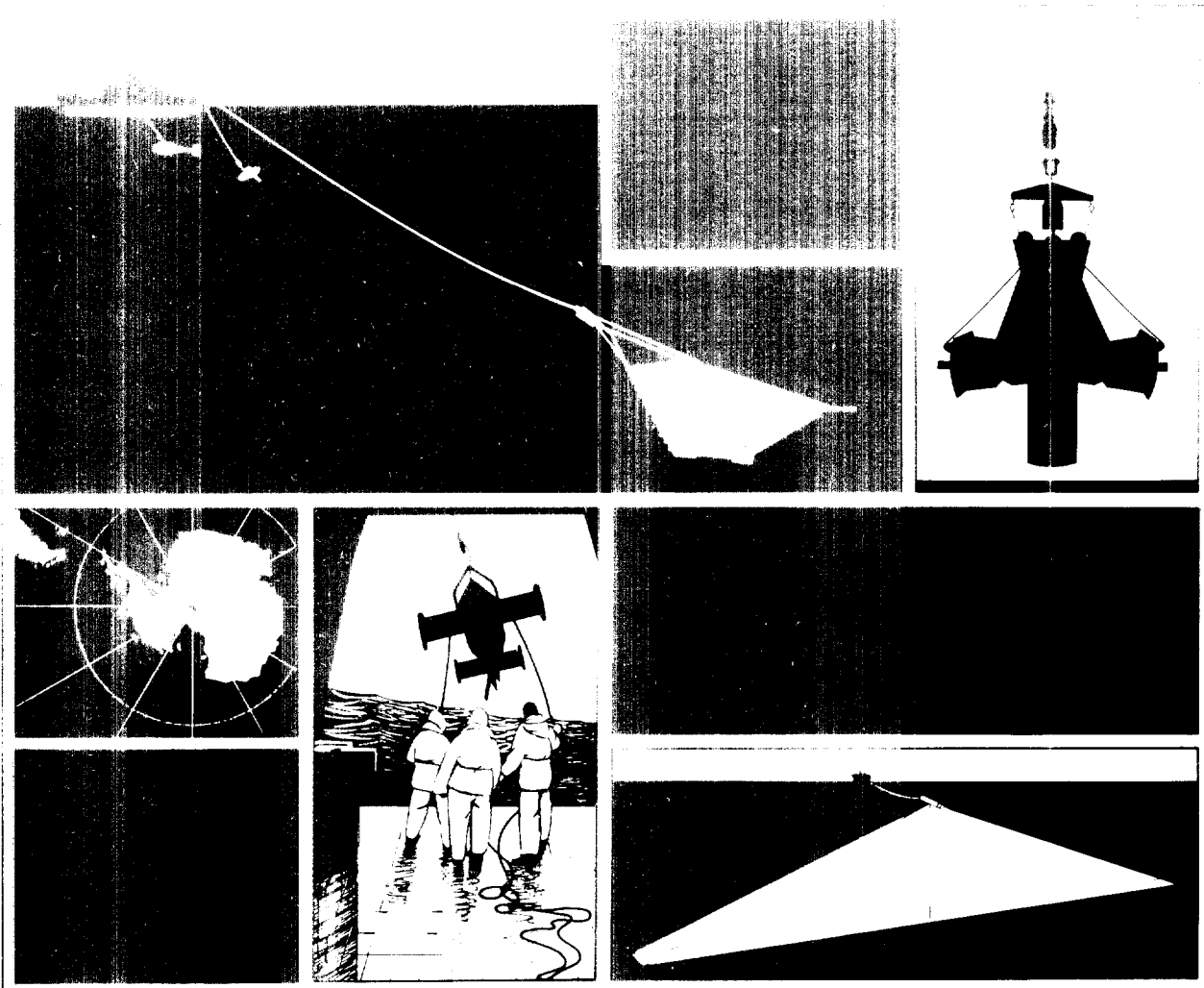




SeaSoar and CTD sections across the Iceland-Faeroes Front and Faeroe Shetland Channel, August 1990

J T Allen, J F Read, S G Alderson & H Desai

Report No 295 1992



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ABSTRACT

In August 1990, RRS *Charles Darwin* Cruise 51 made two CTD and four SeaSoar sections across the inflow to the GIN Seas in addition to one large scale SeaSoar survey of the Iceland-Faeroes Front, and three repeat fine scale SeaSoar surveys of a selected region of the Front.

Sections of temperature, salinity and derived parameters including sound speed are presented. The data provide detailed information to identify water mass characteristics and indicate their relative locations. In addition, the SeaSoar surveys of the Iceland-Faeroes Front present a time sequence in which the generation and development of meanders and eddies may be observed.

KEYWORDS

"CHARLES DARWIN"/RRS - cruise(1990)(51)
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SALINITY DATA

SEASOAR
SOUND VELOCITY
TEMPERATURE DATA

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INTRODUCTION

RRS Charles Darwin Cruise 51 took place between the 24th of July and the 20th of August 1990 (Griffiths 1990). The cruise track (Figure 1) encompassed the Iceland Færøes Front and the inflow to the Norwegian Sea. Five towed SeaSoar surveys were carried out and 18 full ocean depth CTD stations were sampled.

The first CTD section, comprising 9 stations began at 17:12 hrs on the 25th of July. With the exception of one station the CTD section was entirely successful, however on station 5105 the CTD/bottle rosette frame touched the bottom resulting in the destruction of three 10 litre Niskin bottles, but luckily no damage to either the CTD or the frame.

Having completed the first CTD section at 13:55 hrs on the 26th of July the first of the SeaSoar surveys began at 18:50 hrs on the same day and, lasting four days, established the extent of North Atlantic Water in the region north east of the Færøe Islands. Very early in this survey it became apparent that intense seasonal heating and low wind mixing of the upper 20m of the water column would result in little surface expression of a front being found virtually throughout the cruise. After completion of a further 9 station CTD section (Figure 1) SeaSoar was redeployed at 22:30 hrs on the 31st of July to begin the large scale survey of the Iceland Færøes Front. This survey took until the 8th of August to complete with only one short break when hydraulic control of SeaSoar was lost due to a cable termination failure. These data have been used to describe the water masses and mixing between Iceland and Scotland (Read and Pollard 1992).

The large scale survey made eight crossings of the IFF in 200 km legs running SSW-NNE (and vice-versa) approximately 40 km apart and clearly indicated the presence of a northward intrusion of Atlantic water to a depth of 300m centred at around 10°W. It was therefore decided that the repeated fine scale surveys, surveys 3 and 4, should cover the warm intrusion identified in the large scale survey and particularly the associated smaller scale eddies and meanders that were only partially resolved at the larger scale. The fine scale surveys had legs of around 80 km in length, 15 km apart, running in a parallel direction to those of the large scale survey (Figures 2 and 3); this track length was fixed for the SeaSoar towing speed (8 knots) in an attempt to synchronise with the M₂ tidal cycle. The first of the fine scale surveys began at 18:30 hrs on the 9th of August and ended in the early afternoon of the 12th of August. Just prior to recovery the strain gauge connected to the SeaSoar towing cable read full - scale, indicating dangerously high cable tension; however as the weather was calm and SeaSoar was due to be recovered in a few hours the survey was continued to its planned completion with a close vigil being kept on vehicle depth and behaviour. SeaSoar was deployed again just before midnight on the 12th of August for the second fine scale survey, a repeat of the first, which was completed just a little under

three days later on the 15th. Small scale features identified in the large scale survey were clearly observed and their changing geographical position monitored in the fine scale surveys. With spare time available after successful mooring and drifter recoveries, it was considered worthwhile to redeploy SeaSoar a final time at the north east corner of the fine scale survey box in the evening of the 16th of August and make a third fine scale survey (Figure 4). This last survey was shorter than the previous two and finished at 16:50 hrs on the 18th of August at which time SeaSoar was recovered and the ship set course for Troon.

SEASOAR DATA

The IOSDL SeaSoar vehicle body, containing shallow CTD 01 and an RVS loaned Chelsea Instruments fluorimeter, was used for all the SeaSoar surveys on CD51. This totalled 425.5 hrs and 6350 km of towing with SeaSoar undulating between the surface and 410m, where the bathymetry allowed, at a ship speed of 8 knots (Griffiths 1990).

The first order processing of SeaSoar data was completed at sea in four hour segments and involved the removal of spikes and the correction of obvious large shifts in computed salinity values. To facilitate this, at the end of every four hour watch, the data were plotted as temperature vs. pressure, salinity vs. pressure, fluorescence vs. pressure, temperature vs. salinity and temperature, salinity, fluorescence and pressure vs. time. Up and down profiles were colour coded and successive groups of four profiles were offset from each previous group. Two different plotting scales were necessary for the TvS plots to enable individual profile identification in all water masses. Generally temperature, pressure and fluorimeter data were relatively clean and only required the occasional removal of spikes particularly a number of spikes to extreme minimum temperature and maximum salinity. Conductivity cell fouling caused offsets to appear in the computed salinity data values which could be identified as deviations in the usually stable T-S relationship at the deeper levels. Many such offsets were corrected on board to bring values back to the expected T-S line. Generally fouling affected only a part of an up and down cycle since the turbulent environment near the sea surface cleared the cell. However some fouling was so heavy that parts of the trace had to be discarded and offsets could only be partially resolved and corrected in the time available at sea.

After each four hourly editing session the cleaned up data were appended into sixteen hour sections, each overlapping its antecedent by four hours. These sections were merged with navigation data and the sawtooth profile of pressure with distance travelled, inherent in SeaSoar data (Griffiths 1990, Pollard 1986), was averaged to create 4 km along track by 8 m depth and 0.02 kgm^{-3} density grids. Whilst the cruise proceeded the gridded files were plotted as computer contoured sections similar to those presented in this report, for temperature, salinity and density.

Navigation data were obtained throughout the cruise using the GPS network of satellites. The GPS accuracy had been downgraded for commercial use just prior to CD51, however whilst the ship was docked at Aberdeen before the cruise position fixes were taken every 5 seconds for a period of over 15 hours to estimate the implication of this degradation (Griffiths 1990). The conclusion reached was that to achieve an accuracy of 1cms^{-1} in the ship's velocity an average derived from GPS over 12 minutes had to be made. Armed with this information navigation data were obtained to very high standard throughout the cruise. In addition, whilst a minimum of two satellites are required to make a position fix, accuracy was further enhanced by the availability of three or more satellites for 94% of fixes to begin with increasing to 100% of fixes later in the cruise.

SEASOAR SENSOR CALIBRATION

Pressure

The calibration for pressure was determined by laboratory measurements :-

$$P_1 = (P_{\text{raw}} * 0.01) * 1.000385 - 0.577$$

Temperature

The platinum resistance thermometer in shallow CTD 01 was also calibrated in the laboratory:

$$T = (T_{\text{raw}} * 0.0005) * 0.9990762 - 0.09374233$$

where raw temperature was calculated using a time constant (deltat) of 0.22 to compensate for the different response times of the temperature and conductivity sensors.

Conductivity

Bottle salinity samples were taken at one hour intervals throughout each SeaSoar survey from the ship's non-toxic seawater supply and analysed in the method described later. The taking of the samples was carefully timed to coincide with points at the sea surface at which SeaSoar would subsequently surface. The following conductivity ratio equation was calculated from the first few salinity samples collected at the start of the SeaSoar surveying and was used for all the SeaSoar surveys :-

$$C_1 = (C_{\text{raw}} * 0.001) * 1.0035640$$

Salinity was calculated from conductivity, pressure and temperature using the 1983 equation of state for sea-water. Further corrections were applied, in the form of offsets in salinity. Salinity offsets in the data from SeaSoar surveys 1 and 2, described in the introduction, were calibrated according to the analysed surface salinities as follows :-

file:-	gr510bc	data cycle:-	1-2756	offset:-	0.000
			2757-end		-0.010
	gr510cd		1-1300		-0.010
			1301-end		-0.025
	gr510de		all		-0.025
	gr510eh		1-1508		-0.025
			1509-end		-0.040
	gr510jl		all		-0.050
	gr510lm		all		-0.050
	gr510mp		1-5356		-0.050
			5357-end		-0.060
	gr510pq		1-104		-0.050
			105-end		-0.060
	gr510qt		all		-0.060
	gr510tu		all		-0.060
	gr510ux		all		-0.060
	gr510xz		all		-0.060

Salinity offsets for data from SeaSoar surveys 3, 4 and 5 were identified by comparing T/S profiles with a T/S scatter plot of all the data from the large scale IFF survey, survey 2. Salinity offsets made to fine scale survey data as follows:-

file:-	gr51f1tt	raw files:-	all	offset:-	-0.070
	gr51f2tt	(d. cycles)	ss51085		-0.080
			ss51086-51089		-0.080
			ss51090-51094		-0.040
			ss51095		
			(1-13341)		-0.040
			(13342-13624)		-0.075
			(13625-13780)		-0.005
			(13781-14393)		-0.075
			ss51096-51098		-0.075

	ss51099	
	(1-4135)	-0.075
	(4136-4471)	-0.040
	(4472-4558)	-0.050
	(4559-end)	-0.080
	ss51100-51101	-0.080
gr51f3tt	ss51102	
	(1-4826)	-0.080
	(4827-5200)	-0.060
	(5201-end)	-0.080
	ss51103-51111	-0.080
	ss51112	
	(1-14517)	-0.080
	(14518-15048)	-0.067
	(15049-16921)	-0.080
	(16922-18837)	-0.082

Following this procedure, absolute errors in salinity are estimated to be ± 0.01 psu.

CTD DATA

The CTD system employed during this cruise was the same as that on the preceding cruise: Charles Darwin 50, and the same processing and analytical techniques were used for the data collection and sample analysis. Full details of these are given by Saunders et al (1991) and are only described briefly here.

Eighteen full depth CTD stations were worked in two sections (Fig.1, Table 1). The instrumentation consisted of a NBIS Mark 3 CTD with Beckman oxygen sensor and a rosette with twelve 10 litre Niskin bottles. Four bottles were fired on each station and water samples were collected and analysed for dissolved oxygen content and salinity. These values were then used to calibrate the conductivity and oxygen sensors.

SAMPLE ANALYSIS

Oxygen samples were drawn from the Niskin bottles first and were analysed using the Winkler titration procedure, as described by Saunders et al (1991). A new SIS automated photometric end-point detection system was used but due to a faulty connector air was drawn into the supply of titre from the

burette to the sample. About a quarter of the samples were lost through this problem. From the 109 samples successfully analysed 32 duplicate pairs were obtained of which the mean difference was less than 0.01 ml/l with a standard deviation of 0.004 ml/l.

Salinity samples were analysed using a Guildline Autosal model 8400 bench salinometer, which was sited in the controlled temperature laboratory on the *RRS Charles Darwin*. The salinometer was operated at a temperature of 21°C in a 20°C environment. A total of 136 samples were drawn from the Niskin bottles and analysed providing 67 duplicate pairs. The mean difference between pairs of samples was 0.0006 psu with standard deviation of 0.0007 psu.

CTD SENSOR CALIBRATION

CTD data were collected from the deck unit and transferred to Pstar in the same way as SeaSoar data. Calibration data for comparison with the bottle samples were collected when the multisampler was fired and saved on the CTD deck unit. These were transferred to Pstar later. Processing of the data followed the path described by King et al (1991) and the following corrections were applied:

Pressure

The calibration for pressure was determined by laboratory measurements. Three corrections were applied:

$$P_1 = (P_{raw} * 0.1) * 0.9989873 - 4.69$$

A further correction was made for the effect of temperature on the CTD pressure offset:

$$P = P_1 - 0.4 (t_{lag}(400) - 12)$$

where t_{lag} is a lagged temperature in degrees C constructed from the CTD temperature with a time constant of 400 seconds. The values of 400 seconds and 0.4 db/°C are based on laboratory tests.

The upcast was also corrected for hysteresis resulting from the loading and unloading of the sensor. This was calculated from laboratory measurements of a 5500 db simulated cast (Table 2).

$$P_{new} = P - [DP_{5500}(P) - (P/P_{max} * DP_{5500}(P_{max}))]$$

Temperature

The platinum resistance thermometer was calibrated in the laboratory:

$$T = (T_{\text{raw}} * 0.0005) * 0.9985949 - 0.01177486$$

where raw temperature was calculated using a time constant (deltat) of 0.22 to compensate for the different response times of the temperature and conductivity sensors.

