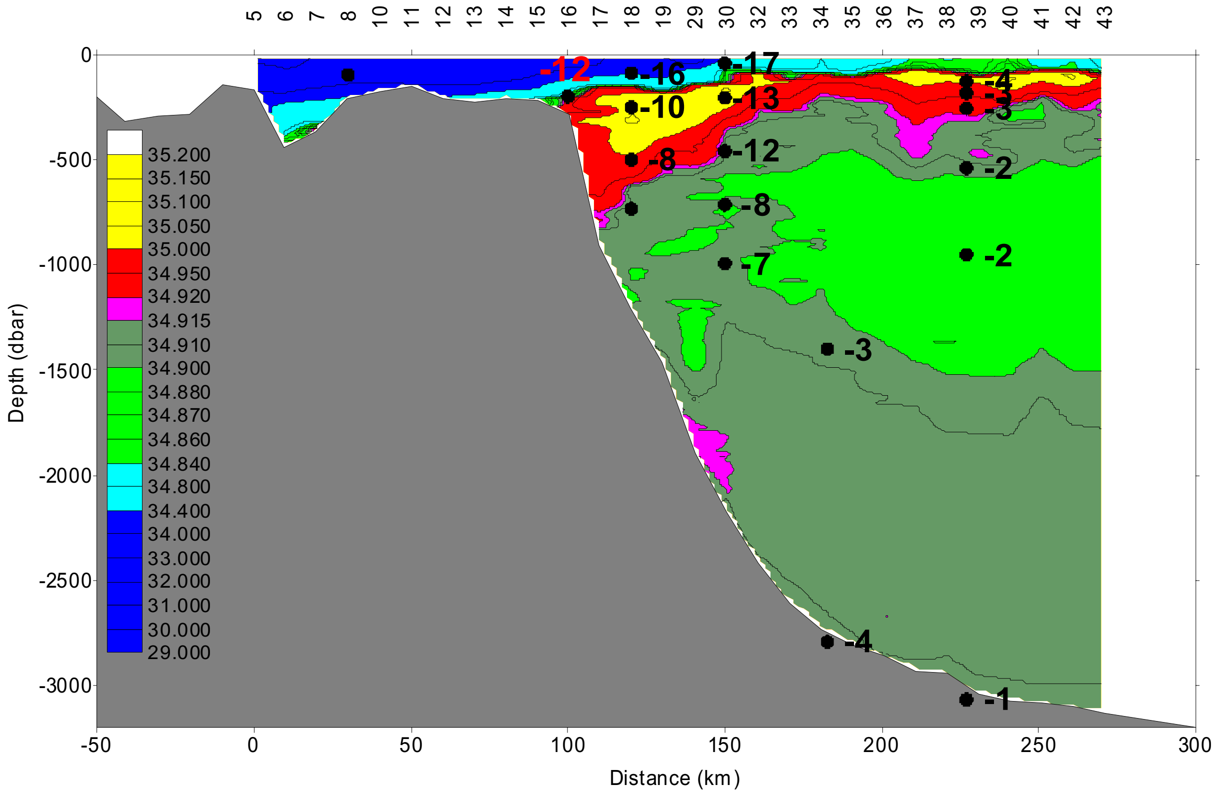


Figure 9. Provisional salinity distribution along the 74°N hydrographic section in September-October 2005. Also shown are the annual mean northward velocity in cm/s obtained by instruments (solid circles) during three different deployments. Going from right to left we have used instruments from the following moorings HH1-01, HH3-01, HH3-04, HH5-04, ADCP-03 and Tube22. Negative values indicates southward flow. At ADCP-03 quasi-barotropic conditions exist.

