



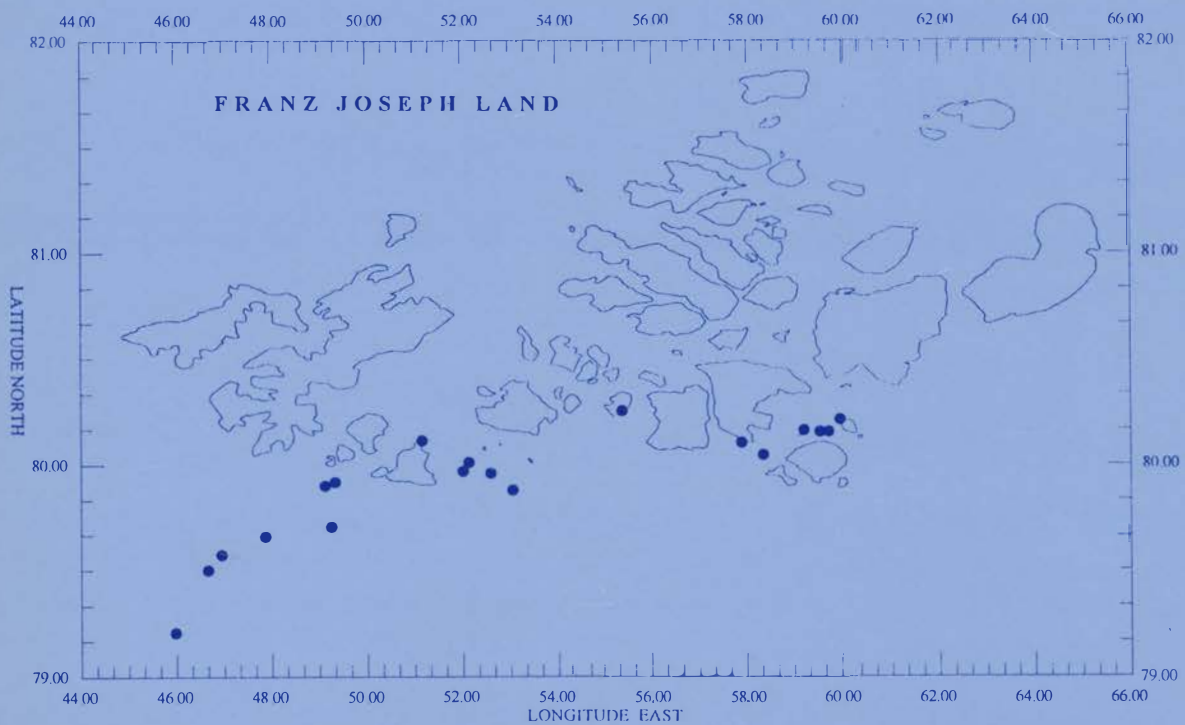
NORSK POLARINSTITUTT

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NINA NORDLUND & TORGNVY VINJE

OCEANOGRAPHIC MEASUREMENTS
R/V DALNIE ZELENTSY,
EASTERN BARENTS SEA,
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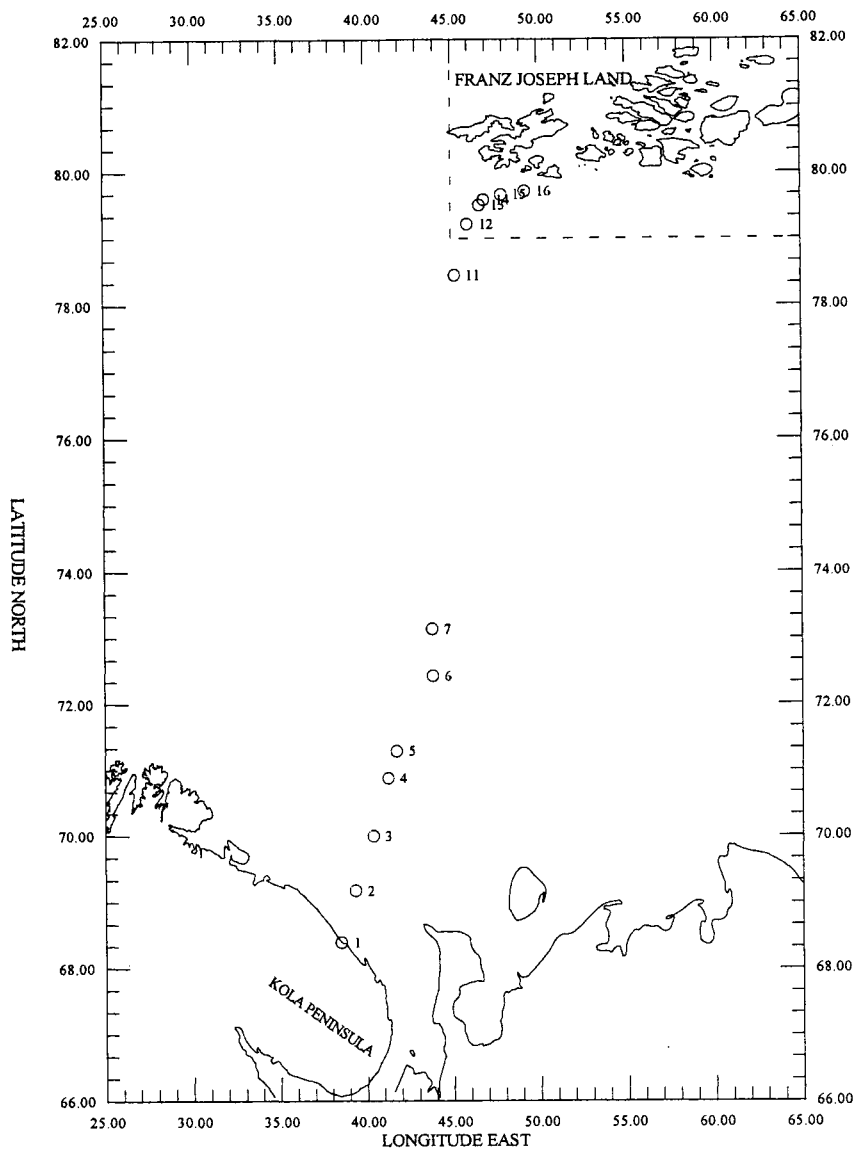


Figure 1a CTD-stations, R/V Dalnie Zelentsy 1993

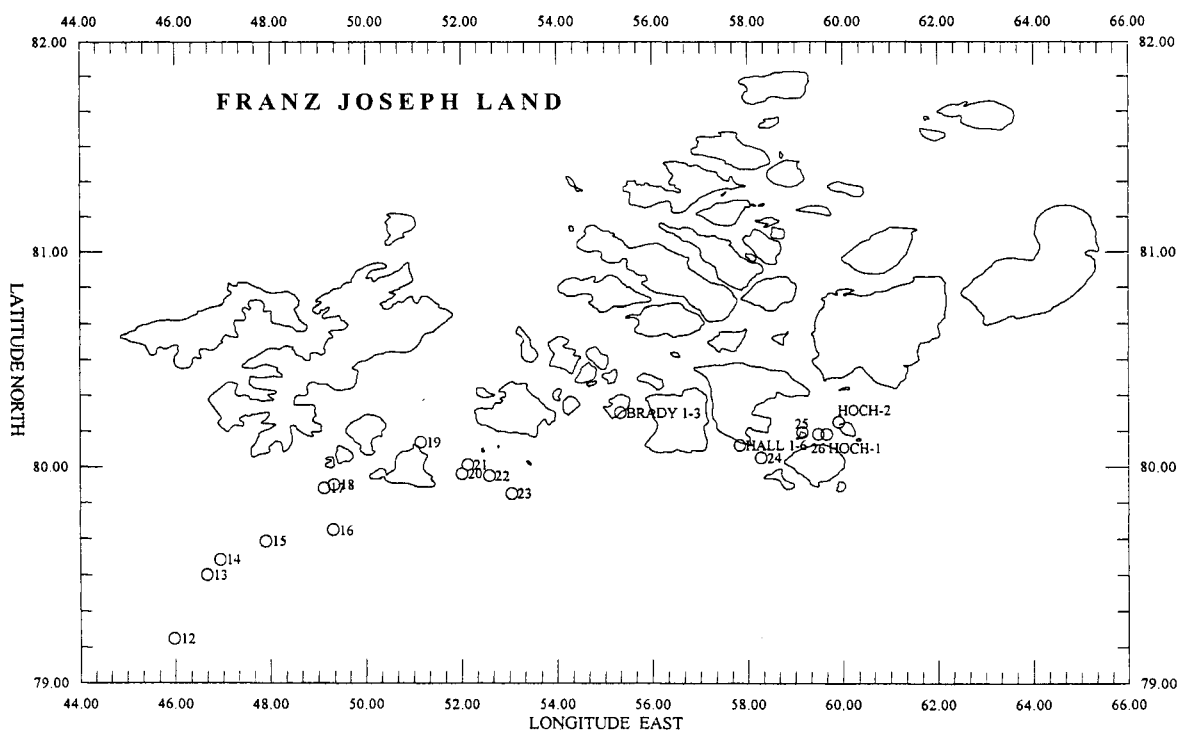


Figure 1b CTD-stations, R/V Dalnie Zelentsy 1993

Introduction

From August 10 to 31 1993, the Murmansk Marine Biological Institute (MMBI) carried out a scientific cruise to Franz Joseph Land with the Russian research vessel R/V Dalnie Zelentzy. Cruise leader was Sergei Korsun from the MMBI. The Norwegian Polar Institute was kindly invited to participate with one person. This report deals with the CTD data from this cruise. The survey area is shown in Figures 1a and 1b.

Instruments

Three types of CTD's were used during the cruise. A short description of the instruments follows.

ME: Meerestechnik Elektronik GmbH, Multiparameter Probe OTS 1500, where data are transferred simultaneously to a computer via a conducting cable. This CTD makes ca 10 measurements of temperature, conductivity and pressure each second, and the accuracy is given to be: $\pm 0.001\text{S/m}$ for conductivity, $\pm 0.01^\circ\text{C}$ for temperature and for pressure $\pm 0.25\%$ of full scale (1500m).

SB: Sea-bird Electronics, Inc., Sea-cat CTD, where data are stored in an internal memory and transferred to a computer when the profile is finished. The SB measures temperature, conductivity and pressure. This CTD makes 2 measurements each second and the accuracy is given to be: $\pm 0.001\text{S/m}$, $\pm 0.01^\circ\text{C}$ for temperature and for pressure $\pm 0.25\%$ of full range (600dbar). Data from this CTD are not shown in this report, but a comparison between the different instruments is given.

SD: Sensordata SD-200, with an internal memory for data storing. The SD measures temperature, salinity and depth. It makes one measurement each 2 seconds. No accuracy was given from the manufacturer for this instrument.

The differences between the instrument parameters were observed at 5m intervals (Figure 2, page 4). Data are picked at as equal depths as possible, and the differences in temperature and salinity have been calculated for each depth. The upper 20m are ignored, because of the

great gradients here. The differences between the instruments are given by the mean values of temperature and salinity differences.

The difference between the ME and the SD (mean value \pm std deviation):

ME temperature - SD temperature: -0.02 ± 0.13

ME salinity - SD salinity: -0.18 ± 0.05

The difference between the ME and the SB (mean value \pm std deviation):

ME temperature - SB temperature: 0.00 ± 0.07

ME salinity - SB salinity: -0.10 ± 0.04

No water samples were collected for calibration of the instruments, and the above comparison has not been applied to the raw data.

Observations

One transect of CTD stations were obtained northwards from the coast of the Kola peninsula, and one from 78°25'N 45°12'E in a north-north-eastward direction towards Franz Joseph Land. A short transect was done in the strait between Northbrook and Hooker Island of Franz Joseph Land (stations 19-23). In addition some shallow stations were done farther east in the archipelago. See Figure 1 and the station list below.

Station list

The station list, Table 1, gives the station number or name, date and time (UTC), position (degrees and minutes north and east), the bottom echo depth (Echo D) and the observation depth (Obs D). The latter is the point where observations stop. The observation depths are given in decibars for data from the ME and in meters for data from the SD. Observation depths are not given for the SB. Table 1 shows the instrument used: ME, SB or SD (see description page 1). The NAV column gives the navigation system used: GPS means a portable GPS (global positioning system) unit, SN means SatNavg, i.e. the satellite navigation system of the ship. A '*' means that the measurements were done from a zodiac, i.e. the positions were determined from a map, and is therefore not very precise. Stations 8,9 and 10 were biological stations. The six shallow stations near Hall Island were taken from near shore, in a southerly direction until a depth of 35m was reached.

Table 1. Station list for CTD stations R/V Dalnie Zelentsy

StNo	Date	Time	Lat	Long	Echo D	Obs D	Instr	Nav
DZ 1	Aug.12	13:39	68°23.3	38°31.6	86	82	ME	GPS
DZ 2	Aug.12	22:40	69°10.1	39°19.9	151	141	ME	SN
DZ 3	Aug.13	06:20	69°59.5	40°22.3	140	131	ME	SN
DZ 4	Aug.13	13:25	70°52.1	41°15.5	95	85	ME	GPS
DZ 5	Aug.13	17:35	71°17.3	41°44.7	170	160	ME	SN
DZ 6	Aug.14	11:10	72°25.1	43°50.6	286	272	ME	SN
DZ 7	Aug.14	17:15	73°07.8	43°48.6	345	287	ME	SN
DZ 8	No CTD							
DZ 9	No CTD							
DZ 10	No CTD							
DZ 11	Aug.17	17:45	78°26.7	45°12.9	255	240	ME	GPS
DZ 12	Aug.18	04:09	79°12.3	45°59.0	78	68	ME	SN
DZ 13	Aug.18	07:25	79°29.9	46°39.8	290	240	ME	GPS
DZ 14	Aug.18	10:00	79°34.2	46°56.6	320	288	ME SD	GPS
DZ 15	Aug.18	14:10	79°39.3	47°54.8	320	281	ME SD	GPS
DZ 16	Aug.18	21:40	79°42.2	49°18.4	240	226	ME SD	GPS
DZ 17	Aug.19	00:25	79°53.9	49°07.0	180	160	ME SD	SN
DZ 18	Aug.19	13:05	79°55.0	49°19.5	135	100	ME SB	GPS
DZ 19	Aug.21	04:15	80°06.7	51°08.9	240	220	ME SB	SN
DZ 20	Aug.21	19:45	79°58.0	52°00.4	250	189	ME SB	GPS
DZ 21	Aug.21	21:50	80°00.5	52°07.8	305	230	ME SB	GPS
DZ 22	Aug.22	00:10	79°57.4	52°35.1	300	228	ME SB	GPS
DZ 23	Aug.22	02:30	79°52.5	53°03.0	467	408	SD	GPS
BRADY1	Aug.22	11:13	80°15	55°20	10	9	SD	*
BRADY2	Aug.22	11:17	80°15	55°20	9	8	SD	*
BRADY3	Aug.22	11:23	80°15	55°20	3	2	SD	*
DZ 24	Aug.23	14:30	80°02.4	58°17.4	305	267	ME SB	
HALL1	Aug.23	17:38	80°06	57°50	4	3	SD	*
HALL2	Aug.23	17:46	80°06	57°50	9	8	SD	*
HALL3	Aug.23	18:18	80°06	57°50	12	11	SD	*
HALL4	Aug.23	18:40	80°06	57°50	23	22	SD	*
HALL5	Aug.23	19:12	80°06	57°50	29	28	SD	*
HALL6	Aug.23	19:22	80°06	57°50	35	34	SD	*
DZ 25	Aug.24	07:15	80°09.5	59°04.7	190	165	ME SB	SN
DZ 26	Aug.24	09:20	80°12.0	59°29.6	278	261	ME SB	SN
HOCH1	Aug.24	10:13	80°13	59°40	75	74	SD	*
HOCH2	Aug.24	13:20	80°12.5	59°55	9	8	SD	*

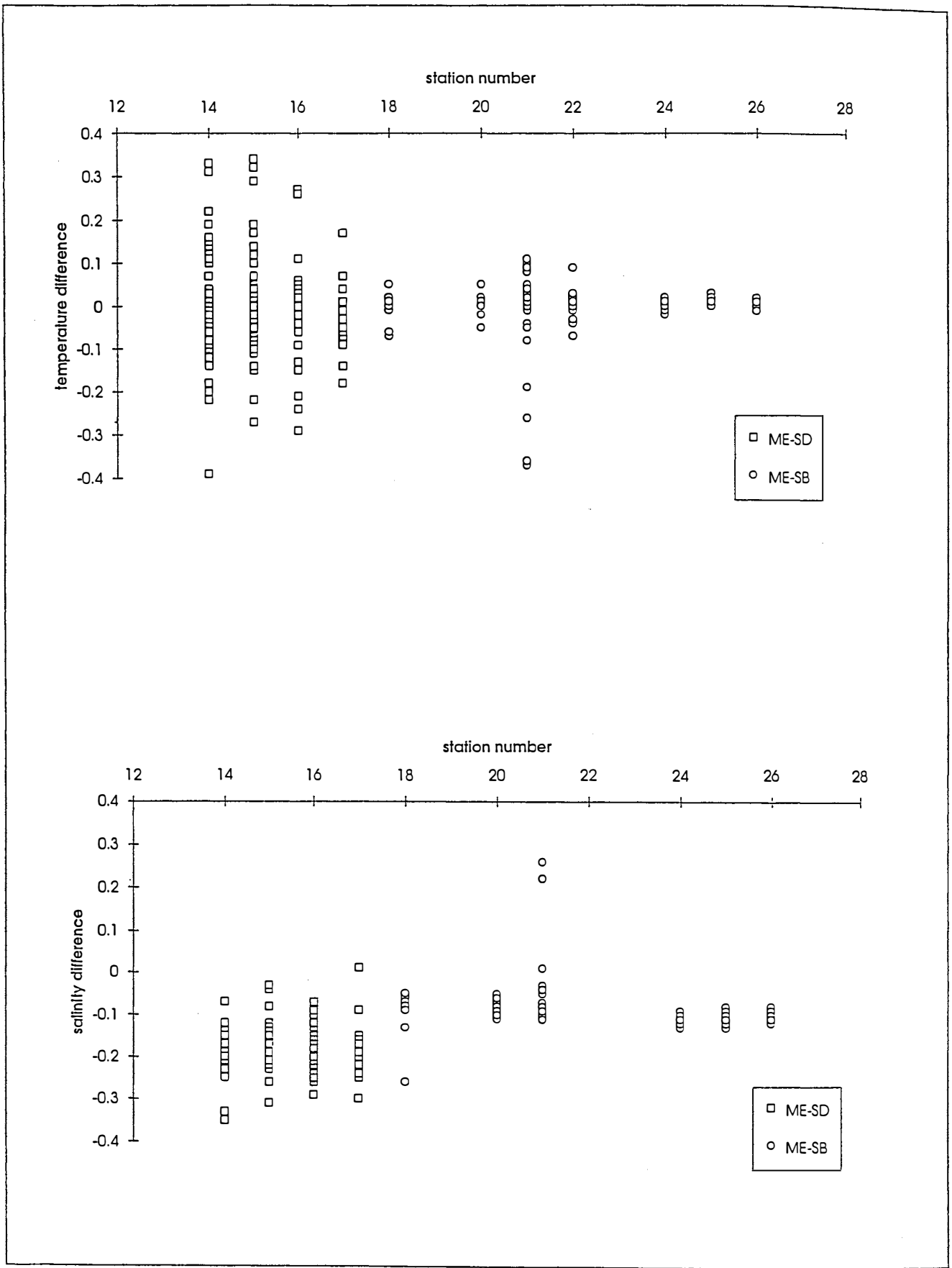


Figure 2 Differences between the instruments

Contour plots and some general results

The water masses usually present in the Barents Sea are listed in Table 2.