Conductivity

An initial conductivity ratio was calculated from the first few salinity samples collected, this was used for the first nine stations. For stations 10 -18 the coefficients were revised after further comparison with sample data.

$$\text{Stations 1 - 9: } C_1 = (C_{\text{raw}} * 0.001) * 0.995478$$

$$\text{Stations 10 - 18: } C_1 = (C_{\text{raw}} * 0.001) * 0.995595$$

Conductivity was further corrected for the effects of pressure and temperature:

$$C = C_1 * [1 + 1.5e^{-8} * (\text{press} - 0) - 6.5e^{-6} * (\text{temp} - 15)]$$

Salinity was calculated from conductivity, pressure and temperature using the 1983 equation of state for sea-water. Further corrections were applied, in the form of offsets, after comparison with the bottle samples. These are listed in Table 3.

Oxygen

Dissolved oxygen was calculated using the equation:

$$O = \text{Osat}(T,S) * r * \text{oxyC} * \exp(a \text{oxyT} + b \text{press})$$

where the coefficients a, b, and r were obtained by a least squares regression of $\ln(\text{oxysamp}/(\text{oxyC} * \text{Osat}))$. Only four samples were drawn on each station, too few to calculate coefficients for each cast. The entire data set was used giving $r = 1.536171$, $a = -.04140$ and $b = 0.0001595$. These coefficients fitted the oxygen profiles to the sample data reasonably accurately on stations 1 - 9. Between

stations 9 and 10 the CTDO unit was left unused on deck for 4 days and on station 10 and succeeding stations the fit between samples and oxygen was poor. To compensate r was adjusted gradually through stations 10 - 14 until it returned to 1.536171 on station 15.

10:	$r = 1.42$	($a = -.041$, $b = 0.00016$)
11,12:	$r = 1.48$	($a = -.041$, $b = 0.00016$)
13:	$r = 1.50$	($a = -.041$, $b = 0.00016$)
14:	$r = 1.51$	($a = -.041$, $b = 0.00016$)

DATA PRESENTATION

CTD data are presented in the form of listings at standard depths, together with profiles of potential temperature against salinity and potential temperature against oxygen. Contoured plots of potential temperature, salinity, oxygen and density versus depth are also presented for the two CTD sections.

SeaSoar data are presented as contoured sections of salinity against density and potential temperature, density, salinity, sound speed and cross-track geostrophic velocity (ref. level 400 m) against depth. Each leg is plotted separately as indicated in the title eg. gr51snbc, gr51flsnkl where the last two letters refer to the end points of the leg (Figures 1, 2, 3 and 4). The inclusion of the letter "f" and following number in the title indicates which fine scale survey. It should be noted that the fine scale survey sections are plotted against an expanded horizontal (latitude) scale.

ACKNOWLEDGEMENTS

CD51 succeeded in carrying out one more SeaSoar survey than planned, enabling the study of a considerably longer time sequence of in-situ data than would otherwise have been possible. This was, at least in part, a result of the eager and proficient assistance of the Master, Officers and crew of RRS Charles Darwin and of the enthusiastic support of John Smithers, Steven Keene and Robert Wallace, keeping SeaSoar flying; all of whom are here gratefully acknowledged.

Our thanks also to Louise Fuger and Alison Chadwick for their help in making this report camera ready.

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LISTINGS

CTD bottle sample data. 19

CTD data listings. 20-33

FIGURES 34-38

Figure 1: Track chart of the two large scale SeaSoar surveys, the two CTD sections and, shaded, the approximate region covered by the three fine scale SeaSoar surveys.

Figure 2: Track chart of the first fine scale SeaSoar survey.

Figure 3: Track chart of the second fine scale SeaSoar survey.

Figure 4: Track chart of the third fine scale SeaSoar survey.

Potential temperature plotted versus salinity and oxygen for the CTD sections AB and HI.

Contoured sections of potential temperature, salinity, oxygen and density (σ_0) versus depth for the CTD sections AB and HI.

Contoured sections of potential temperature, salinity, density (σ_0), sound speed and cross track geostrophic velocity versus depth and salinity versus density (σ_0) for all legs of the five SeaSoar surveys.

Table 1: CTD Positions

Cast	Day Date (1990)	Time Down	Latitude °N	Longitude °W	Water Depth (m)	Closest Approach	Comments
1	206 25/7	1730	61 30.0	0 42.0	172	10	
2	206 25/7	1944	61 40.2	0 59.1	305	10	
3	206 25/7	2140	61 46.1	1 19.4	676	12	
4	207 26/7	0011	61 53.2	1 39.3	1369	7	
5	207 26/7	0240	61 59.9	1 55.9	1568	0	on bottom
6	207 26/7	0524	62 06.0	2 13.7	1648	10	
7	207 26/7	0733	62 11.8	2 31.4	1698	20	
8	207 26/7	1106	62 18.1	2 47.0	1176	70	
9	207 26/7	1325	62 24.9	3 04.9	606	20	
10	211 30/7	2220	64 09.9	5 32.4	3493		to 2000m
11	212 31/7	0119	63 59.2	5 43.2	3520		to 2000m
12	212 31/7	0413	63 47.6	5 51.0	2821		to 2000m
13	212 31/7	0700	63 36.0	6 01.4	2035	35	
14	212 31/7	0950	63 26.0	6 14.2	1533	25	
15	212 31/7	1235	63 13.9	6 20.3	1651	27	
16	212 31/7	1514	63 00.8	6 31.7	1220	25	
17	212 31/7	1709	62 51.8	6 37.0	536	30	
18	212 31/7	1859	62 39.8	6 45.2	172	20	

Table 2: Pressure Hysteresis

Pressure (db)	DP5500 (db)
5500	0.0
5000	1.0
4500	1.2
4000	1.8
3500	2.4
3000	3.0
2500	3.4
2000	4.8
1500	5.6
1000	6.0
500	6.3
0	0

Table 3: Salinity Offset

Cast	Salinity offset	Cast	Salinity offset
1	+.003	10	-.011
2	+.003	11	-.011
3	+.0	12	-.010
4	+.002	13	-.011
5	+.001	14	-.012
6	+.004	15	-.011
7	+.003	16	-.012
8	+.0	17	-.011
9	+.0	18	-.011

CHARLES DARWIN CRUISE 51 BOTTLE SAMPLES

cast number	pres db	temp degc90	potemp degc90	salin	oxygen ml/l
1.	174.	9.148	9.129	35.369	6.13
1.	101.	9.545	9.534	35.391	6.25
1.	50.	10.784	10.777	35.349	6.28
1.	5.	12.695	12.694	35.341	6.71
2.	300.	9.247	9.213	35.376	6.10
2.	201.	9.443	9.420	35.391	6.21
2.	101.	9.742	9.730	35.398	6.16
2.	20.	11.861	11.858	35.334	-9.99
3.	676.	-0.858	-0.881	34.909	7.06
3.	604.	1.025	0.995	34.915	7.05
3.	252.	8.765	8.738	35.328	6.38
3.	20.	12.026	12.023	35.328	-9.99
4.	1383.	-0.919	-0.975	34.908	-9.99
4.	503.	0.660	0.637	34.902	7.13
4.	123.	7.851	7.838	35.244	6.48
4.	22.	11.674	11.671	35.219	7.02
5.	1588.	-0.926	-0.993	34.908	7.14
5.	811.	-0.426	-0.458	34.903	7.09
5.	356.	3.097	3.074	34.903	7.28
5.	54.	8.247	8.242	-99.999	-9.99
6.	1658.	-0.882	-0.953	34.910	7.09
6.	1008.	-0.581	-0.621	34.909	7.09
6.	206.	7.537	7.517	35.223	6.56
6.	13.	11.710	11.709	35.254	6.92
7.	1704.	-0.913	-0.987	34.910	7.09
7.	1607.	-0.880	-0.949	34.909	7.09
7.	913.	-0.498	-0.534	35.223	6.56
7.	155.	7.627	7.612	35.254	6.92
8.	1070.	-0.780	-0.821	34.908	7.07
8.	303.	2.770	2.751	34.943	7.33
8.	103.	7.607	7.597	35.202	6.42
8.	7.	11.365	11.364	35.101	7.03
9.	594.	-0.656	-0.677	34.907	7.07
9.	203.	2.652	2.639	34.948	7.33
9.	76.	5.675	5.669	35.043	6.86
9.	5.	11.249	11.248	35.043	6.99
10.	2025.	-0.916	-1.010	34.910	-9.99
10.	1523.	-0.842	-0.906	34.911	7.07
10.	1016.	-0.604	-0.645	34.908	7.01
10.	206.	2.761	2.749	34.963	-9.99
11.	2029.	-0.926	-1.020	34.910	7.11
11.	1525.	-0.852	-0.916	34.911	7.08
11.	1019.	-0.647	-0.687	34.909	7.03
11.	206.	2.728	2.715	34.908	7.04
12.	494.	0.377	0.356	34.910	7.11
12.	209.	2.836	2.823	34.904	7.13
12.	18.	9.623	9.621	34.970	7.33
12.	18.	9.623	9.621	34.945	7.00
13.	1524.	-0.807	-0.872	34.909	7.12
13.	1017.	-0.578	-0.619	34.908	7.06
14.	1591.	-0.872	-0.940	34.909	7.08
14.	1321.	-0.693	-0.749	34.910	7.05
14.	712.	-0.369	-0.397	34.905	7.05
14.	206.	3.067	3.054	34.890	7.18
15.	1644.	-0.952	-1.022	34.909	7.14
15.	1010.	-0.707	-0.746	34.909	7.07
15.	507.	-0.299	-0.318	34.903	7.07
15.	206.	1.055	1.045	34.857	7.30
16.	1200.	-0.729	-0.777	34.909	7.04
16.	313.	0.873	0.859	34.890	7.28
16.	114.	5.211	5.202	34.997	6.73
16.	21.	9.945	9.942	34.961	6.98
17.	502.	-0.070	-0.090	34.904	7.01
17.	254.	6.597	6.574	35.135	6.48
17.	102.	8.185	8.175	35.263	6.45
17.	12.	11.272	11.270	35.153	6.69
18.	151.	8.741	8.724	35.226	6.55
18.	102.	9.068	9.057	35.211	6.58
18.	42.	9.315	9.310	35.189	6.66
18.	12.	9.798	9.797	35.207	6.77

CHARLES DARWIN CRUISE 51 STATION 01

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	12.588	35.340	6.68	12.587	26.739	31.139	0.013	1499.4	10.	129.80	-9.999
20.	11.896	35.335	6.74	11.893	26.870	31.283	0.026	1497.2	20.	117.69	6.423
30.	11.304	35.330	6.78	11.300	26.977	31.403	0.037	1495.3	30.	107.73	5.840
40.	11.193	35.329	6.69	11.188	26.997	31.425	0.047	1495.1	40.	106.10	2.509
50.	10.982	35.317	6.59	10.975	27.027	31.459	0.058	1494.5	50.	103.49	3.092
60.	10.608	35.361	6.47	10.601	27.128	31.568	0.068	1493.4	59.	94.11	5.669
70.	9.854	35.388	6.36	9.846	27.282	31.737	0.076	1490.9	69.	79.74	6.979
80.	9.735	35.394	6.30	9.726	27.307	31.764	0.084	1490.7	79.	77.60	2.819
90.	9.631	35.393	6.30	9.621	27.324	31.784	0.092	1490.5	89.	76.17	2.353
100.	9.576	35.394	6.31	9.565	27.334	31.795	0.100	1490.4	99.	75.45	1.781
120.	9.465	35.388	6.35	9.452	27.348	31.812	0.115	1490.4	119.	74.56	1.504
140.	9.248	35.376	6.33	9.232	27.375	31.843	0.129	1489.9	139.	72.42	2.078
160.	9.150	35.370	6.34	9.132	27.387	31.858	0.144	1489.8	158.	71.69	1.400
175.	9.147	35.371	6.24	9.128	27.388	31.859	0.154	1490.1	173.	71.91	0.509

CHARLES DARWIN CRUISE 51 STATION 02

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	12.555	35.325	6.75	12.554	26.734	31.134	0.013	1499.3	10.	130.33	-9.999
20.	12.034	35.332	6.84	12.032	26.841	31.251	0.026	1497.7	20.	120.44	5.821
30.	11.421	35.339	6.59	11.418	26.962	31.385	0.037	1495.7	30.	109.14	6.208
40.	11.222	35.338	6.36	11.217	26.999	31.426	0.048	1495.2	40.	105.93	3.404
50.	10.913	35.344	6.29	10.907	27.061	31.494	0.058	1494.3	50.	100.31	4.429
60.	10.477	35.358	6.21	10.470	27.150	31.592	0.068	1493.0	59.	92.05	5.327
70.	10.244	35.364	6.16	10.236	27.196	31.643	0.077	1492.3	69.	87.95	3.805
80.	9.941	35.375	6.16	9.932	27.257	31.710	0.086	1491.4	79.	82.34	4.419
90.	9.840	35.389	6.15	9.830	27.285	31.741	0.094	1491.2	89.	79.89	2.992
100.	9.746	35.398	6.14	9.734	27.308	31.766	0.101	1491.0	99.	77.90	2.724
120.	9.621	35.405	6.20	9.607	27.335	31.796	0.117	1490.9	119.	75.79	2.075
140.	9.584	35.405	6.23	9.568	27.342	31.803	0.132	1491.1	139.	75.64	1.015
160.	9.537	35.399	6.22	9.518	27.346	31.808	0.147	1491.3	158.	75.71	0.803
180.	9.498	35.397	6.24	9.478	27.350	31.814	0.162	1491.5	178.	75.70	0.888
200.	9.444	35.392	6.25	9.421	27.356	31.821	0.177	1491.6	198.	75.60	0.964
220.	9.400	35.389	6.29	9.375	27.362	31.827	0.192	1491.8	218.	75.50	0.959
240.	9.336	35.385	6.25	9.309	27.369	31.836	0.208	1491.9	238.	75.20	1.123
260.	9.245	35.377	6.22	9.216	27.378	31.847	0.223	1491.8	257.	74.76	1.217
280.	9.247	35.377	6.16	9.215	27.379	31.848	0.238	1492.2	277.	75.17	0.254
300.	9.247	35.377	6.17	9.213	27.379	31.848	0.253	1492.5	297.	75.58	0.230
301.	9.247	35.377	6.16	9.213	27.379	31.848	0.253	1492.5	298.	75.61	-0.590

CHARLES DARWIN CRUISE 51 STATION 03

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	12.735	35.323	6.87	12.734	26.697	31.093	0.014	1499.9	10.	133.82	-9.999
20.	11.704	35.328	6.95	11.702	26.901	31.318	0.026	1496.5	20.	114.70	8.040
30.	10.787	35.337	6.59	10.783	27.077	31.513	0.037	1493.5	30.	98.24	7.465
40.	10.157	35.334	6.31	10.153	27.186	31.635	0.046	1491.5	40.	88.09	5.887
50.	9.920	35.375	6.18	9.914	27.259	31.713	0.054	1490.8	50.	81.40	4.810
60.	9.796	35.374	6.22	9.790	27.280	31.737	0.062	1490.5	59.	79.62	2.591
70.	9.623	35.391	6.17	9.615	27.323	31.783	0.070	1490.1	69.	75.82	3.669
80.	9.563	35.392	6.15	9.554	27.334	31.796	0.078	1490.1	79.	74.96	1.911
90.	9.543	35.391	6.21	9.533	27.337	31.799	0.085	1490.1	89.	74.91	0.958
100.	9.474	35.389	6.22	9.462	27.347	31.811	0.092	1490.1	99.	74.19	1.781
120.	9.396	35.382	6.26	9.383	27.355	31.821	0.107	1490.1	119.	73.86	1.147
140.	9.214	35.365	6.29	9.199	27.371	31.841	0.122	1489.7	139.	72.71	1.636
160.	9.154	35.363	6.25	9.137	27.380	31.851	0.136	1489.8	158.	72.30	1.193
180.	9.053	35.352	6.27	9.033	27.389	31.862	0.151	1489.8	178.	71.89	1.196
200.	8.949	35.340	6.35	8.927	27.397	31.872	0.165	1489.7	198.	71.56	1.133
220.	8.843	35.332	6.43	8.819	27.407	31.886	0.179	1489.6	218.	70.92	1.335
240.	8.757	35.325	6.45	8.731	27.416	31.896	0.194	1489.7	238.	70.49	1.196
260.	8.691	35.320	6.47	8.663	27.423	31.905	0.208	1489.7	257.	70.22	1.080
280.	8.623	35.313	6.51	8.593	27.429	31.912	0.222	1489.8	277.	70.06	0.984
300.	8.480	35.299	6.53	8.448	27.440	31.927	0.236	1489.6	297.	69.32	1.394
350.	8.089	35.264	6.60	8.052	27.473	31.969	0.270	1488.9	346.	66.87	1.520
400.	7.662	35.232	6.67	7.622	27.512	32.018	0.303	1488.1	396.	63.82	1.641
450.	6.738	35.170	6.76	6.696	27.595	32.123	0.333	1485.3	445.	56.01	2.414
500.	4.124	35.006	6.97	4.087	27.782	32.376	0.356	1475.3	495.	36.11	3.714
550.	2.245	34.929	7.12	2.212	27.898	32.543	0.371	1468.1	544.	23.06	3.006
600.	1.113	34.917	7.02	1.083	27.973	32.650	0.380	1463.9	593.	14.48	2.431
650.	-0.741	34.911	7.00	-0.764	28.072	32.804	0.385	1456.2	643.	1.96	2.904
677.	-0.858	34.909	7.07	-0.881	28.075	32.811	0.385	1456.1	669.	1.40	0.793