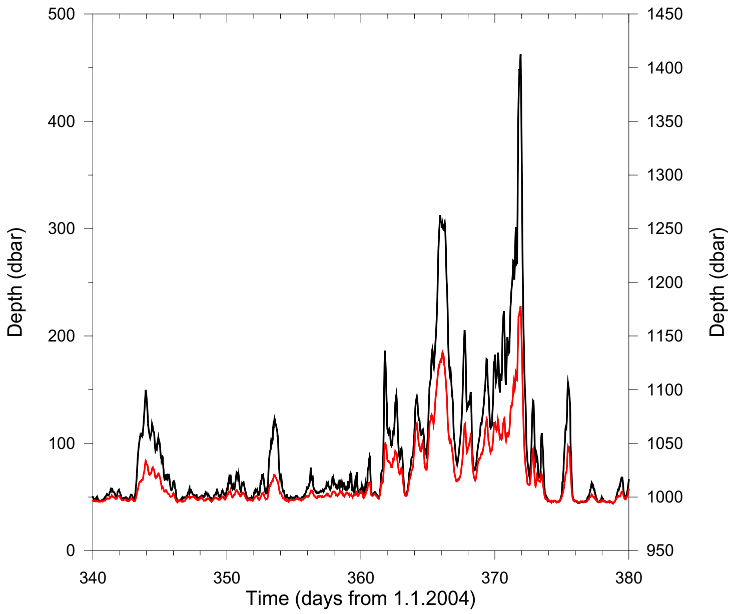


Figure 10. Pressure time series from the upper (black) and lower (red) SBE16 on mooring HH3-04 at 74°N, 14°02W from December 6th 2004 to January 15th 2005 showing the knockdown of instruments by currents.

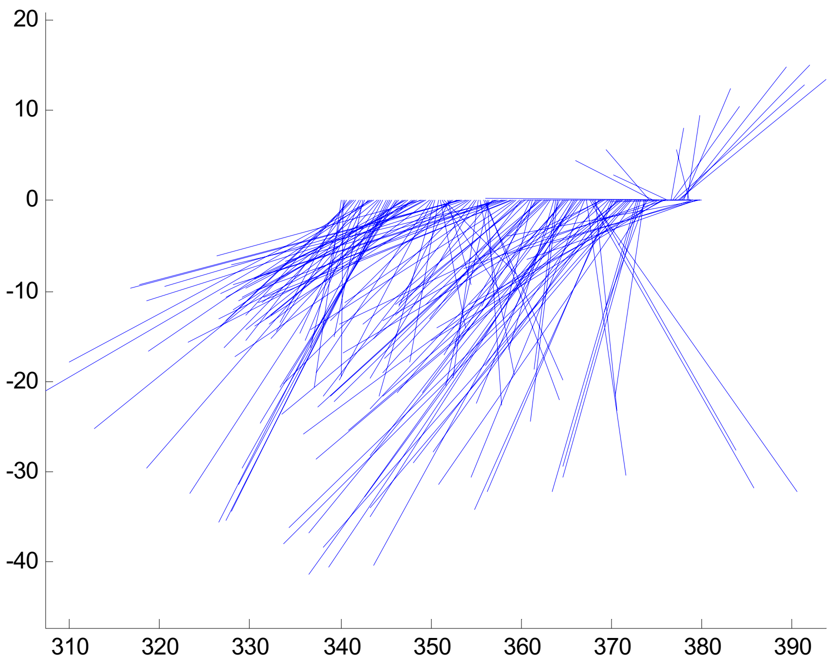


Figure 11. Stick plot for daily filtered current data from the instrument at 44m depth on mooring HH3-04 at 74°N, 14°02W from December 6th 2004 to January 15th 2005. Every sixth measurement is shown.

