

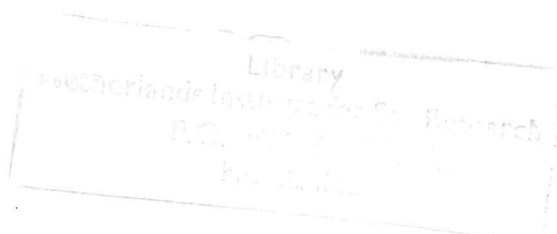
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**R.V. TYRO HYDROGRAPHIC DATA FROM THE
GOLFE DU LION (CRUISE 87/5)
a data report**

H.M. van Aken

This study is part of the Dutch contribution to the
EROS-2000 programme



NETHERLANDS INSTITUTE FOR SEA RESEARCH

Abstract

169 profiles of temperature, salinity, oxygen concentration and light attenuation were taken at 157 stations in the Golfe du Lion (NW-Mediterranean) in July 1987. These profiles have been processed, calibrated and corrected for sensor mismatches. A data set with filtered 5 dbar values has been generated. The distribution of these data is presented graphically in the form of horizontal and vertical sections as well as potential temperature-salinity diagrams. Copies of these data are available on request.

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Introduction

The EROS-2000 (European River Ocean System) is an internationally coordinated interdisciplinary research programme on biogeochemical interactions affecting pollutants and nutrients transfer in European coastal waters and their atmospheric and climatic implications. This programme has been proposed by 29 institutions in 11 EC-countries.

In July 1987 R.V. Tyro carried out a survey in the Golfe du Lion (NW-Mediterranean) where water from the river Rhone enters the oceanic environment. During this survey 169 hydrographic profiles were obtained by means of a Neil Brown Instrument Systems (NBIS) Mk III CTD-system. The parameters obtained were temperature, salinity, oxygen concentration and the light attenuation coefficient at 660 nm.

This data report presents graphic representations of the observed parameters. This is done in the form of distribution maps of the surface temperature, salinity and attenuation coefficients, of potential temperature-salinity diagrams and of vertical sections of potential temperature, salinity, potential density excess, attenuation coefficients and oxygen concentrations, all determined from the parameters recorded by the CTD system.

Cruise area and stations

Fig. 1 shows the overall research area with some isobaths. The area consisted of a shallow shelf region in the northwestern part, a continental slope and the deep Algero Provençal Basin in the southeastern part. A list of the hydrographic stations is given in table 1 and the distribution of these stations is shown in fig. 2. In fig. 3 the stations are shown where boxcores have been taken for geochemical purposes. Fig. 4 shows the anchor stations where incubation experiments have been carried out for the determination of primary production.

Data processing

The CTD-data have been recorded every 0.5 dbar. Since the data quality was good these data have been edited by hand in order to remove spikes. Hereafter the data have been reduced to 5 dbar values by applying a 2 x 5 dbar Barlett filter. The reduced data have been corrected for the calibration determined from reversing thermometers and water samples. The salinity has been determined from these reduced temperature and conductivity values. Since absolutely pure water was not available to calibrate the transmissometer, the attenuation coefficients still contain an unknown additional constant. Finally the salinity was corrected to compensate for the mismatch of the time constants of the conductivity and temperature sensors. This last correction however is negligible outside the seasonal thermocline. The accuracy of the temperature obtained in this way is estimated to be

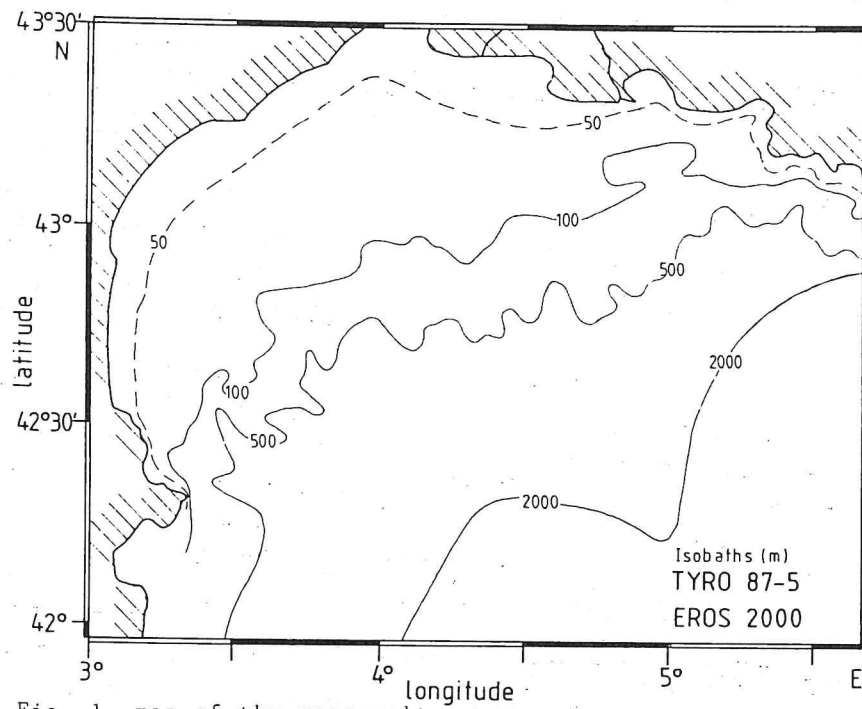


Fig. 1 map of the research area.

0.04°C while the accuracy of the salinity is estimated to be 0.004 psu. The accuracy of the oxygen concentration, determined from the CTD-mounted sensors appears to be 2.5 $\mu\text{mol}/\text{dm}^3$ or better, that is 1.2% of the typical values observed in the Golfe du Lion.

By selection of values at standard pressures a second sub-set of the data has been generated.

Data presentation

The data are presented graphically in the form of sections. The horizontal distribution of the surface parameters is given as horizontal sections at 5 dbar of temperature, salinity and attenuation coefficient. It is however noted that in the river plume ($S(5 \text{ dbar}) < 36$) even the uppermost 5 dbar occasionally showed vertical gradients, which unfortunately were strongly disturbed by the ship's influence.

The vertical distribution of the hydrographic parameters is presented graphically as vertical sections of potential temperature, salinity, potential density excess, attenuation coefficient and oxygen concentration. These sections are preceded by a map showing the position of the section and one or two potential temperature-salinity diagrams of the CTD-stations on that section.

Data availability

The data, presented in this report are available on request. They may be supplied in the form of listings of the data at standard pressures or as ASCII copies of the listings of the full data set or of the data at standard pressures on 9-track tape.

Aknowledgements

The research reported here has been supported by the Netherlands Council for Oceanic Research (NRZ).

Table 1

List of recorded hydrographic profiles

headers: DAY	Julian day, 1 January 1987 = DAY 1
TIME	time in UTC, hh.mm, hh = hours, mm = minutes
STAT	station number
CAS	cast number at station
LATITUDE	geographical latitude, dd:mm.mH, dd = degrees, mm.m = decimal degrees H = hemisphere
LONGITUDE	geographical longitude, ddd:mm.mH, ddd = degrees, mm.m = decimal minutes, H = hemisphere
DEPTH	local waterdepth according to echosounder uncorrected
REMARKS	remarks on other activities

DAY	TIME	STAT	CAS	LATITUDE	LONGITUDE	DEPTH	REMARKS
===	=====	=====	===	=====	=====	=====	=====
182	14.41	1	1	43:02.1N	5:07.5E	303	
182	15.40	2	1	43:03.8N	5:04.8E	134	
182	16.24	3	1	43:05.8N	5:02.4E	109	
182	17.04	4	1	43:07.6N	4:59.9E	109	
182	17.44	5	1	43:07.6N	4:56.3E	109	
182	19.11	6	1	43:07.3N	4:52.1E	104	
182	20.10	7	1	43:06.9N	4:48.3E	102	
182	20.56	8	1	43:07.4N	4:44.4E	92	
182	21.34	9	1	43:07.5N	4:40.3E	84	
182	22.11	10	1	43:07.6N	4:36.8E	80	
182	22.50	11	1	43:07.7N	4:32.6E	79	
182	23.23	12	1	43:07.6N	4:28.7E	76	
182	23.59	13	1	43:08.9N	4:26.8E	74	
183	.26	14	1	43:10.6N	4:24.9E	74	
183	.56	15	1	43:12.4N	4:22.9E	74	
183	1.27	16	1	43:14.1N	4:20.6E	70	
183	1.56	17	1	43:11.8N	4:20.5E	84	
183	2.59	19	1	43:07.2N	4:20.6E	89	
183	3.27	20	1	43:04.8N	4:20.5E	89	
183	4.04	21	1	43:02.2N	4:20.4E	94	
183	4.50	22	1	43:02.2N	4:24.6E	99	
183	5.28	23	1	43:02.3N	4:27.9E	109	
183	6.15	24	1	43:02.2N	4:32.3E	110	
183	8.33	25	1	43:02.3N	4:35.9E	99	box core
183	9.59	26	1	43:02.2N	4:39.9E	96	
183	11.36	27	1	43:02.2N	4:43.9E	100	
183	12.10	28	1	43:02.2N	4:47.5E	104	
183	12.45	29	1	43:02.2N	4:51.4E	115	
183	13.20	30	1	43:02.2N	4:55.4E	114	
183	13.57	31	1	43:02.2N	4:59.3E	124	
183	14.33	32	1	43:02.2N	5:03.5E	204	
183	15.24	33	1	42:58.0N	4:59.4E	288	
183	16.04	34	1	42:58.0N	4:55.7E	388	
183	16.53	35	1	42:58.0N	4:51.4E	136	
183	17.30	36	1	42:58.0N	4:47.6E	373	
183	18.15	37	1	42:57.9N	4:43.9E	130	
183	18.52	38	1	42:57.9N	4:40.0E	124	
183	19.30	39	1	42:58.1N	4:35.7E	126	
183	20.07	40	1	42:58.0N	4:32.3E	124	
183	20.50	41	1	42:58.0N	4:28.1E	343	
183	21.34	42	1	42:58.0N	4:24.6E	114	
183	22.09	43	1	42:57.9N	4:20.5E	96	
184	8.34	44	1	43:01.9N	5:07.0E	452	box core
184	9.30	45	1	43:00.0N	5:04.9E	734	
184	11.30	46	1	43:00.0N	4:47.9E	119	
184	12.28	47	1	43:06.9N	4:48.0E	98	
184	13.39	48	1	43:07.0N	4:34.0E	79	
184	14.36	49	1	43:00.0N	4:34.0E	124	
184	16.00	50	1	43:00.0N	4:20.0E	92	
184	17.05	51	1	42:53.0N	4:20.0E	241	
184	17.47	52	1	42:52.9N	4:25.0E	229	
184	20.14	53	1	42:53.0N	4:30.0E	392	
184	21.09	54	1	42:53.0N	4:35.0E	645	
184	22.07	55	1	42:53.0N	4:39.9E	129	
185	7.09	56	1	43:14.2N	4:20.4E	70	box core
185	10.28	56	2	43:14.2N	4:20.4E	70	at anchor
185	12.20	56	3	43:14.2N	4:20.4E	70	at anchor

DAY	TIME	STAT	CAS	LATITUDE	LONGITUDE	DEPTH	REMARKS
===	=====	=====	===	=====	=====	=====	=====
186	7.07	57	1	43:09.3N	4:42.2E	84	box core
186	10.27	57	2	43:09.3N	4:42.2E	84	at anchor
186	12.10	57	3	43:09.3N	4:42.2E	84	box core
186	16.03	57	4	43:09.3N	4:42.2E	84	at anchor
186	23.52	58	1	42:56.1N	5:36.8E	897	
187	.48	59	1	42:53.6N	5:36.9E	1999	
187	2.15	60	1	42:50.9N	5:36.9E	2178	
187	4.54	61	1	42:45.8N	5:36.8E	2246	box core
187	10.45	62	1	42:41.0N	5:37.0E	2196	
187	12.31	63	1	42:35.9N	5:36.9E	2305	
187	14.04	64	1	42:30.9N	5:36.9E	2352	
187	16.09	65	1	42:25.6N	5:36.9E	2389	
187	18.14	66	1	42:21.0N	5:36.7E	2384	
187	20.08	67	1	42:16.0N	5:36.7E	2394	
187	21.53	68	1	42:16.1N	5:29.9E	2359	
187	23.40	69	1	42:16.2N	5:23.3E	2320	
188	1.16	70	1	42:15.9N	5:16.3E	2290	
188	3.00	71	1	42:16.1N	5:09.3E	2159	
188	5.00	72	1	42:16.0N	5:02.7E	2012	box core
188	9.56	73	1	42:16.0N	4:56.0E	1897	
188	11.32	74	1	42:16.0N	4:49.2E	2029	
188	12.58	75	1	42:16.0N	4:42.1E	2053	
188	14.24	76	1	42:16.0N	4:35.4E	2039	
188	16.05	77	1	42:16.0N	4:28.6E	2128	
188	18.00	78	1	42:15.9N	4:21.8E	2084	
188	19.58	79	1	42:16.0N	4:15.0E	1810	
188	21.34	80	1	42:16.0N	4:08.1E	1621	
188	22.53	81	1	42:16.0N	4:01.5E	1541	
189	.12	82	1	42:15.9N	3:54.7E	1294	
189	1.31	83	1	42:16.0N	3:47.7E	977	
189	2.32	84	1	42:15.8N	3:40.6E	1156	
189	5.33	85	1	42:16.0N	3:34.0E	298	box core
189	9.13	86	1	42:15.9N	3:27.2E	119	
189	10.07	87	1	42:15.8N	3:20.8E	89	
189	10.54	88	1	42:13.1N	3:24.1E	114	
189	11.47	89	1	42:10.3N	3:28.1E	144	box core
189	13.40	90	1	42:07.3N	3:32.6E	308	
189	14.27	91	1	42:04.0N	3:36.0E	482	
189	15.14	92	1	42:01.7N	3:39.6E	715	
189	16.41	93	1	41:58.7N	3:43.4E	1106	
189	6.04	94	1	42:11.7N	3:09.2E	25	box core
190	10.40	94	2	42:11.7N	3:09.2E	25	at anchor
190	12.14	94	3	42:11.7N	3:09.2E	25	at anchor
191	6.09	95	1	43:01.3N	3:23.3E	67	box core
191	10.42	95	2	43:01.3N	3:23.3E	67	at anchor
191	11.55	95	3	43:01.3N	3:23.3E	67	at anchor
192	5.24	96	1	42:29.9N	4:52.1E	1701	box core
192	8.33	97	1	42:32.0N	4:48.8E	1631	
192	9.40	98	1	42:34.4N	4:45.5E	1551	
192	10.51	99	1	42:36.5N	4:43.2E	1348	
192	11.51	100	1	42:38.7N	4:40.5E	1319	
192	12.50	101	1	42:41.0N	4:37.6E	1239	
192	13.45	102	1	42:43.2N	4:35.0E	601	
192	14.28	103	1	42:45.5N	4:32.2E	576	
192	15.05	104	1	42:47.7N	4:29.5E	428	
192	15.43	105	1	42:50.0N	4:26.7E	179	
192	16.15	106	1	42:52.2N	4:24.0E	124	

DAY	TIME	STAT	CAS	LATITUDE	LONGITUDE	DEPTH	REMARKS
===	=====	=====	===	=====	=====	=====	=====
192	16.58	107	1	42:54.3N	4:21.2E	109	
192	17.21	108	1	42:56.5N	4:18.5E	99	
192	18.03	109	1	42:58.7N	4:15.9E	92	
192	18.37	110	1	43:01.0N	4:13.0E	90	
192	19.09	111	1	43:03.3N	4:10.4E	90	
192	19.43	112	1	43:05.4N	4:07.6E	93	
192	20.23	113	1	43:07.4N	4:05.1E	96	
192	20.58	114	1	43:09.5N	4:02.6E	94	
192	21.31	115	1	43:11.3N	4:00.2E	89	
193	6.05	116	1	43:09.8N	4:29.9E	69	box core
193	10.32	116	2	43:09.8N	4:29.9E	69	at anchor
193	12.05	116	3	43:09.8N	4:29.9E	69	at anchor
193	22.10	117	1	43:04.8N	4:00.0E	95	
193	22.43	118	1	43:02.0N	4:00.0E	93	
193	23.17	119	1	42:58.9N	4:00.0E	92	
193	23.50	120	1	42:56.0N	4:00.0E	91	
194	.24	121	1	42:53.0N	3:59.9E	164	
194	1.00	122	1	42:50.1N	4:00.0E	184	
194	1.36	123	1	42:47.0N	4:00.0E	600	
194	2.19	124	1	42:44.0N	4:00.0E	706	
194	5.46	125	1	42:40.0N	4:00.0E	760	box core
194	8.26	126	1	42:37.0N	4:00.0E	836	
194	9.23	127	1	42:34.0N	4:00.0E	1008	
194	10.20	128	1	42:30.0N	4:00.0E	1056	
194	11.19	129	1	42:33.1N	3:56.9E	720	
194	12.10	130	1	42:36.0N	3:54.0E	571	
194	12.55	131	1	42:39.0N	3:51.0E	376	
194	13.39	132	1	42:42.0N	3:48.0E	244	
194	14.16	133	1	42:45.1N	3:44.9E	148	
194	14.53	134	1	42:48.0N	3:42.0E	132	
194	15.31	135	1	42:51.0N	3:39.0E	96	
194	16.11	136	1	42:54.0N	3:36.0E	94	
194	16.44	137	1	42:57.0N	3:33.0E	90	
194	17.28	138	1	43:00.0N	3:30.0E	86	
194	18.00	139	1	43:01.5N	3:33.0E	84	
194	18.29	140	1	43:03.0N	3:36.0E	86	
194	18.58	141	1	43:04.5N	3:38.9E	87	
194	19.33	142	1	43:06.0N	3:42.1E	87	
194	20.00	143	1	43:07.5N	3:45.0E	89	
194	20.32	144	1	44:09.0N	3:48.0E	94	
194	21.06	145	1	43:10.5N	3:51.0E	94	
194	21.36	146	1	43:12.0N	3:54.1E	92	
194	22.05	147	1	43:13.4N	3:57.1E	90	
194	22.35	148	1	43:14.9N	4:00.0E	85	
194	23.06	149	1	43:14.9N	4:05.1E	85	
194	23.37	150	1	43:15.0N	4:09.9E	80	
195	.13	151	1	43:15.0N	4:15.1E	70	
195	.49	152	1	43:15.0N	4:19.9E	65	
195	6.02	153	1	43:08.6N	4:36.0E	74	box core
195	10.29	153	2	43:08.6N	4:36.0E	74	at anchor
195	12.00	153	3	43:08.6N	4:36.0E	74	at anchor
196	5.31	154	1	42:35.0N	4:24.9E	1477	box core
196	11.17	155	1	42:35.0N	5:00.0E	1782	
196	13.06	156	1	42:35.0N	5:15.0E		
196	14.35	157	1	42:35.0N	5:30.0E		