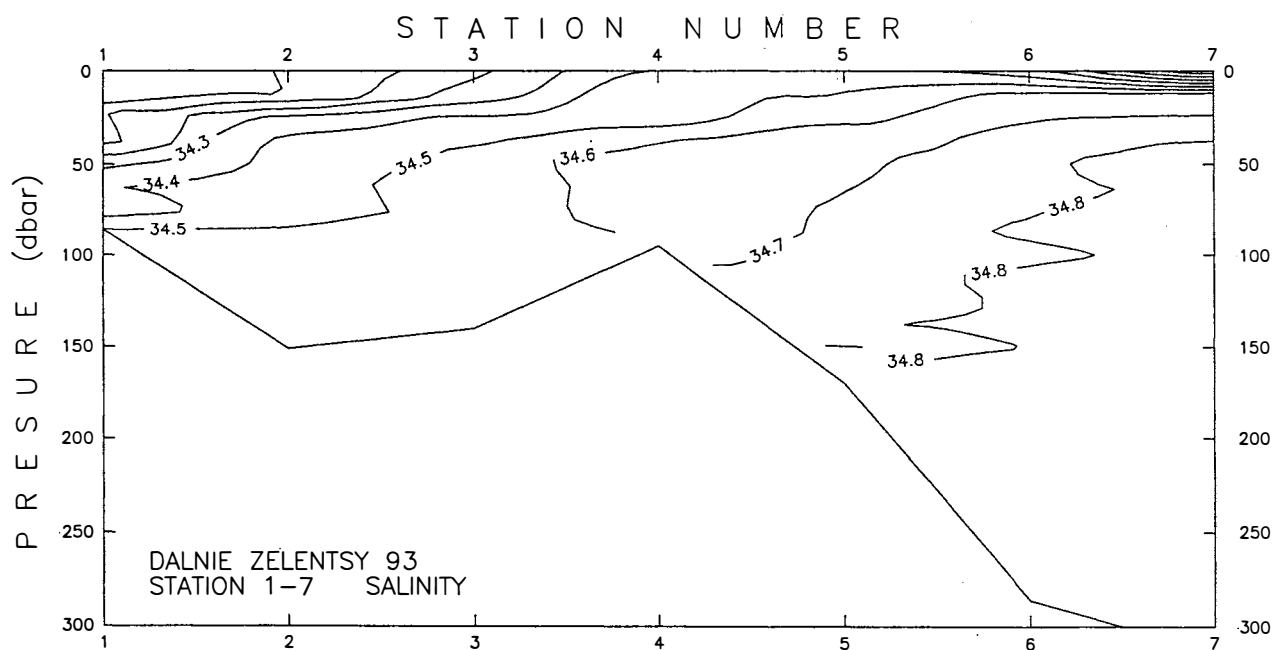
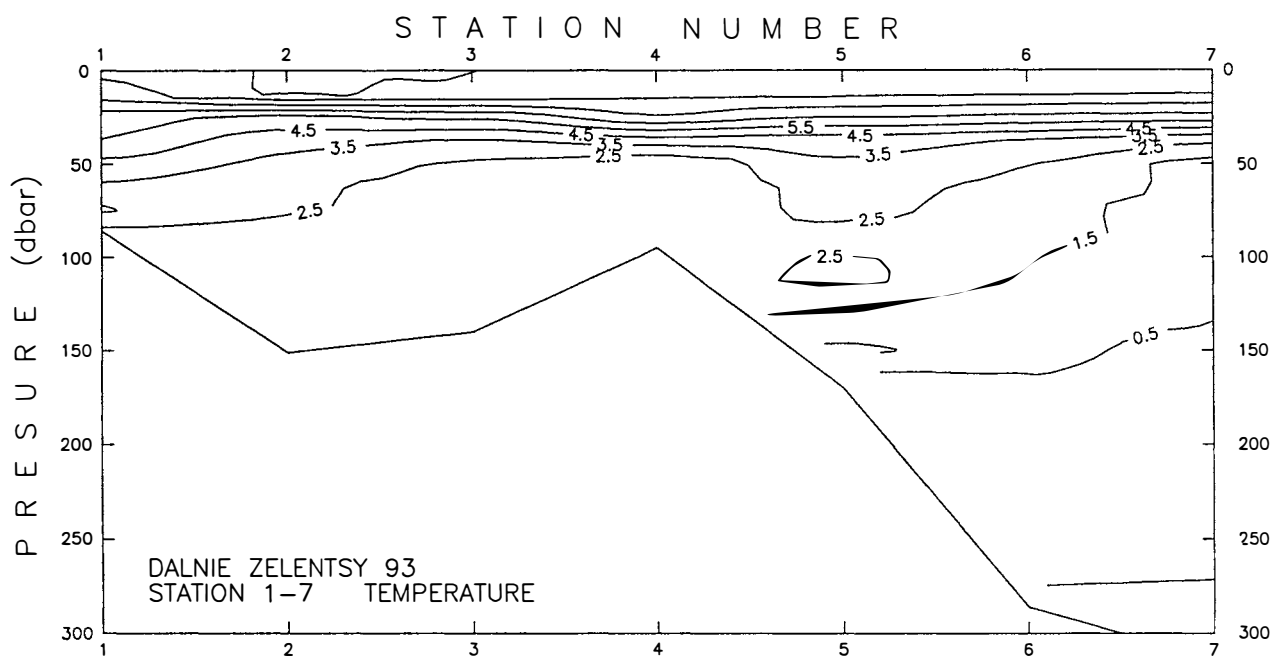
Near the coast at stations 1-6, see page 6, we observed an extension of the Norwegian Coastal Current, which outside Russia is called the Murman Coastal Current. Further north one finds what Loeng (1991) called Barents Sea Water, which is Atlantic Water transformed by mixing with Arctic Water, and affected by ice formation and melting. The rest of the stations (north of about 78°, in the vicinity of Franz Joseph Land), are dominated by Arctic Water and Melt Water.

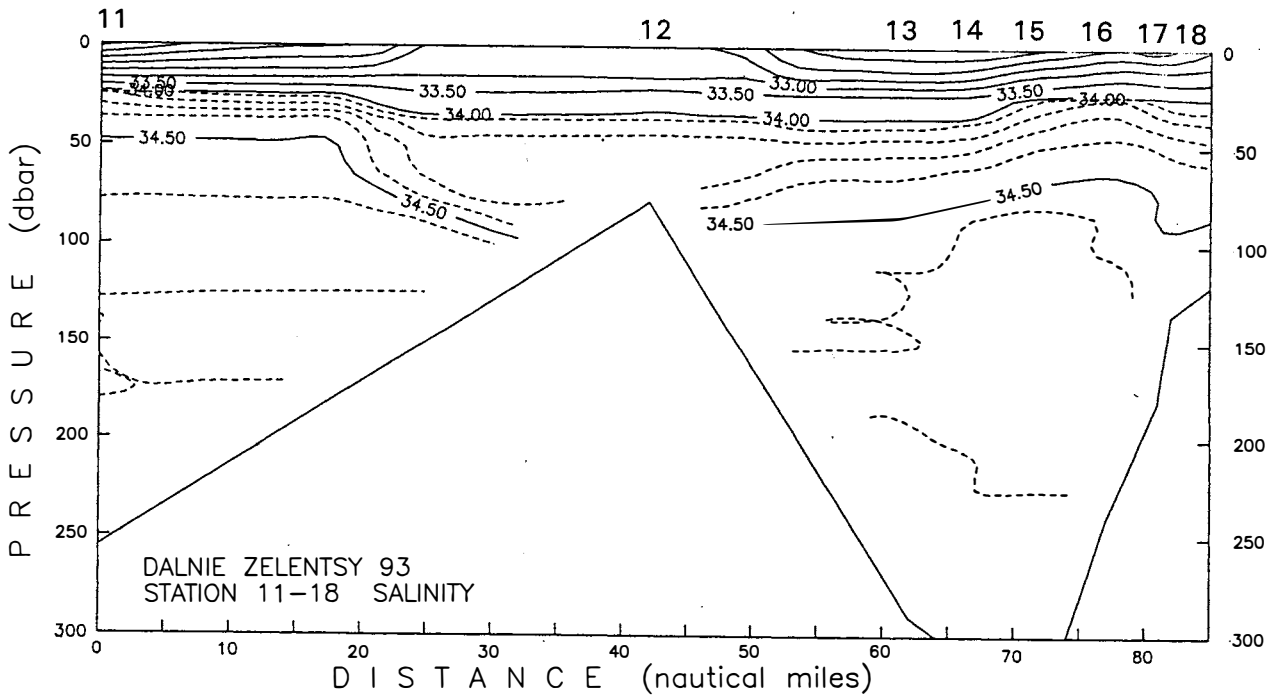
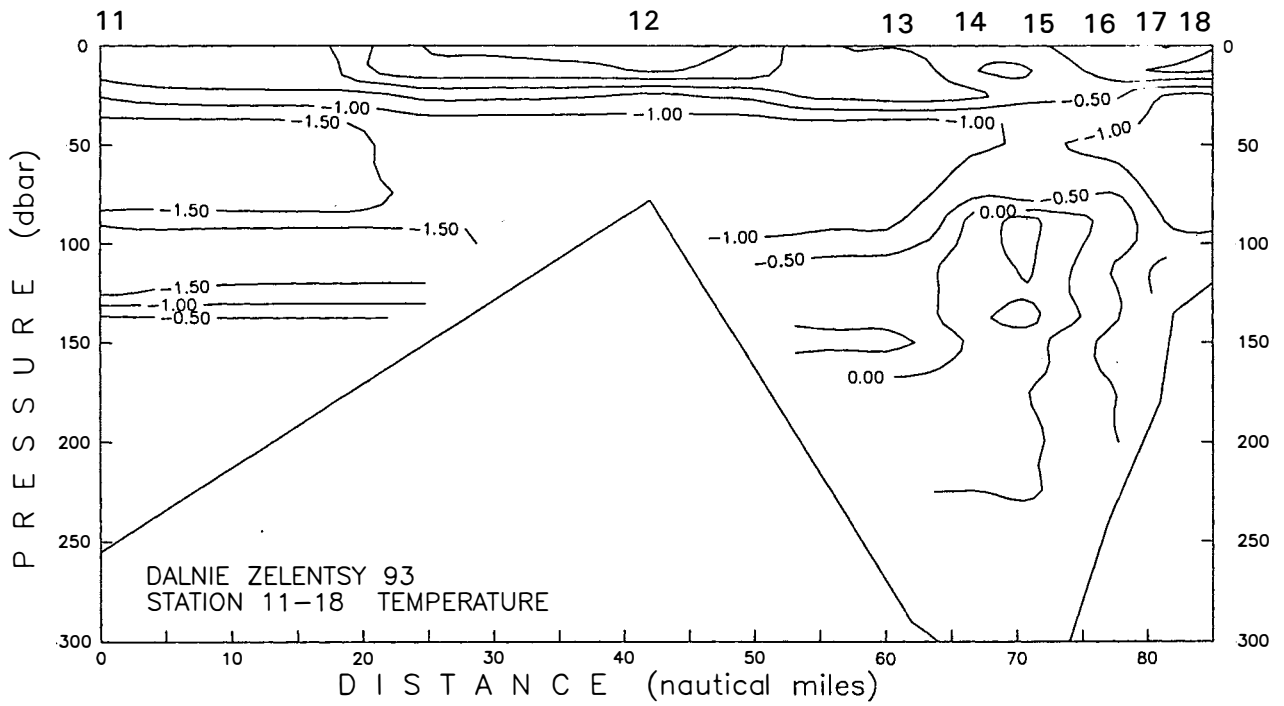
The contour plots show isolines of temperature and salinity. The depth is given in decibars for the ME data and as meters for the SD data. The difference in meters and decibars increases with depth and becomes about 2m at 300m. The software used is SURFER.

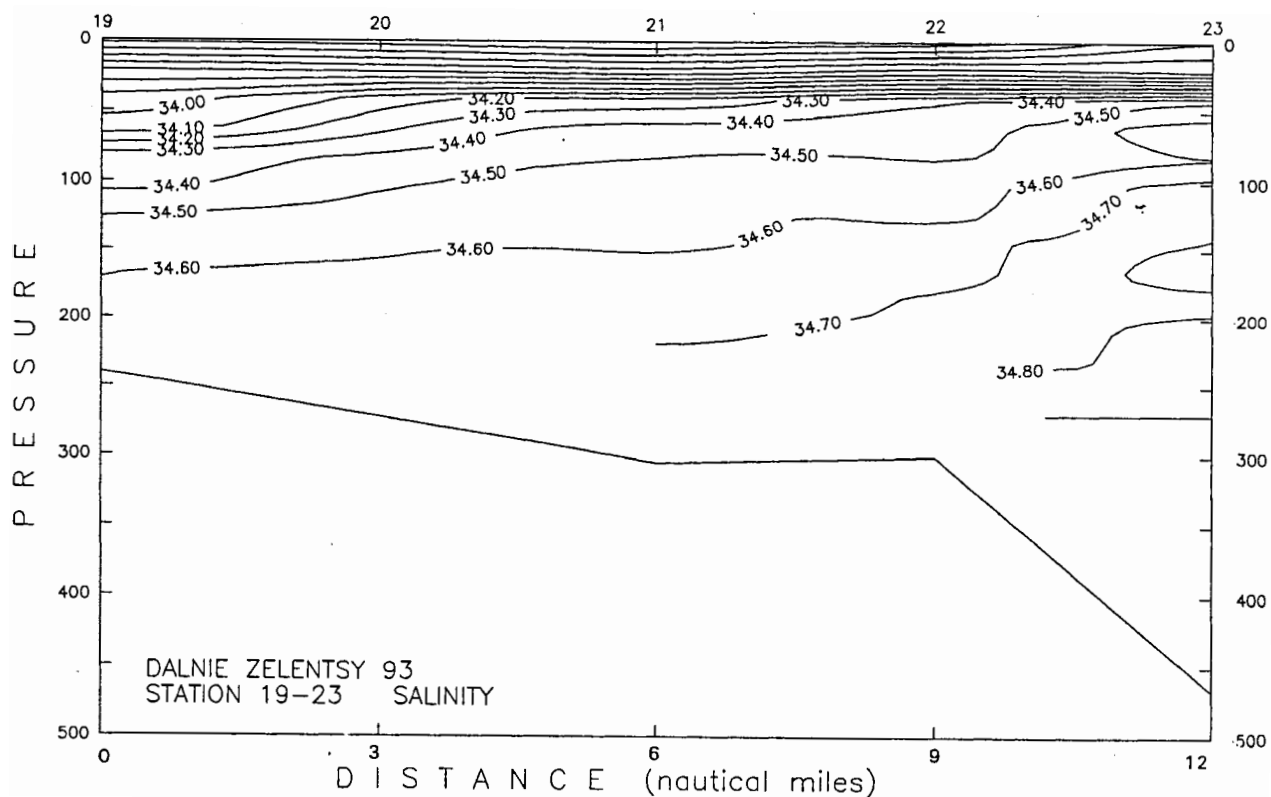
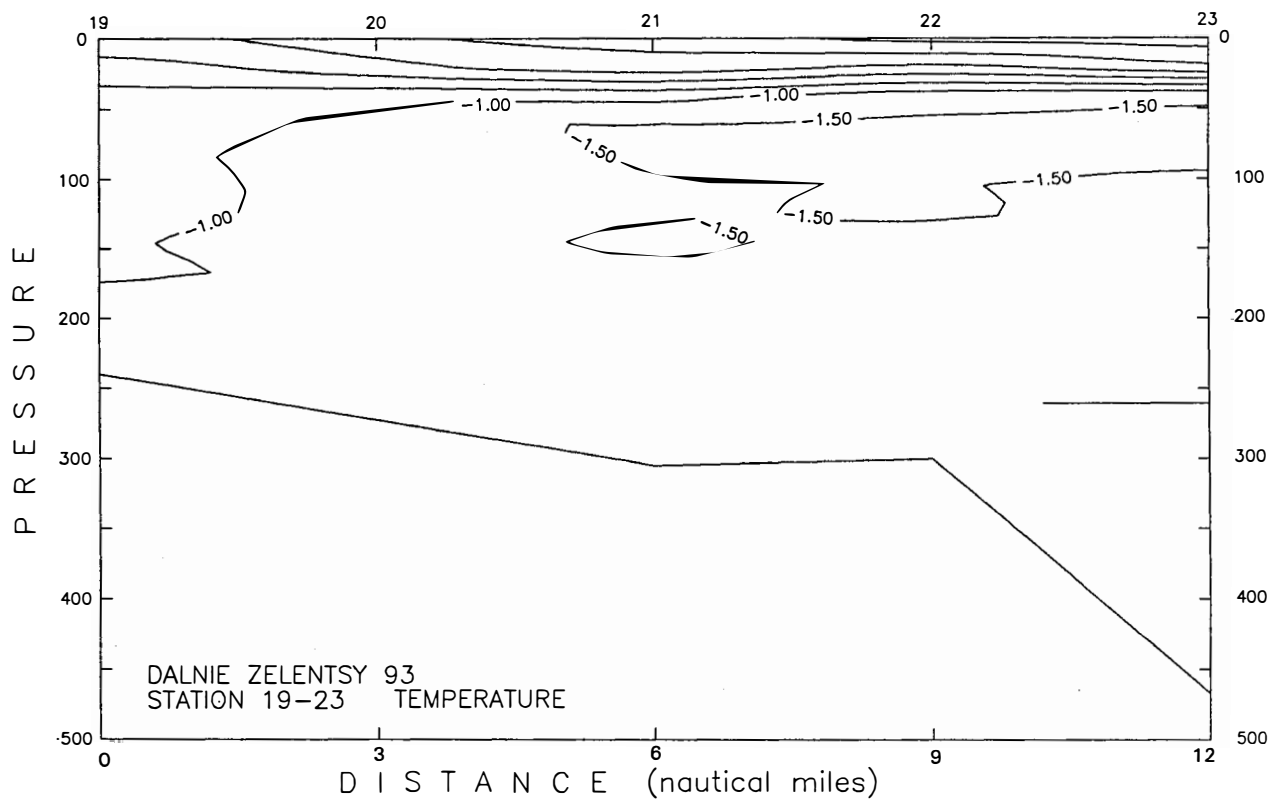
Table 2. Water masses in the Barents Sea