Station list for the RV LANCE 18/2005 Cruise

EXPO-CODE	Stat. No.	Cast No.	Cast Type	Date mmddyy	Time UTC	Code	Position Latitude	Position Longitude	Code	Bottom depth	Max Press.	Bottom Dist.	Comments
58LA1805	001	01	FLOAT	092305	0614	DE	74 59.88 N	00 00.15 W	GPS				APEX Float No.2286
58LA1805	002	01	FLOAT	092305	0821	DE	75 00.04 N	01 17.70 W	GPS	3613			APEX Float No.2285
58LA1805	003	01	FLOAT	092305	1023	DE	75 00.14 N	02 34.80 W	GPS	3616			APEX Float No.2244
58LA1805	004	01	ROS/CTD	092505	1926	BE	73 59.43 N	18 44.12 W	GPS	260			
58LA1805	004	01	ROS/CTD	092505	1935	BO	73 59.00 N	18 44.00 W	GPS	237	245	10	Teststation
58LA1805	004	01	ROS/CTD	092505	1949	EN	73 58.90 N	18 44.14 W	GPS	222			
58LA1805	005	01	ROS/CTD	092605	0731	BE	74 00.00 N	19 00.00 W	GPS	162			
58LA1805	005	01	ROS/CTD	092605	0739	BO	74 00.00 N	19 00.00 W	GPS	164	159	10	
58LA1805	005	01	ROS/CTD	092605	0750	EN	74 00.00 N	19 00.90 W	GPS	149			
58LA1805	006	01	ROS/CTD	092605	0911	BE	73 59.86 N	18 40.66 W	GPS	439			
58LA1805	006	01	ROS/CTD	092605	0922	BO	73 59.63 N	18 41.38 W	GPS	417	431	12	
58LA1805	006	01	ROS/CTD	092605	0935	EN	73 59.39 N	18 42.47 W	GPS	320			
58LA1805	007	01	ROS/CTD	092605	1053	BE	73 59.96 N	18 20.61 W	GPS	365			
58LA1805	007	01	ROS/CTD	092605	1104	BO	73 59.85 N	18 20.99 W	GPS	367	360	10	
58LA1805	007	01	ROS/CTD	092605	1115	EN	73 59.75 N	18 21.32 W	GPS	369			
58LA1805	008	01	ROS/CTD	092605	1232	BE	74 00.14 N	18 00.48 W	GPS	200			
58LA1805	008	01	ROS/CTD	092605	1238	BO	74 00.06 N	18 00.56 W	GPS	202	198	7	
58LA1805	008	01	ROS/CTD	092605	1245	EN	73 59.98 N	18 00.72 W	GPS	204			
58LA1805	009	01	MOR	092605	1258	BE	74 00.10 N	17 58.57 W	GPS	200	Deployment of Tube 22		
58LA1805	009	01	MOR	092605	1333	EN	74 00.02 N	17 59.41 W	GPS	202			
58LA1805	010	01	ROS/CTD	092605	1528	BE	74 00.02 N	17 40.06 W	GPS	167			
58LA1805	010	01	ROS/CTD	092605	1535	BO	73 59.95 N	17 40.21 W	GPS	167	164	10	
58LA1805	010	01	ROS/CTD	092605	1541	EN	73 59.89 N	17 40.40 W	GPS	171			
58LA1805	011	01	ROS/CTD	092605	1619	BE	73 59.97 N	17 20.24 W	GPS	148			
58LA1805	011	01	ROS/CTD	092605	1625	BO	73 59.96 N	17 20.21 W	GPS	145	138	15	
58LA1805	011	01	ROS/CTD	092605	1632	EN	73 59.96 N	17 20.06 W	GPS	146			
58LA1805	012	01	ROS/CTD	092605	1723	BE	74 00.00 N	16 59.92 W	GPS	202			
58LA1805	012	01	ROS/CTD	092605	1730	BO	73 59.97 N	16 59.98 W	GPS	200	196	11	
58LA1805	012	01	ROS/CTD	092605	1737	EN	73 59.92 N	17 00.18 W	GPS	200			
58LA1805	013	01	ROS/CTD	092605	1829	BE	74 00.06 N	16 40.16 W	GPS	219			