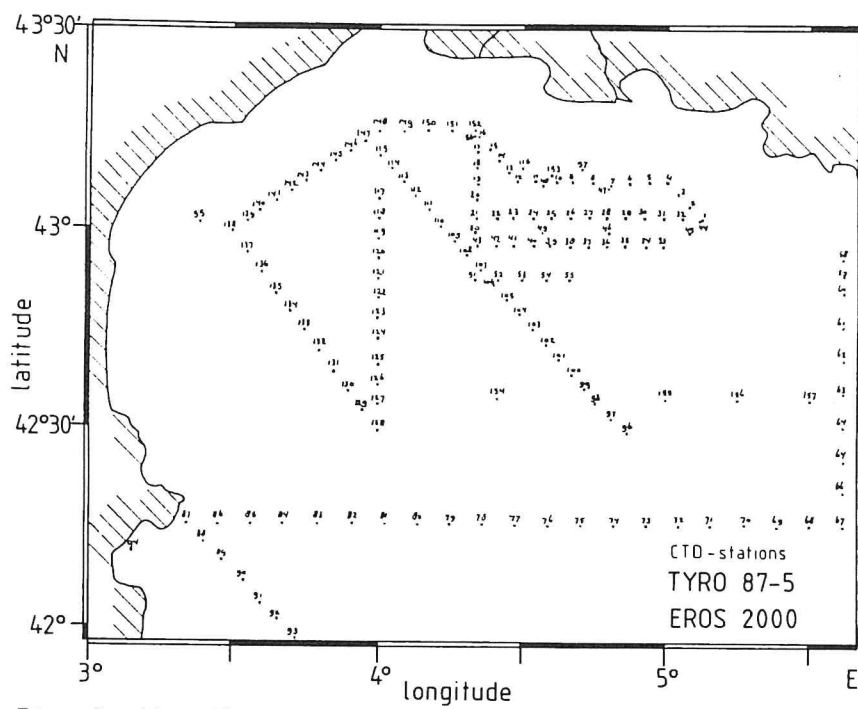
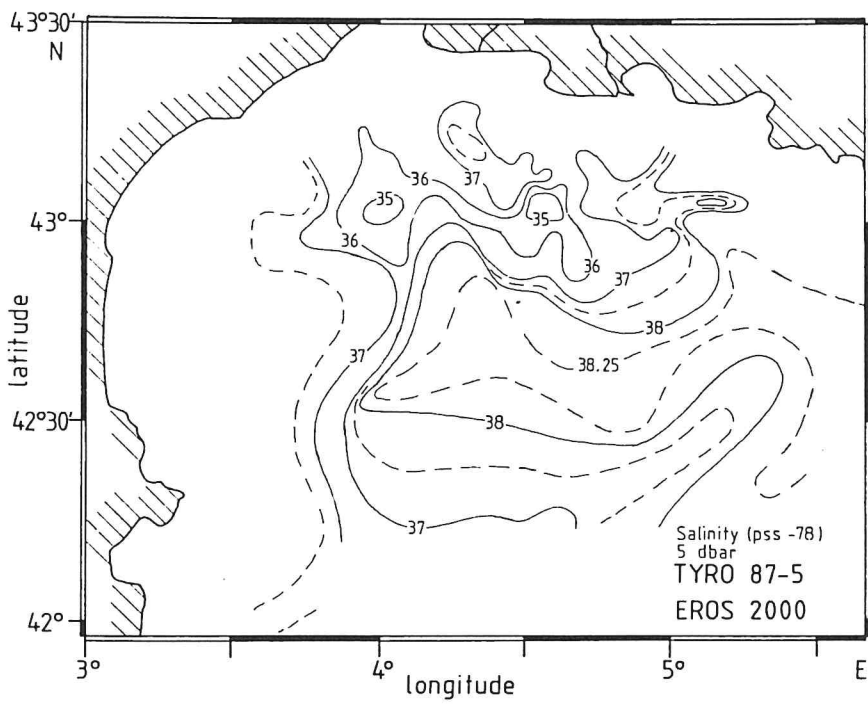
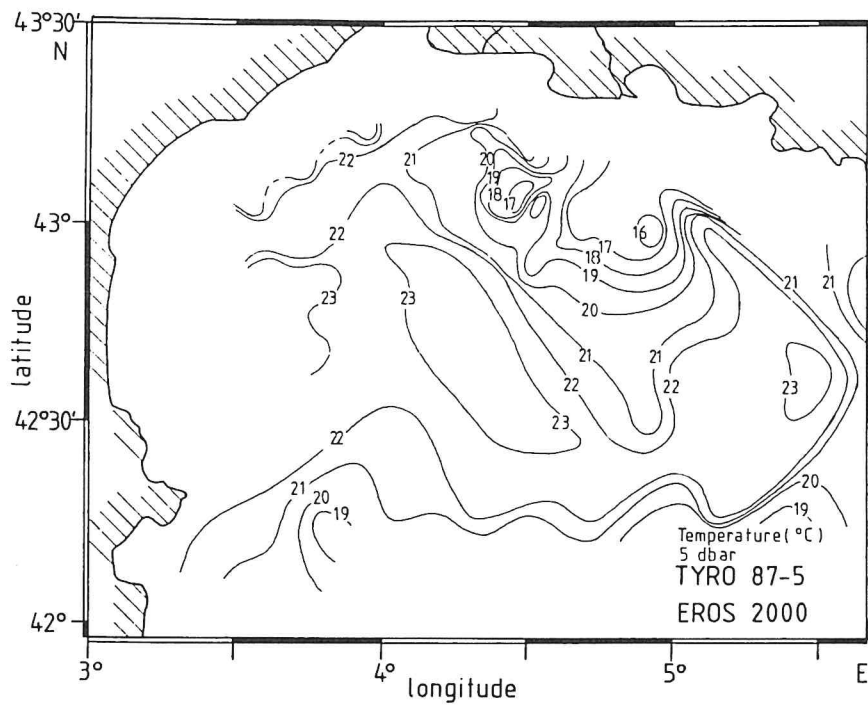
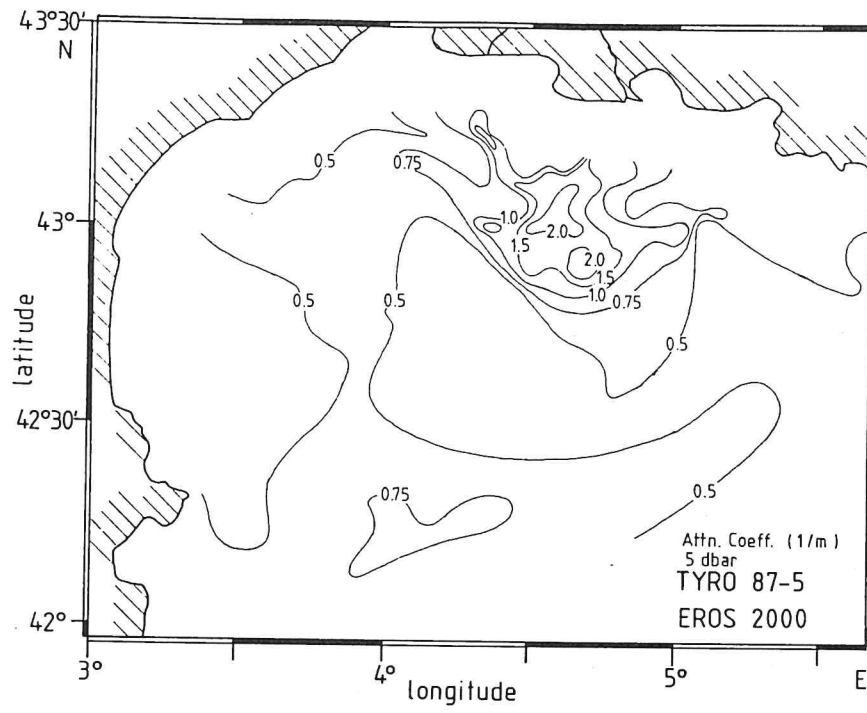


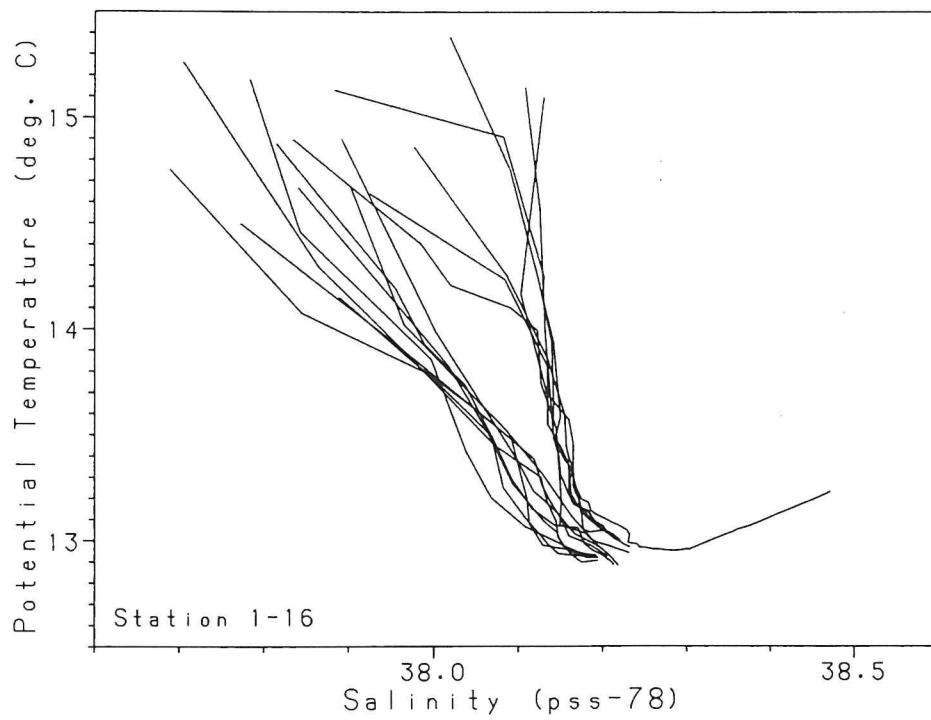
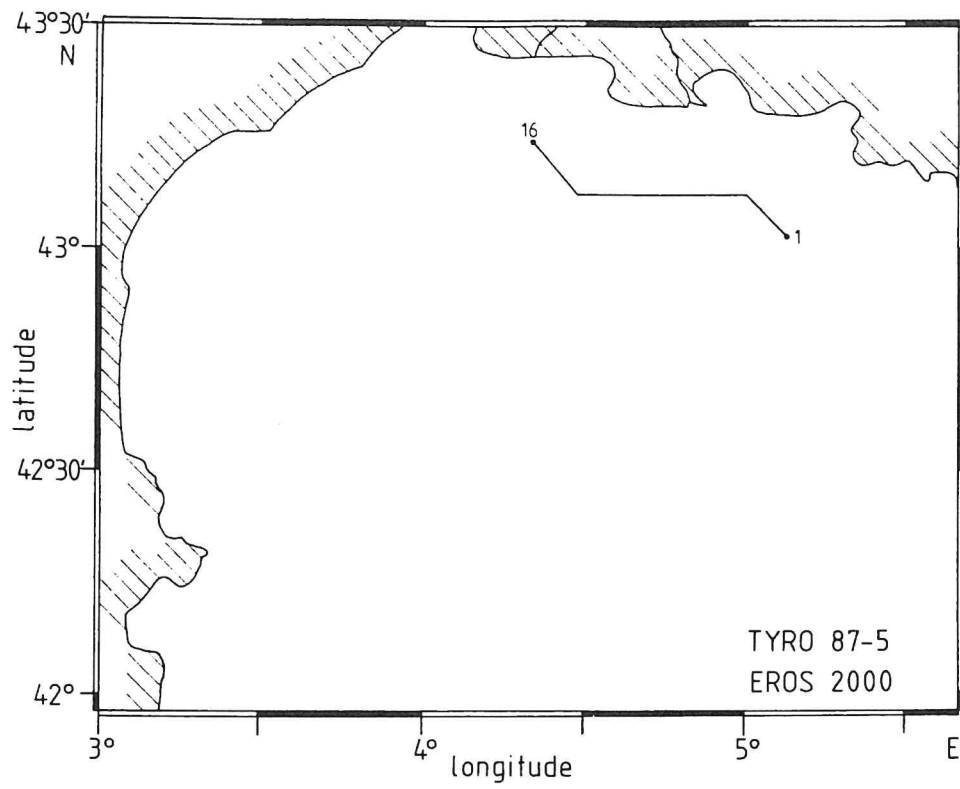
Fig. 2 distribution of the CTD-stations

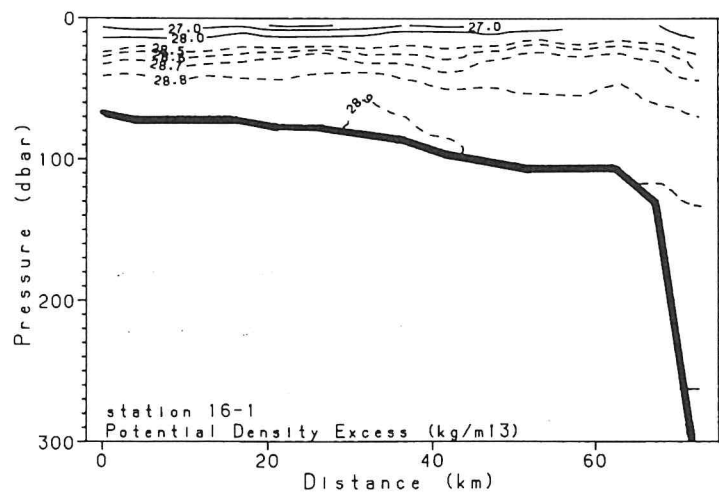
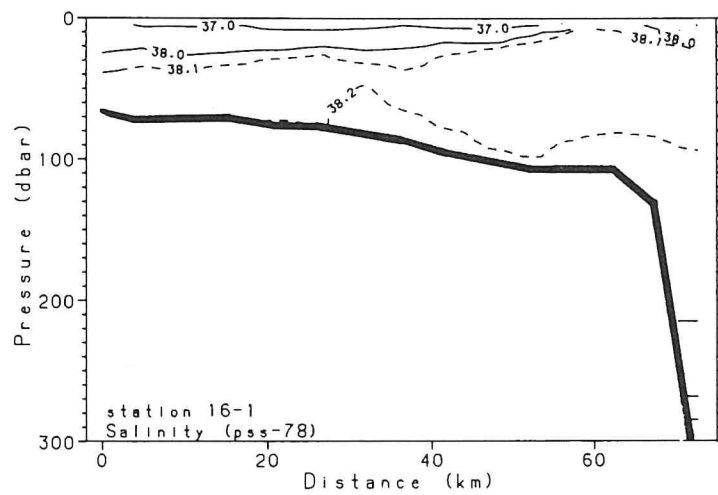
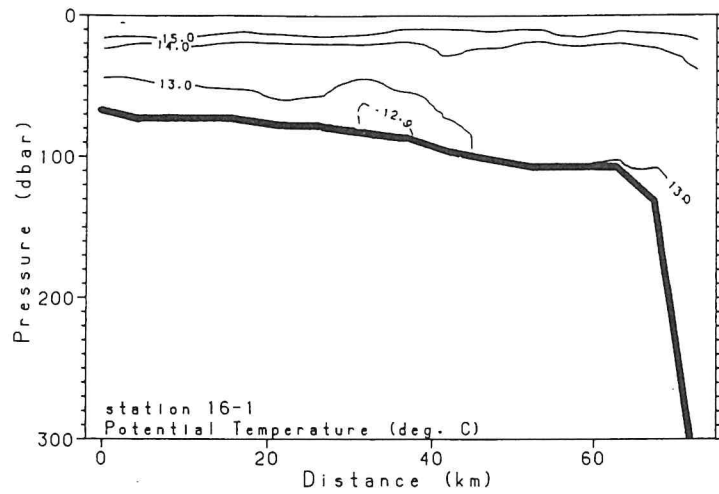
Surface parameters