CHARLES DARWIN CRUISE 51 STATION 04

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	12.401	35.223	7.08	12.400	26.685	31.089	0.014	1498.6	10.	134.93	-9.999
20.	11.841	35.216	7.17	11.838	26.788	31.203	0.026	1496.9	20.	125.42	5.707
30.	11.167	35.205	7.04	11.164	26.905	31.334	0.039	1494.7	30.	114.54	6.094
40.	10.598	35.224	6.94	10.594	27.023	31.464	0.050	1492.9	40.	103.54	6.124
50.	10.158	35.231	6.88	10.152	27.106	31.556	0.060	1491.5	50.	95.94	5.117
60.	9.571	35.227	6.76	9.564	27.204	31.666	0.069	1489.5	59.	86.86	5.571
70.	9.140	35.242	6.65	9.132	27.286	31.758	0.077	1488.2	69.	79.21	5.127
80.	8.774	35.246	6.56	8.766	27.349	31.829	0.085	1487.0	79.	73.45	4.465
90.	8.353	35.246	6.56	8.344	27.414	31.904	0.092	1485.6	89.	67.36	4.585
100.	8.176	35.249	6.51	8.166	27.445	31.938	0.098	1485.1	99.	64.66	3.116
120.	7.940	35.249	6.44	7.928	27.480	31.979	0.111	1484.5	119.	61.61	2.399
140.	7.730	35.231	6.53	7.716	27.498	32.002	0.123	1484.0	139.	60.27	1.695
160.	7.491	35.213	6.55	7.476	27.519	32.029	0.135	1483.4	158.	58.60	1.852
180.	7.293	35.202	6.64	7.276	27.539	32.054	0.146	1483.0	178.	56.97	1.824
200.	6.848	35.160	6.64	6.830	27.569	32.094	0.158	1481.6	198.	54.31	2.246
220.	6.519	35.137	6.69	6.500	27.595	32.129	0.168	1480.6	218.	51.99	2.105
240.	6.181	35.116	6.73	6.160	27.624	32.165	0.178	1479.5	238.	49.44	2.192
260.	5.604	35.068	6.81	5.582	27.659	32.215	0.188	1477.5	257.	46.06	2.480
280.	5.036	35.028	6.86	5.013	27.696	32.267	0.197	1475.5	277.	42.48	2.537
300.	4.614	35.013	6.94	4.591	27.733	32.314	0.205	1474.1	297.	38.96	2.510
350.	3.310	34.943	7.09	3.287	27.813	32.429	0.222	1469.4	346.	30.85	2.404
400.	2.265	34.926	7.10	2.241	27.892	32.537	0.236	1465.7	396.	22.67	2.393
450.	1.620	34.925	7.10	1.596	27.943	32.605	0.246	1463.7	445.	17.49	1.910
500.	0.735	34.906	7.13	0.711	27.989	32.677	0.253	1460.5	495.	12.16	1.920
550.	0.224	34.902	7.12	0.201	28.016	32.720	0.259	1459.0	544.	8.88	1.501
600.	-0.053	34.904	7.13	-0.077	28.033	32.744	0.262	1458.6	594.	6.94	1.147
650.	-0.199	34.905	7.15	-0.225	28.041	32.757	0.266	1458.7	643.	5.83	0.857
700.	-0.328	34.906	7.16	-0.356	28.048	32.768	0.268	1458.9	692.	4.89	0.785
750.	-0.428	34.907	7.19	-0.457	28.054	32.777	0.271	1459.3	742.	4.11	0.703
800.	-0.501	34.908	7.22	-0.532	28.059	32.784	0.272	1459.8	791.	3.47	0.632
850.	-0.559	34.909	7.22	-0.592	28.062	32.789	0.274	1460.3	840.	2.96	0.552
900.	-0.606	34.909	7.25	-0.641	28.065	32.793	0.275	1461.0	890.	2.51	0.506
950.	-0.645	34.910	7.23	-0.682	28.067	32.797	0.277	1461.6	939.	2.11	0.470
1000.	-0.685	34.911	7.24	-0.724	28.069	32.800	0.278	1462.2	988.	1.69	0.481
1100.	-0.755	34.909	7.27	-0.798	28.071	32.804	0.279	1463.6	1087.	1.13	0.366
1200.	-0.813	34.910	7.24	-0.860	28.075	32.810	0.280	1465.0	1185.	0.45	0.412
1300.	-0.869	34.909	7.21	-0.921	28.077	32.814	0.280	1466.4	1284.	-0.17	0.381
1385.	-0.919	34.907	7.14	-0.975	28.077	32.816	0.279	1467.5	1368.	-0.60	0.322

CHARLES DARWIN CRUISE 51 STATION 05

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	11.873	35.150	6.96	11.872	26.730	31.145	0.013	1496.7	10.	130.63	-9.999
20.	10.747	35.170	7.04	10.744	26.954	31.392	0.025	1493.0	20.	109.64	8.415
30.	9.678	35.176	7.02	9.675	27.145	31.605	0.035	1489.4	30.	91.76	7.772
40.	8.851	35.207	6.82	8.847	27.305	31.784	0.044	1486.6	40.	76.70	7.138
50.	8.369	35.248	6.65	8.364	27.413	31.902	0.051	1485.0	50.	66.62	5.858
60.	8.024	35.236	6.56	8.018	27.457	31.954	0.057	1483.8	59.	62.70	3.710
70.	7.896	35.237	6.54	7.889	27.477	31.977	0.063	1483.5	69.	60.95	2.552
80.	7.781	35.226	6.50	7.773	27.486	31.988	0.069	1483.2	79.	60.31	1.667
90.	7.752	35.227	6.51	7.743	27.491	31.994	0.075	1483.3	89.	59.98	1.313
100.	7.693	35.222	6.50	7.683	27.496	32.001	0.081	1483.2	99.	59.70	1.257
120.	7.533	35.208	6.47	7.521	27.508	32.017	0.093	1482.9	119.	58.85	1.436
140.	7.410	35.200	6.51	7.396	27.520	32.032	0.105	1482.8	139.	58.08	1.377
160.	7.294	35.184	6.50	7.189	27.532	32.053	0.116	1482.3	158.	56.78	1.666
180.	7.068	35.176	6.54	7.051	27.550	32.070	0.128	1482.1	178.	55.85	1.469
200.	6.980	35.181	6.58	6.961	27.567	32.089	0.139	1482.1	198.	54.54	1.665
220.	6.446	35.120	6.67	6.406	27.592	32.127	0.149	1480.3	218.	52.25	2.097
240.	6.091	35.111	6.72	6.070	27.632	32.175	0.160	1479.2	238.	48.65	2.556
260.	5.862	35.099	6.75	5.840	27.651	32.201	0.169	1478.6	257.	46.96	1.829
280.	5.477	35.068	6.81	5.454	27.675	32.234	0.178	1477.3	277.	44.79	2.026
300.	4.879	35.023	6.88	4.855	27.711	32.285	0.187	1475.2	297.	41.23	2.531
350.	3.256	34.967	7.20	3.233	27.789	32.407	0.205	1469.1	346.	33.04	2.415
400.	2.546	34.927	7.22	2.522	27.870	32.507	0.220	1466.9	396.	25.10	2.362
450.	1.937	34.924	7.16	1.912	27.918	32.571	0.231	1465.1	445.	20.23	1.862
500.	1.111	34.906	7.18	1.087	27.964	32.642	0.240	1462.2	495.	14.97	1.915
550.	0.472	34.902	7.11	0.447	28.002	32.698	0.246	1460.1	544.	10.61	1.733
600.	0.142	34.899	7.14	0.117	28.018	32.724	0.251	1459.5	593.	8.60	1.176
650.	-0.100	34.901	7.22	-0.127	28.033	32.746	0.255	1459.2	643.	6.81	1.099
700.	-0.223	34.902	7.20	-0.251	28.040	32.757	0.258	1459.4	692.	5.86	0.796
750.	-0.339	34.903	7.21	-0.369	28.047	32.767	0.260	1459.7	741.	5.00	0.746
800.	-0.412	34.904	7.24	-0.443	28.051	32.773	0.263	1460.2	791.	4.39	0.620
850.	-0.477	34.904	7.26	-0.510	28.055	32.779	0.265	1460.7	840.	3.84	0.534
900.	-0.534	34.905	7.25	-0.569	28.058	32.784	0.267	1461.3	889.	3.32	0.554
950.	-0.576	34.906	7.25	-0.615	28.061	32.789	0.268	1461.9	939.	2.84	0.530
1000.	-0.622	34.906	7.23	-0.662	28.063	32.792	0.270	1462.5	988.	2.43	0.480
1100.	-0.686	34.908	7.23	-0.730	28.067	32.798	0.272	1463.9	1087.	1.71	0.441
1200.	-0.734	34.908	7.24	-0.782	28.070	32.802	0.273	1465.3	1185.	1.16	0.365
1300.	-0.783	34.909	7.21	-0.836	28.073	32.807	0.274	1466.8	1284.	0.53	0.396
1400.	-0.835	34.908	7.20	-0.893	28.075	32.811	0.274	1468.2	1382.	-0.09	0.384
1500.	-0.887	34.908	7.20	-0.950	28.077	32.815	0.274	1469.6	1480.	-0.71	0.384
1587.	-0.925	34.905	7.01	-0.993	28.076	32.815	0.273	1470.9	1566.	-0.98	0.199

CHARLES DARWIN CRUISE 51 STATION 06

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	11.641	35.253	6.95	11.640	26.854	31.273	0.013	1496.1	10.	118.87	-9.999
20.	11.285	35.254	6.81	11.282	26.922	31.348	0.024	1495.0	20.	112.70	4.629
30.	10.574	35.267	6.66	10.571	27.061	31.502	0.035	1492.7	30.	99.74	6.639
40.	9.819	35.297	6.51	9.815	27.216	31.672	0.044	1490.2	40.	85.28	7.000
50.	9.179	35.331	6.41	9.174	27.349	31.819	0.052	1488.1	50.	72.83	6.504
60.	8.882	35.316	6.38	8.875	27.386	31.863	0.059	1487.1	59.	69.49	3.446
70.	8.705	35.312	6.36	8.698	27.411	31.892	0.066	1486.6	69.	67.35	2.803
80.	8.597	35.303	6.39	8.588	27.421	31.905	0.072	1486.4	79.	66.57	1.822
90.	8.432	35.290	6.40	8.423	27.437	31.924	0.079	1485.9	89.	65.28	2.238
100.	8.316	35.280	6.43	8.305	27.447	31.937	0.085	1485.7	99.	64.46	1.851
120.	8.062	35.258	6.45	8.050	27.469	31.965	0.098	1485.0	119.	62.73	1.883
140.	7.863	35.245	6.50	7.849	27.489	31.989	0.110	1484.6	139.	61.20	1.795
160.	7.754	35.236	6.54	7.738	27.499	32.002	0.123	1484.5	158.	60.62	1.271
180.	7.650	35.231	6.55	7.632	27.510	32.016	0.135	1484.4	178.	59.89	1.359
200.	7.534	35.223	6.56	7.514	27.521	32.030	0.147	1484.3	198.	59.14	1.371
220.	7.411	35.215	6.60	7.390	27.533	32.045	0.158	1484.1	218.	58.34	1.400
240.	7.263	35.206	6.66	7.240	27.547	32.062	0.170	1483.9	238.	57.27	1.548
260.	7.112	35.196	6.66	7.088	27.561	32.080	0.181	1483.6	257.	56.25	1.522
280.	6.926	35.182	6.68	6.899	27.576	32.100	0.192	1483.2	277.	55.02	1.625
300.	6.711	35.168	6.70	6.683	27.595	32.124	0.203	1482.7	297.	53.44	1.791
350.	5.498	35.073	6.76	5.468	27.677	32.236	0.228	1478.6	346.	45.52	2.412
400.	3.649	34.955	7.05	3.621	27.789	32.397	0.248	1471.6	396.	33.82	2.868
450.	2.258	34.897	7.19	2.232	27.870	32.515	0.263	1466.4	445.	25.06	2.476
500.	1.708	34.924	7.02	1.681	27.935	32.596	0.274	1464.9	495.	18.50	2.139
550.	1.034	34.910	7.11	1.007	27.973	32.652	0.282	1462.7	544.	14.24	1.729
600.	0.406	34.902	7.12	0.380	28.006	32.703	0.288	1460.7	593.	10.24	1.660
650.	0.088	34.900	7.11	0.061	28.022	32.730	0.293	1460.0	643.	8.14	1.198
700.	-0.085	34.904	7.12	-0.114	28.034	32.747	0.296	1460.1	692.	6.68	0.994
750.	-0.240	34.905	7.14	-0.270	28.044	32.761	0.299	1460.2	741.	5.47	0.899
800.	-0.342	34.905	7.14	-0.374	28.049	32.769	0.302	1460.5	791.	4.75	0.681
850.	-0.415	34.906	7.15	-0.449	28.053	32.776	0.304	1461.0	840.	4.14	0.617
900.	-0.483	34.906	7.13	-0.518	28.057	32.781	0.306	1461.5	889.	3.58	0.589
950.	-0.536	34.908	7.15	-0.574	28.060	32.787	0.308	1462.1	939.	3.02	0.582
1000.	-0.579	34.908	7.15	-0.619	28.063	32.791	0.309	1462.7	988.	2.60	0.493
1100.	-0.638	34.910	7.19	-0.683	28.067	32.797	0.311	1464.1	1087.	1.89	0.439
1200.	-0.691	34.911	7.18	-0.739	28.070	32.801	0.313	1465.5	1185.	1.28	0.399
1300.	-0.736	34.909	7.19	-0.789	28.071	32.804	0.314	1467.0	1284.	0.85	0.304
1400.	-0.784	34.909	7.19	-0.843	28.074	32.808	0.314	1468.4	1382.	0.24	0.387
1500.	-0.823	34.909	7.19	-0.887	28.075	32.811	0.315	1469.9	1480.	-0.28	0.345
1600.	-0.878	34.910	7.13	-0.946	28.078	32.816	0.314	1471.3	1579.	-0.99	0.425
1665.	-0.882	34.911	7.06	-0.954	28.080	32.818	0.313	1472.4	1642.	-1.29	0.305