58LA1805	013	01	ROS/CTD	092605	1836	BO	74 00.07 N	16 40.28 W	GPS	219	215	11	
58LA1805	013	01	ROS/CTD	092605	1844	EN	74 00.06 N	16 40.28 W	GPS	219			

58LA1805	014	01	ROS/CTD	092605	1939	BE	74 00.01 N	16 19.75 W	GPS	203			
58LA1805	014	01	ROS/CTD	092605	1947	BO	74 00.01 N	16 19.87 W	GPS	203	198	11	
58LA1805	014	01	ROS/CTD	092605	1954	EN	74 00.04 N	16 20.03 W	GPS	201			
58LA1805	015	01	ROS/CTD	092605	2107	BE	74 00.04 N	16 00.02 W	GPS	210			
58LA1805	015	01	ROS/CTD	092605	2116	BO	74 00.05 N	16 00.20 W	GPS	213	212	11	
58LA1805	015	01	ROS/CTD	092605	2124	EN	74 00.03 N	16 00.31 W	GPS	215			
58LA1805	016	01	ROS/CTD	092605	2239	BE	73 59.91 N	15 40.16 W	GPS	259			
58LA1805	016	01	ROS/CTD	092605	2248	BO	73 59.76 N	15 40.46 W	GPS	273	274	9	
58LA1805	016	01	ROS/CTD	092605	2257	EN	73 59.60 N	15 40.76 W	GPS	275			
58LA1805	017	01	ROS/CTD	092605	2355	BE	74 00.00 N	15 20.65 W	GPS	907			
58LA1805	017	01	ROS/CTD	092705	0020	BO	73 59.72 N	15 22.34 W	GPS	864	894	13	
58LA1805	017	01	ROS/CTD	092705	0047	EN	73 59.49 N	15 23.72 W	GPS	830			
58LA1805	018	01	ROS/CTD	092705	0141	BE	73 59.97 N	15 00.53 W	GPS	1167			
58LA1805	018	01	ROS/CTD	092705	0210	BO	73 59.46 N	15 02.65 W	GPS	1182	1198	10	
58LA1805	018	01	ROS/CTD	092705	0239	EN	73 58.80 N	15 04.07 W	GPS	1206			
58LA1805	019	01	ROS/CTD	092705	0332	BE	73 59.89 N	14 40.54 W	GPS	1442			
58LA1805	019	01	ROS/CTD	092705	0403	BO	73 59.22 N	14 42.65 W	GPS	1454	1457	41	
58LA1805	019	01	ROS/CTD	092705	0438	EN	73 58.53 N	14 44.41 W	GPS	1483			
58LA1805	020	01	MOR	092705	0831	BE	74 01.96 N	15 39.03 W	GPS	187			Recovery of ADCP mooring 04
58LA1805	020	01	MOR	092705	0942	EN	74 02.34 N	15 39.58 W	GPS	188			
58LA1805	021	01	MOR	092705	1015	BE	74 04.34 N	15 47.32 W	GPS	200			Recovery of Tube 18
58LA1805	021	01	MOR	092705	1125	EN	74 02.21 N	15 47.36 W	GPS	196			failed
58LA1805	022	01	MOR	092705	1235	BE	74 01.61 N	15 31.95 W	GPS	313			Recovery of Tube 19
58LA1805	022	01	MOR	092705	1313	EN	74 01.27 N	15 33.98 W	GPS	279			
58LA1805	023	01	MOR	092705	1455	BE	74 01.50 N	15 31.83 W	GPS	349			Deployment of Tube 23
58LA1805	023	01	MOR	092705	1514	EN	74 01.61 N	15 31.43 W	GPS	349			
58LA1805	024	01	MOR	092705	1636	BE	73 59.89 N	15 00.75 W	GPS	1190			Recovery HH5-04
58LA1805	024	01	MOR	092705	1721	EN	73 59.02 N	15 00.90 W	GPS				
58LA1805	025	01	MOR	092705	1908	BE	73 59.94 N	14 03.33 W	GPS				Recovery HH3-04
58LA1805	025	01	MOR	092705	2029	EN	73 58.13 N	14 05.94 W	GPS	1868			