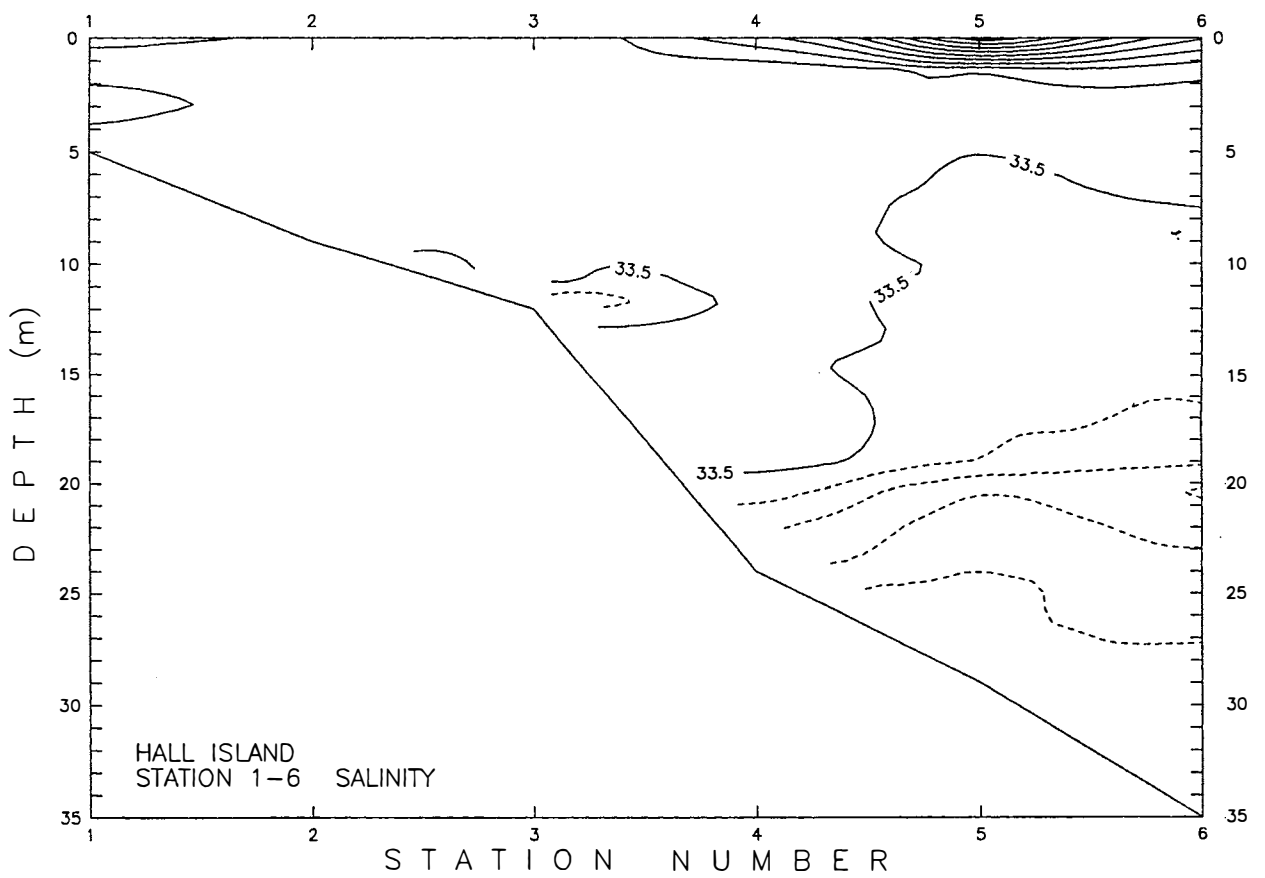
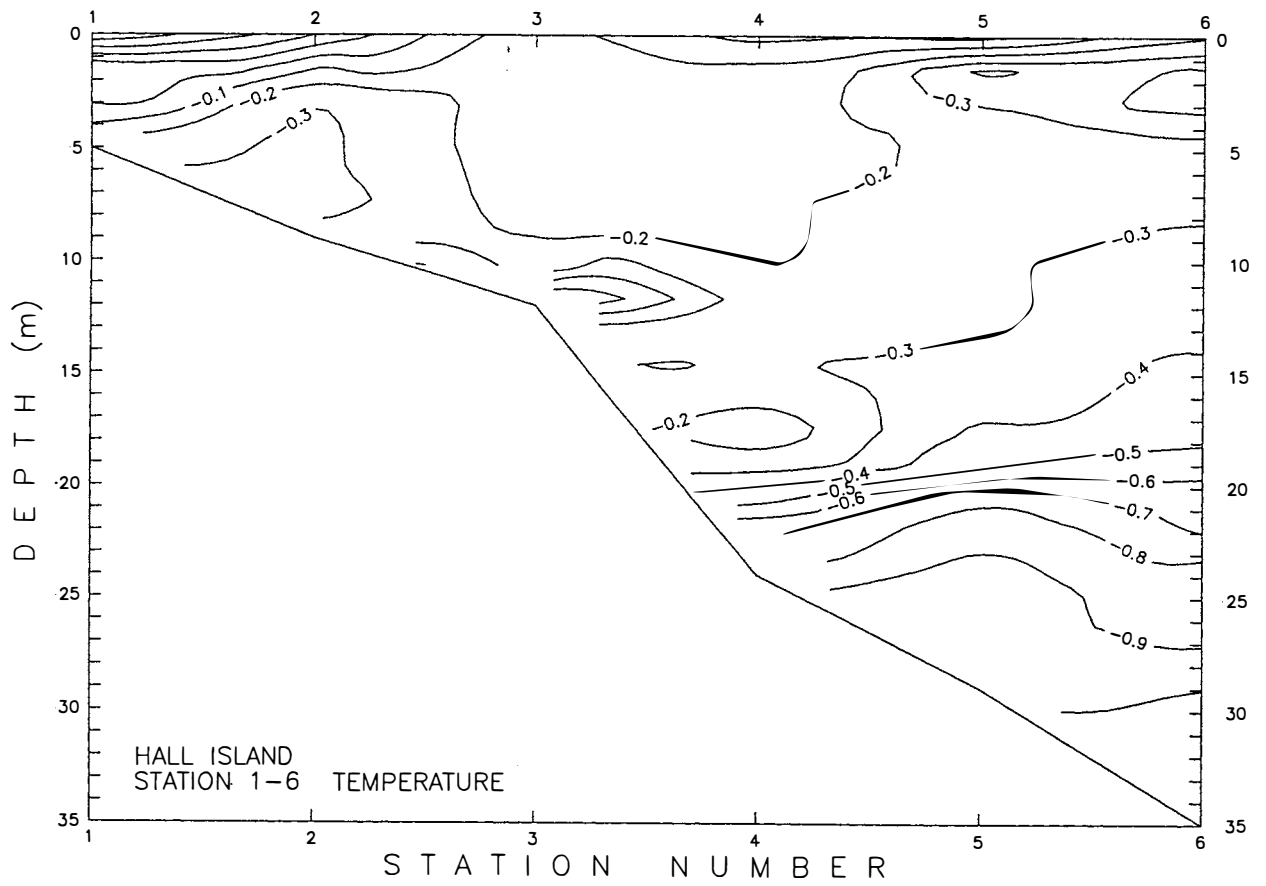
Main water masses		Characteristics	
		Temperature	Salinity
Coastal Water	CW	>2.0	<34.7
(North) Atlantic Water	NAW	>3.0	>35.0
Arctic Water	AW	<0.0	34.4 - 34.8
Locally formed water masses			
Melt Water	MW	>0.0	<34.2
Barents Sea Water	BSW	-1.5 - 2.0	34.7 - 35.0
Polar Front Water	PFW	-0.5 - 2.0	34.8 - 35.0

From Loeng, 1991: Features of the physical oceanographic conditions of the Barents Sea; Polar Research Vol 10, No 1.









The raw data

Data listing

A selection of the data is listed, showing pressure (PRESS) or depth (pressure is shown for the ME data, depth for the SD), temperature (TEMP), potential temperature (THETA), salinity, density (σ_θ) relative to surface (SIGT) and density (σ_1) relative to 1000m (SIG1). Pressure is given in dbars, depth in meters, temperature in °C, salinity in PSU and density in kg/m³. A 'ME' in the station number means that the ME was used, a 'SD' that the SD was used.

ME	DZ	001					
	PRESS	TEMP	THETA	SAL	SIGT	SIG1	
	1.00	7.505	7.505	33.854	26.45	30.98	
	11.20	7.180	7.181	33.758	26.42	30.96	
	20.10	6.384	6.386	33.938	26.66	31.22	
	31.10	5.755	5.758	34.094	26.87	31.44	
	40.40	5.460	5.463	34.071	26.89	31.46	
	50.60	4.922	4.926	34.154	27.01	31.60	
	60.10	4.387	4.391	34.230	27.13	31.74	
	71.50	3.829	3.834	34.309	27.25	31.87	
	80.00	3.653	3.658	34.354	27.31	31.93	

ME	DZ	002					
	PRESS	TEMP	THETA	SAL	SIGT	SIG1	
	0.40	9.782	9.782	33.964	26.18	30.67	
	10.80	9.791	9.792	33.977	26.19	30.68	
	20.00	6.259	6.261	34.231	26.91	31.47	
	30.90	4.182	4.184	34.429	27.31	31.92	
	41.70	3.503	3.506	34.481	27.42	32.05	
	50.80	3.078	3.081	34.495	27.47	32.11	
	60.10	2.809	2.813	34.491	27.50	32.14	
	71.00	2.491	2.495	34.482	27.52	32.17	
	81.60	2.285	2.289	34.491	27.54	32.19	
	90.70	2.155	2.160	34.498	27.56	32.21	
	101.10	2.009	2.014	34.508	27.58	32.24	
	110.10	1.945	1.951	34.508	27.58	32.24	
	120.80	2.039	2.045	34.533	27.59	32.25	
	131.00	2.032	2.039	34.550	27.61	32.27	

ME	DZ	003					
	PRESS	TEMP	THETA	SAL	SIGT	SIG1	
	0.70	10.062	10.062	34.142	26.27	30.75	
	12.00	9.925	9.926	34.221	26.36	30.84	
	21.30	6.365	6.367	34.404	27.03	31.59	
	31.10	4.150	4.152	34.468	27.35	31.95	
	40.00	3.109	3.111	34.509	27.48	32.12	
	50.90	2.181	2.184	34.492	27.55	32.21	
	61.00	1.929	1.932	34.496	27.57	32.24	
	71.40	1.881	1.885	34.502	27.58	32.25	
	80.80	1.877	1.881	34.536	27.61	32.27	
	90.60	1.808	1.813	34.565	27.64	32.30	
	100.30	1.812	1.817	34.566	27.64	32.30	
	110.50	1.820	1.826	34.567	27.64	32.30	
	120.10	1.823	1.829	34.571	27.64	32.31	
	131.20	1.825	1.832	34.569	27.64	32.31	

ME	DZ	004					
	PRESS	TEMP	THETA	SAL	SIGT	SIG1	
	0.50	8.806	8.806	34.501	26.76	31.26	
	12.80	8.638	8.639	34.519	26.80	31.31	
	22.00	8.089	8.091	34.505	26.87	31.39	
	30.50	5.643	5.645	34.557	27.25	31.82	
	41.00	3.571	3.574	34.642	27.54	32.17	
	51.40	1.411	1.413	34.662	27.75	32.42	
	62.90	1.383	1.386	34.641	27.73	32.41	

72.10	1.381	1.384	34.642	27.73	32.41
80.70	1.384	1.388	34.641	27.73	32.41

ME DZ 005

PRESS	TEMP	THETA	SAL	SIGT	SIG1
0.70	9.056	9.056	34.432	26.66	31.16
10.40	8.899	8.900	34.446	26.70	31.20
21.70	7.198	7.200	34.553	27.04	31.58
30.40	5.454	5.456	34.617	27.32	31.89
41.50	3.410	3.413	34.633	27.55	32.18
50.10	3.423	3.426	34.695	27.60	32.23
62.00	3.089	3.093	34.686	27.63	32.26
70.60	3.063	3.067	34.706	27.64	32.28
80.40	2.983	2.988	34.713	27.66	32.29
90.40	2.323	2.328	34.630	27.65	32.30
100.20	2.650	2.656	34.706	27.68	32.32
110.30	2.767	2.774	34.740	27.70	32.34
120.80	2.395	2.402	34.715	27.71	32.36
131.00	1.738	1.745	34.681	27.74	32.40
140.40	1.717	1.724	34.678	27.74	32.40
150.10	1.684	1.692	34.689	27.75	32.42

ME DZ 006

PRESS	TEMP	THETA	SAL	SIGT	SIG1
1.20	8.705	8.705	34.651	26.89	31.40
10.60	8.676	8.677	34.635	26.88	31.39
21.80	7.728	7.730	34.650	27.04	31.57
30.80	4.712	4.714	34.770	27.53	32.12
41.90	3.252	3.255	34.796	27.70	32.33
51.10	2.816	2.819	34.807	27.75	32.39
61.80	2.487	2.491	34.823	27.79	32.44
70.90	2.203	2.207	34.830	27.82	32.47
80.20	2.015	2.019	34.833	27.84	32.50
90.70	1.836	1.841	34.846	27.86	32.52
101.50	1.646	1.651	34.841	27.87	32.54
110.40	1.478	1.483	34.868	27.91	32.58
121.00	1.192	1.198	34.863	27.92	32.60
130.00	1.030	1.036	34.864	27.93	32.62
140.20	0.980	0.986	34.864	27.94	32.62
150.70	0.737	0.744	34.867	27.96	32.65
160.50	0.556	0.563	34.867	27.97	32.66
170.90	0.426	0.433	34.865	27.97	32.67
180.20	0.324	0.331	34.859	27.97	32.68
190.90	0.202	0.209	34.858	27.98	32.69
200.60	0.126	0.134	34.855	27.98	32.69
210.90	0.087	0.095	34.852	27.98	32.69
220.60	0.050	0.058	34.852	27.98	32.70
230.70	0.027	0.036	34.851	27.98	32.70
240.20	-0.013	-0.004	34.849	27.99	32.70
251.50	-0.055	-0.046	34.849	27.99	32.70
260.90	-0.081	-0.071	34.851	27.99	32.71
270.90	-0.082	-0.072	34.850	27.99	32.71

ME DZ 007

PRESS	TEMP	THETA	SAL	SIGT	SIG1
0.10	8.732	8.732	33.918	26.31	30.82
11.40	8.459	8.460	34.657	26.93	31.45
20.60	8.253	8.255	34.656	26.97	31.48
30.00	4.330	4.332	34.716	27.53	32.13
40.80	2.105	2.107	34.820	27.82	32.48
50.10	1.079	1.081	34.890	27.95	32.63
61.10	0.868	0.871	34.839	27.92	32.61
70.30	0.476	0.479	34.840	27.95	32.65
81.40	0.256	0.259	34.837	27.96	32.67
91.90	0.193	0.196	34.844	27.97	32.68
100.80	0.128	0.132	34.842	27.97	32.68
111.60	0.066	0.070	34.850	27.98	32.69
120.20	0.018	0.022	34.840	27.98	32.69
131.00	0.011	0.016	34.848	27.98	32.70
141.30	-0.024	-0.019	34.856	27.99	32.71
150.10	-0.071	-0.066	34.854	27.99	32.71
160.80	-0.115	-0.109	34.851	27.99	32.71
170.90	-0.176	-0.170	34.844	27.99	32.71
181.70	-0.250	-0.244	34.848	28.00	32.72
191.80	-0.332	-0.325	34.846	28.00	32.72
200.20	-0.374	-0.367	34.838	27.99	32.72
210.70	-0.419	-0.412	34.844	28.00	32.73