CHARLES DARWIN CRUISE 51 STATION 07

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	12.039	35.249	6.86	12.038	26.775	31.186	0.013	1497.4	10.	126.38	-9.999
20.	10.862	35.233	6.89	10.860	26.982	31.417	0.025	1493.5	20.	106.94	8.103
30.	9.783	35.230	6.83	9.780	27.169	31.627	0.034	1489.8	30.	89.41	7.696
40.	9.265	35.234	6.67	9.260	27.259	31.729	0.043	1488.1	40.	81.09	5.340
50.	8.656	35.225	6.51	8.651	27.350	31.833	0.050	1486.0	50.	72.68	5.366
60.	8.414	35.234	6.46	8.408	27.396	31.884	0.058	1485.3	59.	68.53	3.810
70.	8.330	35.262	6.40	8.323	27.431	31.921	0.064	1485.2	69.	65.40	3.237
80.	8.143	35.257	6.39	8.135	27.455	31.949	0.071	1484.6	79.	63.27	2.790
90.	8.056	35.254	6.36	8.047	27.466	31.962	0.077	1484.5	89.	62.40	1.889
100.	7.958	35.249	6.38	7.948	27.477	31.976	0.083	1484.3	99.	61.51	1.912
120.	7.798	35.232	6.42	7.786	27.488	31.990	0.095	1484.0	119.	60.84	1.325
140.	7.720	35.230	6.50	7.706	27.498	32.002	0.107	1484.0	139.	60.25	1.276
160.	7.633	35.223	6.53	7.618	27.506	32.012	0.119	1484.0	158.	59.88	1.121
180.	7.541	35.218	6.55	7.523	27.516	32.025	0.131	1484.0	178.	59.25	1.299
200.	7.412	35.211	6.57	7.393	27.529	32.041	0.143	1483.8	198.	58.32	1.473
220.	7.261	35.200	6.62	7.240	27.543	32.058	0.155	1483.5	218.	57.34	1.501
240.	7.074	35.187	6.64	7.052	27.559	32.079	0.166	1483.1	238.	56.05	1.688
260.	6.886	35.177	6.70	6.862	27.578	32.102	0.177	1482.7	257.	54.51	1.776
280.	6.631	35.159	6.72	6.605	27.599	32.129	0.188	1482.0	277.	52.74	1.878
300.	6.373	35.142	6.77	6.346	27.620	32.157	0.198	1481.3	297.	50.87	1.917
350.	5.260	35.066	6.86	5.222	27.700	32.265	0.222	1477.6	346.	43.17	2.376
400.	4.065	34.988	6.99	4.036	27.773	32.369	0.241	1473.4	396.	35.84	2.305
450.	2.885	34.922	7.14	2.857	27.836	32.464	0.258	1469.2	445.	29.04	2.205
500.	1.996	34.928	7.11	1.967	27.917	32.569	0.270	1466.2	495.	20.65	2.417
550.	0.837	34.903	7.15	0.811	27.980	32.665	0.278	1461.8	544.	13.26	2.256
600.	0.250	34.897	7.17	0.224	28.010	32.713	0.284	1460.0	593.	9.52	1.600
650.	0.025	34.898	7.16	-0.002	28.024	32.733	0.288	1459.7	642.	7.87	1.063
700.	-0.158	34.902	7.18	-0.187	28.037	32.752	0.292	1459.7	692.	6.31	1.024
750.	-0.270	34.904	7.18	-0.300	28.044	32.762	0.295	1460.0	741.	5.37	0.787
800.	-0.381	34.904	7.20	-0.412	28.050	32.772	0.297	1460.3	791.	4.53	0.736
850.	-0.443	34.905	7.20	-0.477	28.054	32.777	0.299	1460.9	840.	4.02	0.562
900.	-0.518	34.906	7.21	-0.553	28.058	32.784	0.301	1461.4	889.	3.38	0.628
950.	-0.556	34.906	7.21	-0.594	28.060	32.787	0.303	1462.0	939.	3.01	0.457
1000.	-0.587	34.906	7.20	-0.627	28.062	32.790	0.304	1462.7	988.	2.70	0.410
1100.	-0.638	34.908	7.19	-0.683	28.065	32.795	0.307	1464.1	1087.	2.04	0.419
1200.	-0.689	34.908	7.16	-0.738	28.068	32.800	0.308	1465.5	1185.	1.45	0.387
1300.	-0.729	34.909	7.15	-0.783	28.070	32.803	0.310	1467.0	1284.	0.94	0.347
1400.	-0.784	34.909	7.14	-0.843	28.073	32.808	0.310	1468.4	1382.	0.26	0.416
1500.	-0.827	34.909	7.14	-0.890	28.075	32.811	0.310	1469.9	1480.	-0.29	0.361
1600.	-0.876	34.910	7.13	-0.945	28.078	32.816	0.310	1471.3	1579.	-0.96	0.406
1700.	-0.913	34.909	7.12	-0.987	28.079	32.818	0.308	1472.8	1677.	-1.42	0.306
1705.	-0.913	34.909	7.09	-0.987	28.079	32.818	0.308	1472.9	1682.	-1.45	0.351

CHARLES DARWIN CRUISE 51 STATION 08

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	10.666	35.108	7.11	10.665	26.920	31.360	0.012	1492.5	10.	112.61	-9.999
20.	10.643	35.112	7.09	10.640	26.927	31.368	0.023	1492.6	20.	112.18	1.507
30.	9.679	35.137	7.01	9.675	27.114	31.575	0.034	1489.3	30.	94.68	7.689
40.	8.915	35.126	6.89	8.910	27.231	31.709	0.042	1486.7	40.	83.69	6.113
50.	8.345	35.155	6.75	8.340	27.344	31.834	0.050	1484.8	50.	73.18	5.982
60.	8.244	35.183	6.63	8.238	27.382	31.874	0.057	1484.6	59.	69.81	3.453
70.	8.053	35.195	6.51	8.046	27.420	31.917	0.064	1484.1	69.	66.36	3.488
80.	7.759	35.193	6.45	7.751	27.462	31.966	0.071	1483.1	79.	62.49	3.682
90.	7.663	35.200	6.40	7.654	27.483	31.988	0.077	1482.9	89.	60.75	2.538
100.	7.616	35.202	6.33	7.606	27.492	31.998	0.083	1482.9	99.	60.09	1.682
120.	7.472	35.196	6.36	7.460	27.508	32.018	0.095	1482.7	119.	58.87	1.634
140.	7.183	35.173	6.37	7.170	27.531	32.048	0.106	1481.9	139.	56.98	1.943
160.	6.860	35.156	6.46	6.845	27.563	32.088	0.117	1480.9	158.	54.19	2.290
180.	6.304	35.112	6.57	6.288	27.604	32.143	0.128	1479.0	178.	50.41	2.621
200.	5.201	35.016	6.81	5.185	27.666	32.233	0.137	1474.8	198.	44.30	3.270
220.	4.259	34.964	6.93	4.243	27.732	32.323	0.145	1471.3	218.	37.88	3.339
240.	3.440	34.921	7.08	3.424	27.781	32.394	0.153	1468.1	238.	32.92	2.937
260.	3.031	34.915	7.13	3.014	27.816	32.439	0.159	1466.7	257.	29.59	2.417
280.	2.881	34.942	7.22	2.864	27.851	32.479	0.164	1466.4	277.	26.28	2.409
300.	2.777	34.951	7.22	2.758	27.868	32.499	0.169	1466.3	297.	24.74	1.681
350.	2.076	34.923	7.20	2.056	27.905	32.555	0.181	1464.0	346.	20.99	1.654
400.	1.282	34.907	7.22	1.262	27.953	32.625	0.190	1461.3	396.	15.96	1.876
450.	0.493	34.901	7.13	0.473	28.000	32.695	0.197	1458.6	445.	10.72	1.896
500.	0.069	34.898	7.11	0.048	28.022	32.729	0.201	1457.5	495.	8.13	1.330
550.	-0.136	34.901	7.11	-0.158	28.035	32.749	0.205	1457.4	544.	6.58	1.022
600.	-0.283	34.903	7.14	-0.306	28.044	32.762	0.208	1457.5	593.	5.51	0.839
650.	-0.363	34.903	7.17	-0.388	28.048	32.769	0.211	1458.0	643.	4.93	0.606
700.	-0.446	34.904	7.20	-0.473	28.053	32.776	0.213	1458.4	692.	4.25	0.650
750.	-0.507	34.905	7.14	-0.536	28.057	32.782	0.215	1458.9	741.	3.68	0.589
800.	-0.561	34.906	7.15	-0.592	28.060	32.787	0.217	1459.5	791.	3.20	0.532
850.	-0.606	34.907	7.13	-0.639	28.063	32.791	0.218	1460.1	840.	2.75	0.507
900.	-0.707	34.908	7.11	-0.741	28.068	32.799	0.219	1460.5	889.	1.96	0.693
950.	-0.745	34.908	7.10	-0.781	28.070	32.802	0.220	1461.1	939.	1.61	0.426
1000.	-0.754	34.908	7.13	-0.793	28.070	32.803	0.221	1461.9	988.	1.43	0.248
1073.	-0.779	34.908	7.10	-0.821	28.072	32.806	0.222	1463.0	1060.	1.05	0.335

CHARLES DARWIN CRUISE 51 STATION 09

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	10.791	35.050	6.89	10.790	26.852	31.290	0.013	1492.9	10.	119.05	-9.999
20.	10.321	35.072	7.01	10.319	26.953	31.400	0.024	1491.4	20.	109.74	5.641
30.	9.691	35.080	6.84	9.688	27.068	31.529	0.035	1489.3	30.	99.05	6.034
40.	8.088	35.062	6.89	8.084	27.310	31.806	0.043	1483.5	40.	76.22	8.767
50.	6.657	35.114	6.76	6.653	27.557	32.086	0.050	1478.3	50.	52.87	8.861
60.	6.420	35.111	6.62	6.415	27.586	32.122	0.055	1477.5	59.	50.18	3.084
70.	6.115	35.092	6.60	6.109	27.611	32.154	0.060	1476.5	69.	47.95	2.824
80.	5.604	35.046	6.72	5.597	27.640	32.196	0.064	1474.5	79.	45.31	3.054
90.	4.712	34.953	6.95	4.705	27.672	32.251	0.069	1471.0	89.	42.19	3.292
100.	4.417	34.957	6.91	4.410	27.708	32.295	0.073	1469.9	99.	38.84	3.402
120.	3.845	34.943	6.95	3.836	27.758	32.360	0.080	1467.9	119.	34.17	2.857
140.	3.757	34.948	6.92	3.747	27.771	32.375	0.087	1467.8	139.	33.15	1.429
160.	3.240	34.928	7.00	3.230	27.806	32.424	0.093	1466.0	158.	29.82	2.425
180.	2.877	34.939	7.08	2.866	27.848	32.476	0.099	1464.7	178.	25.79	2.646
200.	2.710	34.939	7.26	2.698	27.864	32.496	0.104	1464.4	198.	24.36	1.624
220.	2.368	34.940	7.28	2.355	27.895	32.536	0.108	1463.2	218.	21.45	2.257
240.	2.133	34.927	7.27	2.120	27.904	32.552	0.112	1462.5	238.	20.56	1.299
260.	1.916	34.925	7.26	1.902	27.919	32.573	0.116	1461.9	257.	19.05	1.649
280.	1.685	34.920	7.26	1.670	27.933	32.594	0.120	1461.2	277.	17.68	1.567
300.	1.457	34.913	7.25	1.442	27.944	32.612	0.123	1460.5	297.	16.53	1.440
350.	0.879	34.902	7.26	0.862	27.976	32.660	0.131	1458.7	346.	13.21	1.526
400.	0.249	34.899	7.22	0.232	28.012	32.714	0.136	1456.7	396.	9.25	1.646
450.	-0.160	34.903	7.16	-0.177	28.037	32.751	0.140	1455.6	445.	6.39	1.387
500.	-0.424	34.905	7.15	-0.442	28.052	32.774	0.143	1455.2	495.	4.61	1.082
550.	-0.630	34.907	7.14	-0.650	28.064	32.792	0.145	1455.1	544.	3.12	0.979
595.	-0.657	34.908	7.13	-0.678	28.065	32.795	0.146	1455.7	588.	2.85	0.381

CHARLES DARWIN CRUISE 51 STATION 10

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	10.430	34.853	6.62	10.428	26.763	31.210	0.013	1491.3	10.	127.49	-9.999
20.	9.277	34.889	6.83	9.275	26.986	31.457	0.025	1487.4	20.	106.48	8.411
30.	5.877	34.911	7.35	5.874	27.499	32.049	0.033	1474.6	30.	57.96	12.744
40.	4.021	34.886	7.41	4.018	27.694	32.291	0.037	1467.2	40.	39.48	7.880
50.	3.475	34.879	7.27	3.472	27.744	32.355	0.041	1465.1	50.	34.77	4.002
60.	3.256	34.881	7.20	3.252	27.767	32.384	0.044	1464.3	59.	32.66	2.714
70.	3.168	34.887	7.12	3.163	27.779	32.399	0.048	1464.1	69.	31.52	2.016
80.	3.088	34.891	7.13	3.083	27.790	32.412	0.051	1463.9	79.	30.58	1.851
90.	3.041	34.895	7.12	3.036	27.798	32.421	0.054	1463.9	89.	29.92	1.578
100.	2.976	34.906	7.11	2.970	27.813	32.438	0.057	1463.8	99.	28.55	2.200
120.	2.972	34.930	7.12	2.964	27.832	32.457	0.062	1464.2	119.	26.88	1.747
140.	2.952	34.947	7.15	2.943	27.848	32.473	0.067	1464.4	139.	25.56	1.572
160.	2.835	34.945	7.19	2.826	27.857	32.486	0.073	1464.2	158.	24.80	1.234
180.	2.791	34.951	7.23	2.780	27.866	32.496	0.077	1464.4	178.	24.10	1.191
200.	2.722	34.955	7.22	2.710	27.875	32.507	0.082	1464.4	198.	23.32	1.250
220.	2.665	34.962	7.21	2.652	27.886	32.519	0.087	1464.5	218.	22.40	1.332
240.	2.601	34.967	7.21	2.586	27.896	32.531	0.091	1464.6	238.	21.61	1.247
260.	2.467	34.970	7.19	2.452	27.910	32.548	0.095	1464.3	257.	20.34	1.537
280.	2.270	34.962	7.19	2.254	27.921	32.565	0.099	1463.8	277.	19.28	1.410
300.	1.962	34.948	7.22	1.946	27.934	32.587	0.103	1462.8	297.	17.91	1.578
350.	1.486	34.928	7.21	1.469	27.955	32.621	0.111	1461.5	346.	15.77	1.262
400.	0.964	34.910	7.20	0.945	27.977	32.659	0.119	1459.9	396.	13.29	1.333
450.	0.603	34.905	7.19	0.583	27.996	32.688	0.125	1459.1	445.	11.23	1.206
500.	0.358	34.902	7.19	0.337	28.008	32.707	0.130	1458.8	495.	9.80	1.004
550.	0.178	34.901	7.18	0.155	28.018	32.722	0.135	1458.8	544.	8.68	0.886
600.	0.007	34.901	7.19	-0.018	28.028	32.737	0.139	1458.8	593.	7.48	0.902
650.	-0.123	34.903	7.15	-0.150	28.036	32.750	0.142	1459.1	643.	6.46	0.831
700.	-0.233	34.903	7.15	-0.261	28.042	32.759	0.145	1459.4	692.	5.71	0.701
750.	-0.334	34.904	7.13	-0.364	28.047	32.767	0.148	1459.7	741.	4.96	0.698
800.	-0.405	34.905	7.12	-0.436	28.052	32.774	0.150	1460.2	791.	4.30	0.643
850.	-0.457	34.907	7.10	-0.490	28.056	32.779	0.152	1460.8	840.	3.79	0.558
900.	-0.507	34.906	7.09	-0.543	28.057	32.783	0.154	1461.4	889.	3.45	0.445
950.	-0.558	34.908	7.09	-0.596	28.062	32.789	0.156	1462.0	939.	2.86	0.599
1000.	-0.604	34.910	7.08	-0.643	28.065	32.794	0.157	1462.6	988.	2.33	0.558
1100.	-0.675	34.911	7.03	-0.719	28.070	32.800	0.159	1463.9	1087.	1.54	0.466
1200.	-0.732	34.912	7.03	-0.781	28.073	32.805	0.160	1465.3	1185.	0.87	0.416
1300.	-0.770	34.910	7.03	-0.824	28.073	32.807	0.161	1466.8	1284.	0.55	0.232
1400.	-0.805	34.911	7.03	-0.863	28.076	32.811	0.161	1468.3	1382.	-0.07	0.391
1500.	-0.837	34.908	7.01	-0.900	28.075	32.811	0.161	1469.9	1480.	-0.32	0.151
1600.	-0.865	34.911	7.06	-0.933	28.079	32.816	0.160	1471.4	1579.	-0.96	0.397
1700.	-0.881	34.911	7.06	-0.955	28.080	32.818	0.159	1473.0	1677.	-1.35	0.267
1800.	-0.896	34.909	7.05	-0.976	28.079	32.817	0.157	1474.6	1775.	-1.54	0.032
1900.	-0.906	34.910	7.07	-0.992	28.080	32.819	0.156	1476.2	1873.	-1.91	0.255
2000.	-0.915	34.911	7.07	-1.008	28.082	32.822	0.153	1477.9	1971.	-2.36	0.305
2025.	-0.916	34.912	7.06	-1.010	28.083	32.822	0.153	1478.3	1996.	-2.46	0.289