58LA1805	026	01	MOR	092905	0851	BE	74 02.64 N	15 37.59 W	GPS	206			Deployment ADCP-05
58LA1805	026	01	MOR	092905	0917	EN	74 02.63 N	15 38.53 W	GPS	201			
58LA1805	027	01	MOR	092905	1032	BE	74 04.28 N	15 47.72 W	GPS	201			dredging for Tube 18
58LA1805	027	01	MOR	092905	1123	EN	74 04.41 N	15 46.56 W	GPS	197			no result
58LA1805	028	01	MOR	092905	1508	BE	74 00.26 N	14 55.10 W	GPS	1219			Deployment HH5-05
58LA1805	028	01	MOR	092905	1655	EN	73 59.43 N	15 12.29 W	GPS	1064			

58LA1805	029	01	ROS/CTD	092905	1857	BE	73 59.77 N	14 20.10 W	GPS	1837		
58LA1805	029	01	ROS/CTD	092905	2007	BO	73 57.58 N	14 21.69 W	GPS	1881	1886	10
58LA1805	029	01	ROS/CTD	092905	2055	EN	73 56.15 N	14 23.06 W	GPS	1961		
58LA1805	030	01	ROS/CTD	092905	2231	BE	73 59.87 N	14 00.22 W	GPS	2108		stopped at 700m
58LA1805	030	01	ROS/CTD	092905	2251	BO	73 59.48 N	14 00.16 W	GPS	2130	738	cabble problems
58LA1805	030	01	ROS/CTD	092905	2304	EN	73 59.12 N	14 00.02 W	GPS	2150		
58LA1805	030	02	ROS/CTD	093005	0043	BE	73 59.89 N	14 00.09 W	GPS	2112		
58LA1805	030	02	ROS/CTD	093005	0121	BO	73 58.65 N	14 00.08 W	GPS	2157	2169	5
58LA1805	030	02	ROS/CTD	093005	0207	EN	73 57.67 N	13 58.44 W	GPS	2199		
58LA1805	031	01	MOR	100105	1114	BE	73 57.58 N	14 02.34 W	GPS	2169	Deployment HH3-05	
58LA1805	031	01	MOR	100105	1238	EN	74 00.20 N	14 02.80 W	GPS	2069		
58LA1805	032	01	ROS/CTD	100105	1349	BE	74 00.01 N	13 40.02 W	GPS	2386		
58LA1805	032	01	ROS/CTD	100105	1426	BO	73 59.80 N	13 39.72 W	GPS	2373	2410	7
58LA1805	032	01	ROS/CTD	100105	1510	EN	73 59.57 N	13 39.72 W	GPS	2375		
58LA1805	033	01	ROS/CTD	100105	1548	BE	73 59.97 N	13 20.17 W	GPS	2549		
58LA1805	033	01	ROS/CTD	100105	1634	BO	73 59.98 N	13 20.21 W	GPS	2548	2595	8
58LA1805	033	01	ROS/CTD	100105	1720	EN	73 59.94 N	13 19.98 W	GPS	2550		
58LA1805	034	01	ROS/CTD	100105	1802	BE	73 59.99 N	13 00.00 W	GPS	2677		
58LA1805	034	01	ROS/CTD	100105	1848	BO	73 59.68 N	12 58.26 W	GPS	2647	2724	10
58LA1805	034	01	ROS/CTD	100105	1935	EN	73 59.35 N	12 56.56 W	GPS	2651		
58LA1805	035	01	ROS/CTD	100105	2007	BE	74 00.00 N	12 40.18 W	GPS	2733		
58LA1805	035	01	ROS/CTD	100105	2054	BO	73 59.99 N	12 38.95 W	GPS	2739	2796	8
58LA1805	035	01	ROS/CTD	100105	2141	EN	73 59.88 N	12 38.01 W	GPS	2727		
58LA1805	036	01	ROS/CTD	100105	2214	BE	73 59.97 N	12 20.23 W	GPS	2797		
58LA1805	036	01	ROS/CTD	100105	2304	BO	73 59.95 N	12 19.40 W	GPS	2799	2851	7
58LA1805	036	01	ROS/CTD	100105	2352	EN	74 00.04 N	12 17.50 W	GPS	2800		