220.50	-0.4666	-0.4599	34.8388	28.00	32.73
230.60	-0.504	-0.496	34.845	28.01	32.73
240.60	-0.518	-0.510	34.838	28.00	32.73
250.60	-0.541	-0.533	34.842	28.01	32.73
260.40	-0.555	-0.546	34.841	28.01	32.73
270.20	-0.576	-0.567	34.839	28.00	32.73
281.70	-0.603	-0.594	34.837	28.00	32.74

ME DZ 011

PRESS	TEMP	THETA	SAL	SIGT	SIG1
0.90	-0.043	-0.043	30.222	24.25	29.01
10.40	-0.077	-0.077	32.194	25.84	30.58
21.00	-0.504	-0.503	34.055	27.37	32.10
31.60	-1.372	-1.371	34.369	27.66	32.41
40.30	-1.618	-1.617	34.436	27.72	32.48
50.80	-1.680	-1.679	34.523	27.79	32.56
61.30	-1.684	-1.683	34.561	27.82	32.59
70.00	-1.661	-1.660	34.574	27.83	32.60
80.40	-1.539	-1.537	34.608	27.85	32.62
90.70	-1.429	-1.427	34.634	27.87	32.63
100.90	-1.593	-1.591	34.656	27.90	32.66
111.10	-1.759	-1.757	34.661	27.90	32.67
121.40	-1.666	-1.663	34.711	27.94	32.71
131.50	-0.975	-0.971	34.797	27.99	32.73
141.20	-0.224	-0.219	34.775	27.94	32.66
151.20	-0.080	-0.075	34.795	27.95	32.66
161.20	-0.164	-0.158	34.749	27.91	32.63
171.20	-0.298	-0.292	34.803	27.96	32.68
180.90	-0.431	-0.425	34.803	27.97	32.70
190.60	-0.435	-0.429	34.815	27.98	32.71
200.40	-0.384	-0.377	34.819	27.98	32.70
210.20	-0.458	-0.451	34.830	27.99	32.72
220.80	-0.454	-0.447	34.826	27.99	32.72
230.50	-0.456	-0.448	34.826	27.99	32.72

ME DZ 012

PRESS	TEMP	THETA	SAL	SIGT	SIG1
3.40	1.326	1.326	32.592	26.09	30.78
10.60	1.170	1.170	32.697	26.18	30.88
21.40	-0.037	-0.036	33.407	26.82	31.55
30.20	-0.914	-0.913	33.984	27.33	32.07
40.30	-1.238	-1.237	34.161	27.48	32.24
50.20	-1.355	-1.354	34.264	27.57	32.33
60.80	-1.357	-1.356	34.272	27.58	32.33

ME DZ 013

PRESS	TEMP	THETA	SAL	SIGT	SIG1
2.30	0.164	0.164	31.145	24.99	29.73
11.40	0.461	0.461	31.959	25.63	30.35
20.30	0.705	0.706	33.396	26.77	31.48
31.00	-0.575	-0.574	33.873	27.22	31.96
41.30	-1.163	-1.162	34.111	27.44	32.19
51.30	-1.239	-1.238	34.260	27.56	32.32
61.20	-1.495	-1.494	34.365	27.66	32.42
71.00	-1.465	-1.463	34.438	27.71	32.47
80.50	-1.363	-1.361	34.471	27.74	32.49
90.00	-1.314	-1.312	34.502	27.76	32.52
101.30	-0.923	-0.920	34.518	27.76	32.50
111.30	-0.043	-0.039	34.603	27.79	32.50
120.40	-0.644	-0.640	34.568	27.79	32.52
130.80	-0.368	-0.364	34.594	27.80	32.52
141.40	-0.587	-0.583	34.587	27.80	32.53
150.30	-0.804	-0.800	34.581	27.81	32.54
160.70	-0.483	-0.478	34.651	27.85	32.58
171.10	0.260	0.267	34.684	27.84	32.54
181.00	0.094	0.101	34.673	27.84	32.55
191.30	0.326	0.334	34.704	27.85	32.55
201.20	0.189	0.197	34.712	27.86	32.57
211.30	0.209	0.217	34.726	27.87	32.58
221.30	0.011	0.019	34.723	27.88	32.60
230.40	0.030	0.039	34.737	27.89	32.61
240.10	-0.224	-0.215	34.740	27.91	32.63

ME DZ 014

PRESS	TEMP	THETA	SAL	SIGT	SIG1
0.50	-0.303	-0.303	30.974	24.87	29.62

10.30	-0.588	-0.588	31.409	25.23	29.99
20.70	-0.743	-0.744	33.443	26.81	31.51
31.80	-0.574	-0.573	33.964	27.30	32.03
40.80	-1.195	-1.194	34.154	27.47	32.23
51.70	-1.169	-1.168	34.281	27.58	32.33
60.80	-0.859	-0.857	34.412	27.67	32.41
71.60	-0.342	-0.340	34.462	27.69	32.42
80.60	-0.742	-0.740	34.523	27.76	32.49
91.20	0.489	0.493	34.623	27.77	32.48
100.10	0.355	0.359	34.629	27.79	32.49
110.70	0.167	0.171	34.614	27.79	32.50
121.30	0.352	0.357	34.624	27.78	32.49
131.80	0.426	0.431	34.643	27.79	32.50
140.30	0.430	0.436	34.635	27.79	32.49
150.60	0.220	0.226	34.647	27.81	32.52
160.90	0.164	0.170	34.636	27.80	32.51
171.30	0.155	0.162	34.654	27.82	32.53
181.30	0.254	0.261	34.670	27.83	32.53
191.40	0.291	0.299	34.669	27.82	32.53
201.30	0.383	0.391	34.694	27.84	32.54
211.20	0.215	0.223	34.709	27.86	32.57
221.20	0.101	0.109	34.700	27.86	32.57
231.20	-0.249	-0.241	34.699	27.88	32.60
240.80	-0.312	-0.304	34.715	27.89	32.62
250.50	-0.023	-0.014	34.729	27.89	32.60
260.40	-0.322	-0.313	34.739	27.91	32.64
270.10	-0.451	-0.442	34.736	27.92	32.64
281.20	-0.431	-0.421	34.741	27.92	32.65

ME DZ 015

PRESS	TEMP	THETA	SAL	SIGT	SIG1
0.70	-0.224	-0.224	31.340	25.16	29.91
10.40	-0.877	-0.877	32.267	25.93	30.70
21.40	-0.315	-0.314	33.998	27.31	32.04
30.60	-0.780	-0.779	34.119	27.43	32.17
41.50	-0.838	-0.837	34.300	27.58	32.32
50.50	-0.922	-0.921	34.405	27.67	32.41
61.40	-0.856	-0.854	34.467	27.72	32.46
70.50	-1.128	-1.126	34.466	27.73	32.47
81.40	-0.335	-0.332	34.532	27.75	32.47
90.20	0.756	0.760	34.643	27.77	32.47
100.50	0.604	0.608	34.634	27.78	32.47
111.00	0.588	0.593	34.638	27.78	32.48
121.30	0.442	0.447	34.629	27.78	32.48
131.40	0.594	0.599	34.647	27.79	32.49
141.50	0.637	0.643	34.632	27.77	32.47
151.40	0.161	0.167	34.607	27.78	32.49
161.30	0.244	0.250	34.647	27.81	32.52
171.30	0.053	0.059	34.634	27.81	32.52
180.10	0.172	0.179	34.643	27.81	32.52
191.10	0.026	0.033	34.657	27.83	32.54
200.80	0.117	0.125	34.676	27.84	32.55
210.50	0.120	0.128	34.685	27.85	32.56
220.20	0.110	0.118	34.697	27.86	32.57
231.20	-0.141	-0.133	34.681	27.86	32.57
240.90	0.119	0.128	34.810	27.95	32.66
250.20	-0.082	-0.073	34.725	27.89	32.61
261.30	-0.275	-0.266	34.733	27.90	32.63
270.40	-0.338	-0.329	34.740	27.91	32.64

ME DZ 016

PRESS	TEMP	THETA	SAL	SIGT	SIG1
0.70	0.533	0.533	32.051	25.70	30.42
10.80	0.307	0.307	32.784	26.30	31.02
20.70	-0.234	-0.233	34.184	27.46	32.18
31.50	-0.431	-0.430	34.290	27.55	32.28
40.00	-0.854	-0.853	34.404	27.66	32.41
50.50	-1.157	-1.156	34.456	27.72	32.47
61.00	-0.938	-0.936	34.493	27.74	32.48
71.60	-0.532	-0.530	34.537	27.76	32.49
80.40	-0.112	-0.109	34.586	27.78	32.50
90.70	-0.271	-0.268	34.592	27.79	32.51
101.10	-0.285	-0.282	34.591	27.79	32.51
111.40	-0.542	-0.538	34.598	27.81	32.54
121.60	-0.437	-0.433	34.608	27.81	32.54
130.00	-0.316	-0.312	34.629	27.82	32.55
141.60	-0.396	-0.391	34.641	27.84	32.56
151.60	-0.594	-0.589	34.638	27.84	32.58

160.00	-0.7112	-0.7077	34.630	27.84	32.58
171.60	-0.542	-0.536	34.675	27.87	32.60
181.50	-0.276	-0.270	34.690	27.87	32.59
191.40	-0.603	-0.597	34.685	27.88	32.61
201.30	-0.483	-0.476	34.705	27.89	32.62
211.10	-0.776	-0.770	34.700	27.90	32.64
220.60	-0.742	-0.735	34.703	27.90	32.64

ME	DZ	017				
	PRESS	TEMP	THETA	SAL	SIGT	SIG1
	0.30	-0.303	-0.303	31.539	25.33	30.08
	11.60	0.390	0.390	33.240	26.67	31.38
	20.90	-0.936	-0.935	34.090	27.41	32.16
	30.10	-1.085	-1.084	34.218	27.52	32.27
	41.10	-1.057	-1.056	34.393	27.66	32.41
	50.20	-1.069	-1.068	34.405	27.67	32.42
	61.10	-1.243	-1.241	34.451	27.72	32.47
	70.10	-1.406	-1.404	34.481	27.75	32.51
	80.80	-1.327	-1.325	34.498	27.76	32.51
	91.40	-0.965	-0.962	34.536	27.78	32.52
	100.20	-0.695	-0.692	34.560	27.78	32.52
	110.70	-1.187	-1.184	34.562	27.81	32.56
	121.40	-1.206	-1.203	34.582	27.82	32.57
	130.10	-1.245	-1.242	34.578	27.82	32.57
	140.50	-1.168	-1.164	34.589	27.83	32.58
	150.90	-1.279	-1.275	34.616	27.85	32.61

ME	DZ	018				
	PRESS	TEMP	THETA	SAL	SIGT	SIG1
	1.20	0.778	0.778	33.070	26.51	31.21
	11.20	0.782	0.782	33.091	26.52	31.23
	21.30	-0.675	-0.674	33.780	27.15	31.89
	31.40	-1.135	-1.134	34.029	27.37	32.12
	41.40	-1.181	-1.180	34.181	27.50	32.25
	51.60	-1.139	-1.138	34.350	27.63	32.38
	60.20	-1.147	-1.145	34.420	27.69	32.44
	70.70	-1.197	-1.195	34.447	27.71	32.46
	80.70	-1.120	-1.118	34.473	27.73	32.48
	90.90	-1.044	-1.042	34.508	27.76	32.50
	100.80	-0.977	-0.974	34.506	27.75	32.50

ME	DZ	019				
	PRESS	TEMP	THETA	SAL	SIGT	SIG1
	0.60	0.083	0.083	33.262	26.70	31.42
	10.90	-0.304	-0.304	33.527	26.93	31.66
	21.50	-0.488	-0.487	33.708	27.09	31.82
	30.70	-0.599	-0.598	33.795	27.16	31.90
	41.40	-0.669	-0.668	33.924	27.27	32.01
	50.20	-0.681	-0.680	33.988	27.32	32.06
	60.60	-0.736	-0.734	34.038	27.36	32.10
	70.90	-0.818	-0.816	34.185	27.49	32.23
	81.20	-0.790	-0.788	34.280	27.56	32.30
	91.00	-0.819	-0.816	34.323	27.60	32.34
	100.80	-0.826	-0.823	34.356	27.62	32.37
	110.60	-0.848	-0.845	34.450	27.70	32.44
	120.50	-0.779	-0.775	34.485	27.73	32.47
	130.20	-0.774	-0.770	34.509	27.75	32.49
	141.20	-0.904	-0.900	34.527	27.77	32.51
	150.90	-0.916	-0.912	34.545	27.78	32.52
	160.70	-0.695	-0.690	34.579	27.80	32.54
	170.50	-0.765	-0.760	34.589	27.81	32.55
	180.00	-0.893	-0.888	34.604	27.83	32.57
	191.10	-1.054	-1.049	34.606	27.84	32.58
	200.50	-1.139	-1.134	34.632	27.86	32.61
	211.10	-1.187	-1.181	34.655	27.88	32.63
	221.20	-1.197	-1.191	34.660	27.89	32.64
	230.30	-1.171	-1.165	34.669	27.89	32.64

ME	DZ	020				
	PRESS	TEMP	THETA	SAL	SIGT	SIG1
	1.40	1.263	1.263	32.970	26.40	31.09
	10.20	1.330	1.330	33.467	26.79	31.48
	21.00	-0.005	-0.004	33.769	27.11	31.84
	30.00	-0.971	-0.970	34.252	27.55	32.29
	40.30	-1.497	-1.496	34.437	27.71	32.48
	51.60	-1.621	-1.620	34.466	27.74	32.51

60.40	-1.6444	-1.643	34.501	27.77	32.54
71.10	-1.638	-1.636	34.529	27.79	32.56
80.10	-1.618	-1.616	34.547	27.81	32.57
90.60	-1.586	-1.584	34.564	27.82	32.58
101.10	-1.553	-1.551	34.571	27.83	32.59
111.70	-1.533	-1.530	34.584	27.84	32.60
120.40	-1.528	-1.525	34.582	27.83	32.59
130.80	-1.524	-1.521	34.596	27.84	32.60
141.00	-1.514	-1.511	34.608	27.85	32.61
151.30	-1.487	-1.483	34.629	27.87	32.63
161.50	-1.473	-1.469	34.629	27.87	32.63
170.10	-1.458	-1.454	34.640	27.88	32.64
180.10	-1.417	-1.413	34.652	27.89	32.64

ME DZ 021

PRESS	TEMP	THETA	SAL	SIGT	SIG1
0.50	1.099	1.099	33.145	26.55	31.24
10.60	1.721	1.722	33.415	26.72	31.40
20.50	0.864	0.865	33.613	26.94	31.64
30.20	0.584	0.585	33.669	27.00	31.71
41.40	-0.831	-0.830	34.227	27.52	32.26
50.50	-1.251	-1.250	34.348	27.63	32.39
61.10	-1.505	-1.504	34.422	27.70	32.46
71.10	-1.646	-1.644	34.478	27.75	32.52
81.30	-1.674	-1.672	34.507	27.78	32.54
91.00	-1.671	-1.669	34.519	27.79	32.55
100.90	-1.644	-1.642	34.548	27.81	32.57
110.60	-1.598	-1.596	34.564	27.82	32.58
120.20	-1.581	-1.578	34.572	27.83	32.59
131.20	-1.568	-1.565	34.584	27.84	32.60
140.70	-1.556	-1.553	34.589	27.84	32.60
150.00	-1.529	-1.526	34.594	27.84	32.60
160.50	-1.505	-1.501	34.610	27.86	32.61
170.90	-1.492	-1.488	34.614	27.86	32.62
181.10	-1.463	-1.459	34.622	27.86	32.62
191.10	-1.454	-1.449	34.638	27.88	32.63
201.10	-1.414	-1.409	34.658	27.89	32.65
211.00	-1.277	-1.271	34.684	27.91	32.66
220.60	-1.110	-1.104	34.707	27.92	32.67
231.00	-1.072	-1.065	34.713	27.92	32.67

ME DZ 022

PRESS	TEMP	THETA	SAL	SIGT	SIG1
0.40	1.779	1.779	33.221	26.56	31.24
11.40	1.670	1.671	33.321	26.65	31.33
21.50	-0.241	-0.240	33.875	27.21	31.94
31.30	-0.678	-0.677	34.296	27.57	32.31
40.70	-1.451	-1.450	34.401	27.68	32.44
51.40	-1.597	-1.596	34.431	27.71	32.48
60.60	-1.616	-1.615	34.443	27.72	32.49
71.00	-1.648	-1.646	34.458	27.74	32.50
80.40	-1.543	-1.541	34.495	27.76	32.52
90.50	-1.555	-1.553	34.510	27.78	32.54
100.30	-1.513	-1.511	34.545	27.80	32.56
110.00	-1.489	-1.486	34.567	27.82	32.58
120.20	-1.518	-1.515	34.572	27.82	32.59
130.00	-1.532	-1.529	34.573	27.83	32.59
140.90	-1.444	-1.441	34.602	27.85	32.60
150.30	-1.454	-1.450	34.613	27.86	32.61
161.00	-1.487	-1.483	34.647	27.88	32.64
171.10	-1.486	-1.482	34.653	27.89	32.65
181.10	-1.475	-1.471	34.664	27.90	32.66
191.40	-1.400	-1.395	34.672	27.90	32.66
200.40	-1.319	-1.314	34.682	27.91	32.66
210.00	-1.143	-1.137	34.705	27.92	32.67
220.10	-1.097	-1.091	34.712	27.92	32.67

SD DZ 023

DEPTH	TEMP	THETA	SAL	SIGT	SIG1
0.35	1.820	1.820	33.540	26.82	31.49
10.45	1.640	1.640	33.720	26.97	31.65
20.17	1.450	1.451	33.640	26.92	31.61
30.57	-0.470	-0.469	34.300	27.56	32.30
40.64	-1.490	-1.489	34.570	27.82	32.58
50.85	-1.630	-1.629	34.610	27.86	32.62
60.13	-1.600	-1.599	34.650	27.89	32.65
70.15	-1.600	-1.598	34.700	27.93	32.69