CHARLES DARWIN CRUISE 51 STATION 11

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	10.379	34.840	6.54	10.378	26.762	31.210	0.013	1491.2	10.	127.62	-9.999
20.	9.845	34.821	6.74	9.843	26.839	31.298	0.025	1489.4	20.	120.53	4.940
30.	8.855	34.921	6.91	8.852	27.079	31.560	0.037	1486.1	30.	97.85	8.734
40.	6.530	34.976	7.04	6.527	27.465	31.999	0.045	1477.5	40.	61.39	11.056
50.	6.036	35.013	6.87	6.032	27.559	32.105	0.050	1475.7	50.	52.57	5.473
60.	5.530	35.011	6.75	5.525	27.621	32.179	0.055	1473.9	59.	46.77	4.456
70.	4.760	34.963	6.81	4.755	27.674	32.252	0.060	1470.9	69.	41.78	4.134
80.	3.936	34.914	6.93	3.930	27.725	32.324	0.064	1467.6	79.	36.94	4.067
90.	3.242	34.886	6.99	3.236	27.772	32.390	0.067	1464.8	89.	32.40	3.935
100.	2.989	34.878	7.01	2.982	27.789	32.414	0.070	1463.8	99.	30.79	2.375
120.	2.784	34.887	6.99	2.777	27.816	32.446	0.076	1463.3	119.	28.40	2.059
140.	2.879	34.926	6.99	2.870	27.888	32.466	0.082	1464.1	139.	26.44	1.880
160.	2.883	34.943	7.00	2.874	27.851	32.479	0.087	1464.5	158.	25.37	1.428
180.	2.828	34.954	7.02	2.817	27.865	32.494	0.092	1464.6	178.	24.21	1.486
200.	2.816	34.969	7.04	2.804	27.878	32.507	0.096	1464.9	198.	23.12	1.438
220.	2.740	34.973	7.07	2.727	27.888	32.519	0.101	1464.9	218.	22.25	1.306
240.	2.586	34.970	7.10	2.572	27.899	32.535	0.105	1464.5	238.	21.25	1.381
260.	2.397	34.966	7.11	2.382	27.913	32.554	0.109	1464.0	257.	19.95	1.550
280.	2.003	34.940	7.16	1.988	27.925	32.576	0.113	1462.6	277.	18.71	1.510
300.	1.749	34.927	7.17	1.733	27.934	32.593	0.117	1461.8	297.	17.70	1.367
350.	1.213	34.914	7.18	1.196	27.963	32.637	0.125	1460.2	346.	14.73	1.457
400.	0.817	34.905	7.21	0.799	27.983	32.668	0.132	1459.3	396.	12.63	1.227
450.	0.503	34.903	7.21	0.483	28.001	32.695	0.138	1458.6	445.	10.65	1.179
500.	0.290	34.903	7.22	0.269	28.013	32.714	0.143	1458.5	495.	9.28	0.980
550.	0.087	34.902	7.24	0.065	28.024	32.731	0.147	1458.4	544.	7.99	0.941
600.	-0.068	34.904	7.22	-0.093	28.034	32.745	0.151	1458.5	593.	6.81	0.893
650.	-0.181	34.904	7.20	-0.207	28.040	32.755	0.154	1458.8	643.	6.01	0.730
700.	-0.288	34.904	7.19	-0.316	28.045	32.763	0.157	1459.1	692.	5.30	0.680
750.	-0.383	34.903	7.18	-0.413	28.049	32.770	0.159	1459.5	741.	4.68	0.625
800.	-0.443	34.907	7.18	-0.474	28.055	32.778	0.161	1460.1	791.	3.94	0.687
850.	-0.494	34.907	7.18	-0.527	28.058	32.782	0.163	1460.6	840.	3.53	0.493
900.	-0.545	34.906	7.17	-0.580	28.060	32.786	0.165	1461.2	889.	3.14	0.471
950.	-0.592	34.908	7.16	-0.629	28.063	32.791	0.166	1461.8	939.	2.62	0.551
1000.	-0.638	34.910	7.14	-0.678	28.067	32.796	0.168	1462.5	988.	2.07	0.570
1100.	-0.692	34.911	7.14	-0.736	28.070	32.801	0.169	1463.9	1087.	1.44	0.401
1200.	-0.746	34.910	7.14	-0.794	28.072	32.805	0.170	1465.3	1185.	0.89	0.363
1300.	-0.787	34.911	7.13	-0.840	28.075	32.809	0.171	1466.7	1284.	0.34	0.361
1400.	-0.821	34.909	7.14	-0.879	28.075	32.810	0.171	1468.3	1382.	-0.01	0.241
1500.	-0.845	34.912	7.13	-0.908	28.078	32.815	0.171	1469.8	1480.	-0.62	0.382
1600.	-0.868	34.911	7.13	-0.937	28.079	32.816	0.170	1471.4	1579.	-0.99	0.253
1700.	-0.889	34.912	7.13	-0.963	28.080	32.819	0.169	1473.0	1677.	-1.44	0.303
1800.	-0.901	34.911	7.13	-0.981	28.081	32.819	0.167	1474.6	1775.	-1.75	0.205
1900.	-0.914	34.911	7.12	-1.000	28.081	32.821	0.165	1476.2	1873.	-2.07	0.218
2000.	-0.924	34.909	7.12	-1.016	28.080	32.820	0.163	1477.8	1971.	-2.26	0.077
2029.	-0.926	34.910	7.07	-1.020	28.081	32.821	0.162	1478.3	2000.	-2.44	0.380

CHARLES DARWIN CRUISE 51 STATION 12

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	9.615	34.928	6.86	9.614	26.961	31.425	0.011	1488.5	10.	108.69	-9.999
20.	9.049	34.933	6.95	9.047	27.058	31.535	0.022	1486.6	20.	99.67	5.551
30.	7.962	34.925	6.99	7.959	27.221	31.722	0.031	1482.7	30.	84.37	7.189
40.	6.608	34.925	7.02	6.605	27.414	31.946	0.038	1477.7	40.	66.20	7.822
50.	5.446	34.915	7.04	5.442	27.555	32.116	0.044	1473.2	50.	52.85	6.714
60.	4.733	34.911	7.01	4.729	27.636	32.215	0.049	1470.5	59.	45.25	5.079
70.	3.811	34.874	7.09	3.806	27.706	32.309	0.053	1466.8	69.	38.59	4.752
80.	3.428	34.881	7.13	3.423	27.750	32.362	0.057	1465.4	79.	34.48	3.748
90.	3.084	34.873	7.04	3.079	27.776	32.399	0.060	1464.1	89.	31.96	2.953
100.	3.155	34.907	7.03	3.149	27.797	32.417	0.063	1464.6	99.	30.09	2.553
120.	2.880	34.902	7.08	2.872	27.818	32.446	0.069	1463.7	119.	28.18	1.859
140.	3.029	34.944	7.07	3.020	27.839	32.462	0.074	1464.7	139.	26.46	1.770
160.	3.113	34.974	7.08	3.103	27.855	32.476	0.079	1465.5	158.	25.11	1.591
180.	2.966	34.965	7.12	2.955	27.861	32.486	0.084	1465.2	178.	24.60	1.042
200.	2.794	34.960	7.19	2.782	27.873	32.503	0.089	1464.7	198.	23.58	1.417
220.	2.691	34.963	7.20	2.677	27.885	32.517	0.094	1464.6	218.	22.59	1.379
240.	2.588	34.965	7.19	2.574	27.896	32.531	0.098	1464.5	238.	21.59	1.377
260.	2.414	34.966	7.19	2.399	27.911	32.551	0.102	1464.1	257.	20.17	1.614
280.	2.257	34.966	7.14	2.241	27.924	32.569	0.106	1463.7	277.	18.93	1.515
300.	2.167	34.960	7.15	2.090	27.932	32.581	0.110	1463.4	297.	18.22	1.181
350.	1.594	34.937	7.15	1.575	27.954	32.617	0.119	1461.9	346.	15.96	1.298
400.	0.907	34.900	7.21	0.889	27.973	32.656	0.126	1459.7	396.	13.63	1.294
450.	0.539	34.907	7.14	0.519	28.002	32.696	0.132	1458.8	445.	10.59	1.453
500.	0.293	34.902	7.17	0.272	28.012	32.713	0.137	1458.5	495.	9.32	0.944
550.	0.108	34.903	7.16	0.085	28.023	32.730	0.141	1458.5	544.	8.06	0.933
600.	-0.065	34.905	7.14	-0.090	28.034	32.746	0.145	1458.5	593.	6.75	0.941
650.	-0.175	34.905	7.15	-0.201	28.040	32.755	0.148	1458.8	643.	5.98	0.712
700.	-0.305	34.905	7.15	-0.332	28.046	32.765	0.151	1459.0	692.	5.13	0.748
750.	-0.395	34.906	7.15	-0.424	28.052	32.774	0.153	1459.5	741.	4.38	0.690
800.	-0.453	34.905	7.10	-0.484	28.054	32.778	0.155	1460.0	791.	4.02	0.462
850.	-0.518	34.906	7.08	-0.551	28.058	32.784	0.157	1460.5	840.	3.42	0.604
900.	-0.564	34.908	7.08	-0.599	28.062	32.789	0.159	1461.1	889.	2.86	0.580
950.	-0.625	34.908	7.07	-0.663	28.065	32.794	0.160	1461.7	939.	2.36	0.542
1000.	-0.646	34.910	7.06	-0.686	28.067	32.797	0.161	1462.4	988.	2.03	0.415
1100.	-0.720	34.908	7.06	-0.764	28.069	32.801	0.163	1463.7	1087.	1.43	0.388
1200.	-0.771	34.909	7.04	-0.819	28.072	32.806	0.164	1465.2	1185.	0.80	0.394
1300.	-0.819	34.913	7.11	-0.872	28.077	32.813	0.164	1466.6	1283.	-0.05	0.477
1400.	-0.844	34.910	7.09	-0.902	28.076	32.813	0.164	1468.1	1382.	-0.24	0.634
1500.	-0.874	34.910	7.07	-0.937	28.078	32.816	0.164	1469.7	1480.	-0.77	0.340
1600.	-0.896	34.910	7.07	-0.964	28.079	32.817	0.163	1471.3	1579.	-1.15	0.260
1700.	-0.912	34.911	7.08	-0.986	28.081	32.820	0.161	1472.9	1677.	-1.61	0.301
1800.	-0.921	34.909	7.07	-1.000	28.080	32.819	0.160	1474.5	1775.	-1.79	-0.048
1900.	-0.926	34.910	7.06	-1.012	28.081	32.820	0.158	1476.1	1873.	-2.08	0.193
1967.	-0.930	34.907	6.98	-1.020	28.079	32.819	0.156	1477.3	1939.	-2.11	-0.217

CHARLES DARWIN CRUISE 51 STATION 13

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dymht	sndv	depth	svanon	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	10.096	35.022	6.71	10.095	26.953	31.405	0.011	1490.4	10.	109.50	-9.999
20.	10.037	35.028	6.77	10.035	26.968	31.422	0.022	1490.3	20.	108.27	2.205
30.	8.809	35.098	6.87	8.806	27.226	31.706	0.032	1486.1	30.	83.95	9.045
40.	7.756	35.021	6.83	7.752	27.327	31.832	0.039	1482.2	40.	74.50	5.673
50.	7.300	34.981	6.76	7.295	27.362	31.878	0.047	1480.6	50.	71.34	3.344
60.	7.295	35.030	6.66	7.290	27.401	31.917	0.054	1480.8	59.	67.83	3.506
70.	7.411	35.083	6.52	7.404	27.427	31.939	0.060	1481.5	69.	65.59	2.846
80.	7.260	35.125	6.44	7.252	27.482	31.998	0.067	1481.1	79.	60.54	4.177
90.	7.222	35.140	6.39	7.213	27.499	32.016	0.073	1481.2	89.	59.08	2.342
100.	6.989	35.136	6.36	6.980	27.529	32.051	0.078	1480.4	99.	56.38	3.058
120.	6.510	35.100	6.44	6.499	27.566	32.100	0.089	1478.8	119.	53.09	2.462
140.	5.732	35.035	6.56	5.720	27.616	32.169	0.100	1476.0	139.	48.50	2.862
160.	4.737	34.964	6.73	4.725	27.679	32.257	0.109	1472.2	158.	42.43	3.252
180.	4.460	34.984	6.70	4.447	27.726	32.311	0.117	1471.5	178.	38.12	2.757
200.	3.508	34.944	6.85	3.494	27.793	32.404	0.124	1467.8	198.	31.49	3.382
220.	2.582	34.922	6.97	2.569	27.861	32.497	0.130	1464.1	218.	24.70	3.408
240.	2.464	34.936	7.04	2.450	27.883	32.522	0.134	1463.9	238.	22.75	1.871
260.	1.715	34.870	7.12	1.701	27.890	32.551	0.139	1460.9	257.	21.62	1.438
280.	1.555	34.881	7.07	1.540	27.912	32.577	0.143	1460.5	277.	19.56	1.900
300.	1.355	34.886	7.10	1.340	27.930	32.601	0.147	1460.0	297.	17.76	1.772
350.	0.680	34.887	7.07	0.664	27.976	32.666	0.154	1457.8	346.	12.97	1.818
400.	0.307	34.888	7.10	0.291	27.999	32.700	0.160	1456.9	396.	10.46	1.313
450.	0.120	34.890	7.15	0.101	28.012	32.718	0.165	1456.9	445.	9.12	0.962
500.	0.004	34.895	7.19	-0.016	28.022	32.732	0.169	1457.2	495.	7.96	0.886
550.	-0.106	34.901	7.18	-0.128	28.033	32.746	0.173	1457.5	544.	6.80	0.881
600.	-0.194	34.903	7.18	-0.218	28.040	32.755	0.176	1457.9	593.	6.03	0.715
650.	-0.273	34.904	7.15	-0.298	28.044	32.762	0.179	1458.4	643.	5.45	0.615
700.	-0.333	34.905	7.18	-0.360	28.048	32.768	0.181	1458.9	692.	4.95	0.557
750.	-0.391	34.904	7.16	-0.421	28.050	32.772	0.184	1459.5	741.	4.55	0.491
800.	-0.431	34.907	7.14	-0.462	28.054	32.777	0.186	1460.1	791.	4.02	0.574
850.	-0.474	34.907	7.15	-0.507	28.056	32.781	0.188	1460.7	840.	3.68	0.440
900.	-0.517	34.907	7.15	-0.552	28.059	32.784	0.189	1461.4	889.	3.30	0.471
950.	-0.550	34.909	7.14	-0.588	28.062	32.789	0.191	1462.0	939.	2.83	0.521
1000.	-0.572	34.910	7.15	-0.612	28.064	32.791	0.192	1462.8	988.	2.55	0.386
1100.	-0.620	34.909	7.11	-0.664	28.065	32.794	0.195	1464.2	1087.	2.12	0.319
1200.	-0.679	34.909	7.08	-0.728	28.069	32.800	0.197	1465.6	1185.	1.45	0.422
1300.	-0.730	34.907	7.08	-0.783	28.069	32.803	0.198	1467.0	1283.	1.03	0.301
1400.	-0.757	34.909	7.08	-0.816	28.072	32.806	0.198	1468.6	1382.	0.51	0.349
1500.	-0.795	34.909	7.06	-0.859	28.074	32.809	0.199	1470.0	1480.	0.02	0.334
1600.	-0.822	34.909	7.05	-0.892	28.075	32.811	0.198	1471.6	1578.	-0.44	0.314
1700.	-0.849	34.908	7.05	-0.924	28.076	32.813	0.198	1473.1	1677.	-0.85	0.282
1800.	-0.874	34.908	7.05	-0.955	28.077	32.815	0.197	1474.7	1775.	-1.26	0.287
1900.	-0.888	34.910	7.05	-0.975	28.080	32.818	0.195	1476.3	1873.	-1.81	0.353
2000.	-0.913	34.908	7.01	-1.005	28.079	32.819	0.193	1477.9	1971.	-2.11	0.208
2033.	-0.915	34.908	7.00	-1.009	28.079	32.819	0.193	1478.4	2004.	-2.18	0.126