58LA1805	037	01	ROS/CTD	100205	0025	BE	74 00.03 N	11 59.98 W	GPS	2863		
58LA1805	037	01	ROS/CTD	100205	0113	BO	74 00.08 N	11 59.47 W	GPS	2865	2922	8
58LA1805	037	01	ROS/CTD	100205	0200	EN	74 00.17 N	11 59.37 W	GPS	2865		
58LA1805	038	01	ROS/CTD	100205	0233	BE	73 59.99 N	11 40.00 W	GPS	2874		
58LA1805	038	01	ROS/CTD	100205	0323	BO	73 59.97 N	11 39.28 W	GPS	2879	2934	8
58LA1805	038	01	ROS/CTD	100205	0411	EN	73 59.91 N	11 38.69 W	GPS	2878		
58LA1805	039	01	ROS/CTD	100205	0444	BE	73 59.99 N	11 20.17 W	GPS	2962		
58LA1805	039	01	ROS/CTD	100205	0534	BO	73 59.93 N	11 21.27 W	GPS	2956	3029	10
58LA1805	039	01	ROS/CTD	100205	0621	EN	73 59.84 N	11 22.36 W	GPS	2964		
58LA1805	040	01	ROS/CTD	100205	0701	BE	73 59.91 N	11 00.15 W	GPS	3002		
58LA1805	040	01	ROS/CTD	100205	0752	BO	73 59.39 N	11 01.07 W	GPS	2962	3066	10
58LA1805	040	01	ROS/CTD	100205	0844	EN	73 58.54 N	11 01.87 W	GPS	2956		
58LA1805	041	01	ROS/CTD	100205	1206	BE	73 59.92 N	10 40.24 W	GPS	3033		

58LA1805	041	01	ROS/CTD	100205	1300	BO	73 59.66 N	10 40.84 W	GPS	3006	3075	8
58LA1805	041	01	ROS/CTD	100205	1351	EN	73 59.69 N	10 40.91 W	GPS	3007		
58LA1805	042	01	ROS/CTD	100205	1534	BE	74 00.02 N	10 20.22 W	GPS	3024		
58LA1805	042	01	ROS/CTD	100205	1629	BO	73 59.92 N	10 20.96 W	GPS	3021	3089	8
58LA1805	042	01	ROS/CTD	100205	1727	EN	73 59.89 N	10 21.29 W	GPS	3017		
58LA1805	043	01	ROS/CTD	100205	1805	BE	74 00.05 N	10 00.20 W	GPS	3057		
58LA1805	043	01	ROS/CTD	100205	1901	BO	73 59.83 N	10 01.61 W	GPS	3057	3119	10
58LA1805	043	01	ROS/CTD	100205	1955	EN	73 59.39 N	10 02.93 W	GPS	3051		
58LA1805	044	01	ROS/CTD	100205	2058	BE	73 50.05 N	09 52.12 W	GPS	3062		
58LA1805	044	01	ROS/CTD	100205	2200	BO	73 49.54 N	09 54.72 W	GPS	3060	3126	10
58LA1805	044	01	ROS/CTD	100205	2257	EN	73 48.99 N	09 57.20 W	GPS	3054		
58LA1805	045	01	ROS/CTD	100305	0100	BE	73 30.49 N	09 36.98 W	GPS	2829		
58LA1805	045	01	ROS/CTD	100305	0151	BO	73 30.36 N	09 37.73 W	GPS	2829	2898	8
58LA1805	045	01	ROS/CTD	100305	0241	EN	73 30.13 N	09 38.34 W	GPS	2848		
58LA1805	046	01	ROS/CTD	100305	0449	BE	73 10.72 N	09 21.69 W	GPS	2990		
58LA1805	046	01	ROS/CTD	100305	0541	BO	73 10.26 N	09 21.80 W	GPS	2977	3046	11
58LA1805	046	01	ROS/CTD	100305	0639	EN	73 09.62 N	09 24.34 W	GPS	2970		
58LA1805	047	01	ROS/CTD	100305	0841	BE	72 51.17 N	09 06.86 W	GPS	2516		
58LA1805	047	01	ROS/CTD	100305	0930	BO	72 50.26 N	09 06.00 W	GPS	2499	2551	8
58LA1805	047	01	ROS/CTD	100305	1022	EN	72 49.27 N	09 05.95 W	GPS	2483		