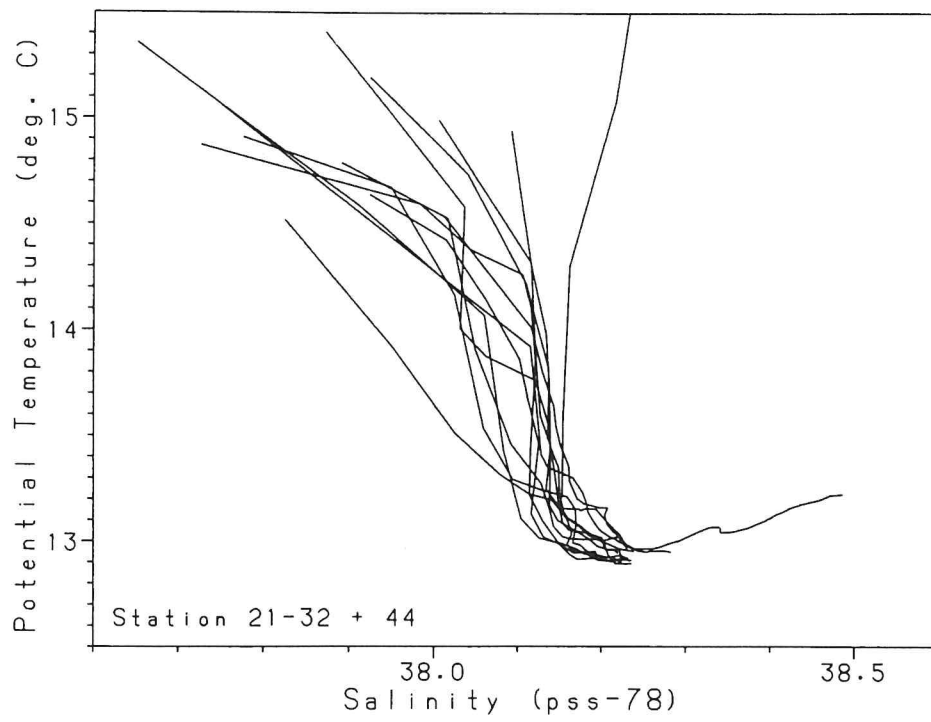
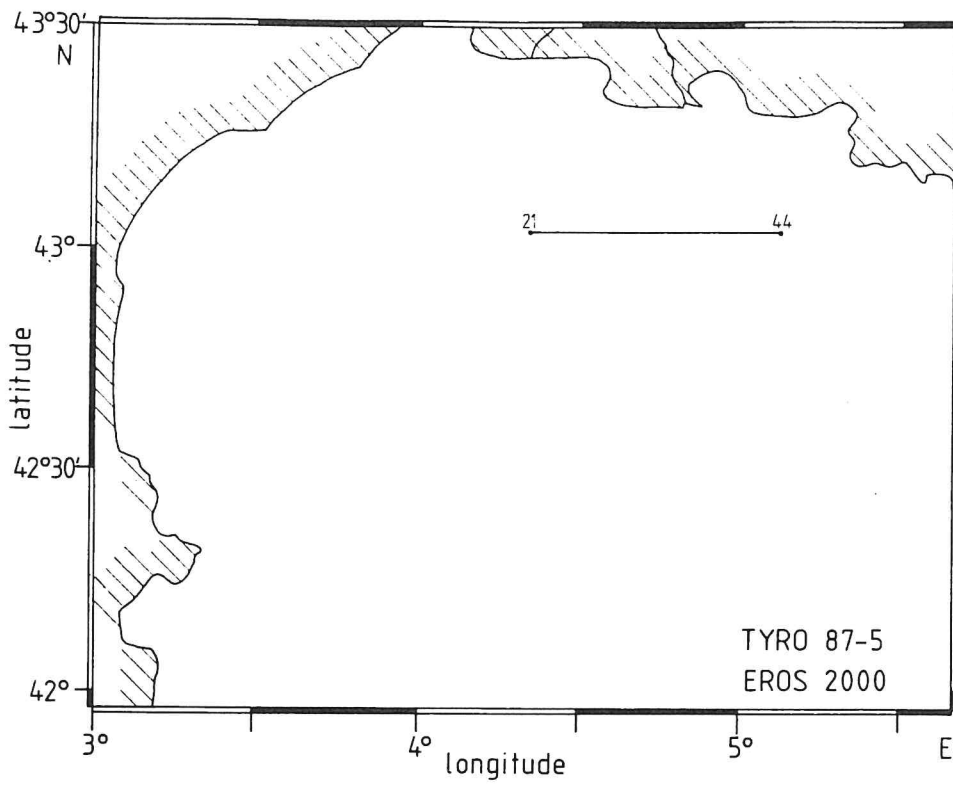


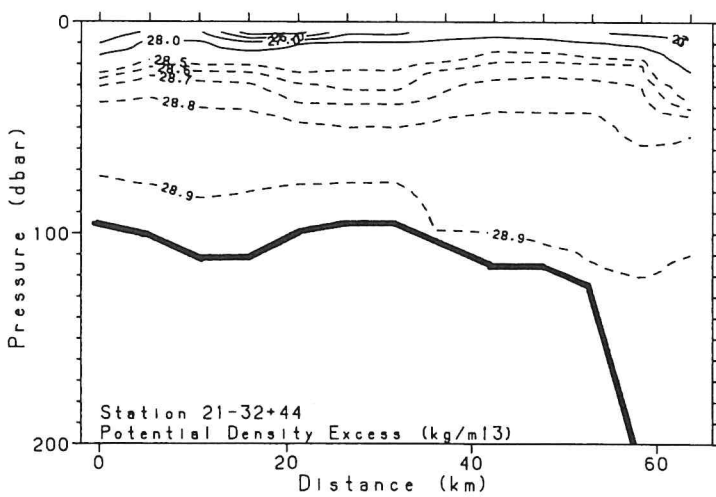
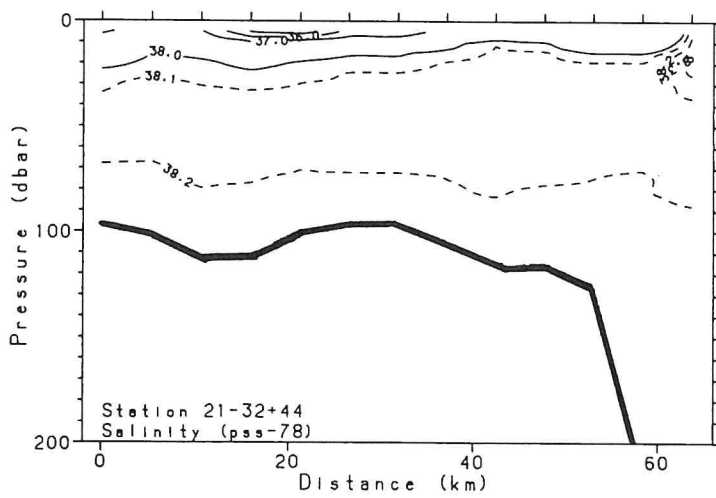
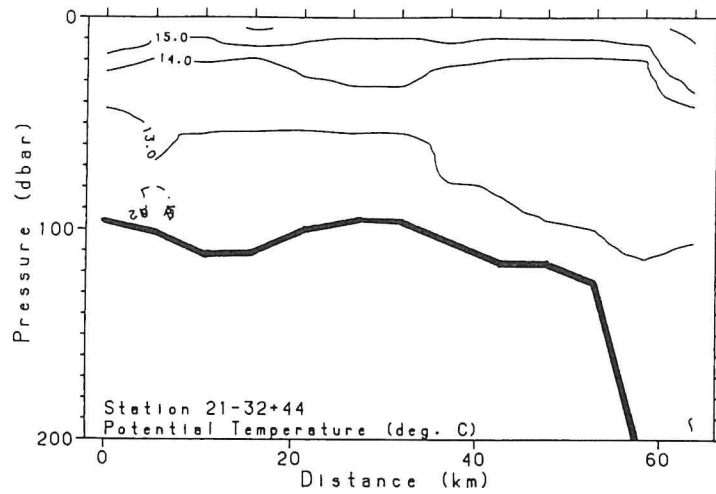


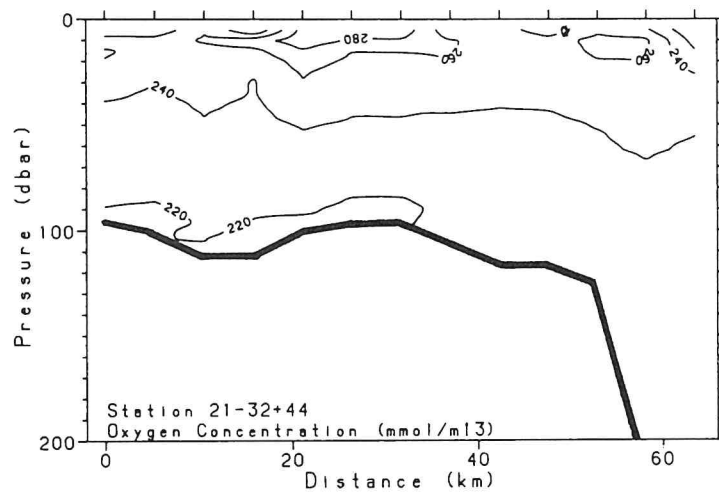
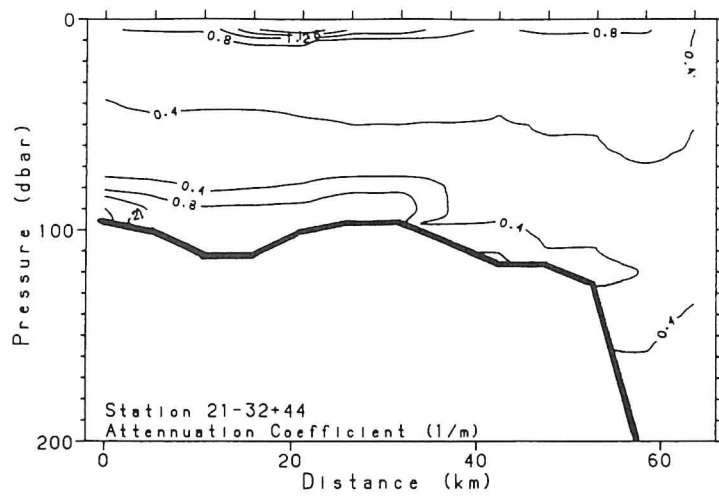
Vertical sections

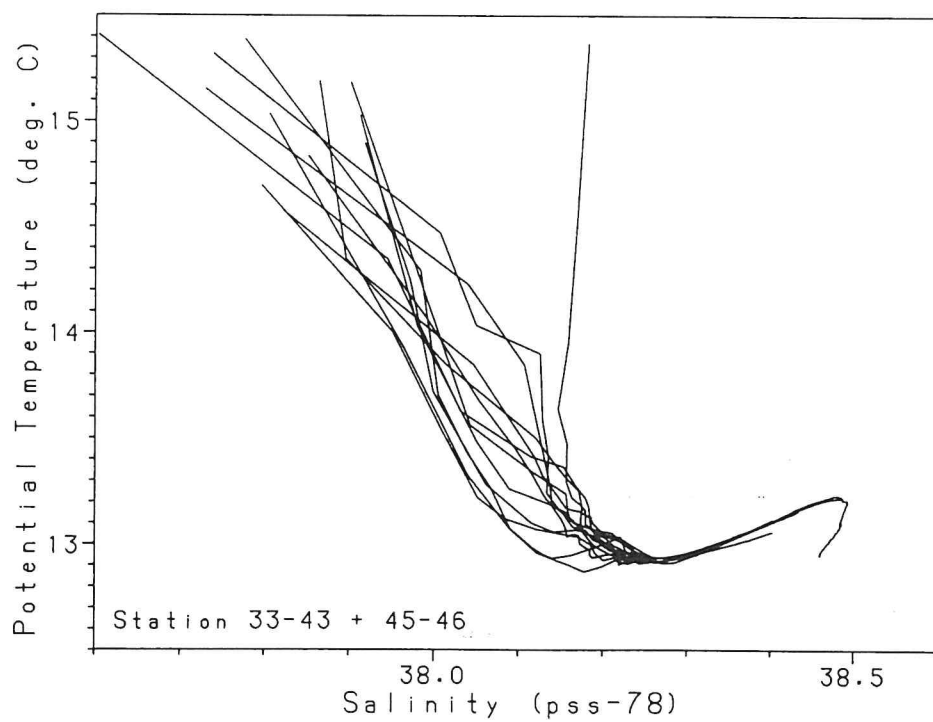
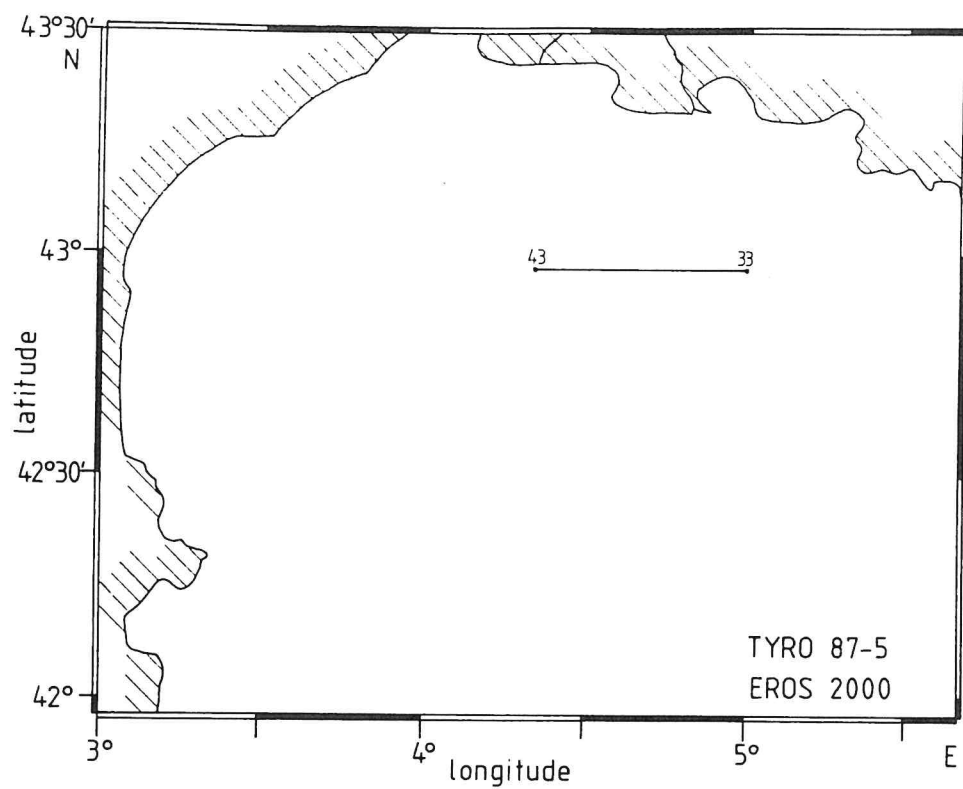


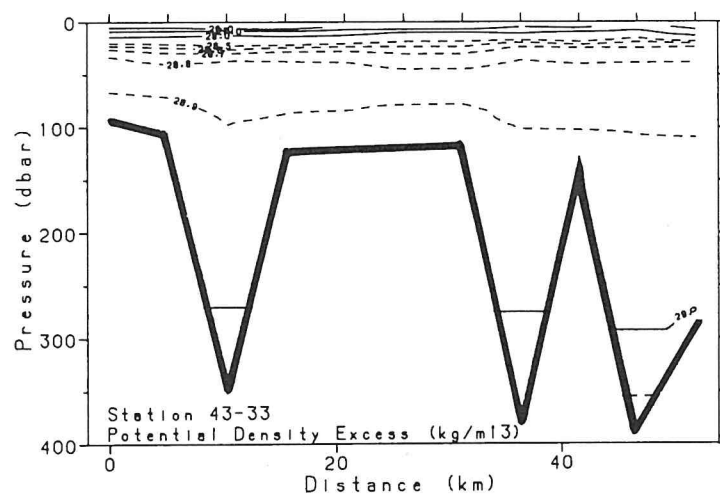
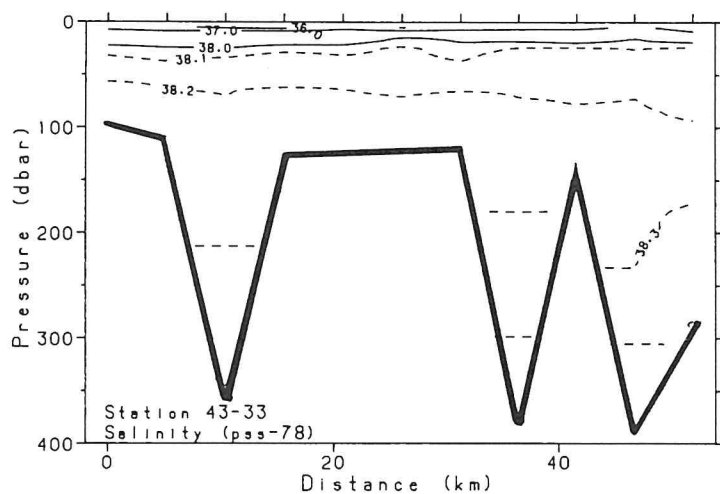
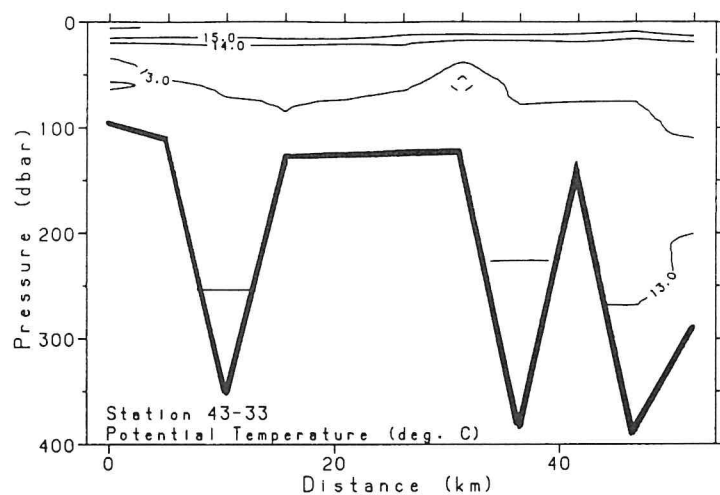