CHARLES DARWIN CRUISE 51 STATION 14

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	10.308	34.993	5.63	10.307	26.893	31.342	0.012	1491.1	10.	115.12	-9.999
20.	9.066	35.057	6.79	9.064	27.152	31.627	0.022	1486.8	20.	90.79	9.048
30.	7.996	35.093	6.70	7.993	27.348	31.847	0.030	1483.1	30.	72.39	7.876
40.	8.088	35.245	6.36	8.084	27.454	31.949	0.037	1483.8	40.	62.58	5.776
50.	7.876	35.228	6.30	7.871	27.472	31.973	0.043	1483.1	50.	60.98	2.451
60.	7.717	35.220	6.31	7.711	27.490	31.994	0.049	1482.7	59.	59.50	2.365
70.	7.597	35.210	6.29	7.591	27.500	32.007	0.055	1482.4	69.	58.76	1.760
80.	7.511	35.204	6.26	7.503	27.508	32.017	0.061	1482.2	79.	58.18	1.603
90.	7.257	35.168	6.29	7.249	27.516	32.032	0.066	1481.3	89.	57.48	1.719
100.	7.008	35.164	6.31	6.998	27.549	32.070	0.072	1480.5	99.	54.56	3.217
120.	6.406	35.116	6.34	6.395	27.593	32.129	0.083	1478.5	119.	50.53	2.700
140.	5.921	35.074	6.39	5.910	27.622	32.171	0.092	1476.8	139.	47.91	2.212
160.	4.923	34.991	6.55	4.911	27.679	32.252	0.101	1473.0	158.	42.50	3.082
180.	4.458	34.983	6.62	4.445	27.725	32.310	0.110	1471.4	178.	38.19	2.760
200.	3.455	34.899	6.77	3.442	27.762	32.375	0.117	1467.5	198.	34.37	2.593
220.	2.663	34.904	6.89	2.650	27.840	32.474	0.123	1464.4	218.	26.73	3.611
240.	2.355	34.883	6.89	2.342	27.850	32.492	0.128	1463.4	238.	25.77	1.353
260.	2.248	34.941	6.81	2.233	27.905	32.550	0.133	1463.3	257.	20.60	2.977
280.	1.660	34.905	6.88	1.646	27.923	32.584	0.137	1461.0	277.	18.63	1.864
300.	1.644	34.907	6.86	1.628	27.926	32.588	0.140	1461.3	297.	18.41	0.715
350.	0.733	34.891	6.92	0.718	27.976	32.665	0.148	1458.0	346.	13.00	1.933
400.	0.311	34.891	6.98	0.294	28.002	32.703	0.154	1456.9	396.	10.21	1.386
450.	0.106	34.893	7.01	0.088	28.016	32.722	0.159	1456.8	445.	8.74	1.003
500.	-0.001	34.898	7.06	-0.022	28.025	32.735	0.163	1457.2	495.	7.70	0.841
550.	-0.117	34.901	7.09	-0.139	28.033	32.747	0.166	1457.4	544.	6.75	0.797
600.	-0.212	34.902	7.10	-0.236	28.039	32.756	0.169	1457.8	593.	6.02	0.696
650.	-0.298	34.903	7.11	-0.324	28.044	32.763	0.172	1458.3	643.	5.36	0.651
700.	-0.365	34.904	7.14	-0.392	28.049	32.770	0.175	1458.8	692.	4.79	0.599
750.	-0.429	34.906	7.15	-0.458	28.053	32.776	0.177	1459.3	741.	4.19	0.613
800.	-0.466	34.906	7.13	-0.498	28.056	32.780	0.179	1460.0	791.	3.81	0.469
850.	-0.513	34.907	7.14	-0.547	28.058	32.784	0.181	1460.6	840.	3.41	0.480
900.	-0.538	34.908	7.08	-0.573	28.061	32.787	0.183	1461.3	889.	3.06	0.442
950.	-0.571	34.909	7.08	-0.609	28.063	32.790	0.184	1461.9	939.	2.69	0.457
1000.	-0.581	34.909	7.07	-0.621	28.063	32.791	0.185	1462.7	988.	2.57	0.205
1100.	-0.612	34.908	7.04	-0.657	28.065	32.794	0.188	1464.2	1086.	2.19	0.286
1200.	-0.640	34.910	7.05	-0.689	28.067	32.797	0.190	1465.8	1185.	1.72	0.336
1300.	-0.685	34.909	7.04	-0.740	28.069	32.800	0.191	1467.2	1283.	1.26	0.327
1400.	-0.724	34.908	7.02	-0.783	28.070	32.803	0.192	1468.7	1382.	0.82	0.317
1500.	-0.774	34.906	7.04	-0.838	28.071	32.805	0.193	1470.1	1480.	0.34	0.329
1593.	-0.871	34.906	6.93	-0.940	28.075	32.812	0.192	1471.2	1572.	-0.60	0.533

CHARLES DARWIN CRUISE 51 STATION 15

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	10.374	35.017	6.78	10.373	26.901	31.348	0.012	1491.4	10.	114.41	-9.999
20.	10.267	35.018	6.78	10.265	26.920	31.369	0.023	1491.1	20.	112.82	2.473
30.	9.361	35.028	6.82	9.358	27.082	31.550	0.033	1488.0	30.	97.70	7.153
40.	8.180	35.001	6.90	8.176	27.248	31.743	0.042	1483.8	40.	82.03	7.275
50.	6.852	34.978	6.89	6.848	27.423	31.949	0.050	1478.9	50.	65.56	7.454
60.	6.121	35.022	6.77	6.116	27.555	32.098	0.055	1476.2	59.	53.12	6.485
70.	5.229	34.966	6.81	5.223	27.622	32.188	0.060	1472.8	69.	46.76	4.660
80.	4.853	34.978	6.78	4.847	27.676	32.251	0.065	1471.4	79.	41.73	4.149
90.	4.276	34.952	6.85	4.270	27.720	32.310	0.069	1469.2	89.	37.61	3.763
100.	3.391	34.885	6.99	3.385	27.757	32.371	0.072	1465.6	99.	33.97	3.536
120.	3.133	34.887	6.97	3.125	27.783	32.404	0.079	1464.8	119.	31.56	2.073
140.	3.024	34.916	6.90	3.016	27.816	32.440	0.085	1464.7	139.	28.56	2.300
160.	2.354	34.896	6.96	2.345	27.860	32.502	0.090	1462.1	158.	24.34	2.701
180.	2.071	34.899	6.96	2.061	27.886	32.536	0.095	1461.2	178.	21.83	2.095
200.	1.252	34.855	7.16	1.243	27.912	32.586	0.099	1457.9	198.	19.05	2.192
220.	0.935	34.853	7.09	0.925	27.932	32.615	0.102	1456.8	218.	17.01	1.873
240.	0.722	34.857	7.08	0.711	27.949	32.638	0.106	1456.1	238.	15.32	1.703
260.	0.662	34.870	7.08	0.650	27.964	32.654	0.109	1456.2	257.	13.98	1.517
280.	0.554	34.890	7.08	0.542	27.986	32.679	0.111	1456.1	277.	11.81	1.922
300.	0.399	34.894	7.09	0.387	27.999	32.697	0.113	1455.7	297.	10.48	1.508
350.	0.146	34.899	7.14	0.132	28.018	32.723	0.118	1455.4	346.	8.56	1.146
400.	-0.026	34.902	7.15	-0.041	28.030	32.740	0.122	1455.4	396.	7.25	0.942
450.	-0.192	34.901	7.19	-0.209	28.038	32.753	0.126	1455.5	445.	6.28	0.802
500.	-0.287	34.904	7.19	-0.306	28.045	32.763	0.128	1455.8	495.	5.45	0.737
550.	-0.362	34.906	7.18	-0.383	28.050	32.770	0.131	1456.3	544.	4.84	0.617
600.	-0.437	34.907	7.17	-0.459	28.054	32.777	0.132	1456.8	593.	4.24	0.610
650.	-0.487	34.908	7.17	-0.511	28.058	32.782	0.135	1457.4	643.	3.78	0.524
700.	-0.514	34.908	7.19	-0.540	28.059	32.784	0.137	1458.1	692.	3.53	0.356
750.	-0.549	34.907	7.17	-0.578	28.060	32.787	0.139	1458.7	741.	3.29	0.342
800.	-0.583	34.910	7.20	-0.614	28.064	32.791	0.140	1459.4	791.	2.80	0.534
850.	-0.610	34.909	7.14	-0.643	28.065	32.793	0.142	1460.1	840.	2.58	0.320
900.	-0.636	34.910	7.15	-0.670	28.067	32.796	0.143	1460.8	889.	2.23	0.438
950.	-0.670	34.909	7.16	-0.706	28.068	32.798	0.144	1461.5	939.	1.98	0.341
1000.	-0.696	34.910	7.14	-0.735	28.069	32.800	0.145	1462.2	988.	1.68	0.389
1100.	-0.746	34.909	7.14	-0.789	28.071	32.804	0.146	1463.6	1086.	1.17	0.337
1200.	-0.800	34.912	7.10	-0.848	28.076	32.810	0.147	1465.0	1185.	0.39	0.454
1300.	-0.844	34.910	7.11	-0.897	28.076	32.812	0.147	1466.5	1283.	-0.01	0.267
1400.	-0.880	34.911	7.13	-0.938	28.079	32.816	0.147	1468.0	1382.	-0.60	0.368
1500.	-0.919	34.909	7.12	-0.981	28.079	32.817	0.146	1469.5	1480.	-0.98	0.253
1600.	-0.943	34.907	7.15	-1.011	28.079	32.819	0.145	1471.0	1578.	-1.33	0.222
1645.	-0.952	34.908	7.09	-1.022	28.080	32.820	0.144	1471.7	1623.	-1.57	0.336

CHARLES DARWIN CRUISE 51 STATION 16

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	10.170	34.954	6.67	10.169	26.887	31.339	0.012	1490.5	10.	115.73	-9.999
20.	9.933	34.955	6.72	9.931	26.929	31.385	0.023	1489.9	20.	112.00	3.634
30.	8.419	34.987	6.86	8.416	27.200	31.690	0.033	1484.5	30.	86.45	9.268
40.	7.663	34.985	6.79	7.659	27.313	31.820	0.041	1481.8	40.	75.89	5.989
50.	7.272	34.965	6.73	7.267	27.353	31.876	0.049	1480.5	50.	72.18	3.602
60.	6.617	34.946	6.73	6.612	27.430	31.962	0.055	1478.1	59.	65.03	4.944
70.	6.613	34.983	6.64	6.606	27.459	31.991	0.062	1478.3	69.	62.39	3.057
80.	5.712	34.957	6.76	5.705	27.556	32.110	0.067	1474.9	79.	53.23	5.577
90.	5.531	34.999	6.62	5.523	27.612	32.170	0.072	1474.3	89.	48.98	4.291
100.	5.212	34.993	6.64	5.204	27.646	32.212	0.077	1473.2	99.	44.90	3.230
120.	4.366	34.936	6.72	4.358	27.697	32.286	0.085	1470.9	119.	40.06	2.924
140.	3.416	34.879	6.88	3.407	27.750	32.363	0.093	1466.3	139.	34.98	2.932
160.	2.811	34.851	7.00	2.801	27.784	32.414	0.099	1464.0	158.	31.67	2.409
180.	2.095	34.827	7.06	2.085	27.825	32.476	0.105	1461.2	178.	27.51	2.676
200.	1.708	34.821	7.10	1.698	27.852	32.512	0.111	1459.8	198.	25.01	2.055
220.	1.213	34.820	7.22	1.203	27.887	32.562	0.115	1458.0	218.	21.43	2.474
240.	1.064	34.823	7.20	1.053	27.900	32.579	0.120	1457.6	238.	19.20	1.469
260.	0.882	34.836	7.24	0.875	27.932	32.601	0.123	1457.2	257.	18.04	1.932
280.	0.945	34.887	7.13	0.932	27.959	32.641	0.127	1457.8	277.	14.84	2.483
300.	0.735	34.885	7.14	0.721	27.971	32.659	0.129	1457.2	297.	13.38	1.480
350.	0.519	34.887	7.16	0.504	27.987	32.681	0.136	1457.1	346.	11.83	1.928
400.	0.284	34.888	7.25	0.268	28.001	32.702	0.141	1456.8	396.	10.30	1.031
450.	0.087	34.891	7.27	0.069	28.015	32.722	0.146	1456.7	445.	8.77	1.024
500.	-0.018	34.896	7.26	-0.038	28.025	32.735	0.150	1457.1	495.	7.73	0.839
550.	-0.109	34.900	7.27	-0.131	28.032	32.745	0.154	1457.5	544.	6.87	0.759
600.	-0.226	34.902	7.22	-0.249	28.040	32.757	0.157	1457.8	593.	5.92	0.751
650.	-0.295	34.904	7.22	-0.321	28.046	32.764	0.159	1458.3	643.	5.25	0.659
700.	-0.392	34.906	7.21	-0.419	28.052	32.774	0.162	1458.6	692.	4.42	0.729
750.	-0.459	34.906	7.19	-0.488	28.055	32.779	0.164	1459.2	741.	3.94	0.540
800.	-0.484	34.908	7.17	-0.515	28.058	32.782	0.166	1459.9	791.	3.61	0.429
850.	-0.513	34.907	7.12	-0.546	28.059	32.784	0.168	1460.6	840.	3.36	0.359
900.	-0.528	34.909	7.09	-0.563	28.061	32.787	0.169	1461.3	889.	3.08	0.385
950.	-0.544	34.908	7.11	-0.582	28.061	32.788	0.171	1462.1	939.	2.95	0.322
1000.	-0.566	34.909	7.10	-0.606	28.063	32.790	0.172	1462.8	988.	2.62	0.423
1100.	-0.633	34.909	7.03	-0.677	28.066	32.795	0.174	1464.1	1086.	2.61	0.495
1200.	-0.728	34.909	6.98	-0.777	28.071	32.803	0.176	1465.4	1185.	1.38	0.512
1201.	-0.729	34.910	6.99	-0.777	28.072	32.804	0.176	1465.4	1186.	1.01	1.498

CHARLES DARWIN CRUISE 51 STATION 17

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁸ m ³ /kg	cy/hr
10.	11.150	35.143	6.55	11.149	26.860	31.296	0.012	1494.2	10.	118.33	-9.999
20.	10.711	35.183	6.62	10.708	26.971	31.409	0.023	1492.9	20.	108.06	5.922
30.	9.882	35.226	6.61	9.879	27.149	31.605	0.033	1490.2	30.	91.34	7.519
40.	9.140	35.226	6.52	9.136	27.273	31.745	0.042	1487.6	40.	79.75	6.277
50.	8.917	35.261	6.34	8.912	27.337	31.814	0.049	1487.0	50.	73.93	4.427
60.	8.708	35.266	6.33	8.701	27.375	31.856	0.057	1486.4	59.	70.54	3.468
70.	8.459	35.263	6.26	8.452	27.411	31.898	0.064	1485.7	69.	67.27	3.498
80.	8.343	35.263	6.33	8.334	27.436	31.919	0.070	1485.4	79.	65.70	2.438
90.	8.242	35.261	6.32	8.233	27.443	31.935	0.077	1485.2	89.	64.59	2.029
100.	8.136	35.255	6.33	8.125	27.455	31.950	0.083	1484.9	99.	63.64	1.969
120.	8.011	35.248	6.32	7.999	27.469	31.966	0.096	1484.8	119.	62.70	1.462
140.	7.897	35.240	6.30	7.883	27.480	31.981	0.108	1484.7	139.	61.99	1.360
160.	7.718	35.221	6.34	7.702	27.492	31.996	0.121	1484.3	158.	61.21	1.393
180.	7.582	35.211	6.35	7.565	27.505	32.012	0.133	1484.1	178.	60.35	1.442
200.	7.365	35.190	6.33	7.345	27.520	32.032	0.145	1483.6	198.	59.22	1.583
220.	7.235	35.183	6.36	7.214	27.533	32.049	0.156	1483.4	218.	58.27	1.480
240.	6.918	35.162	6.37	6.895	27.561	32.085	0.168	1482.5	238.	55.76	2.186
260.	6.482	35.126	6.49	6.459	27.592	32.136	0.179	1481.1	257.	53.93	2.361
280.	5.381	35.047	6.59	5.358	27.670	32.232	0.189	1476.9	277.	45.14	3.679
300.	3.961	34.910	6.88	3.940	27.721	32.320	0.197	1471.3	297.	39.55	3.121
350.	2.599	34.876	7.05	2.578	27.824	32.460	0.214	1466.3	346.	39.15	2.692
400.	1.447	34.855	7.17	1.426	27.899	32.567	0.227	1462.0	396.	21.18	2.350
450.	0.823	34.869	7.11	0.802	27.953	32.639	0.236	1460.1	445.	15.49	1.980
500.	-0.065	34.904	6.96	-0.084	28.033	32.745	0.241	1456.9	495.	6.88	2.411
503.	-0.075	34.904	6.93	-0.094	28.034	32.746	0.242	1456.9	497.	6.80	0.924