80.53	-1.550	-1.548	34.720	27.95	32.71
90.21	-1.510	-1.508	34.730	27.95	32.71
100.45	-1.450	-1.448	34.770	27.98	32.74
110.48	-1.470	-1.467	34.750	27.97	32.73
120.82	-1.390	-1.387	34.790	28.00	32.75
130.14	-1.320	-1.317	34.820	28.02	32.77
140.46	-1.300	-1.296	34.820	28.02	32.77
150.74	-1.320	-1.316	34.840	28.04	32.79
160.21	-1.330	-1.326	34.830	28.03	32.78
170.12	-1.340	-1.336	34.850	28.04	32.80
180.51	-1.340	-1.335	34.850	28.04	32.80
190.14	-1.350	-1.345	34.840	28.04	32.79
200.77	-1.360	-1.355	34.850	28.05	32.80
210.40	-1.320	-1.314	34.860	28.05	32.80
220.27	-1.290	-1.284	34.890	28.08	32.83
230.35	-1.210	-1.204	34.890	28.07	32.82
240.18	-1.110	-1.103	34.880	28.06	32.81
250.30	-1.080	-1.073	34.890	28.07	32.81
260.33	-1.020	-1.012	34.890	28.07	32.81
270.10	-0.920	-0.912	34.900	28.07	32.81
280.10	-0.850	-0.841	34.900	28.07	32.80
290.11	-0.830	-0.821	34.910	28.07	32.81
300.00	-0.800	-0.790	34.920	28.08	32.82
310.57	-0.780	-0.770	34.940	28.10	32.83
320.62	-0.760	-0.750	34.930	28.09	32.82
330.51	-0.760	-0.749	34.930	28.09	32.82
340.47	-0.760	-0.749	34.930	28.09	32.82
350.50	-0.770	-0.759	34.930	28.09	32.82
360.38	-0.770	-0.758	34.920	28.08	32.81
370.68	-0.770	-0.758	34.920	28.08	32.81
380.02	-0.770	-0.758	34.920	28.08	32.81
390.59	-0.770	-0.757	34.910	28.07	32.81
400.72	-0.800	-0.787	34.910	28.07	32.81

ME DZ 024

PRESS	TEMP	THETA	SAL	SIGT	SIG1
0.90	-0.218	-0.218	33.435	26.85	31.58
10.00	-0.269	-0.269	33.313	26.76	31.49
20.30	-0.389	-0.388	33.383	26.82	31.56
30.10	-0.601	-0.600	33.505	26.93	31.67
41.20	-1.054	-1.053	33.778	27.16	31.92
51.20	-1.203	-1.202	33.876	27.25	32.01
61.60	-1.494	-1.493	34.137	27.47	32.23
71.60	-1.553	-1.551	34.205	27.53	32.29
80.00	-1.611	-1.609	34.281	27.59	32.36
90.10	-1.642	-1.640	34.333	27.63	32.40
100.30	-1.648	-1.646	34.345	27.64	32.41
110.40	-1.666	-1.664	34.394	27.68	32.45
120.30	-1.702	-1.699	34.437	27.72	32.49
131.50	-1.698	-1.695	34.528	27.79	32.56
141.10	-1.691	-1.688	34.534	27.80	32.57
150.60	-1.686	-1.683	34.545	27.81	32.57
160.20	-1.683	-1.679	34.565	27.82	32.59
171.00	-1.660	-1.656	34.586	27.84	32.61
180.10	-1.637	-1.633	34.597	27.85	32.61
190.70	-1.624	-1.620	34.603	27.85	32.62
201.40	-1.599	-1.594	34.611	27.86	32.62
210.50	-1.528	-1.523	34.631	27.87	32.63
220.90	-1.482	-1.477	34.638	27.88	32.64
231.30	-1.448	-1.442	34.651	27.89	32.64
240.10	-1.378	-1.372	34.660	27.89	32.65
250.30	-1.289	-1.282	34.681	27.91	32.66
260.10	-1.267	-1.260	34.687	27.91	32.66

ME DZ 025

PRESS	TEMP	THETA	SAL	SIGT	SIG1
0.50	-0.366	-0.366	33.370	26.81	31.54
11.20	-0.463	-0.463	33.324	26.77	31.51
20.10	-0.761	-0.760	33.589	27.00	31.75
30.80	-0.816	-0.815	33.612	27.02	31.77
41.60	-0.927	-0.926	33.686	27.09	31.84
50.40	-1.111	-1.110	33.855	27.23	31.98
60.80	-1.170	-1.169	33.945	27.30	32.06
71.40	-1.327	-1.325	34.124	27.45	32.21
80.40	-1.462	-1.460	34.269	27.58	32.34
90.90	-1.532	-1.530	34.348	27.64	32.41
101.40	-1.549	-1.547	34.386	27.67	32.44
110.00	-1.550	-1.548	34.402	27.69	32.45

120.20	-1.552	-1.549	34.410	27.69	32.46
130.10	-1.542	-1.539	34.541	27.80	32.56
141.30	-1.536	-1.533	34.562	27.82	32.58
151.00	-1.530	-1.526	34.575	27.83	32.59
160.70	-1.527	-1.523	34.590	27.84	32.60

ME DZ 026

PRESS	TEMP	THETA	SAL	SIGT	SIG1
1.90	-0.076	-0.076	33.003	26.050	31.23
10.30	-0.295	-0.295	33.252	26.71	31.44
21.10	-0.675	-0.674	33.602	27.01	31.75
31.50	-0.970	-0.969	33.774	27.16	31.91
41.40	-0.991	-0.990	33.820	27.20	31.95
51.40	-1.135	-1.134	33.905	27.27	32.03
61.30	-1.247	-1.246	33.984	27.34	32.10
71.40	-1.359	-1.357	34.097	27.43	32.19
81.50	-1.438	-1.436	34.203	27.52	32.28
90.00	-1.502	-1.500	34.273	27.58	32.34
100.20	-1.571	-1.569	34.385	27.67	32.44
110.50	-1.639	-1.637	34.440	27.72	32.49
120.70	-1.639	-1.636	34.466	27.74	32.51
130.80	-1.634	-1.631	34.497	27.77	32.53
140.90	-1.627	-1.624	34.502	27.77	32.54
151.00	-1.605	-1.602	34.538	27.80	32.56
161.10	-1.583	-1.579	34.567	27.82	32.59
171.00	-1.581	-1.577	34.582	27.83	32.60
180.90	-1.571	-1.567	34.595	27.85	32.61
190.80	-1.561	-1.557	34.602	27.85	32.61
200.80	-1.540	-1.535	34.618	27.86	32.62
210.60	-1.517	-1.512	34.630	27.87	32.63
220.20	-1.493	-1.488	34.642	27.88	32.64
231.40	-1.447	-1.441	34.651	27.89	32.64
240.90	-1.435	-1.429	34.651	27.89	32.64
250.40	-1.420	-1.414	34.655	27.89	32.65
261.10	-1.411	-1.404	34.657	27.89	32.65

SD HALL - 1

DEPTH	TEMP	THETA	SAL	SIGT	SIG1
0.35	0.950	0.950	32.370	25.93	30.64

SD HALL - 2

DEPTH	TEMP	THETA	SAL	SIGT	SIG1
1.17	0.300	0.300	32.850	26.36	31.08

SD HALL - 3

DEPTH	TEMP	THETA	SAL	SIGT	SIG1
0.29	-0.170	-0.170	33.390	26.81	31.55
10.17	-0.200	-0.200	33.350	26.78	31.52

SD HALL - 4

DEPTH	TEMP	THETA	SAL	SIGT	SIG1
0.54	0.280	0.280	31.900	25.59	30.32
10.73	-0.190	-0.190	33.410	26.83	31.56
20.79	-0.410	-0.409	33.500	26.91	31.65

SD HALL - 5

DEPTH	TEMP	THETA	SAL	SIGT	SIG1
0.40	0.190	0.190	25.230	20.22	25.01
10.56	-0.270	-0.270	33.530	26.93	31.66
20.99	-0.690	-0.689	33.680	27.07	31.81

SD HALL - 6

DEPTH	TEMP	THETA	SAL	SIGT	SIG1
0.92	-0.220	-0.220	32.610	26.19	30.93
10.57	-0.370	-0.370	33.560	26.96	31.70
20.67	-0.570	-0.569	33.660	27.05	31.79
30.02	-1.000	-0.999	33.930	27.29	32.04

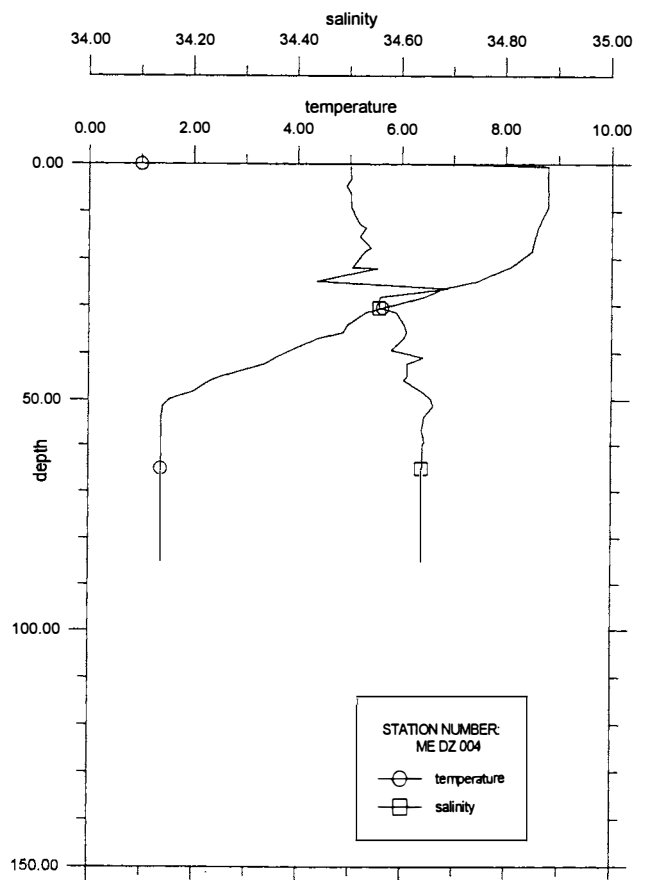
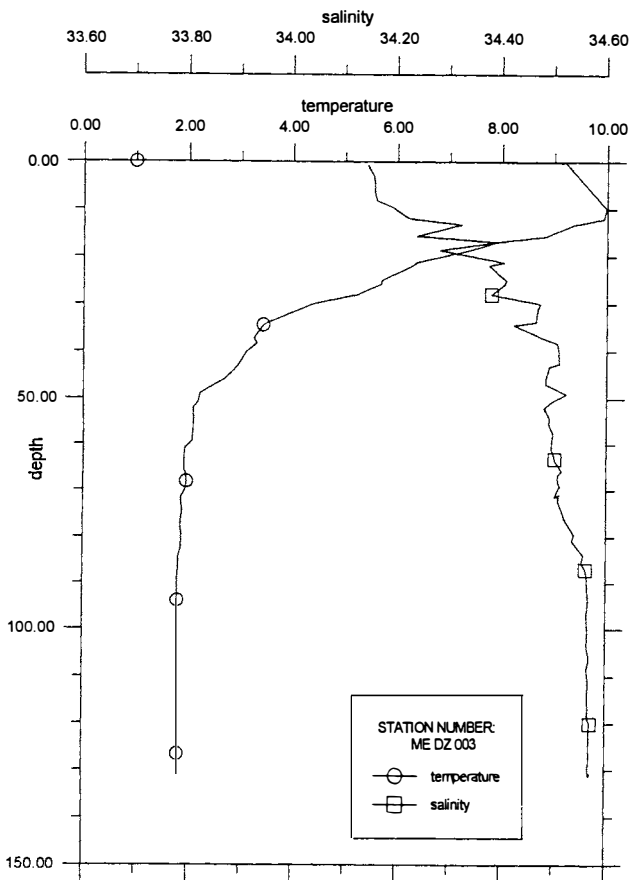
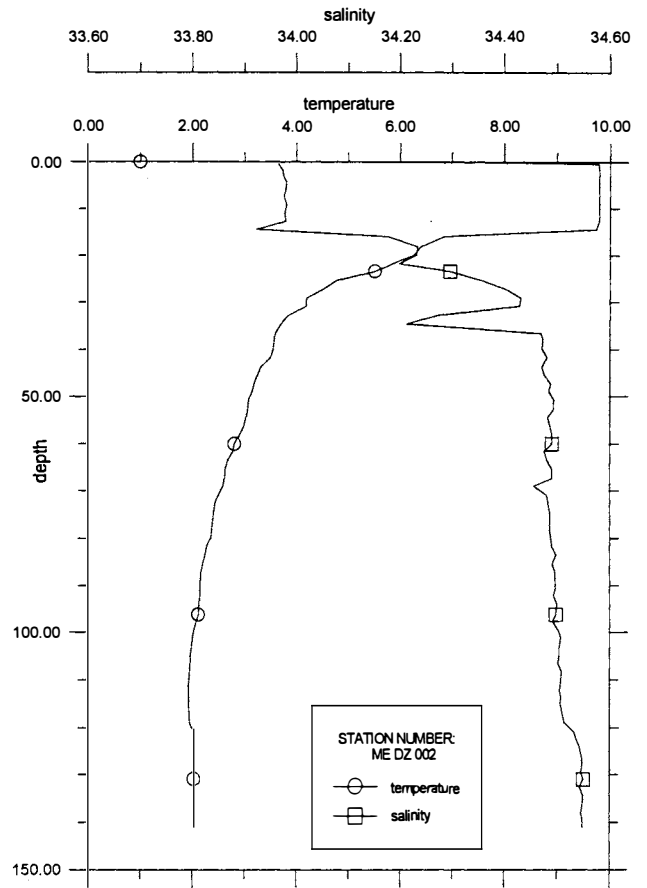
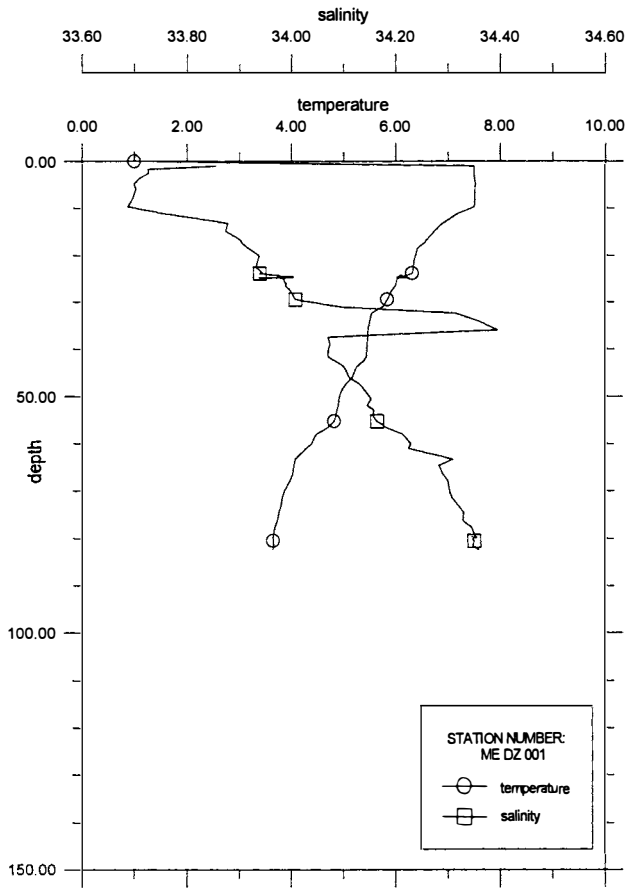
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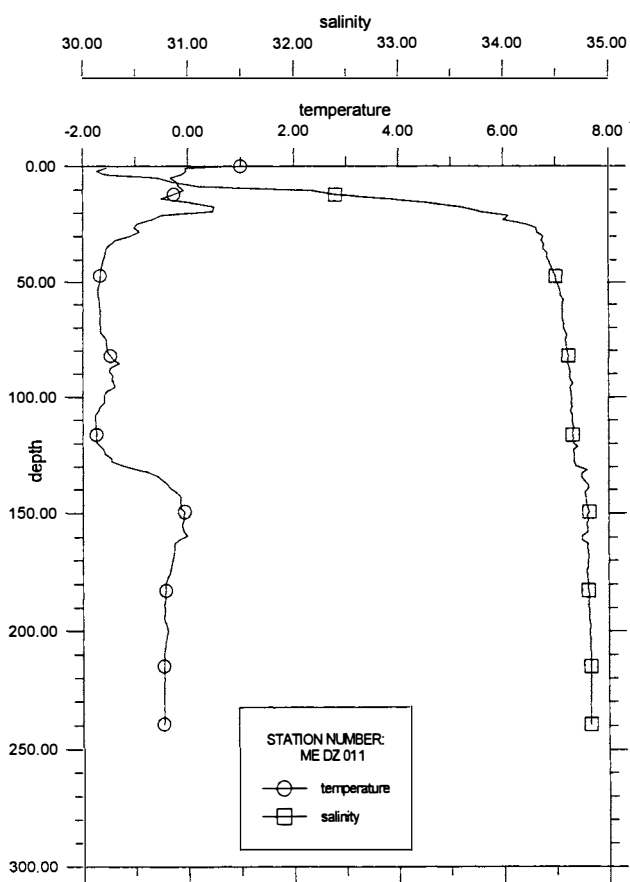
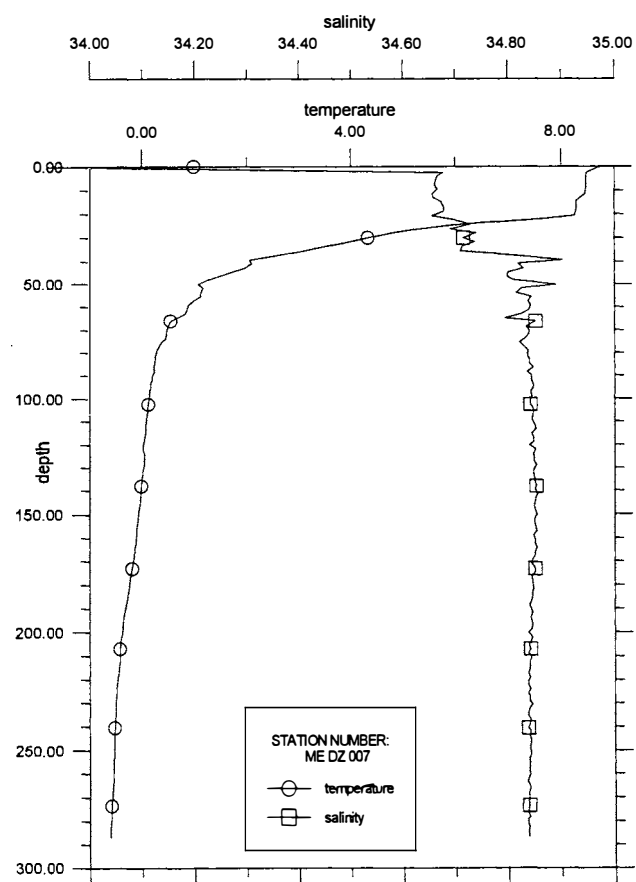
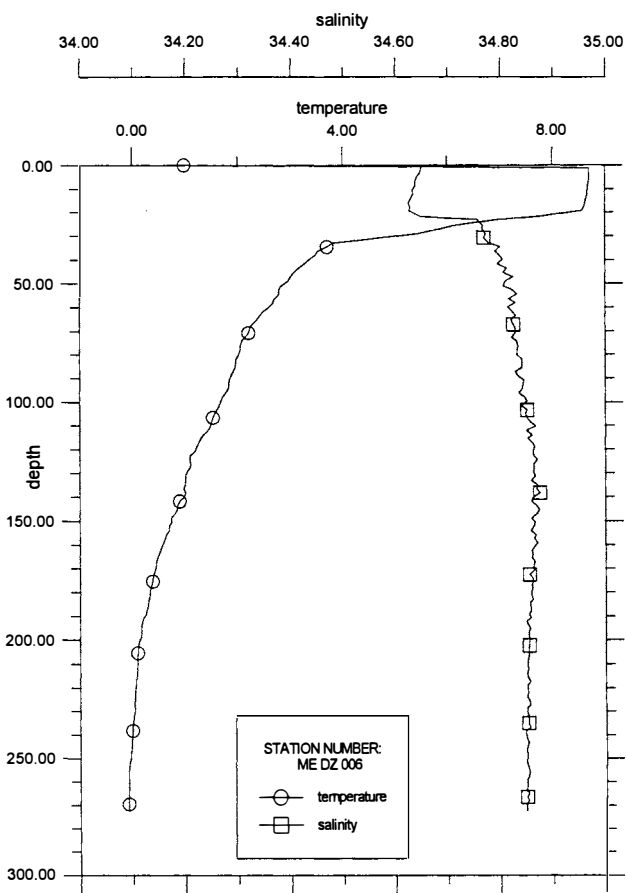
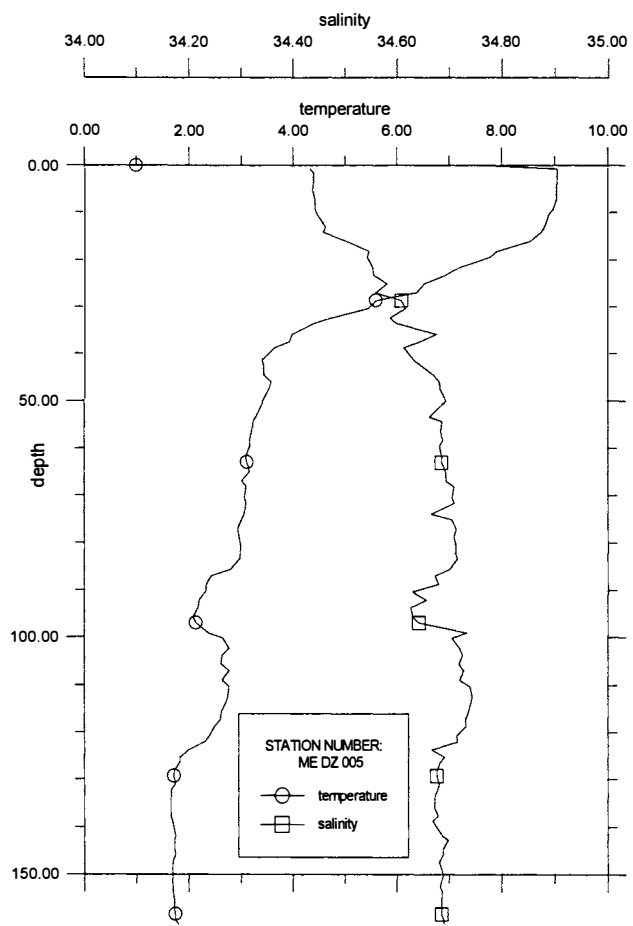
DEPTH	TEMP	THETA	SAL	SIGT	SIG1
0.46	3.830	3.830	26.610	21.13	25.81