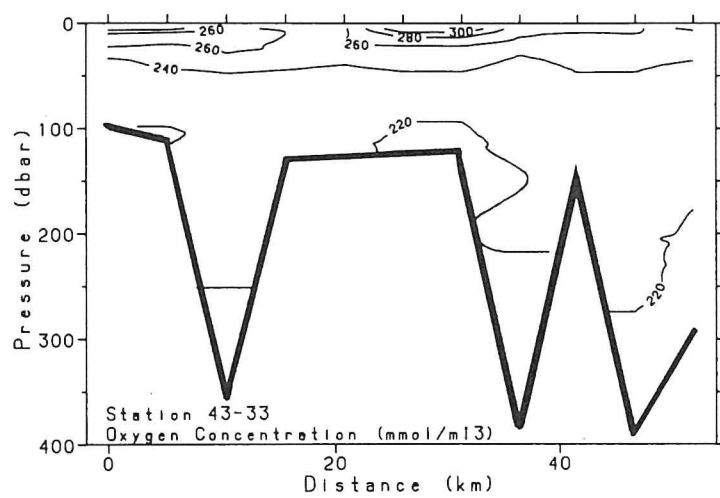
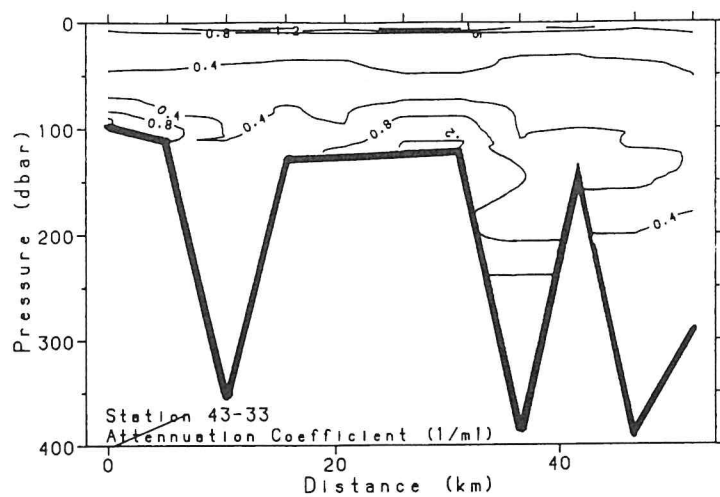


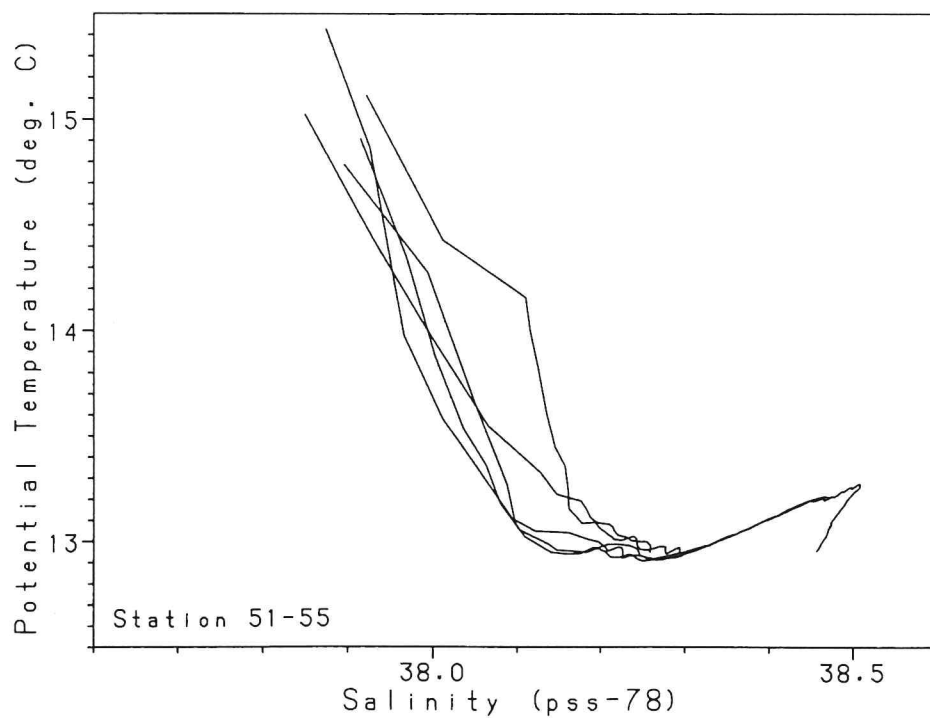
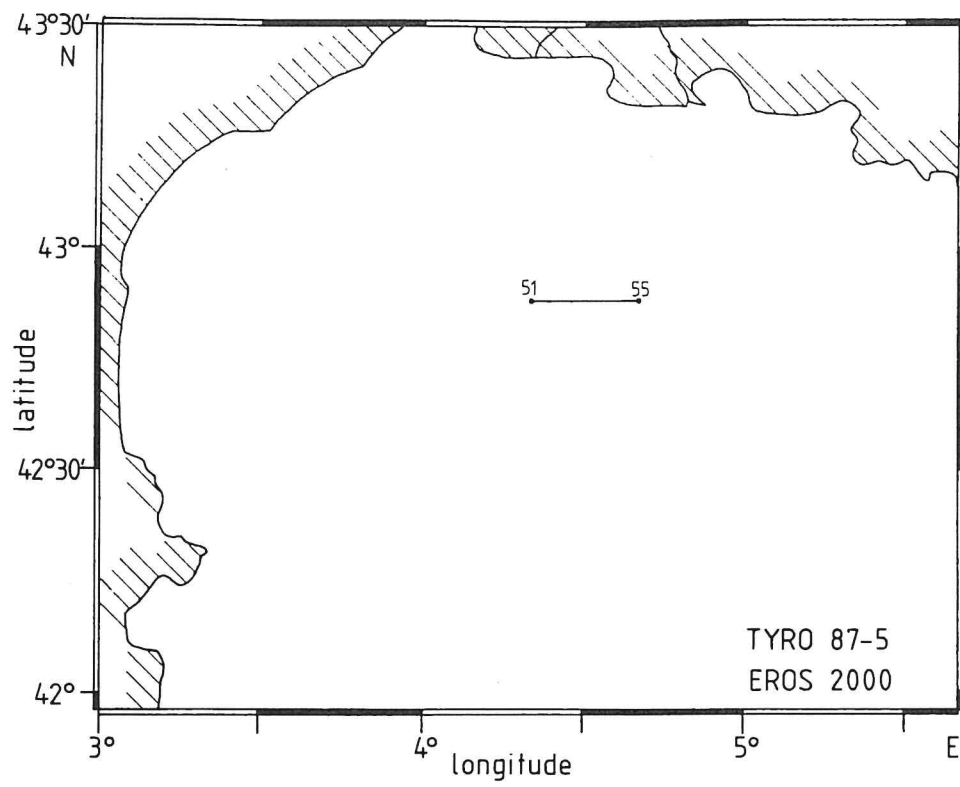


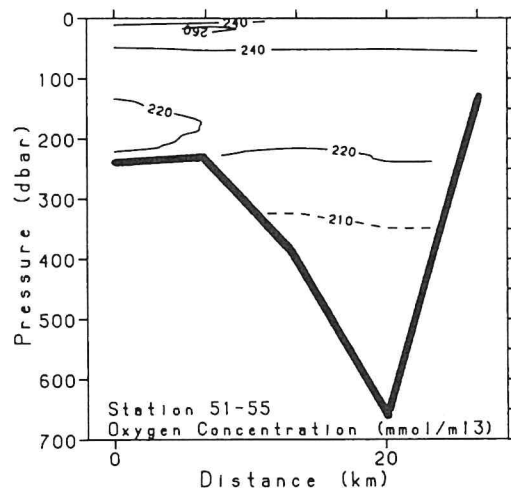
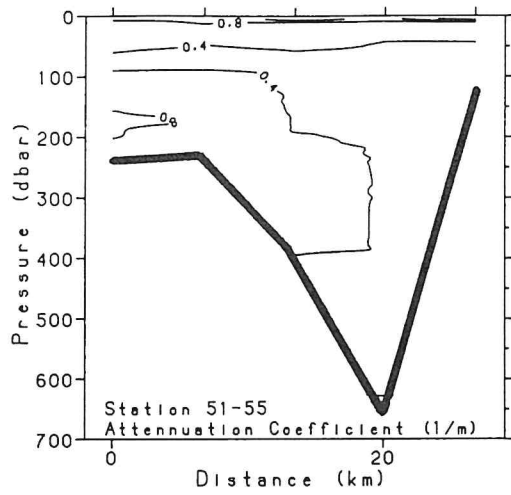


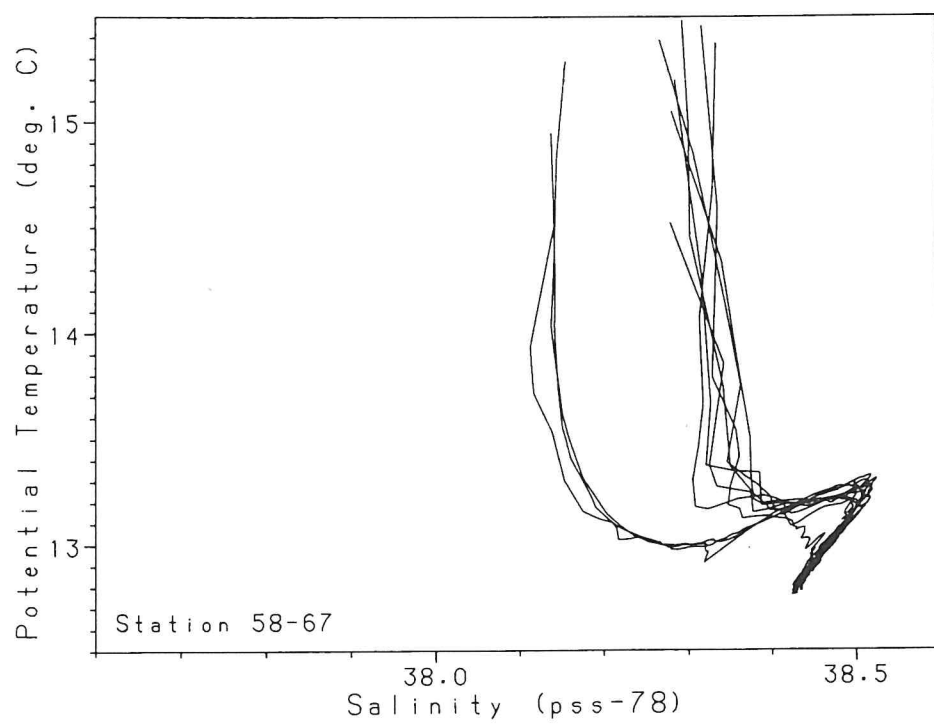
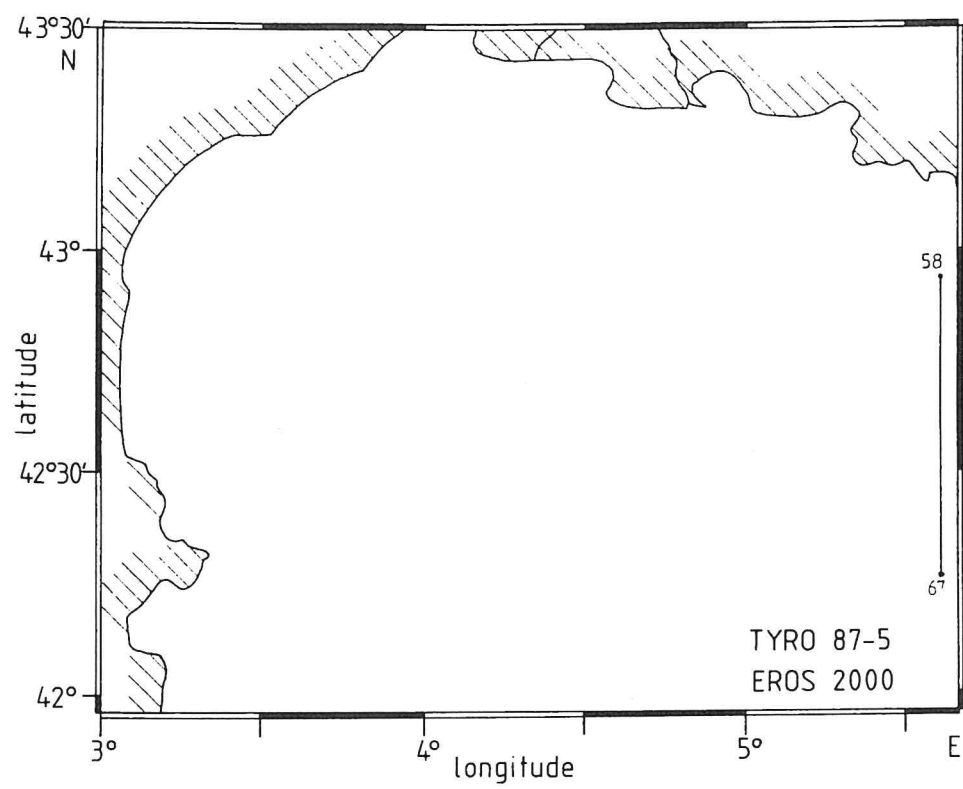


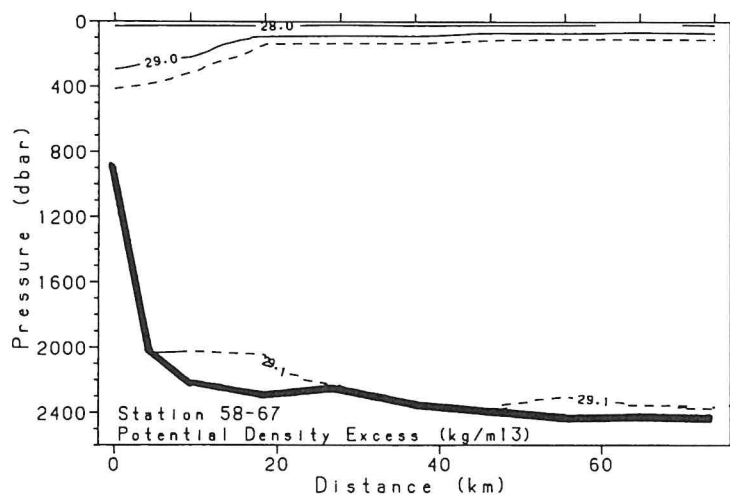
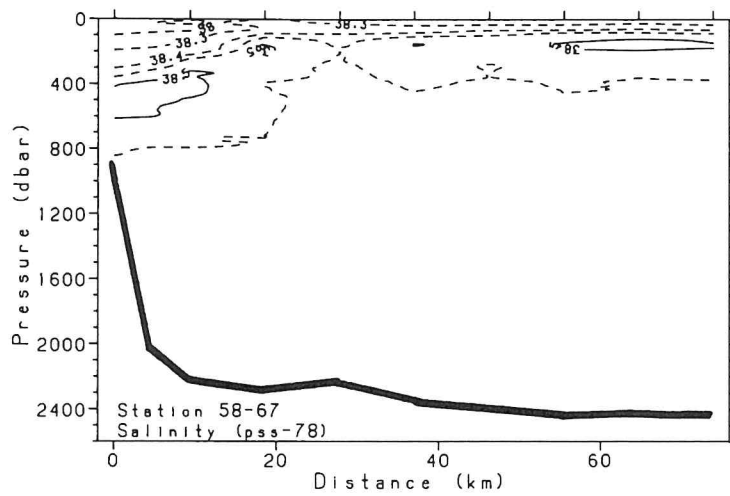
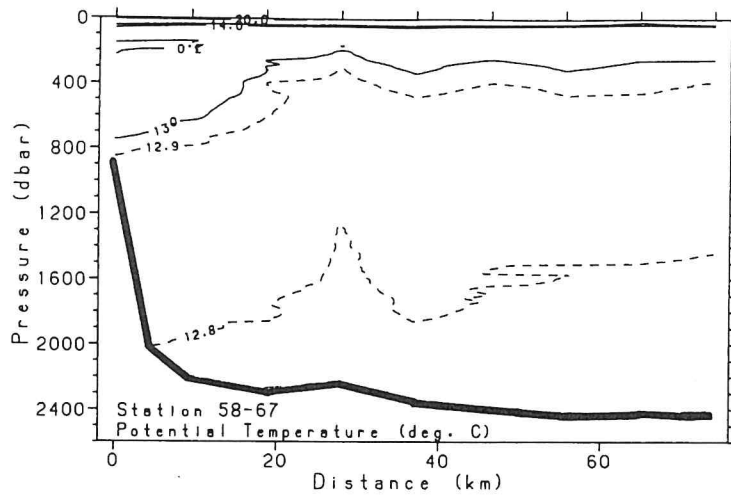