CHARLES DARWIN CRUISE 51 STATION 18

pres	temp	salin	oxygen	potemp	sigma0	sigma1	dynht	sndv	depth	svanom	bvfr
db	degc90		ml/l	degc90	kg/m ³	kg/m ³	dyn.m	m/s	m	10 ⁻⁶ m ³ /kg	cy/hr
10.	10.004	35.215	6.79	10.003	27.120	31.573	0.010	1490.3	10.	93.62	-9.999
20.	9.779	35.206	6.76	9.776	27.151	31.609	0.019	1489.6	20.	90.92	3.127
30.	9.329	35.182	6.56	9.326	27.207	31.676	0.028	1488.1	30.	85.79	4.229
40.	9.302	35.185	6.59	9.297	27.215	31.683	0.036	1488.2	40.	85.33	1.504
50.	9.267	35.189	6.56	9.262	27.223	31.693	0.045	1488.2	50.	84.71	1.679
60.	9.233	35.191	6.54	9.226	27.231	31.701	0.053	1488.3	59.	84.20	1.566
70.	9.166	35.203	6.55	9.159	27.351	31.723	0.062	1488.2	69.	82.51	2.524
80.	9.099	35.204	6.58	9.090	27.363	31.736	0.070	1488.1	79.	81.58	1.955
90.	9.068	35.206	6.57	9.058	27.370	31.744	0.078	1488.2	89.	81.18	1.444
100.	8.998	35.205	6.57	8.987	27.381	31.756	0.086	1488.1	99.	80.37	1.854
120.	8.852	35.211	6.55	8.839	27.309	31.788	0.102	1487.9	119.	76.93	2.148
140.	8.774	35.216	6.54	8.759	27.326	31.807	0.117	1487.9	139.	76.84	1.642
151.	8.733	35.221	6.54	8.706	27.339	31.820	0.126	1487.9	149.	75.99	1.893

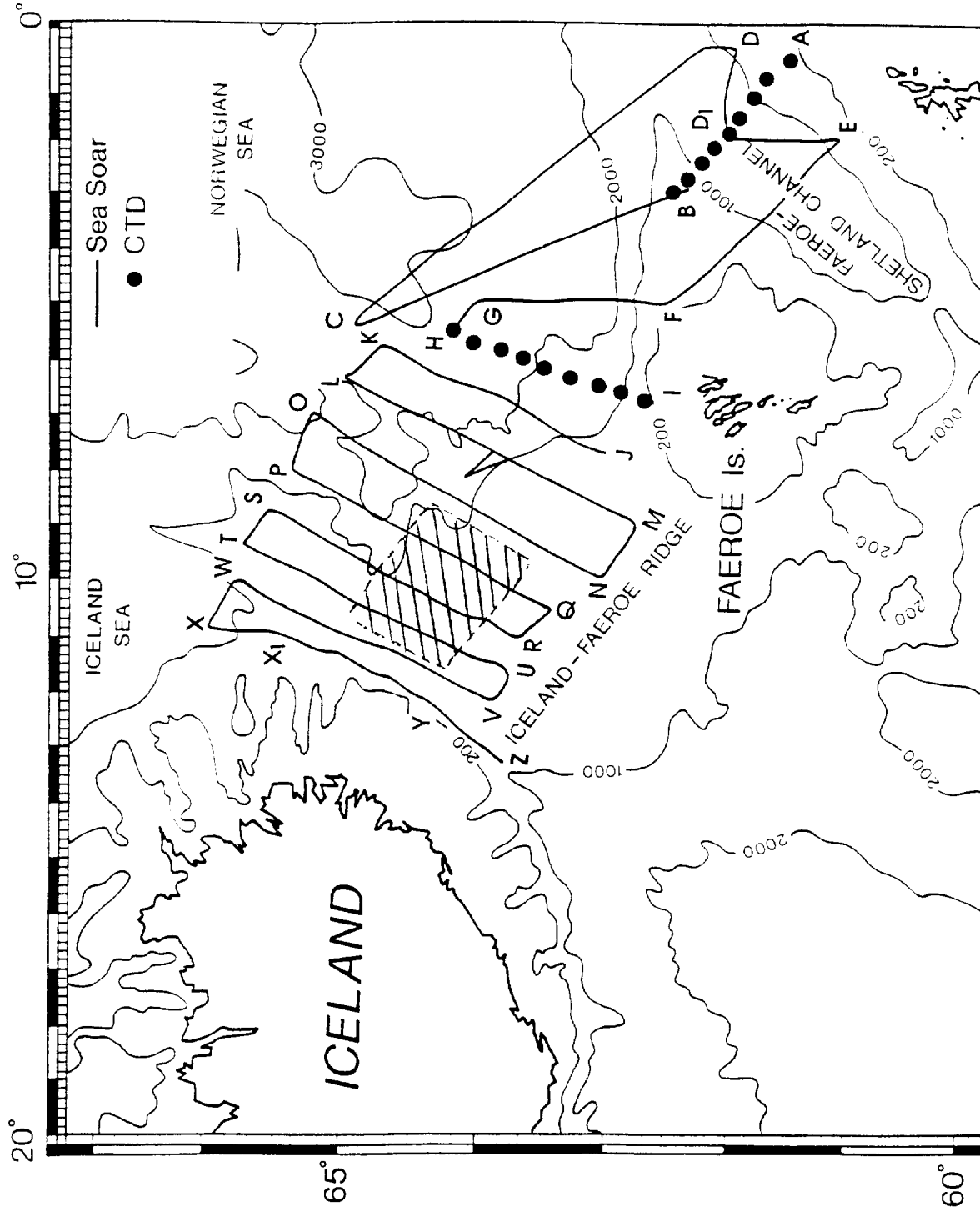


Figure 1: RRS Charles Darwin Cruise 51, 24 Jul-20 Aug 1990. Track chart of the two large scale SeaSoar surveys, the two CTD sections and, shaded, the approximate region covered by the three fine scale SeaSoar surveys.

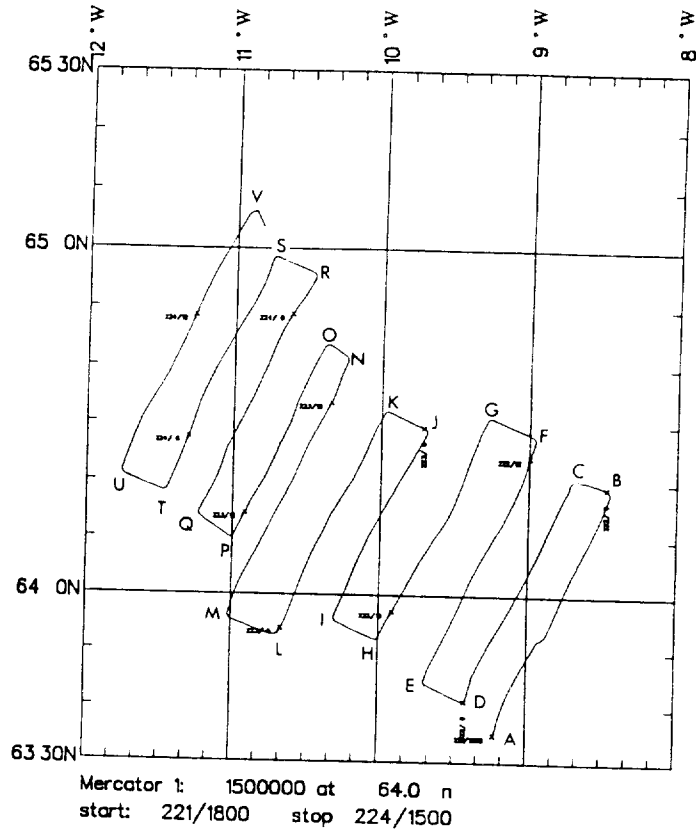


Figure 2: Track chart of the first fine scale SeaSoar survey.

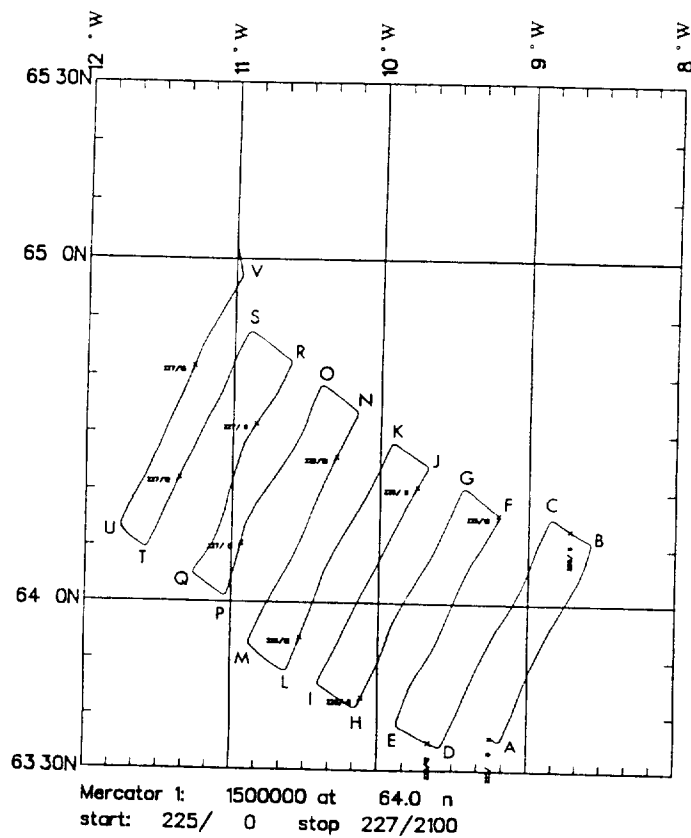


Figure 3: Track chart of the second fine scale SeaSoar survey.