58LA1805	048	01	ROS/CTD	100305	1215	BE	72 31.72 N	08 52.47 W	GPS	2478		
58LA1805	048	01	ROS/CTD	100305	1300	BO	72 31.62 N	08 52.46 W	GPS	2477	2519	8
58LA1805	048	01	ROS/CTD	100305	1345	EN	72 31.46 N	08 51.85 W	GPS	2466		
58LA1805	049	01	ROS/CTD	100305	1541	BE	72 12.28 N	08 37.73 W	GPS	2388		
58LA1805	049	01	ROS/CTD	100305	1623	BO	72 12.26 N	08 37.02 W	GPS	2364	2421	10
58LA1805	049	01	ROS/CTD	100305	1707	EN	72 12.16 N	08 36.75 W	GPS	2351		
58LA1805	050	01	ROS/CTD	100305	1905	BE	71 52.71 N	08 23.81 W	GPS	2372		
58LA1805	050	01	ROS/CTD	100305	1949	BO	71 52.37 N	08 23.37 W	GPS	2410	2424	7
58LA1805	050	01	ROS/CTD	100305	2033	EN	71 51.91 N	08 22.57 W	GPS	2464		
58LA1805	051	01	ROS/CTD	100305	2228	BE	71 33.07 N	08 09.54 W	GPS	2153		
58LA1805	051	01	ROS/CTD	100305							2178	10
58LA1805	051	01	ROS/CTD	100305	2357	EN	71 31.67 N	08 10.26 W	GPS	2087		
58LA1805	052	01	ROS/CTD	100405	0113	BE	71 20.29 N	08 00.96 W	GPS	2087		
58LA1805	052	01	ROS/CTD	100405	0152	BO	71 19.87 N	08 01.76 W	GPS	2103	2123	9
58LA1805	052	01	ROS/CTD	100405	0231	EN	71 19.44 N	08 02.72 W	GPS	2111		
58LA1805	053	01	ROS/CTD	100405	0331	BE	71 11.99 N	07 59.97 W	GPS	1509		
58LA1805	053	01	ROS/CTD	100405	0400	BO	71 11.95 N	07 59.86 W	GPS	1498	1515	25
58LA1805	053	01	ROS/CTD	100405	0428	EN	71 11.92 N	07 59.99 W	GPS	1471		
58LA1805	054	01	ROS/CTD	100405	0443	BE	71 10.96 N	08 00.18 W	GPS	992		

58LA1805	054	01	ROS/CTD	100405	0504	BO	71 10.98 N	08 00.23 W	GPS	999	1014	25	
58LA1805	054	01	ROS/CTD	100405	0524	EN	71 11.00 N	08 00.37 W	GPS	1041			
58LA1805	055	01	ROS/CTD	100505	0941	BE	70 44.74 N	09 11.13 W	GPS	301			
58LA1805	055	01	ROS/CTD	100505	0948	BO	70 44.84 N	09 11.07 W	GPS	293	295	9	
58LA1805	055	01	ROS/CTD	100505	0955	EN	70 44.93 N	09 11.05 W	GPS	291			
58LA1805	056	01	ROS/CTD	100505	1040	BE	70 40.30 N	09 17.29 W	GPS	315			
58LA1805	056	01	ROS/CTD	100505	1048	BO	70 40.39 N	09 17.19 W	GPS	327	326	9	
58LA1805	056	01	ROS/CTD	100505	1056	EN	70 40.53 N	09 17.22 W	GPS	352			
58LA1805	057	01	ROS/CTD	100505	1140	BE	70 34.99 N	09 24.22 W	GPS	550			
58LA1805	057	01	ROS/CTD	100505	1152	BO	70 35.03 N	09 23.95 W	GPS	527	542	12	
58LA1805	057	01	ROS/CTD	100505	1207	EN	70 35.23 N	09 23.65 W	GPS	520			
58LA1805	058	01	ROS/CTD	100505	1248	BE	70 29.95 N	09 31.19 W	GPS	526			
58LA1805	058	01	ROS/CTD	100505	1300	BO	70 30.01 N	09 30.90 W	GPS	536	541	7	
58LA1805	058	01	ROS/CTD	100505	1312	EN	70 30.09 N	09 30.72 W	GPS	546			