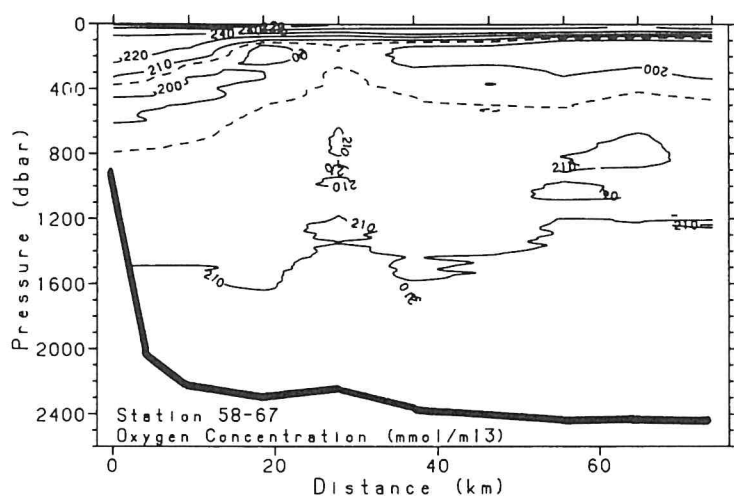
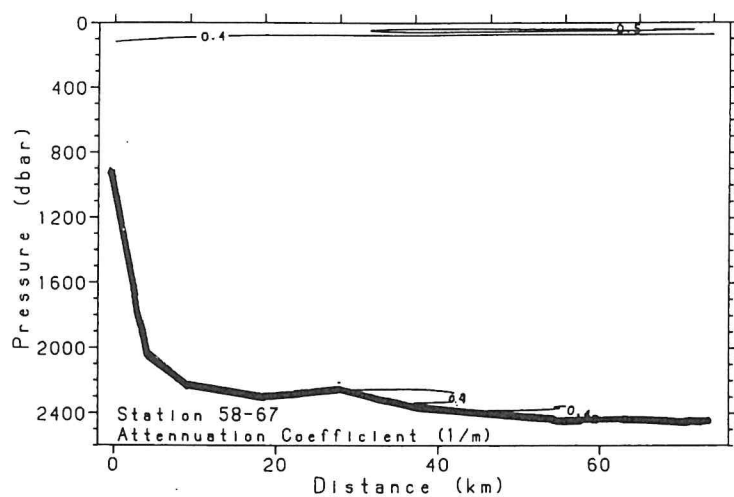


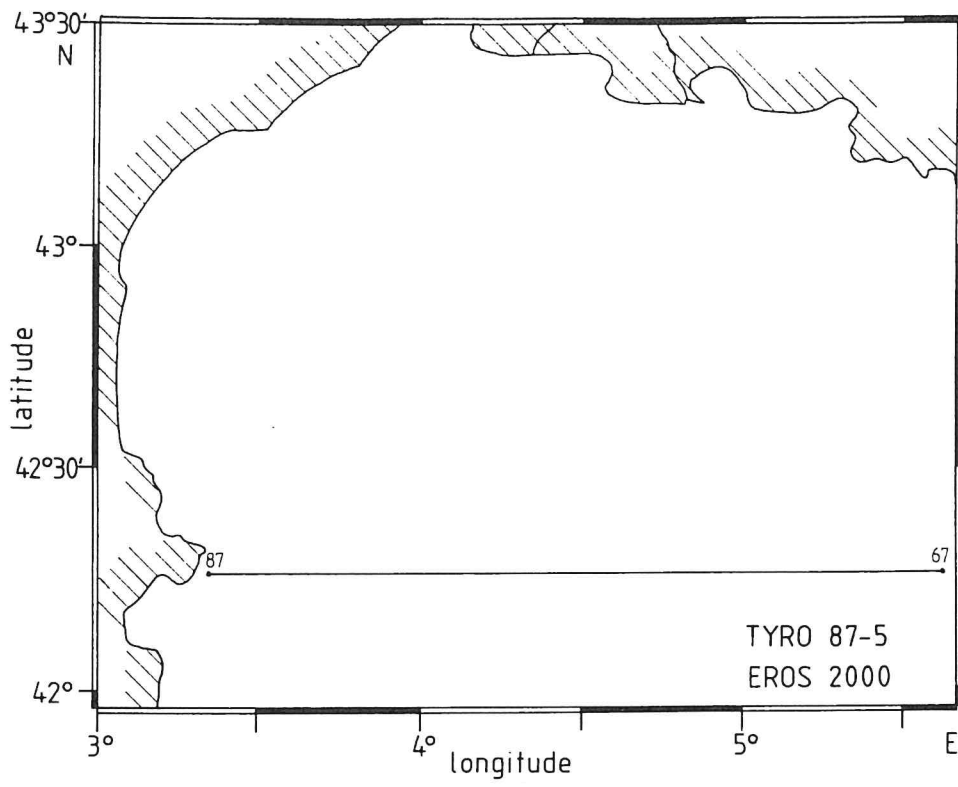


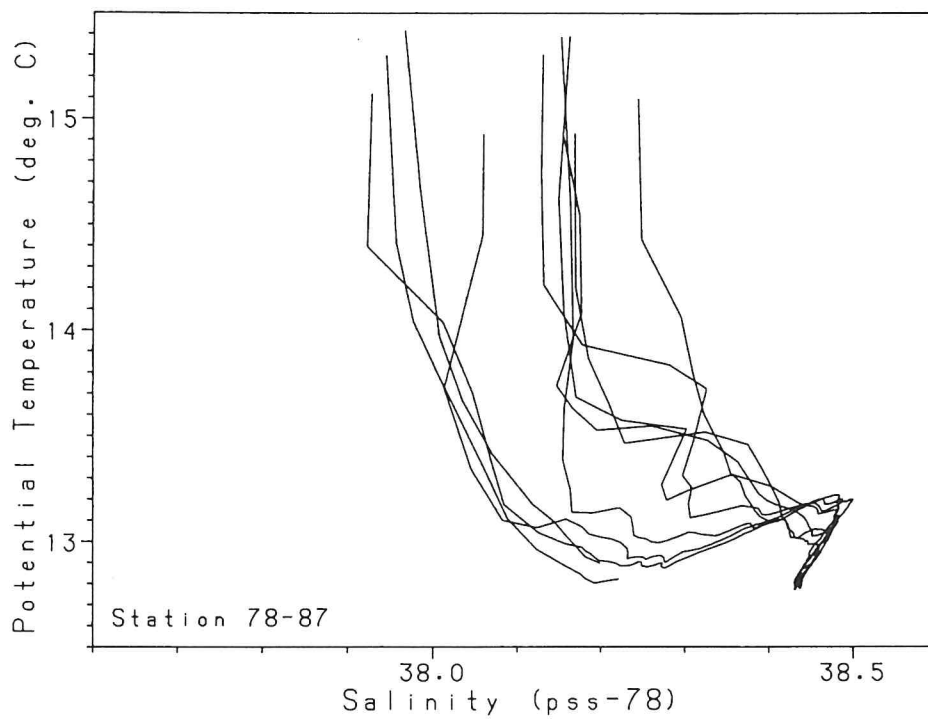
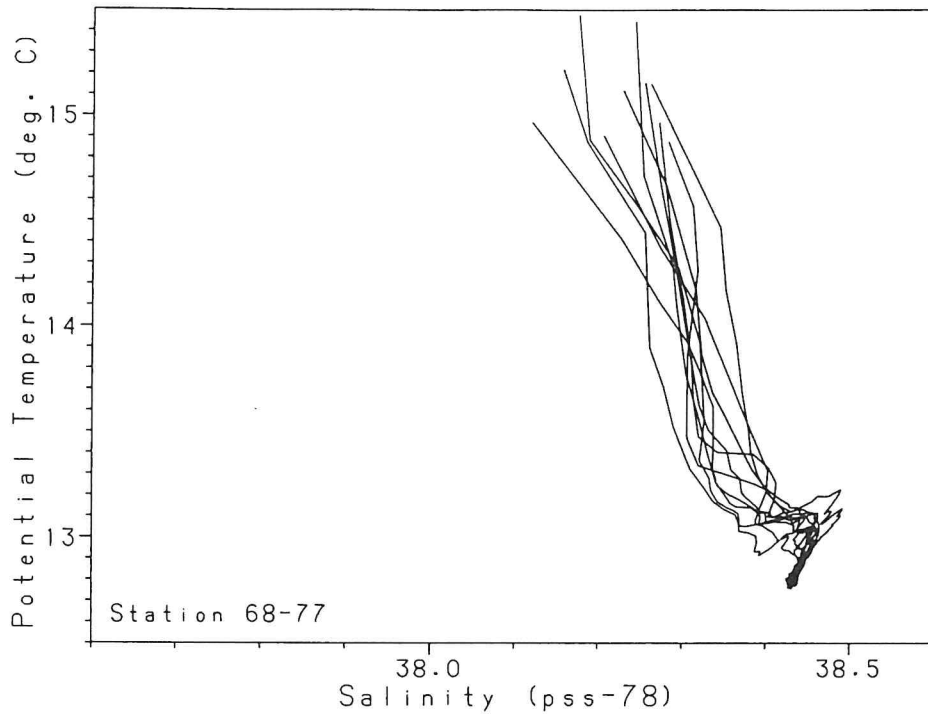


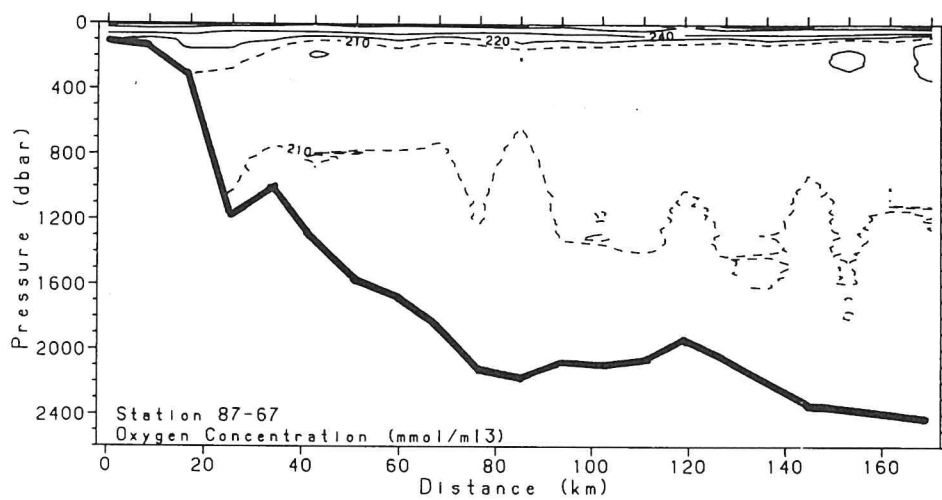
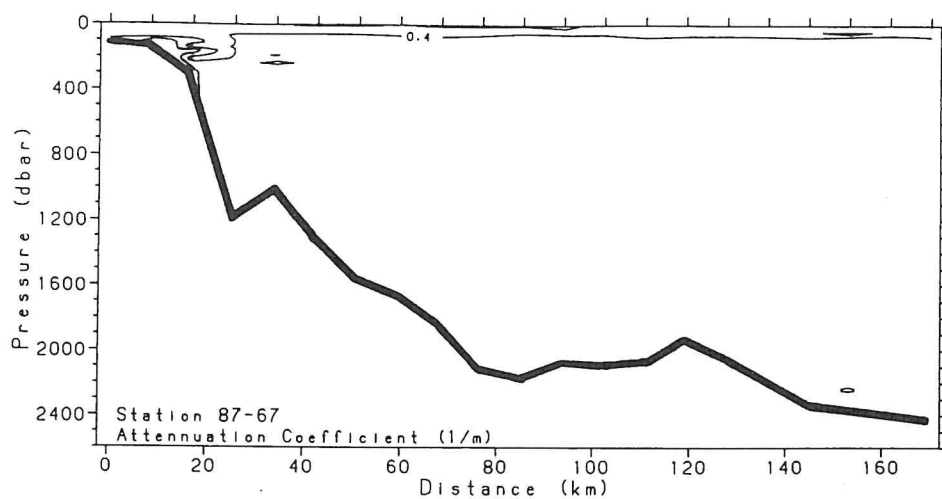


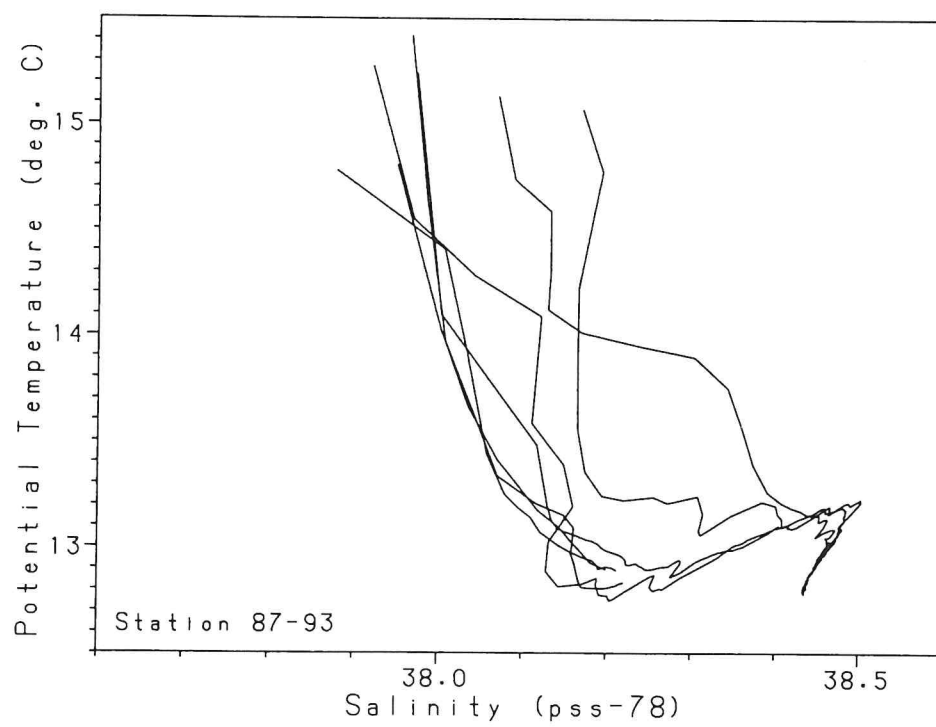
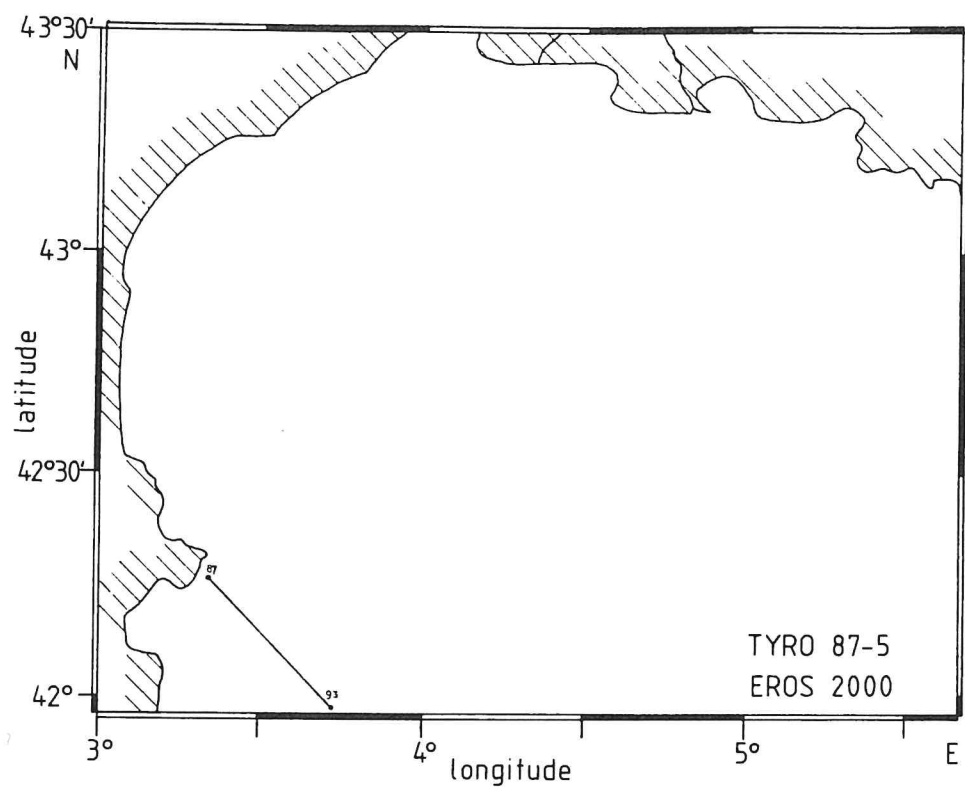