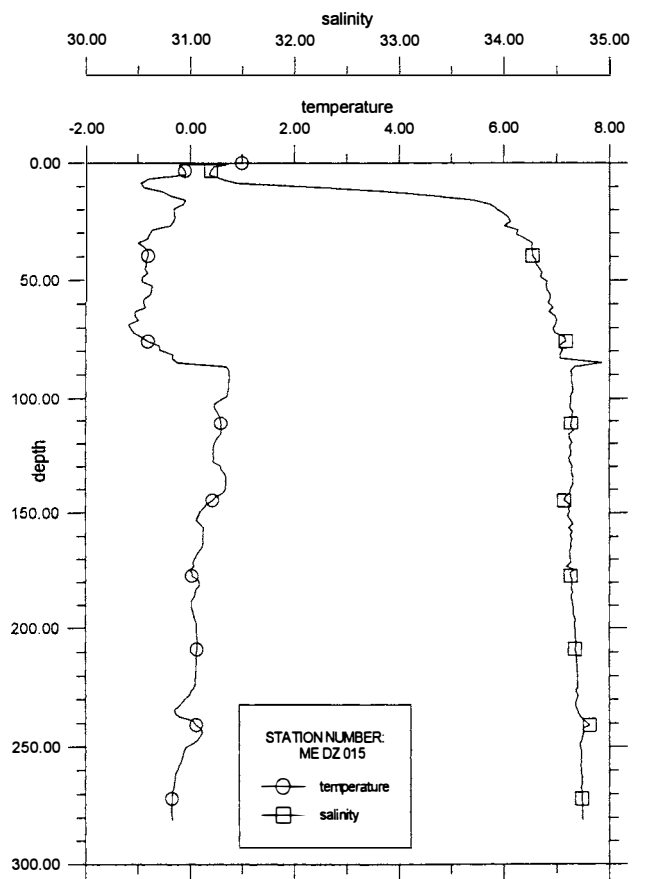
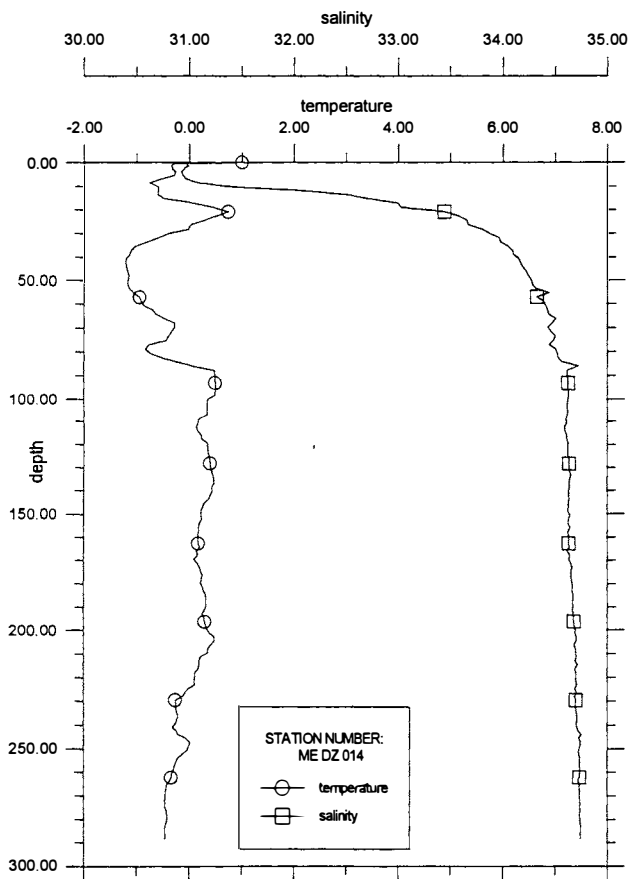
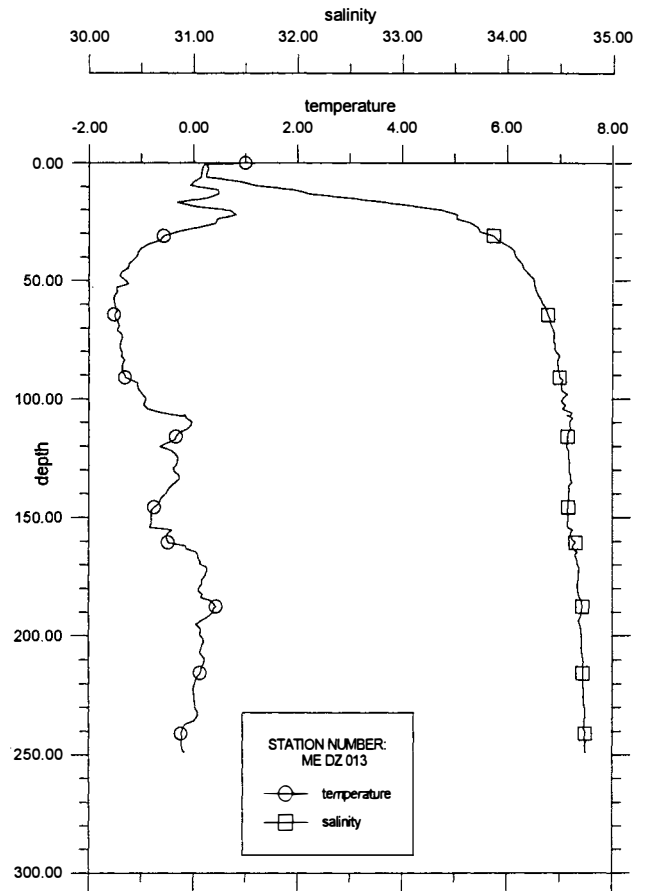
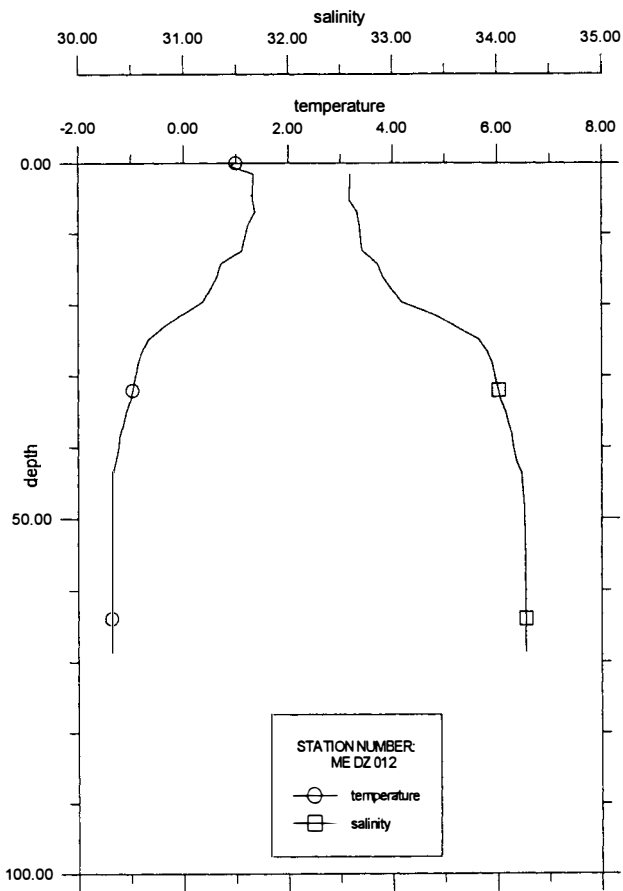
SD	BRADY - 2					
	DEPTH	TEMP	THETA	SAL	SIGT	SIG1
	0.77	1.920	1.920	24.390	19.49	24.23
SD	BRADY - 3					
	DEPTH	TEMP	THETA	SAL	SIGT	SIG1
	0.99	0.740	0.740	31.890	25.56	30.28
SD	HOCH - 1					
	DEPTH	TEMP	THETA	SAL	SIGT	SIG1
	0.44	3.140	3.140	30.160	24.01	28.68
	10.00	-0.610	-0.610	33.640	27.04	31.78
	20.49	-0.660	-0.659	33.840	27.20	31.94
	30.00	-0.880	-0.879	33.920	27.27	32.02
	41.25	-1.030	-1.029	34.030	27.37	32.12
	51.09	-1.080	-1.079	34.060	27.39	32.15
	60.88	-1.310	-1.309	34.250	27.56	32.31
	70.02	-1.420	-1.418	34.390	27.67	32.43
SD	HOCH - 2					
	DEPTH	TEMP	THETA	SAL	SIGT	SIG1
	0.72	2.010	2.010	30.410	24.30	28.99

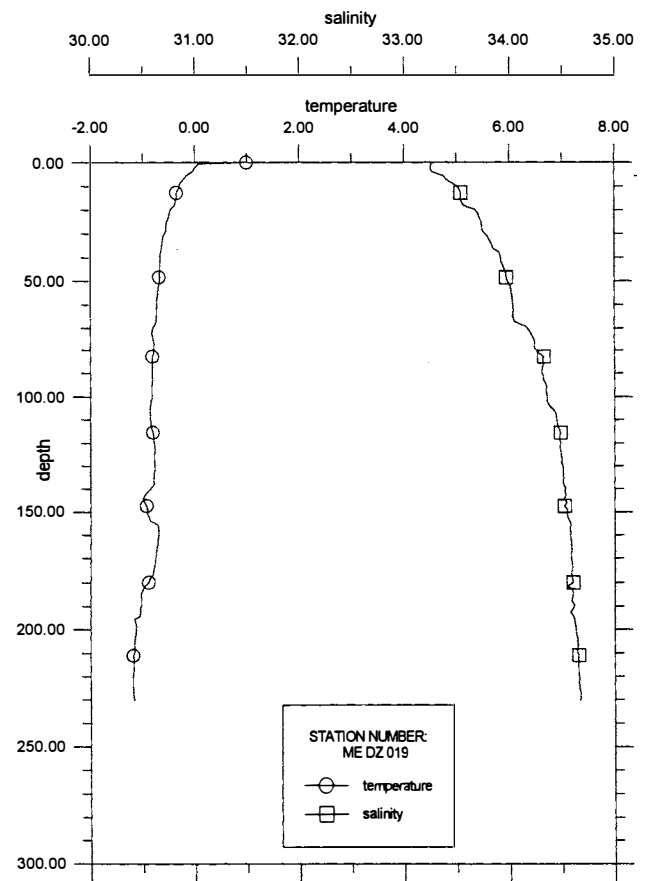
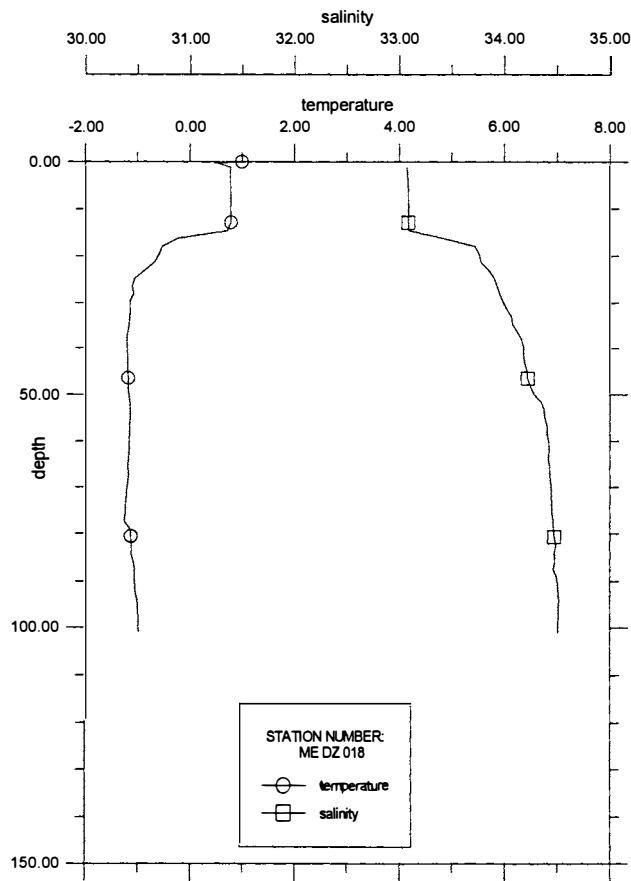
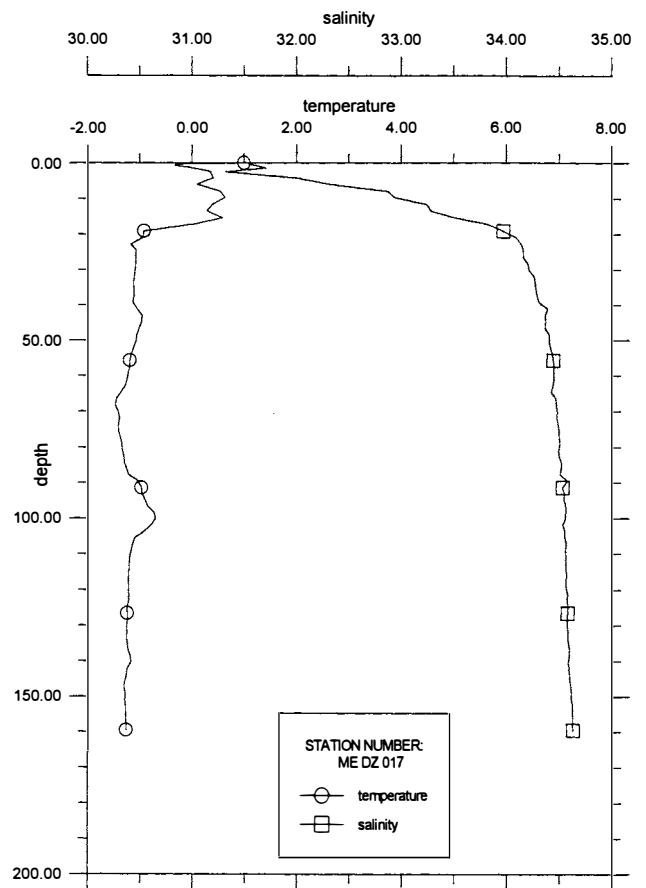
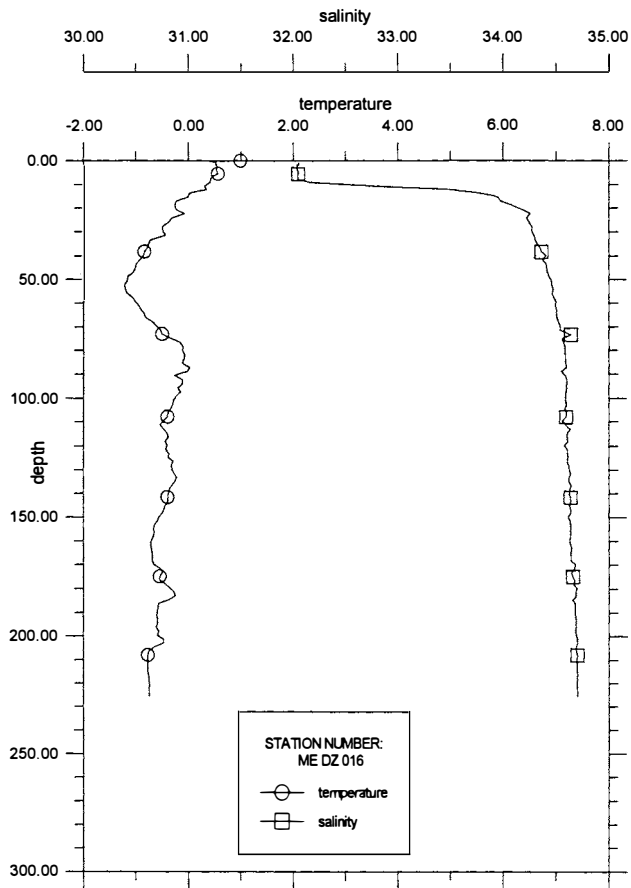
Profile plots