58LA1805	059	01	ROS/CTD	100505	1350	BE	70 24.92 N	09 37.76 W	GPS	632			
58LA1805	059	01	ROS/CTD	100505	1404	BO	70 24.93 N	09 37.56 W	GPS	638	650	8	
58LA1805	059	01	ROS/CTD	100505	1420	EN	70 24.81 N	09 37.16 W	GPS	644			
58LA1805	060	01	ROS/CTD	100505	1454	BE	70 19.93 N	09 44.39 W	GPS	1044			
58LA1805	060	01	ROS/CTD	100505	1518	BO	70 20.00 N	09 44.11 W	GPS	1035	1044	10	
58LA1805	060	01	ROS/CTD	100505	1539	EN	70 19.89 N	09 44.10 W	GPS	1041			
58LA1805	061	01	ROS/CTD	100505	1619	BE	70 14.97 N	09 51.03 W	GPS	1270			
58LA1805	061	01	ROS/CTD	100505	1645	BO	70 15.01 N	09 50.84 W	GPS	1260	1277	10	
58LA1805	061	01	ROS/CTD	100505	1711	EN	70 15.02 N	09 50.65 W	GPS	1252			
58LA1805	062	01	ROS/CTD	100505	1804	BE	70 07.95 N	10 00.51 W	GPS	1822			
58LA1805	062	01	ROS/CTD	100505	1838	BO	70 08.32 N	10 00.17 W	GPS	1794	1837	9	
58LA1805	062	01	ROS/CTD	100505	1914	EN	70 08.69 N	09 59.72 W	GPS	1774			
58LA1805	063	01	ROS/CTD	100505	2020	BE	69 59.91 N	10 10.91 W	GPS	1913			
58LA1805	063	01	ROS/CTD	100505	2100	BO	70 00.17 N	10 09.85 W	GPS	1886	1930	10	
58LA1805	063	01	ROS/CTD	100505	2140	EN	70 00.60 N	10 09.05 W	GPS	1868			
58LA1805	064	01	ROS/CTD	100505	2328	BE	69 44.97 N	10 30.10 W	GPS	1644			
58LA1805	064	01	ROS/CTD	100505	2358	BO	69 44.84 N	10 29.66 W	GPS	1656	1668	8	
58LA1805	064	01	ROS/CTD	100605	0028	EN	69 44.77 N	10 29.32 W	GPS	1669			
58LA1805	065	01	ROS/CTD	100605	0203	BE	69 29.99 N	10 49.49 W	GPS	1748			
58LA1805	065	01	ROS/CTD	100605	0233	BO	69 30.02 N	10 49.45 W	GPS	1749	1769	8	
58LA1805	065	01	ROS/CTD	100605	0308	EN	69 30.10 N	10 49.71 W	GPS	1741			
58LA1805	066	01	ROS/CTD	100605	0443	BE	69 15.08 N	11 08.30 W	GPS	1730			
58LA1805	066	01	ROS/CTD	100605	0518	BO	69 15.12 N	11 09.26 W	GPS	1823	1778	8	
58LA1805	066	01	ROS/CTD	100605	0551	EN	69 15.01 N	11 10.18 W	GPS	1868			
58LA1805	066	02	FLOAT	100605	0604	DE	69 15.00 N	11 10.50 W	GPS	1876			APEX Float No.2304

58LA1805	067	01	ROS/CTD	100605	0743	BE	68 59.99 N	11 27.53 W	GPS	1783			
58LA1805	067	01	ROS/CTD	100605	0815	BO	68 59.79 N	11 28.60 W	GPS	1782	1808	6	
58LA1805	067	01	ROS/CTD	100605	0850	EN	68 59.73 N	11 29.83 W	GPS	1782			
58LA1805	067	02	FLOAT	100605	0856	DE	68 59.72 N	11 29.96 W	GPS	1787			APEX Float No.2305
58LA1805	068	01	FLOAT	100605	1132	DE	68 59.95 N	10 30.90 W	GPS	2204			APEX Float No.2306
58LA1805	069	01	FLOAT	100705	0933	DE	68 49.01 N	03 38.11 W	GPS	3155			APEX Float No.2307
58LA1805	070	01	FLOAT	100705	1047	DE	68 54.00 N	03 14.20 W	GPS	3631			APEX Float No.2245