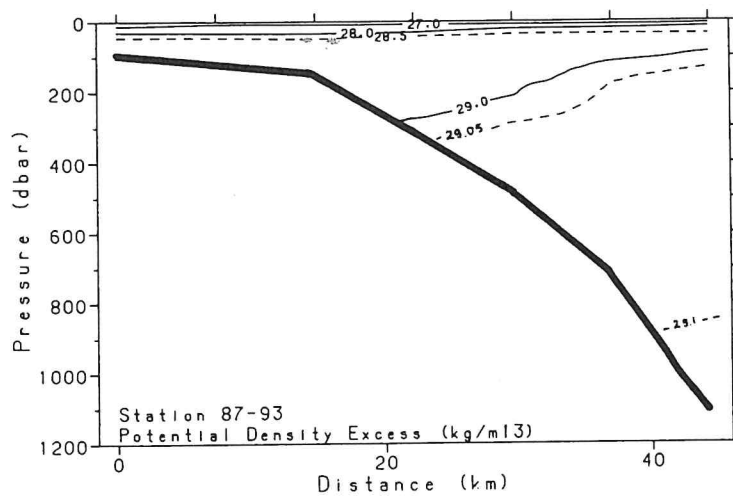
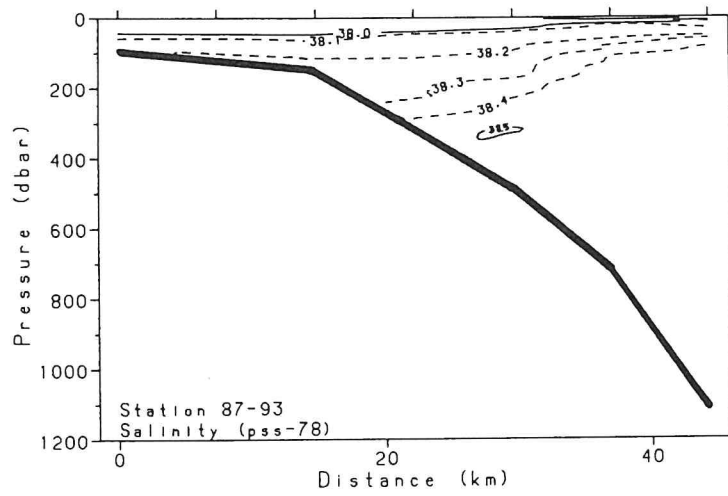
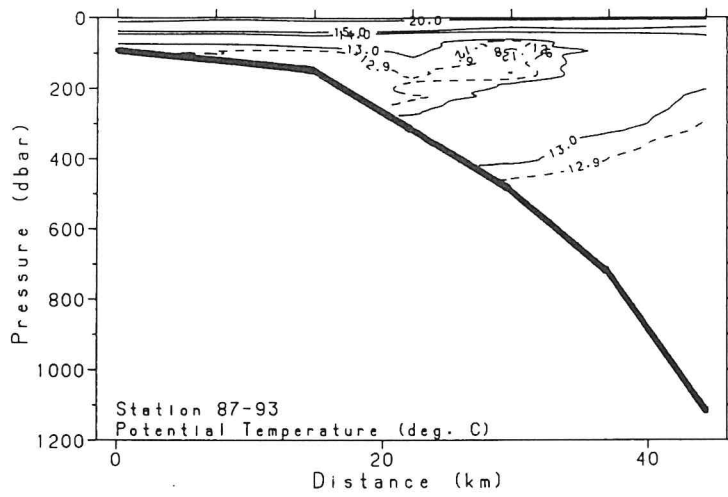


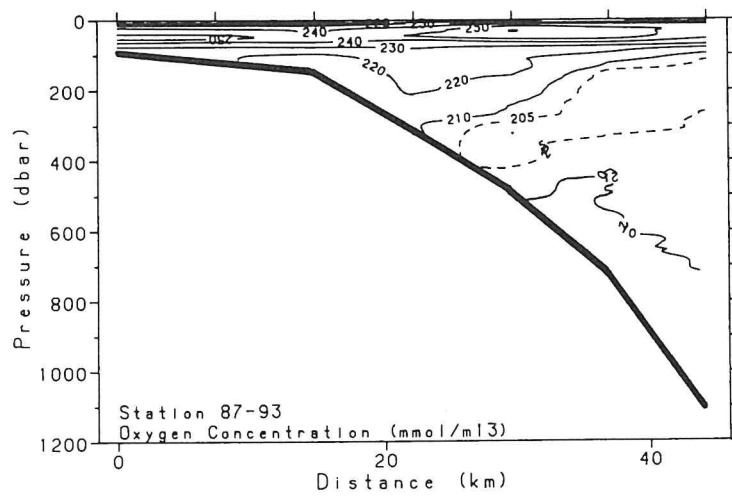
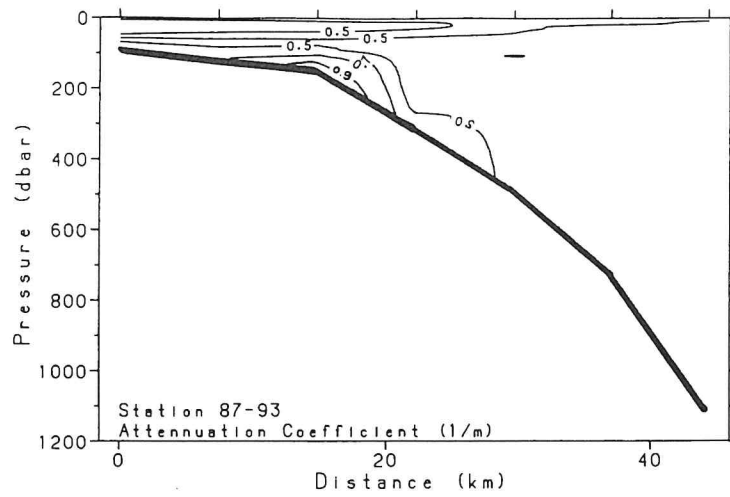


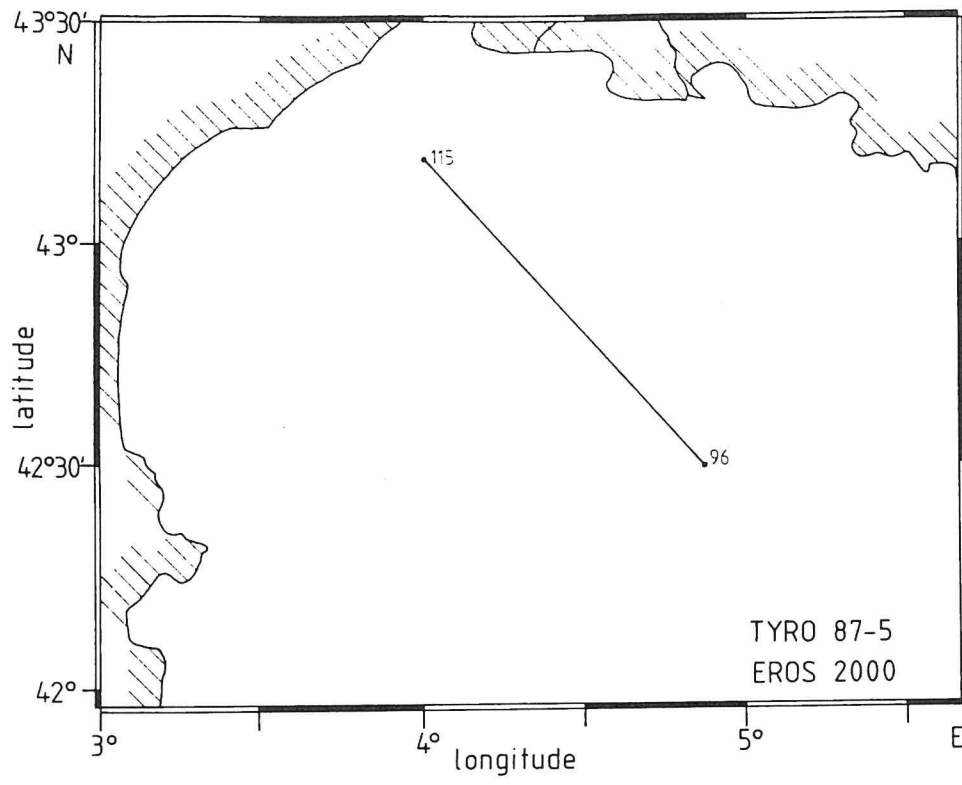


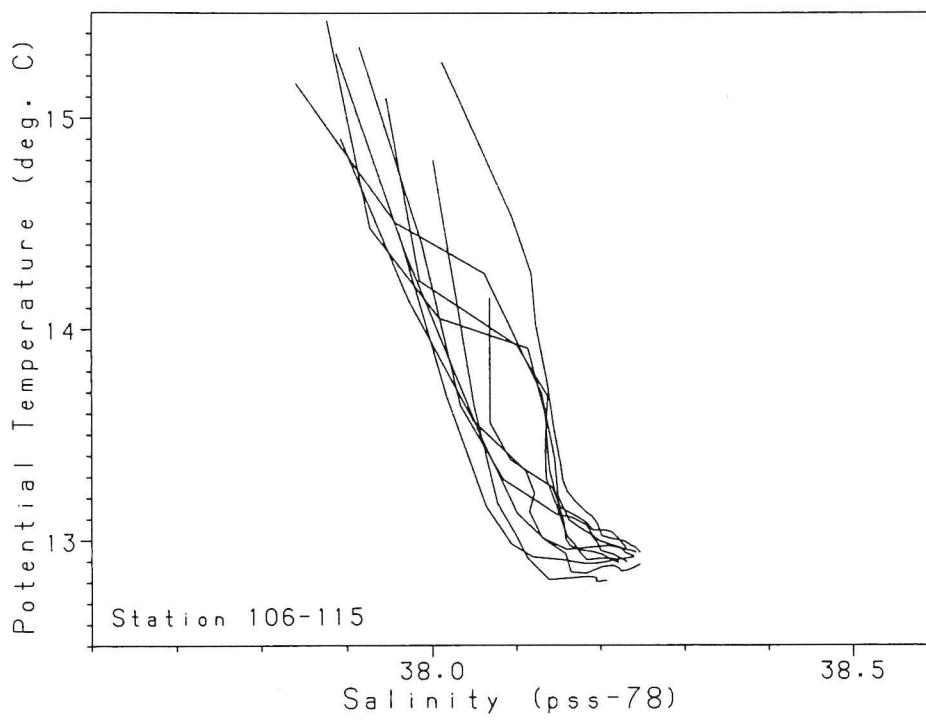
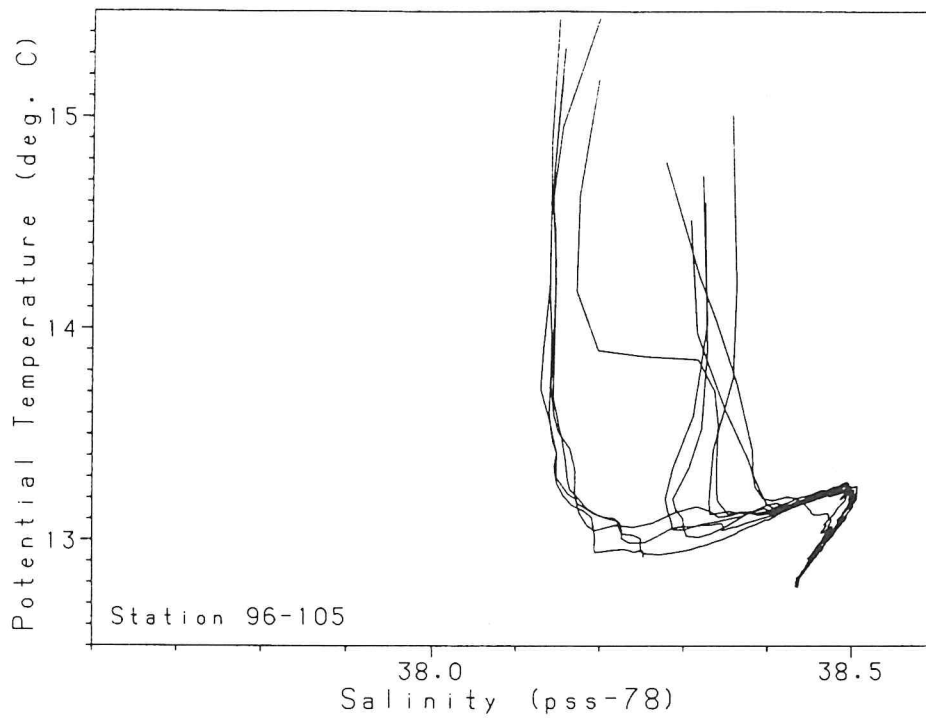


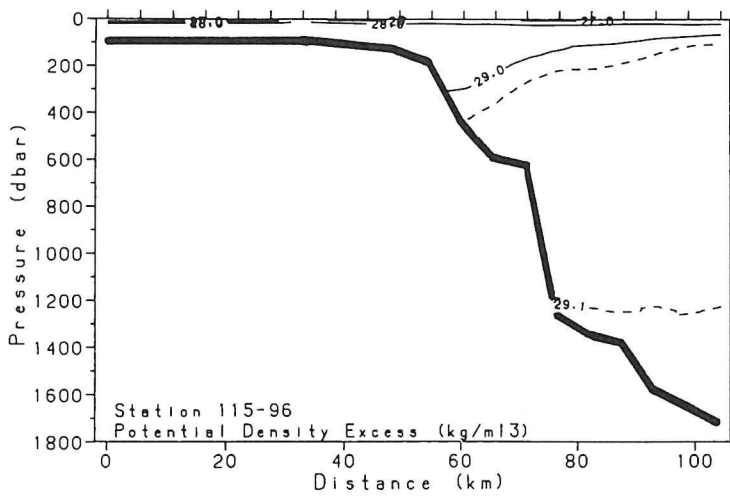
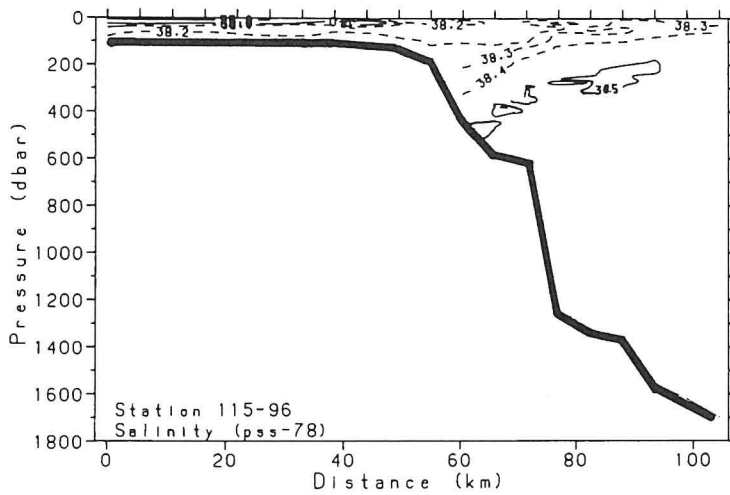
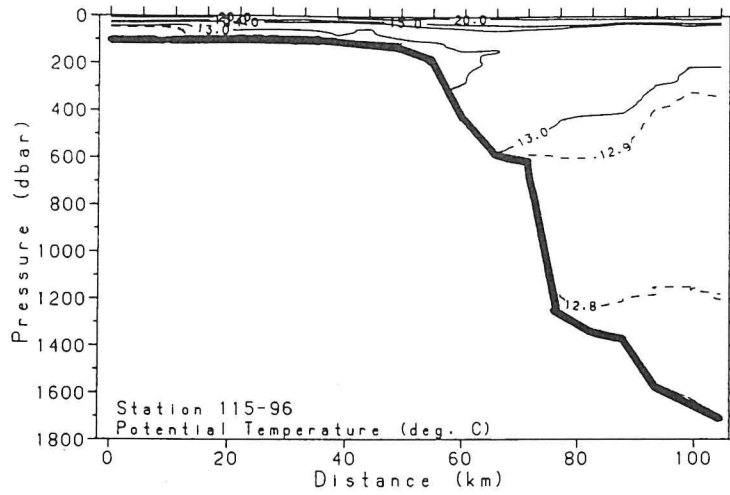