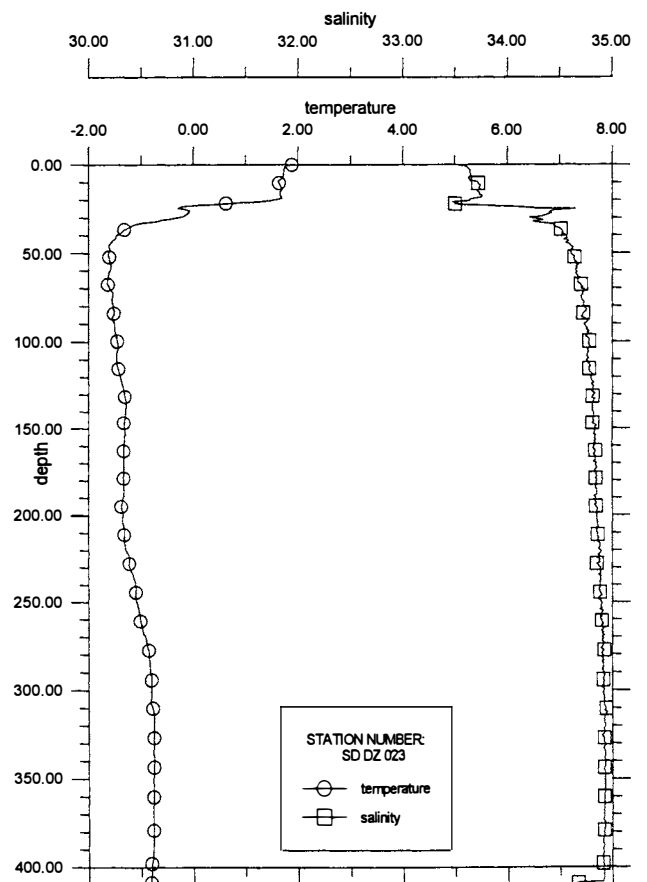
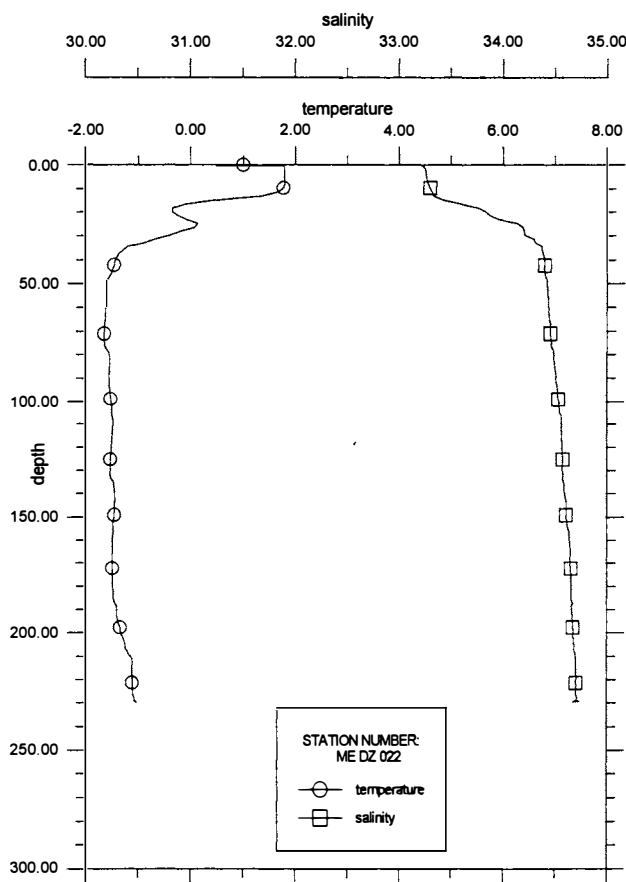
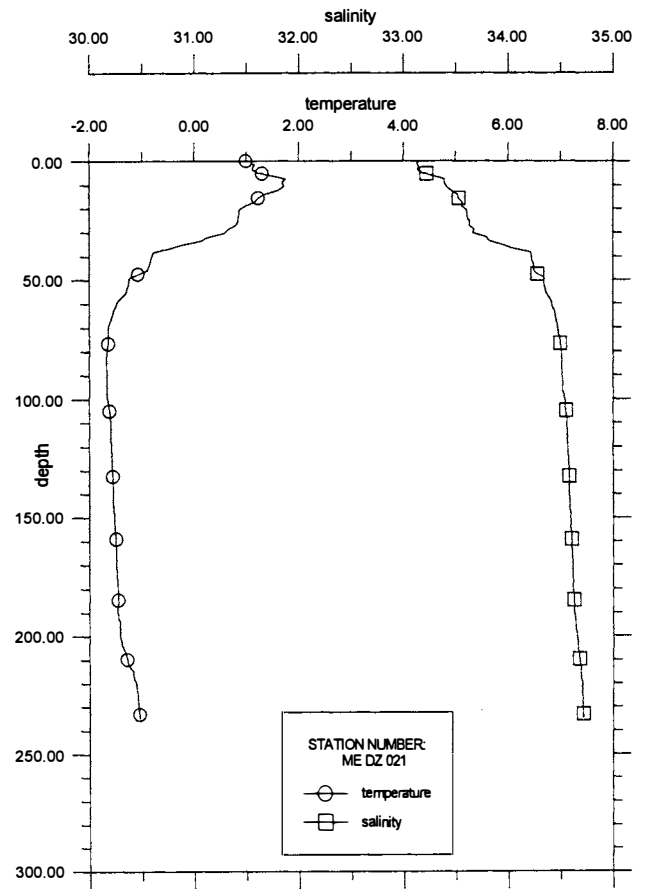
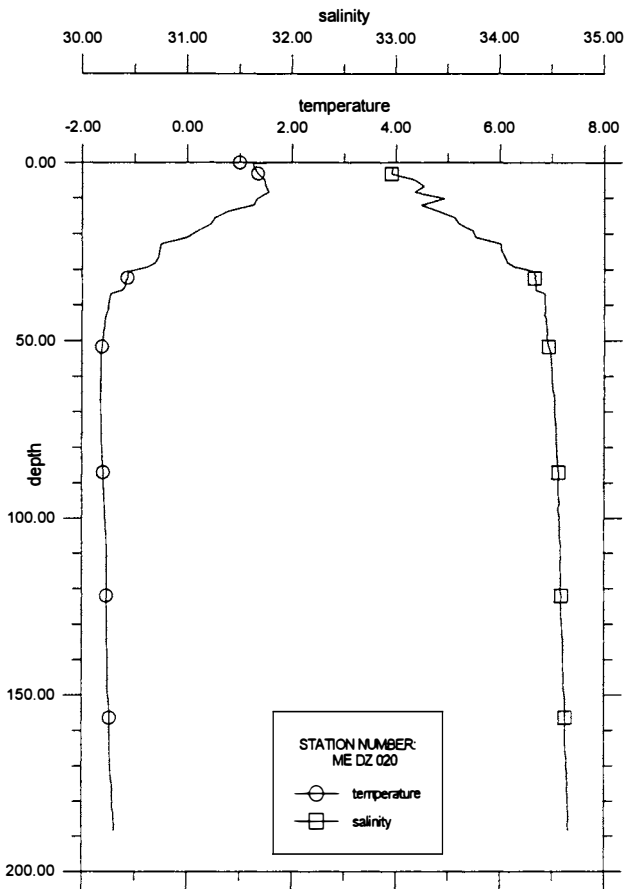
The profile plots show temperature and salinity profiles for each of the stations. Depth is shown in decibars. Each 20th measurement is marked with a square or a rectangle, except at some of the shallowest stations where all data are marked. On the latter plots the data points are not connected with a line. The software used is GRAPHER.

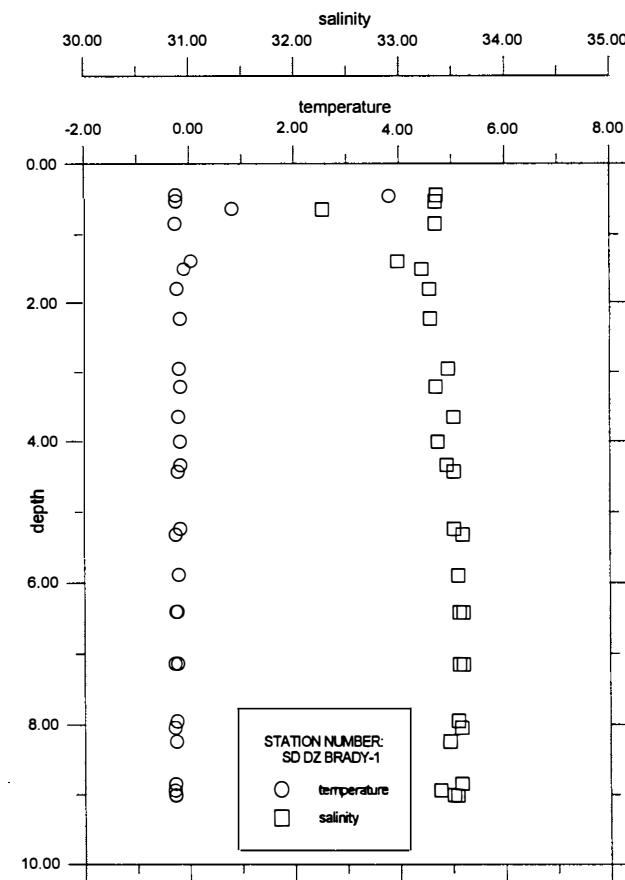
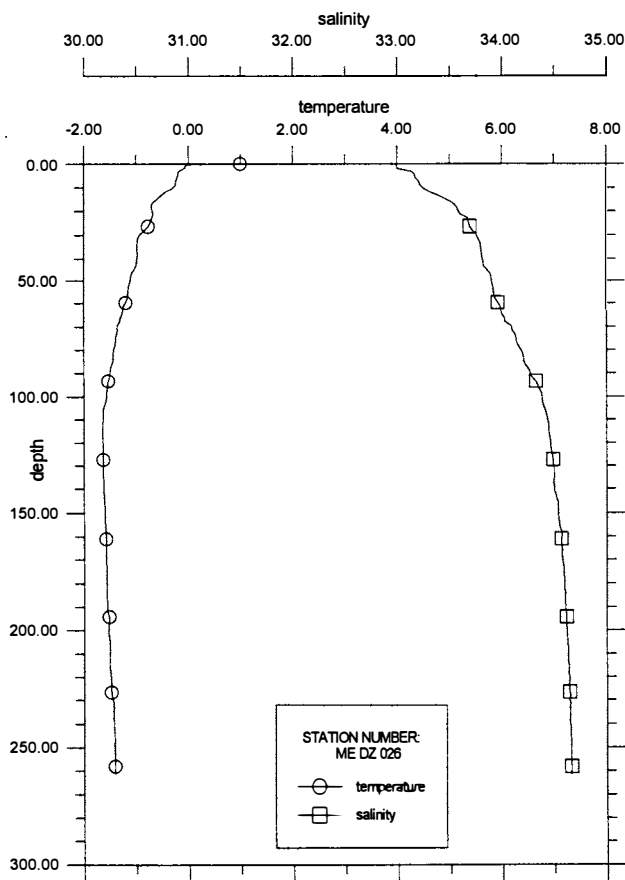
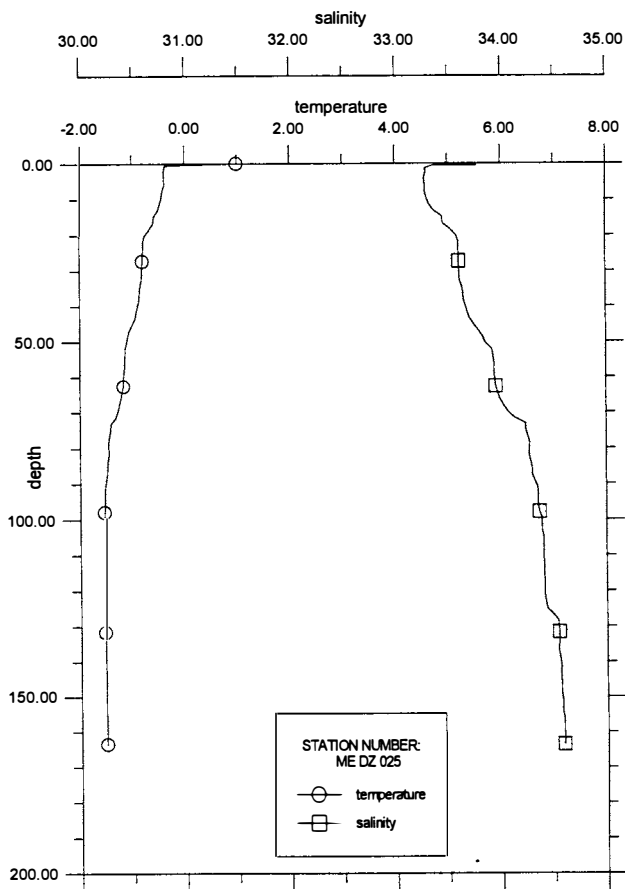
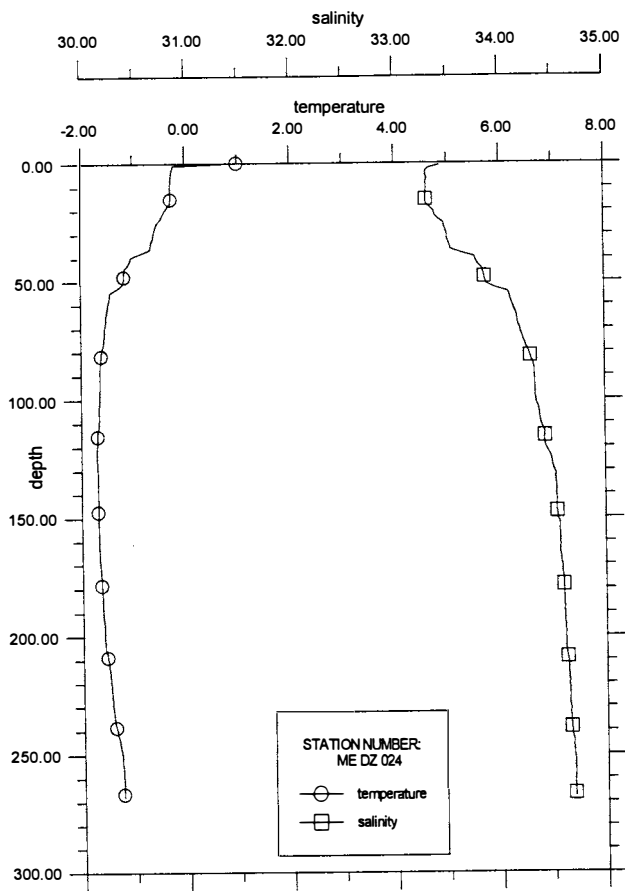


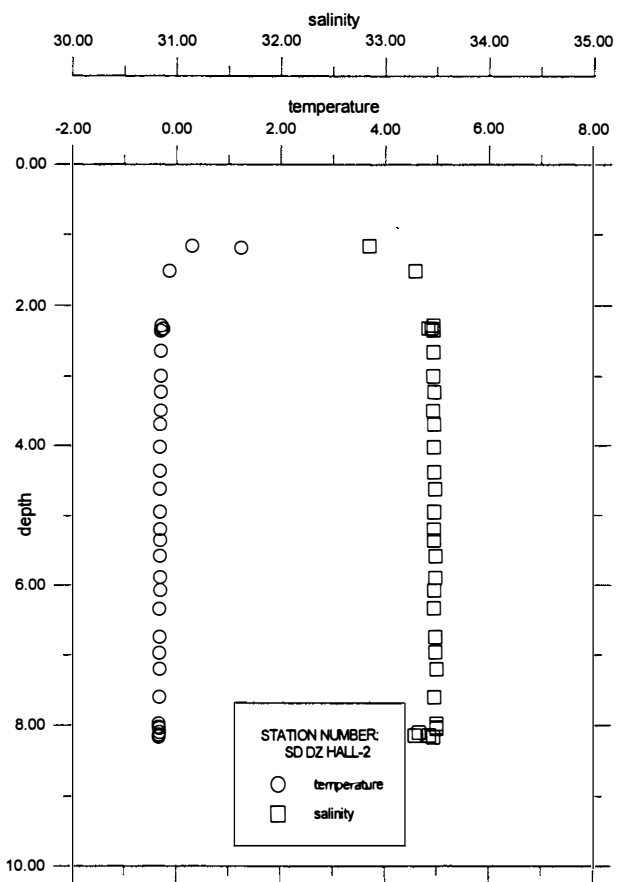
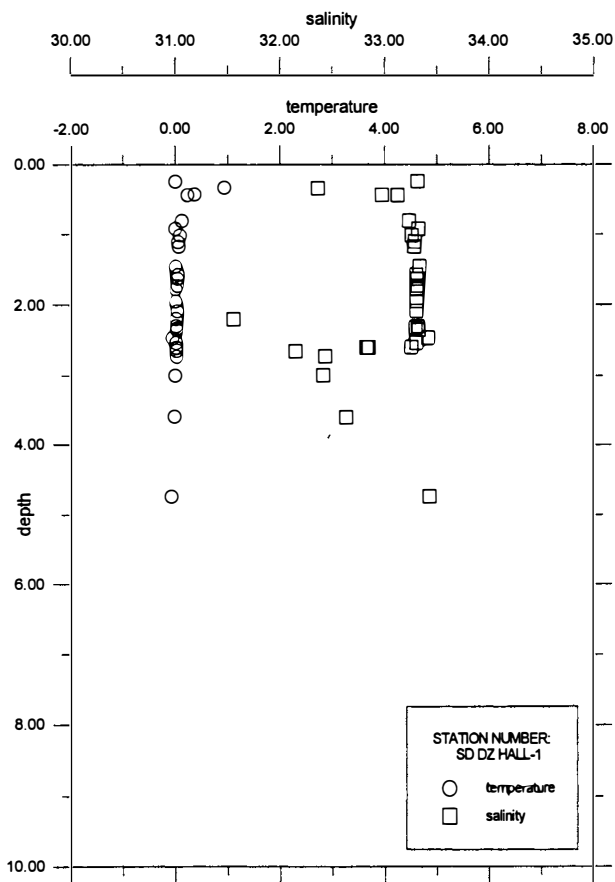
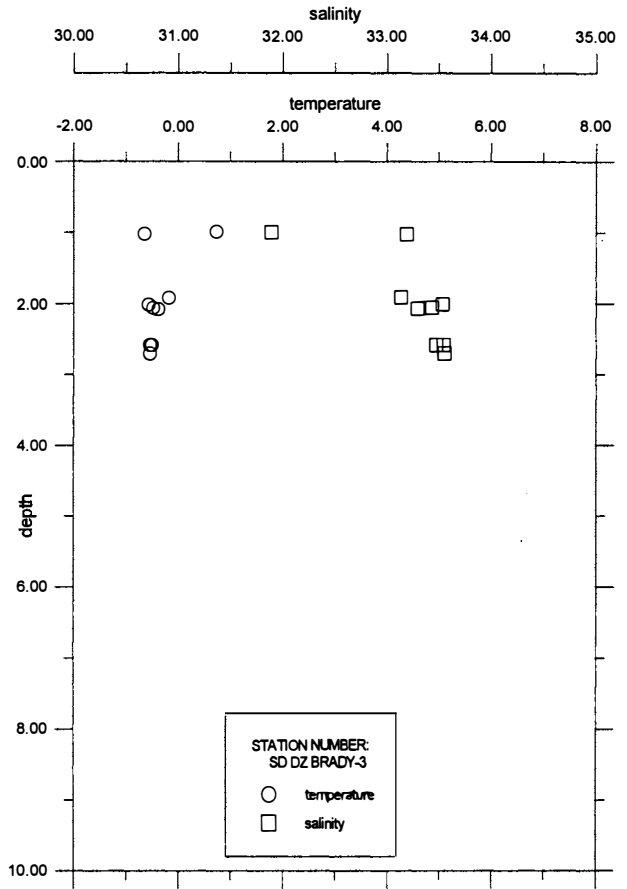
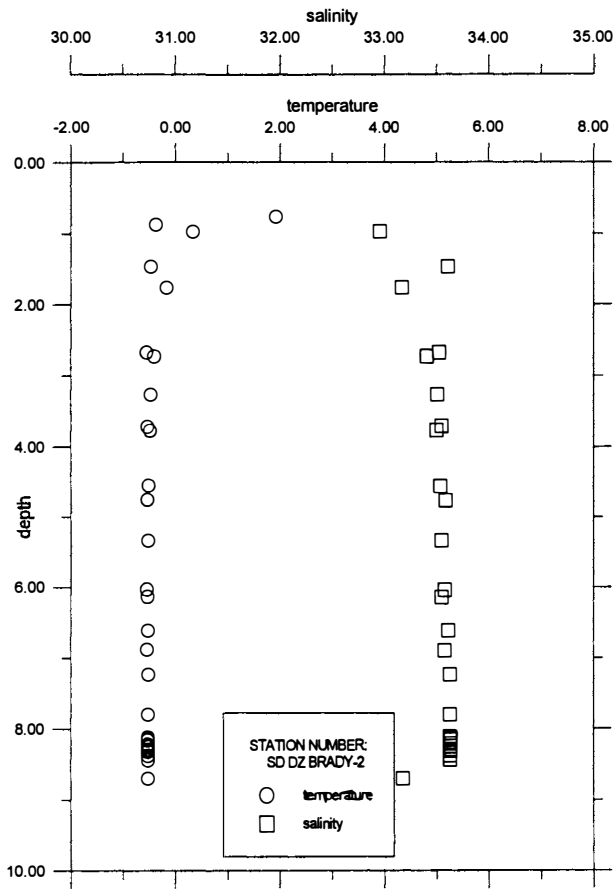


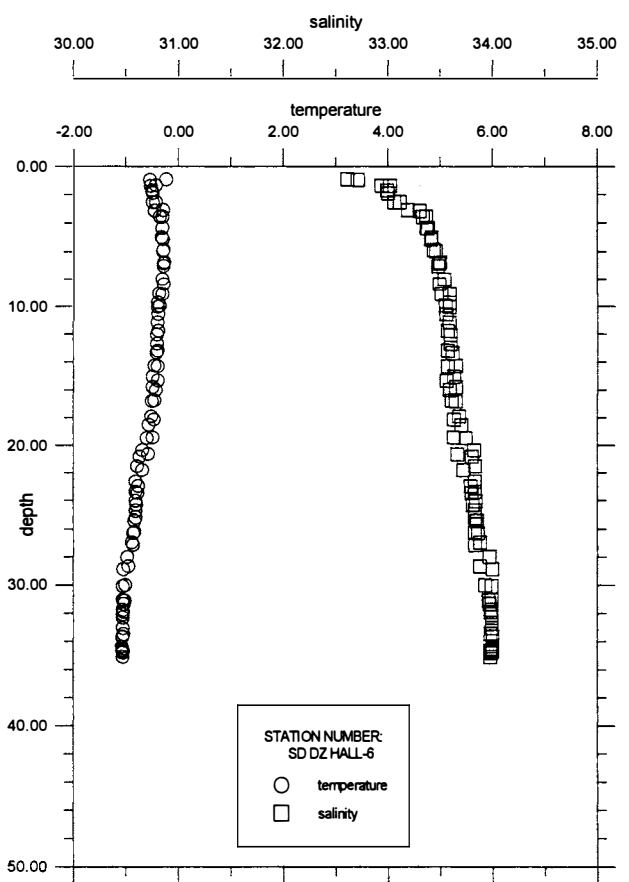
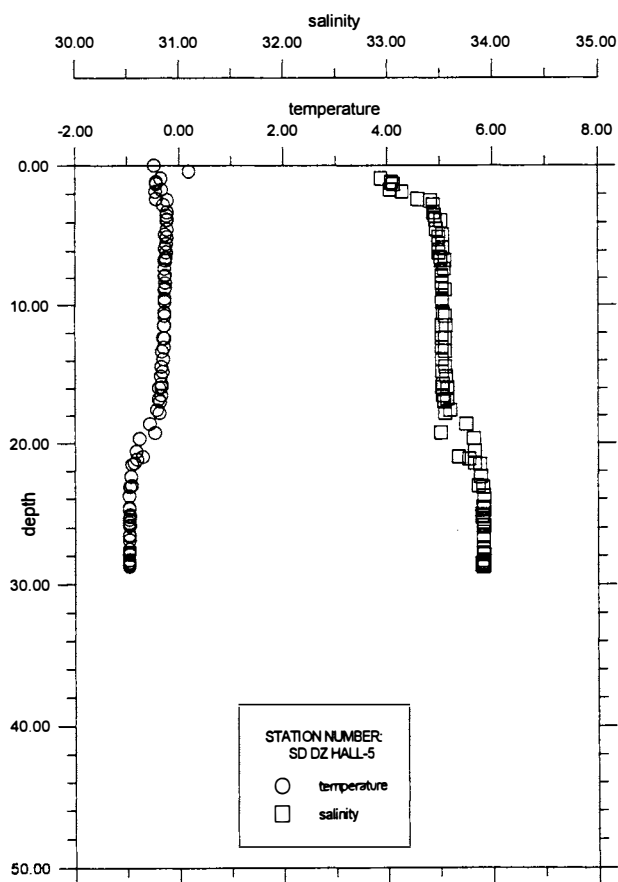
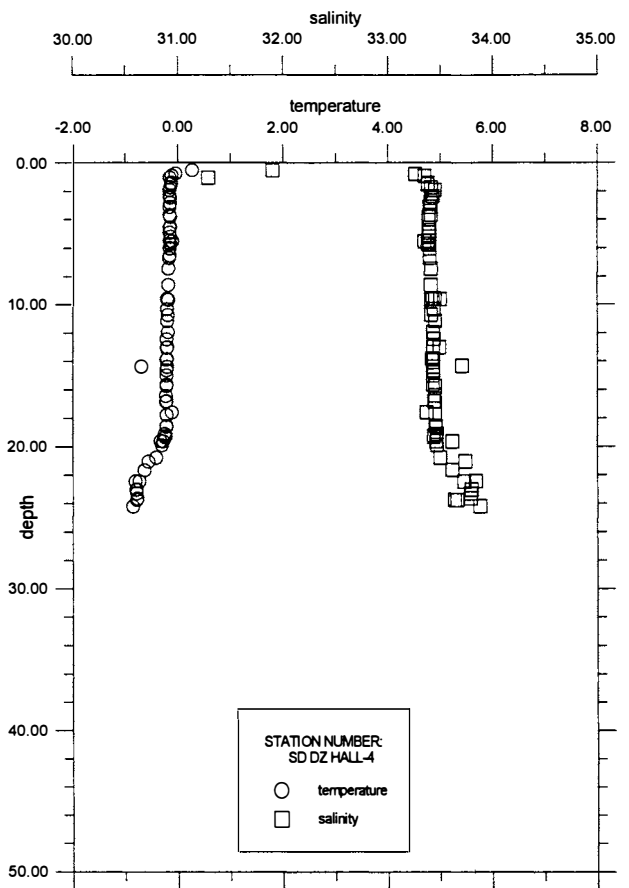
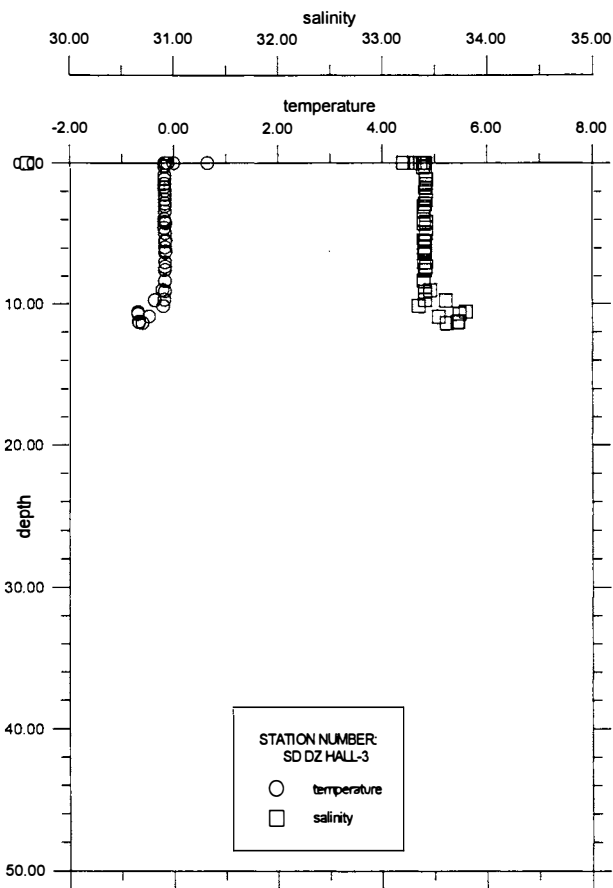


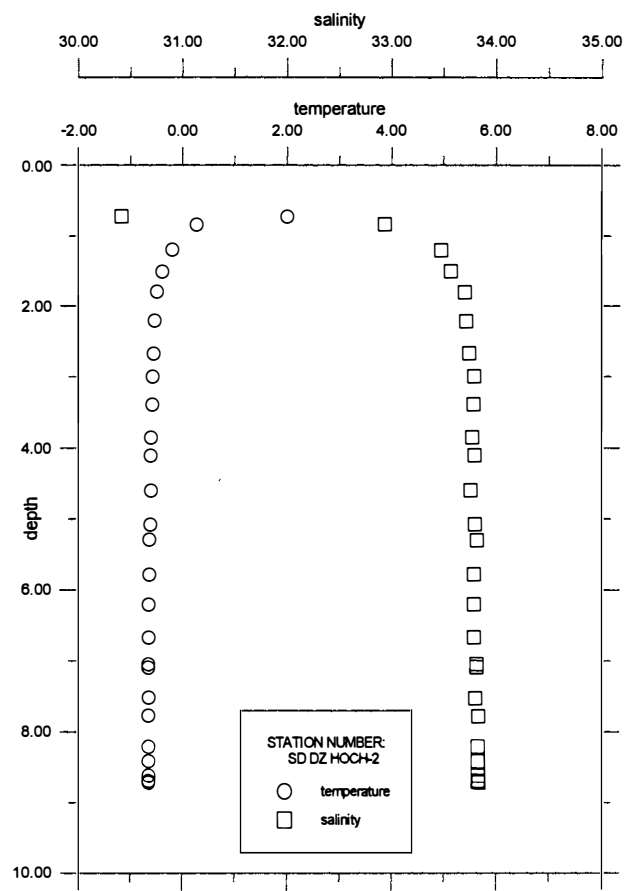
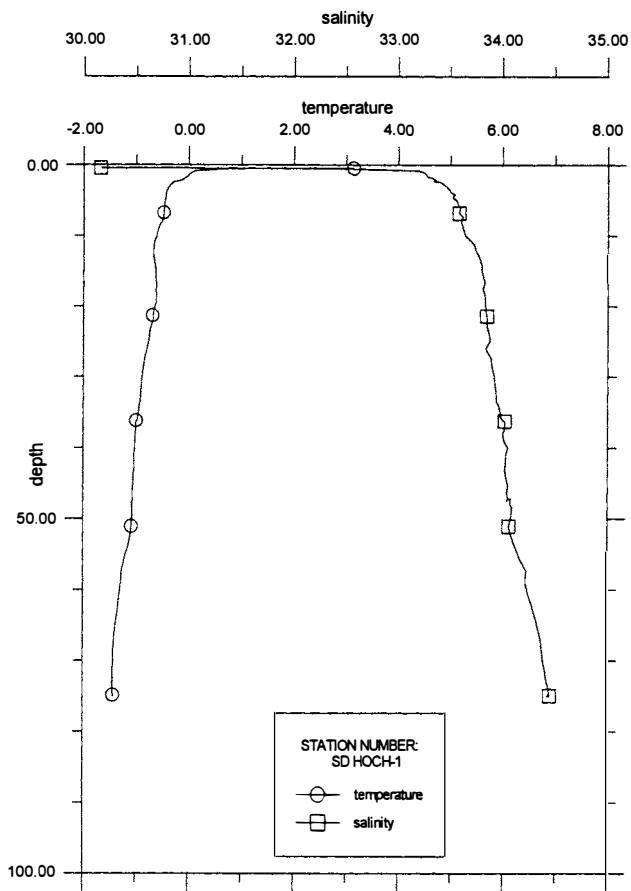












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