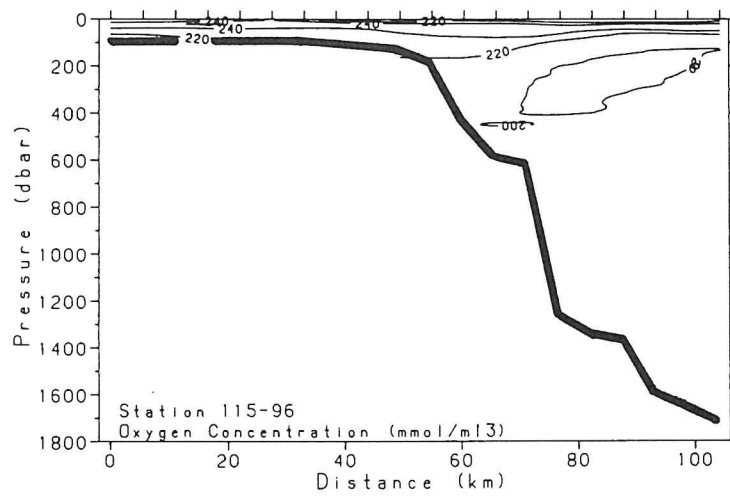
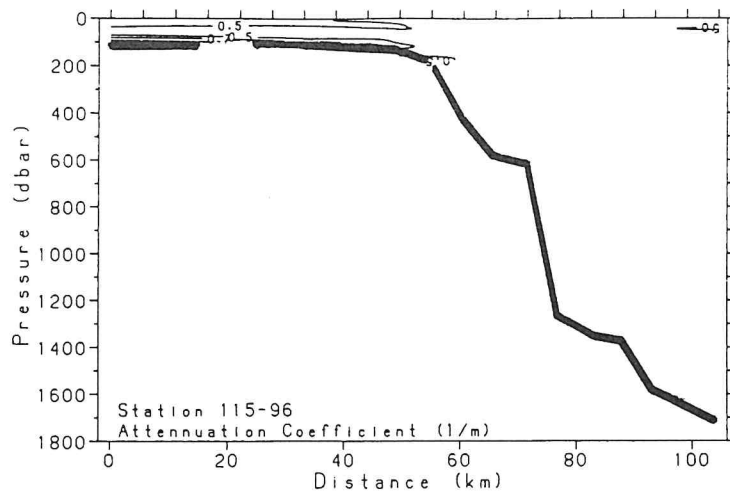


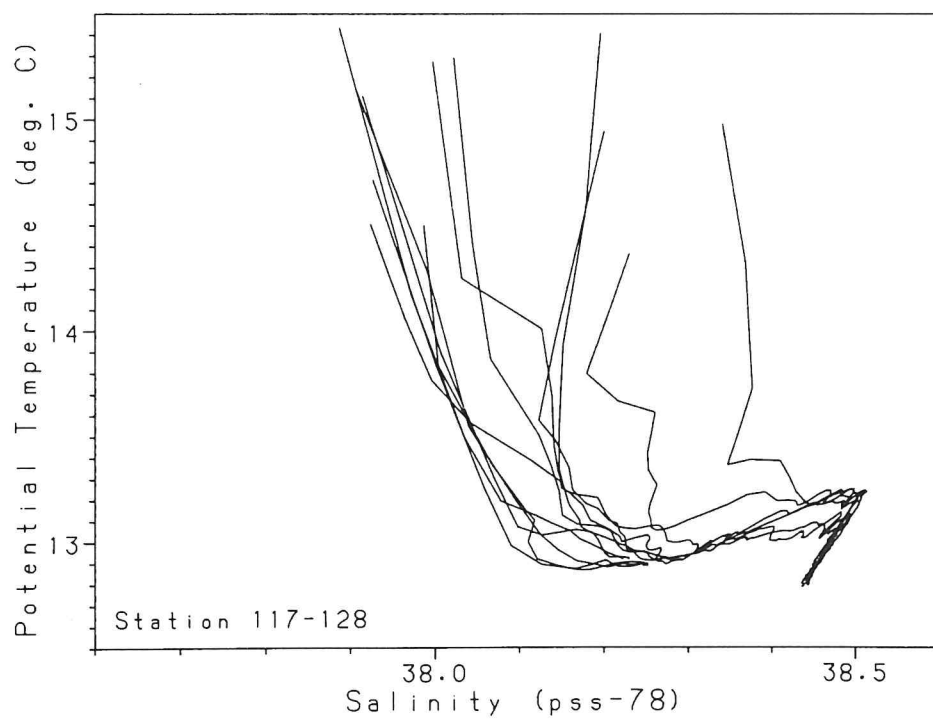
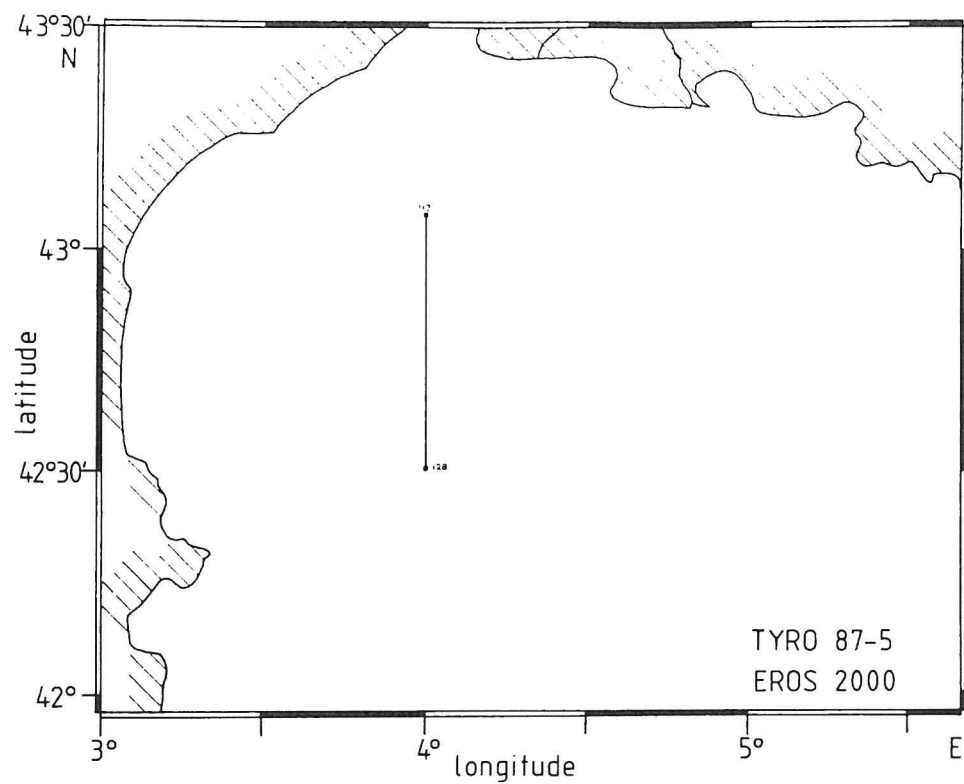


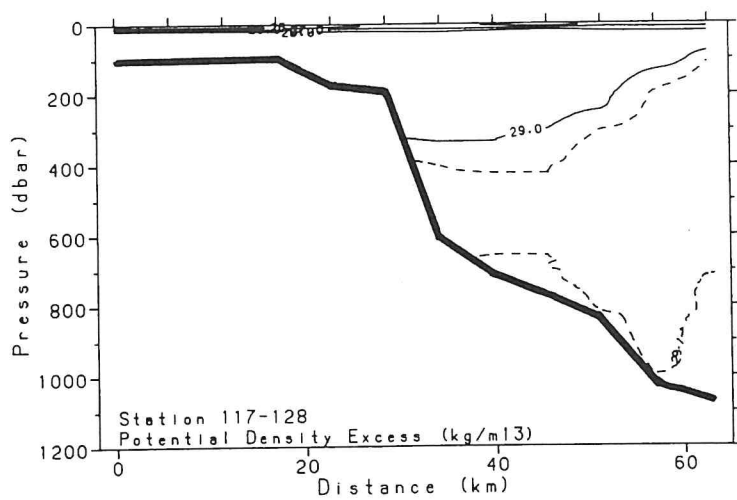
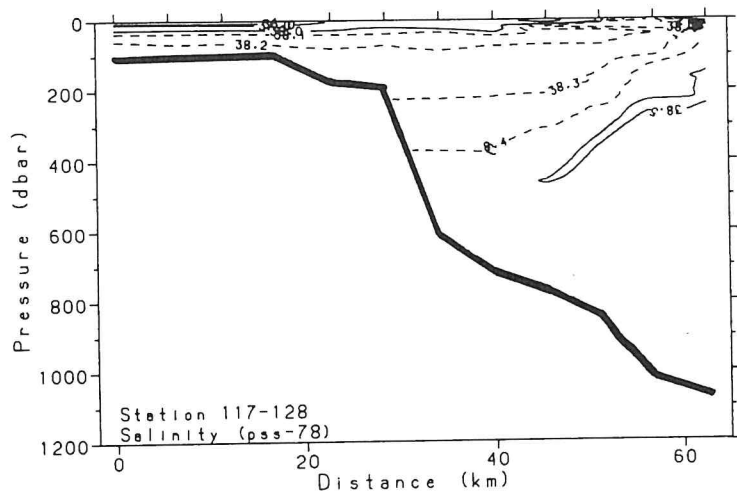
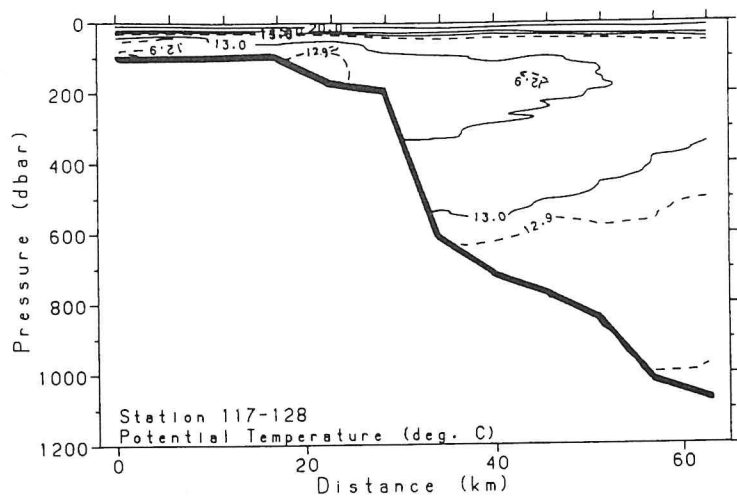


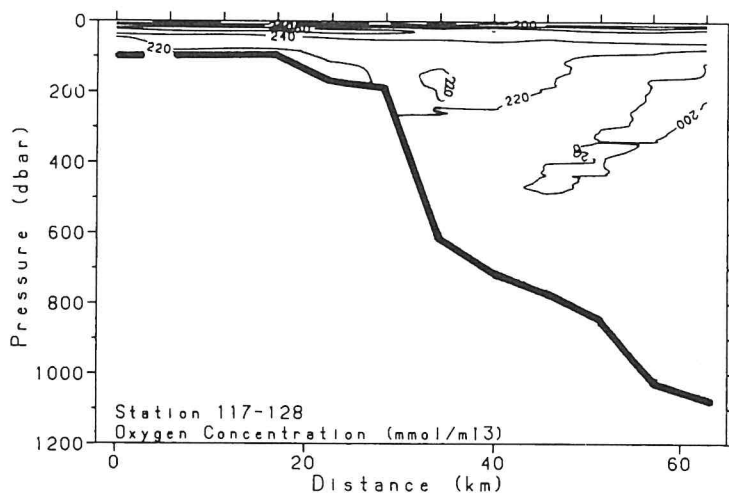
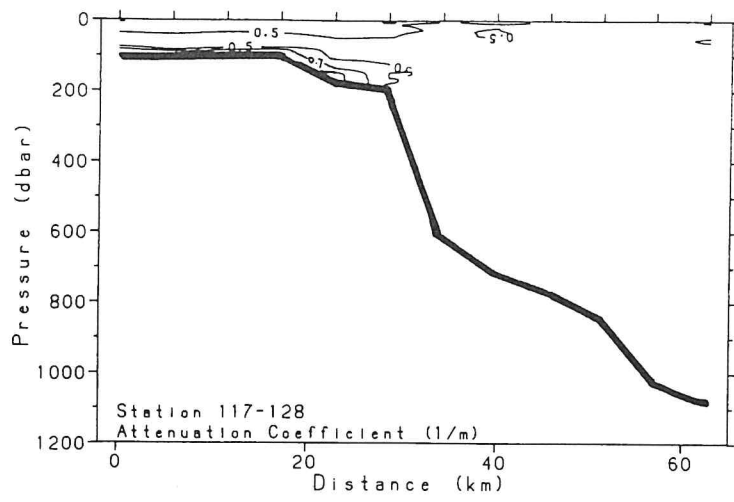


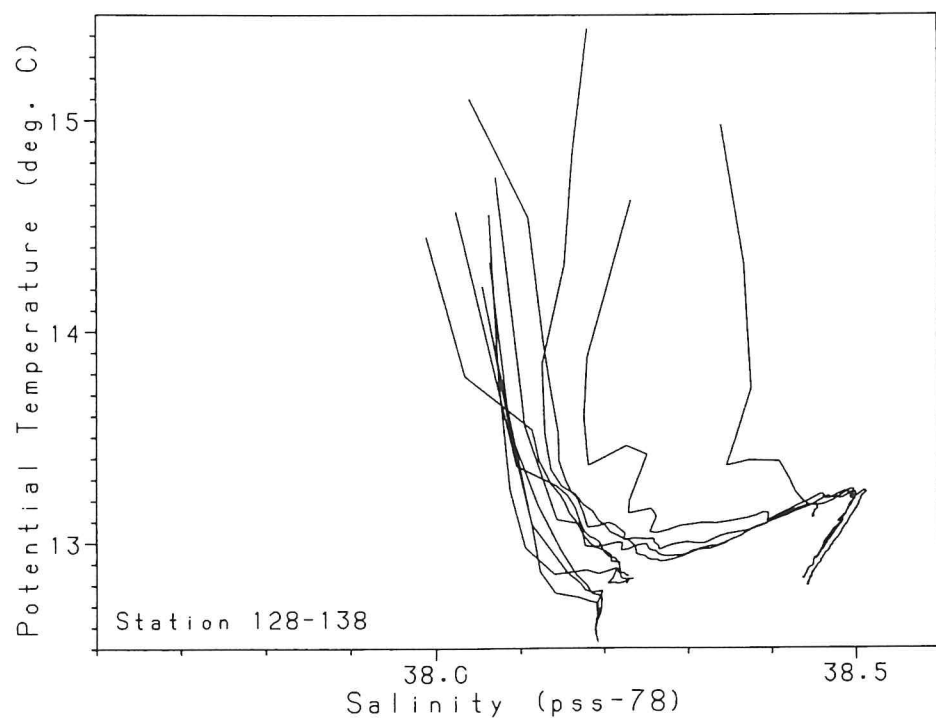
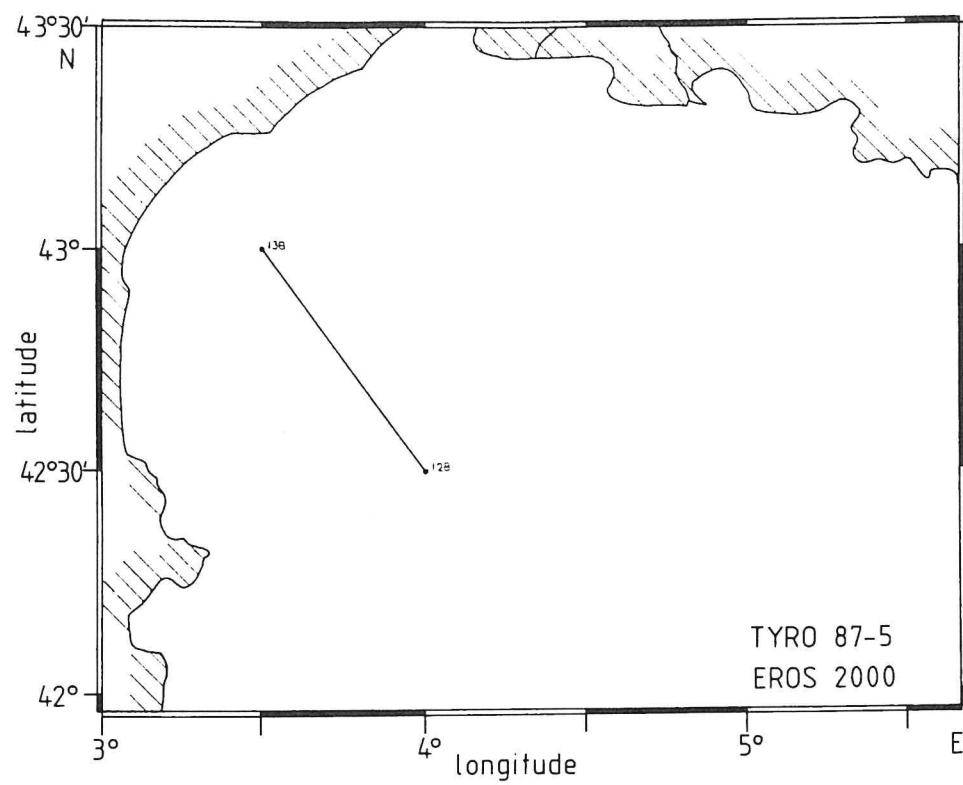


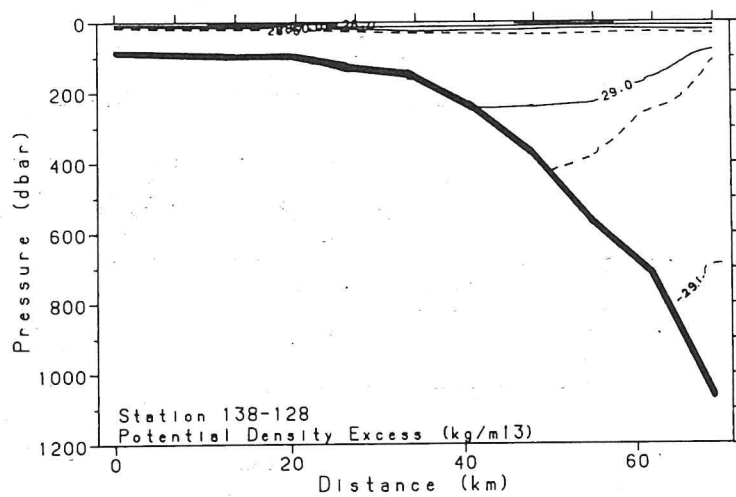
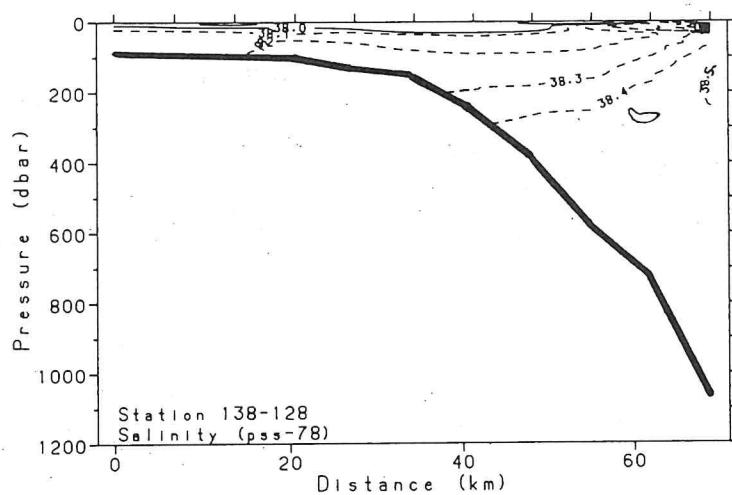
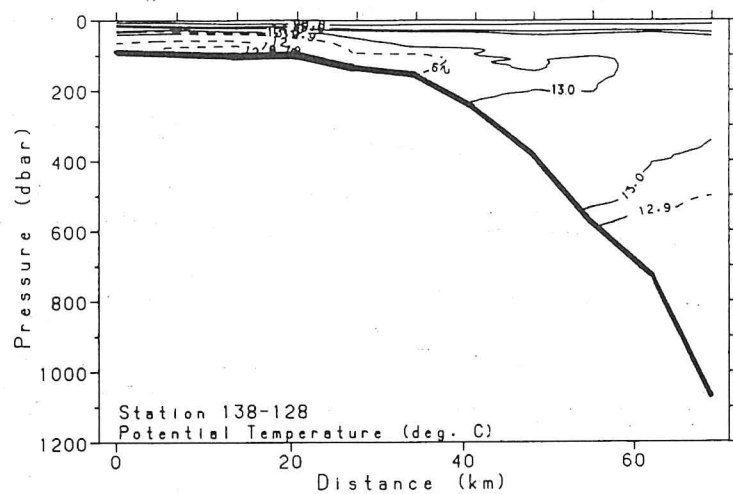


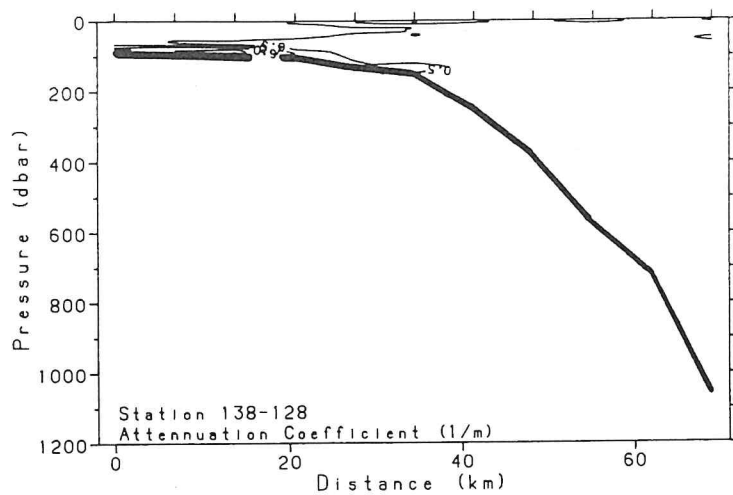


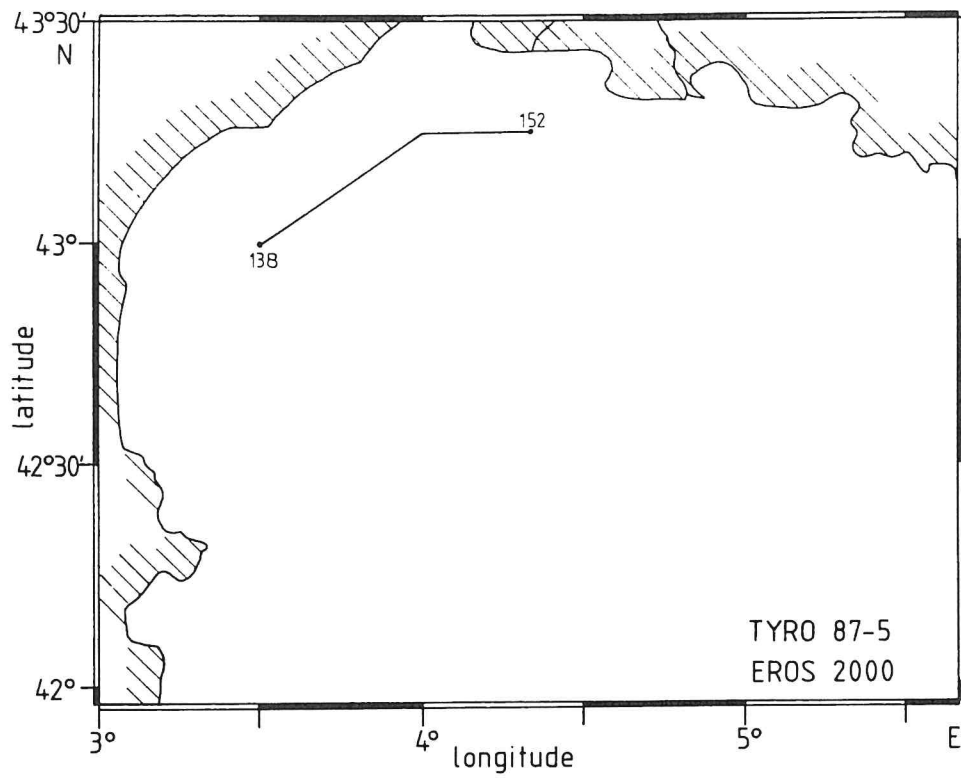


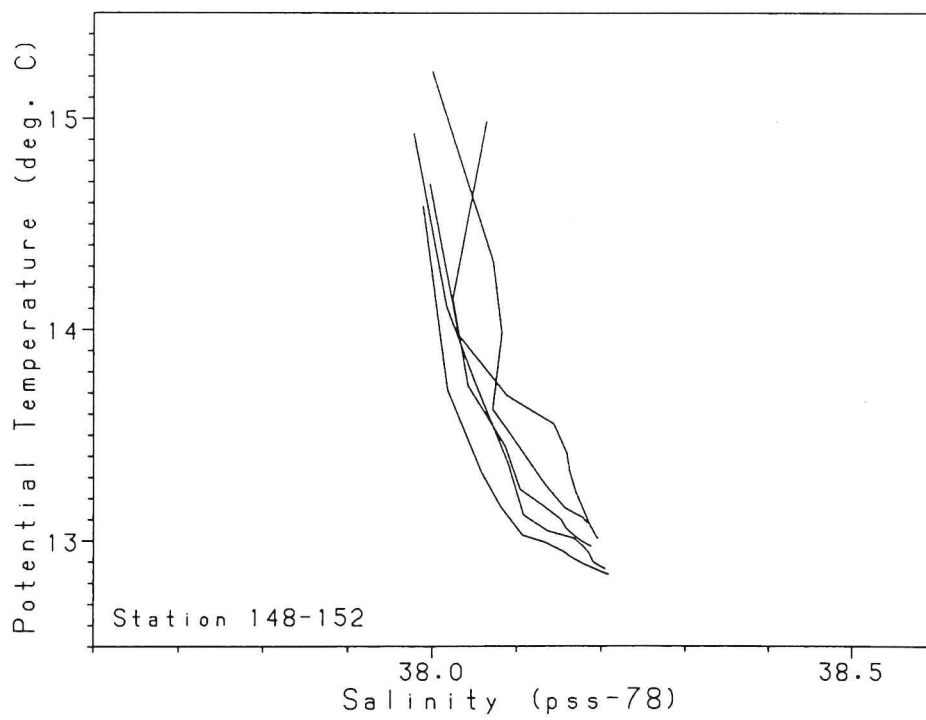
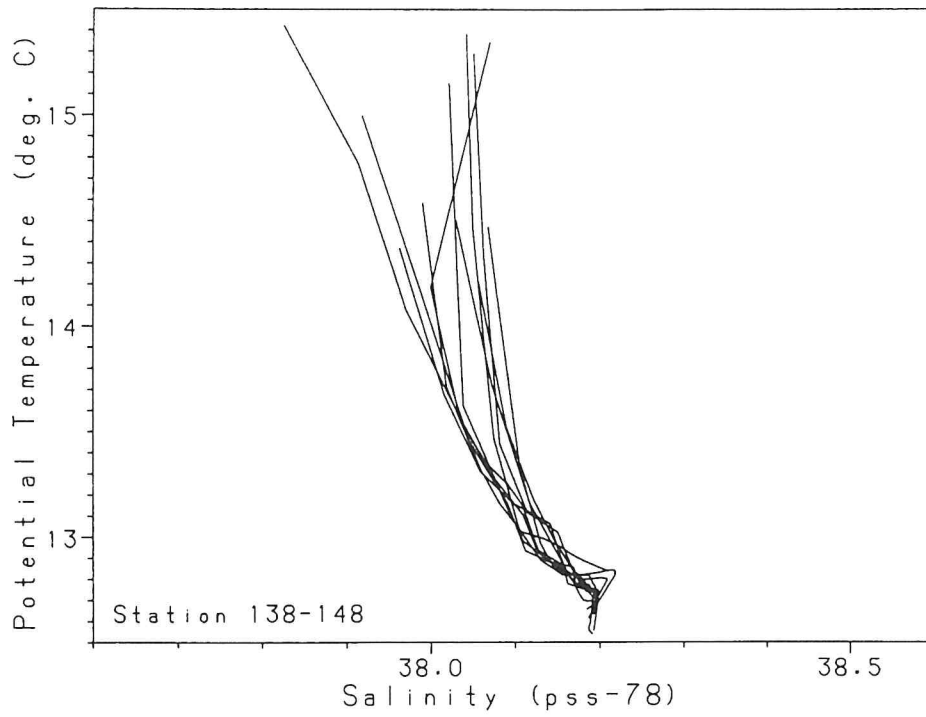


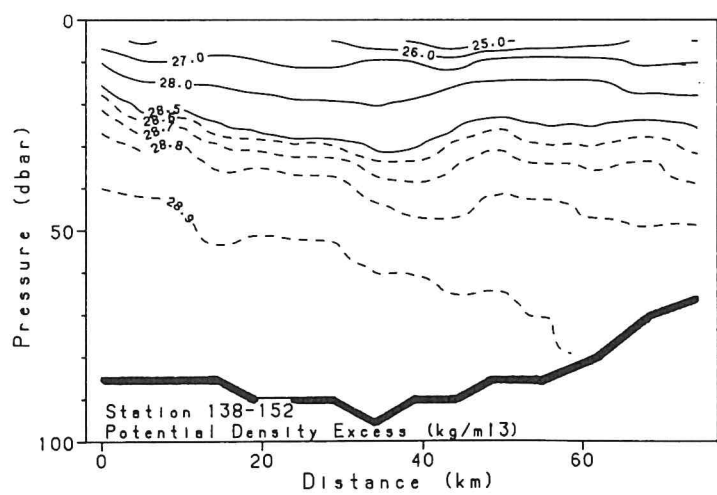
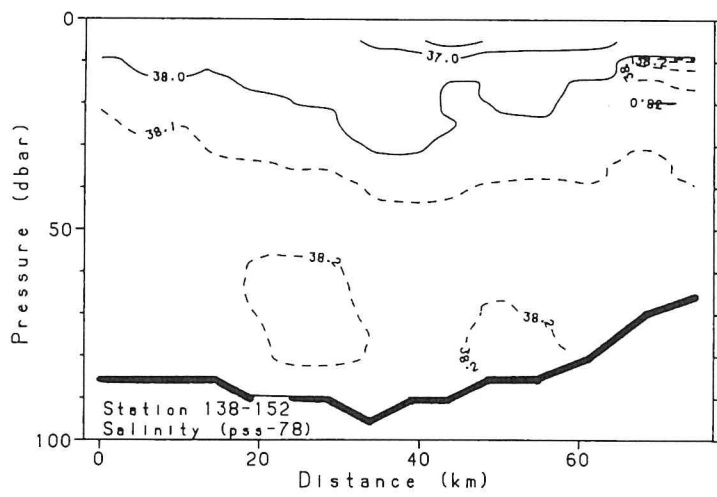
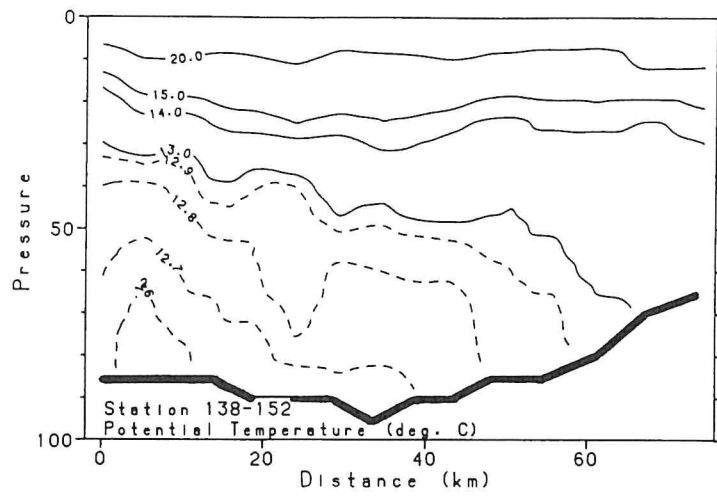


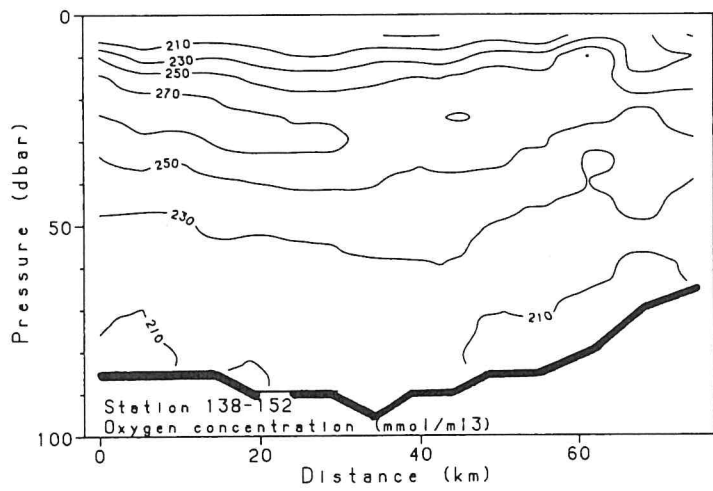
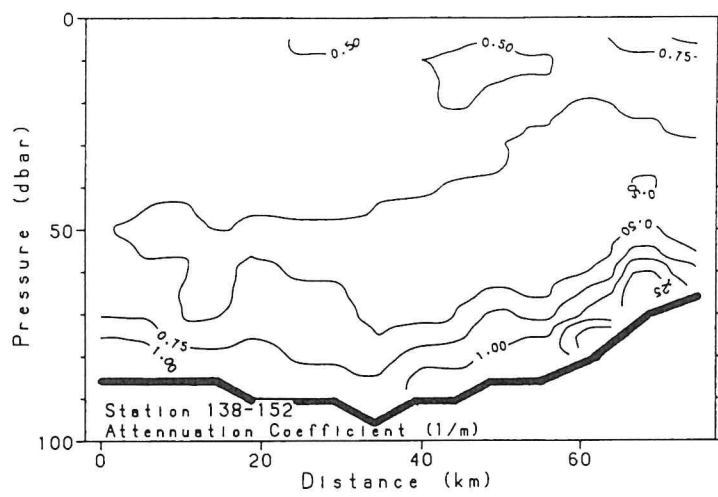












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