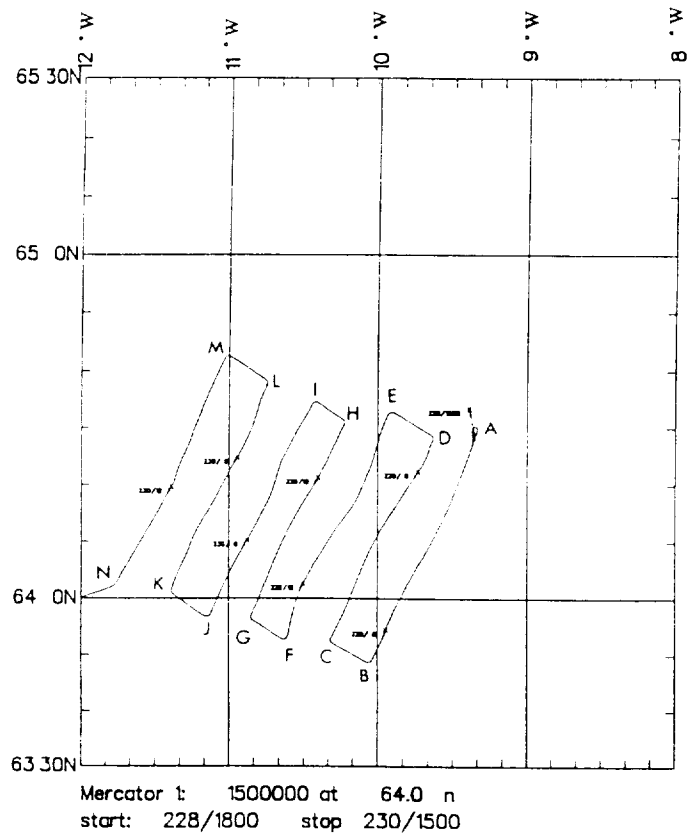
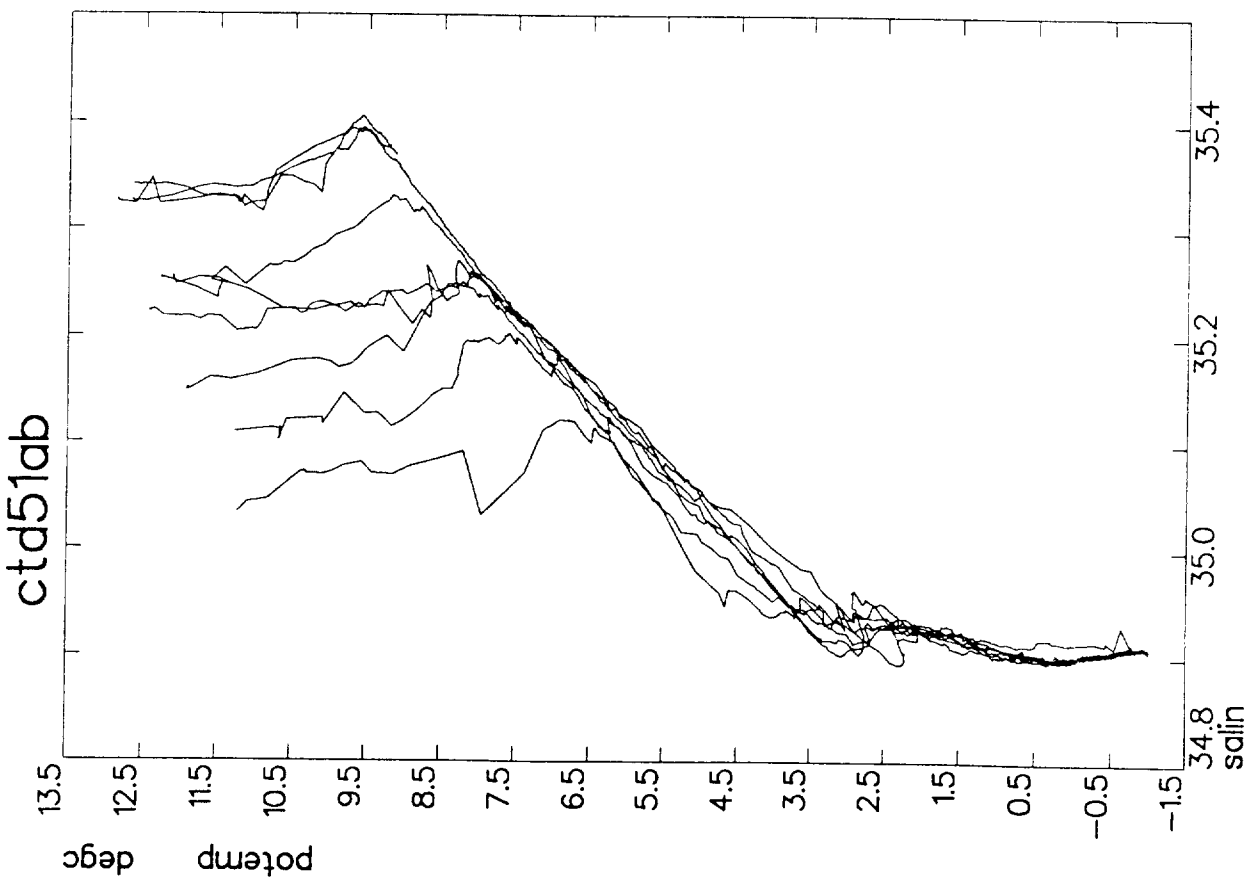
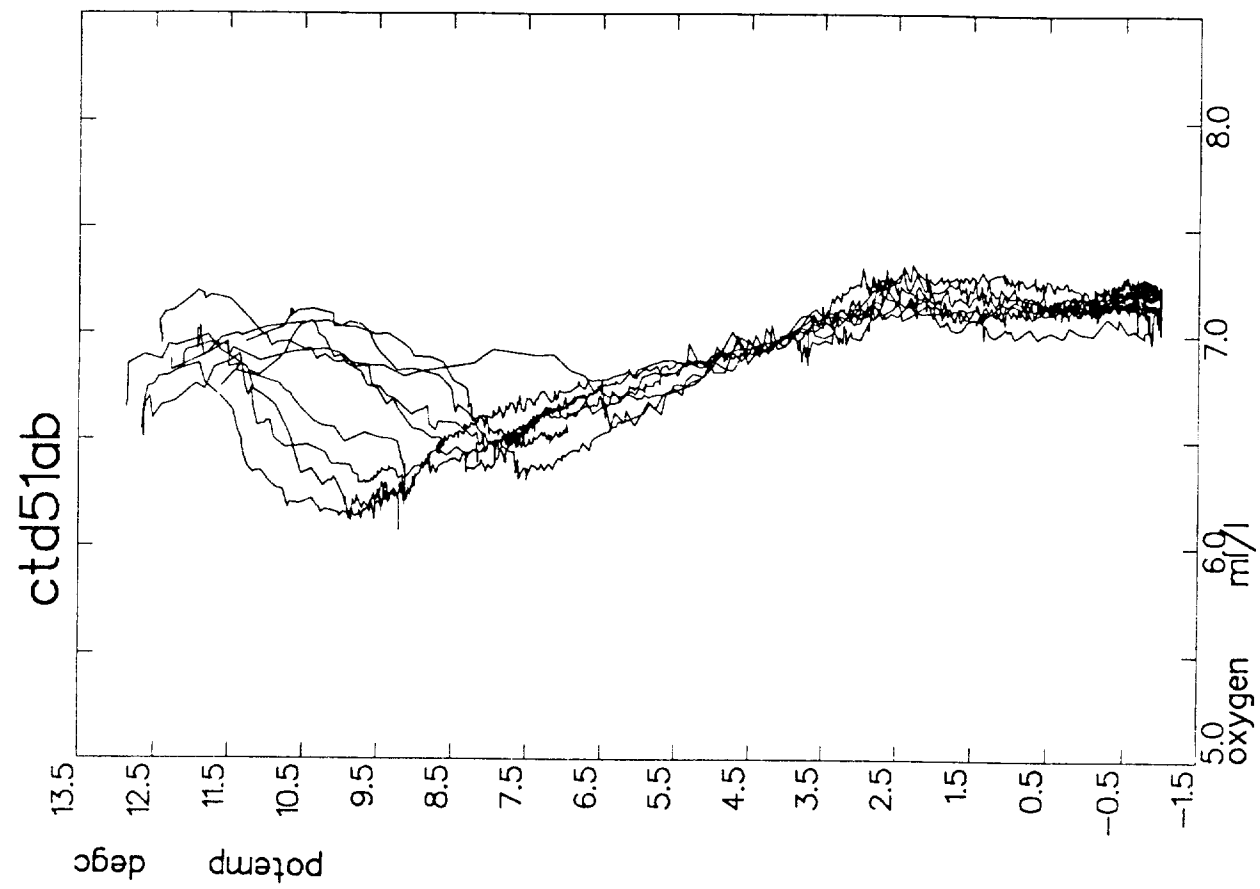
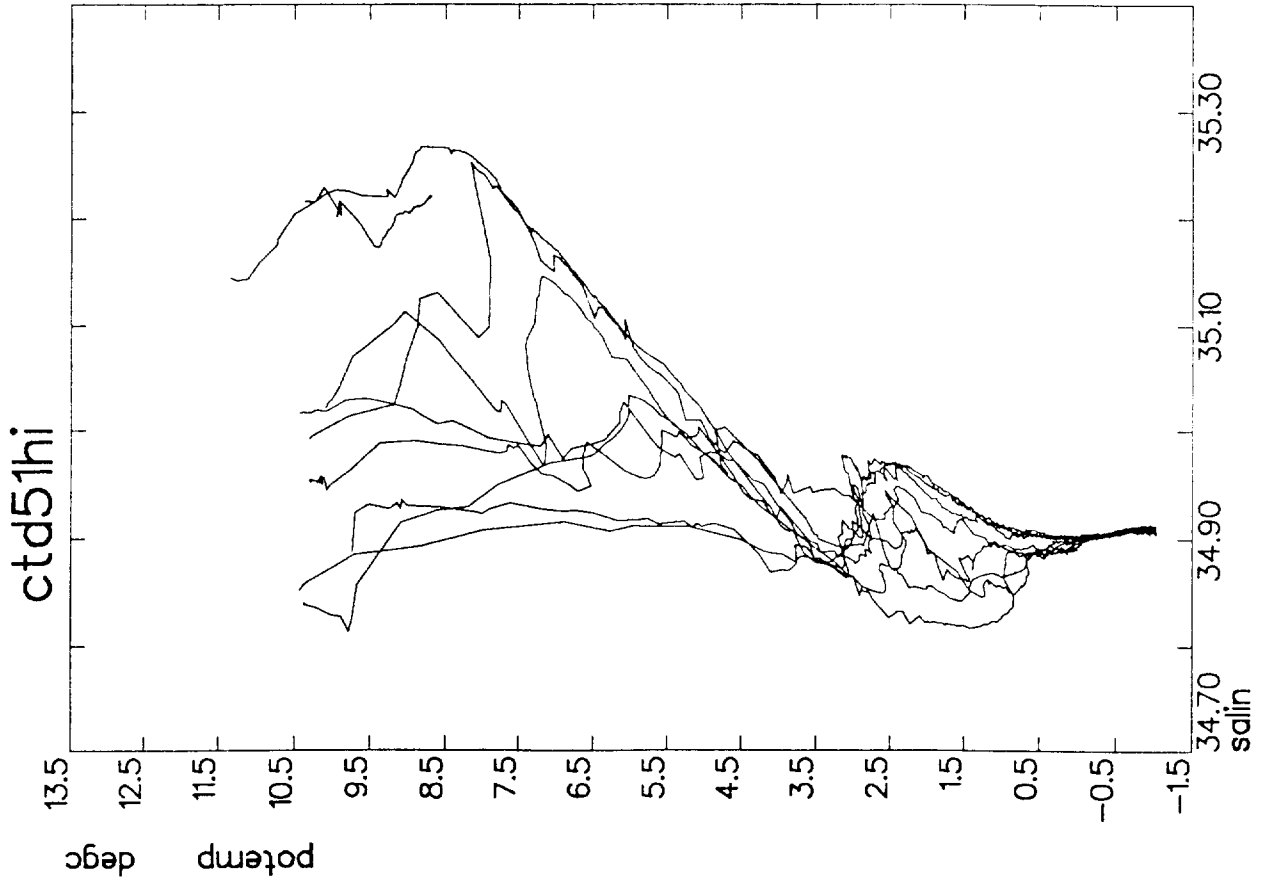
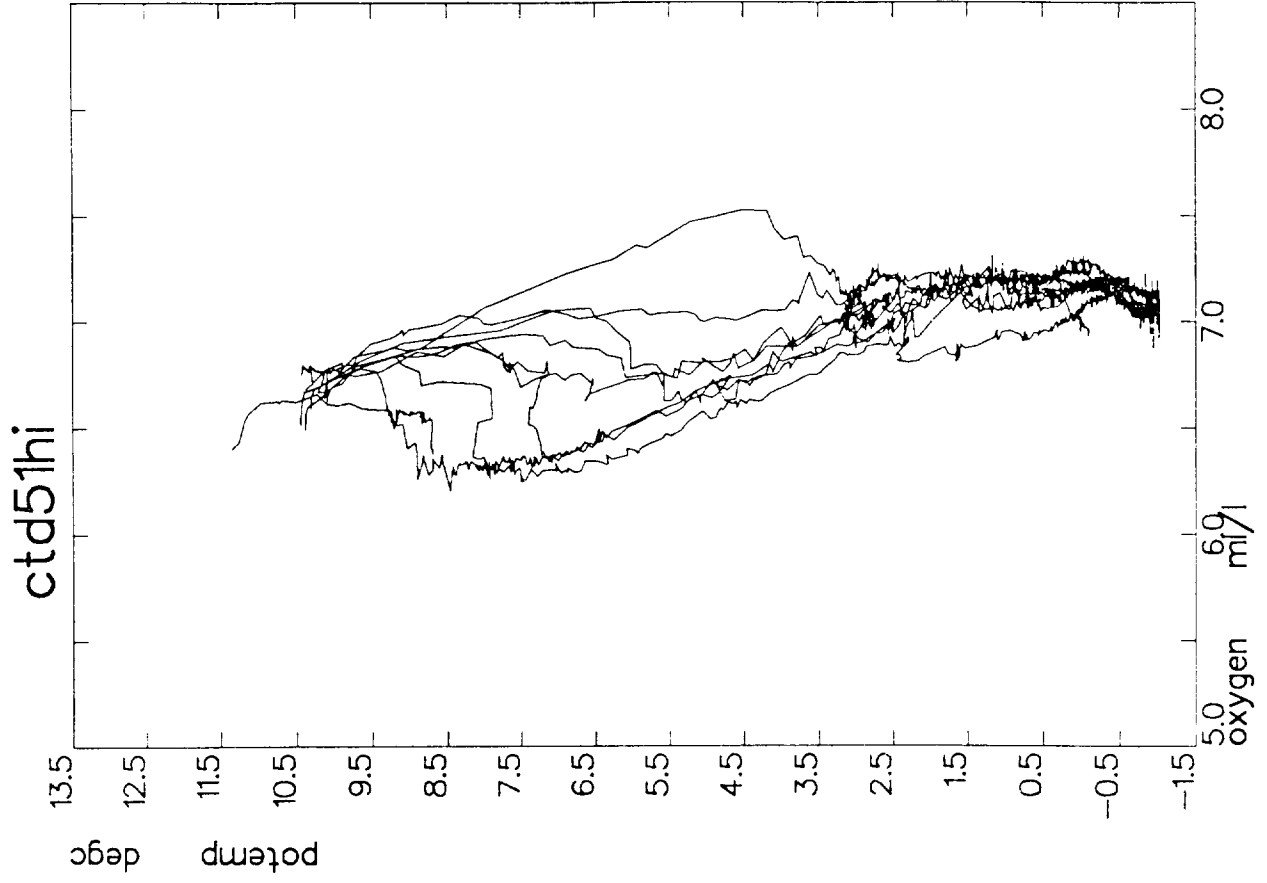
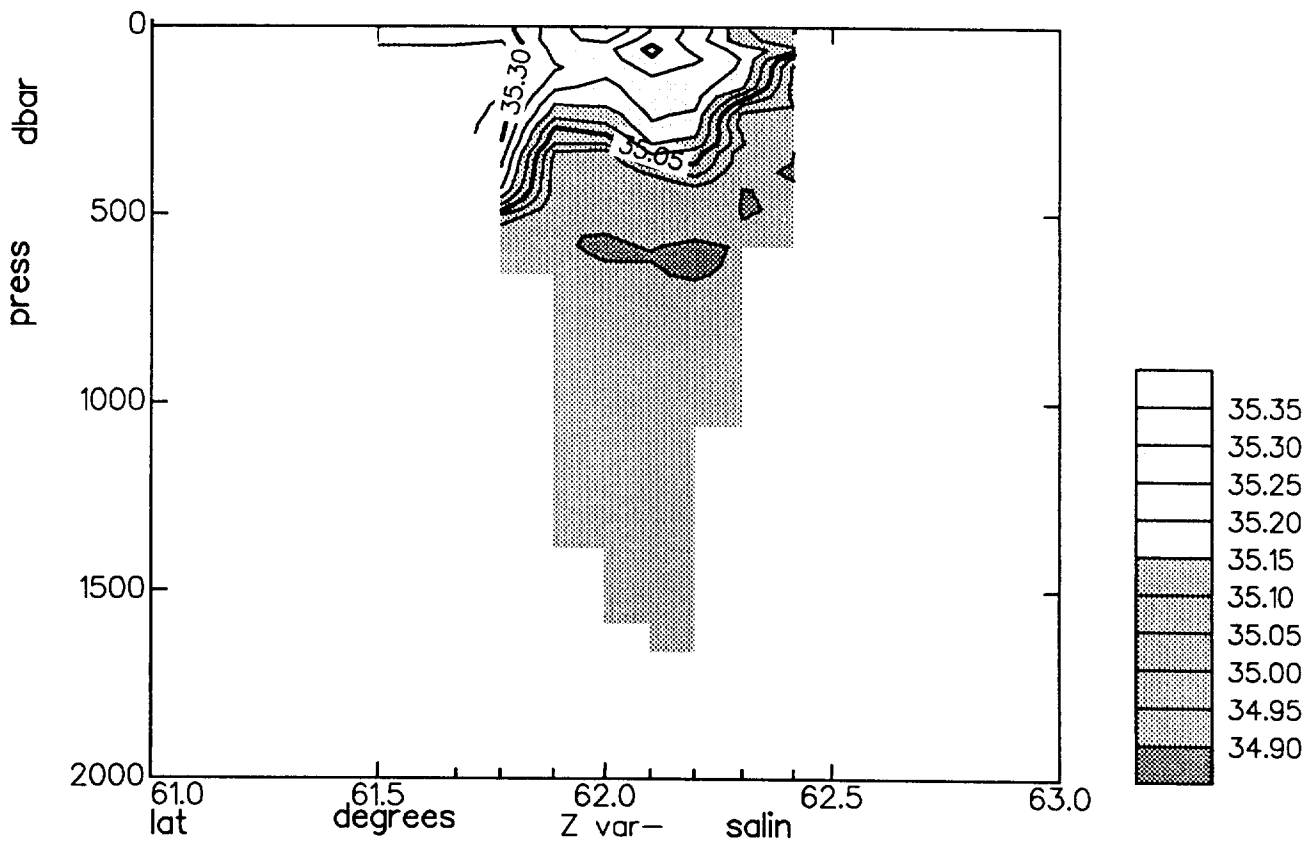
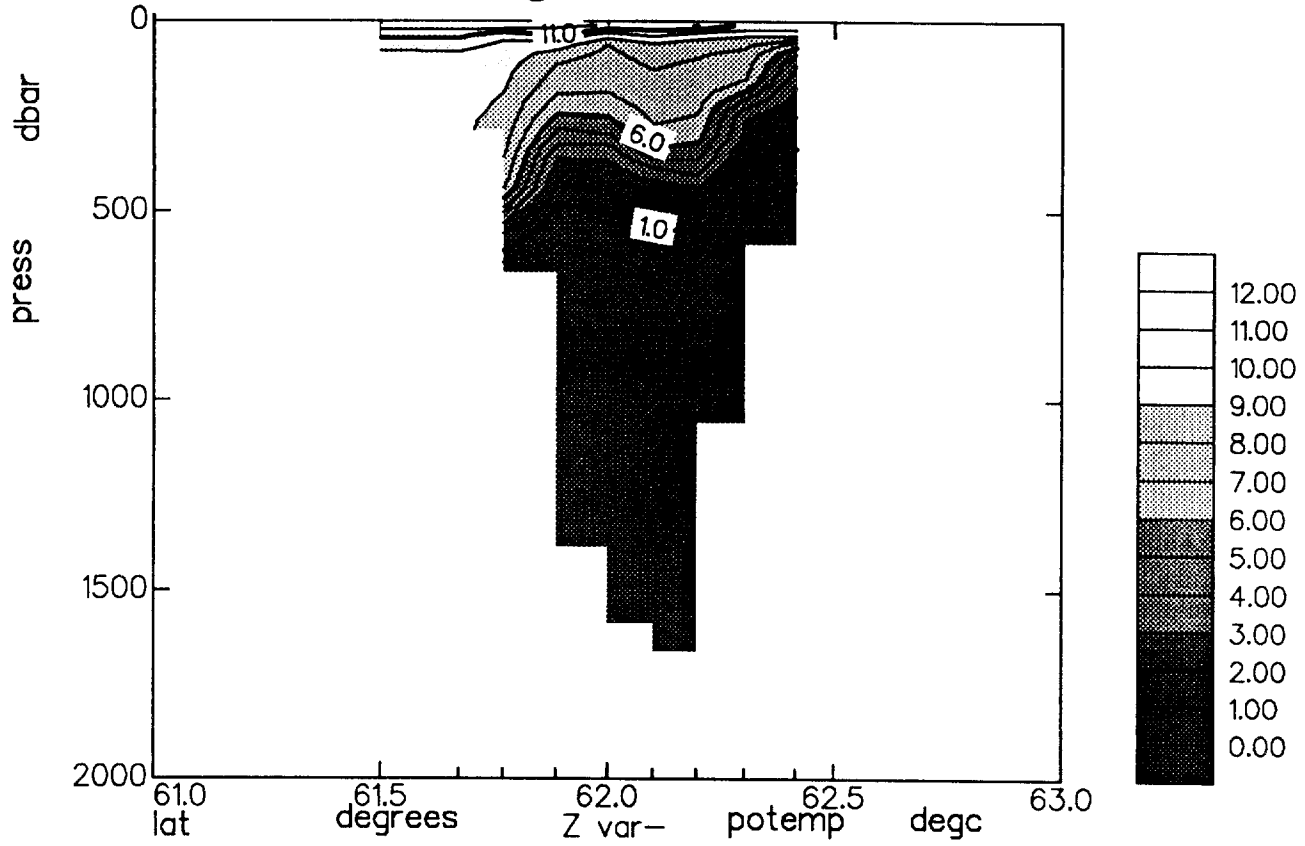


Figure 4: Track chart of the third fine scale SeaSoar survey.

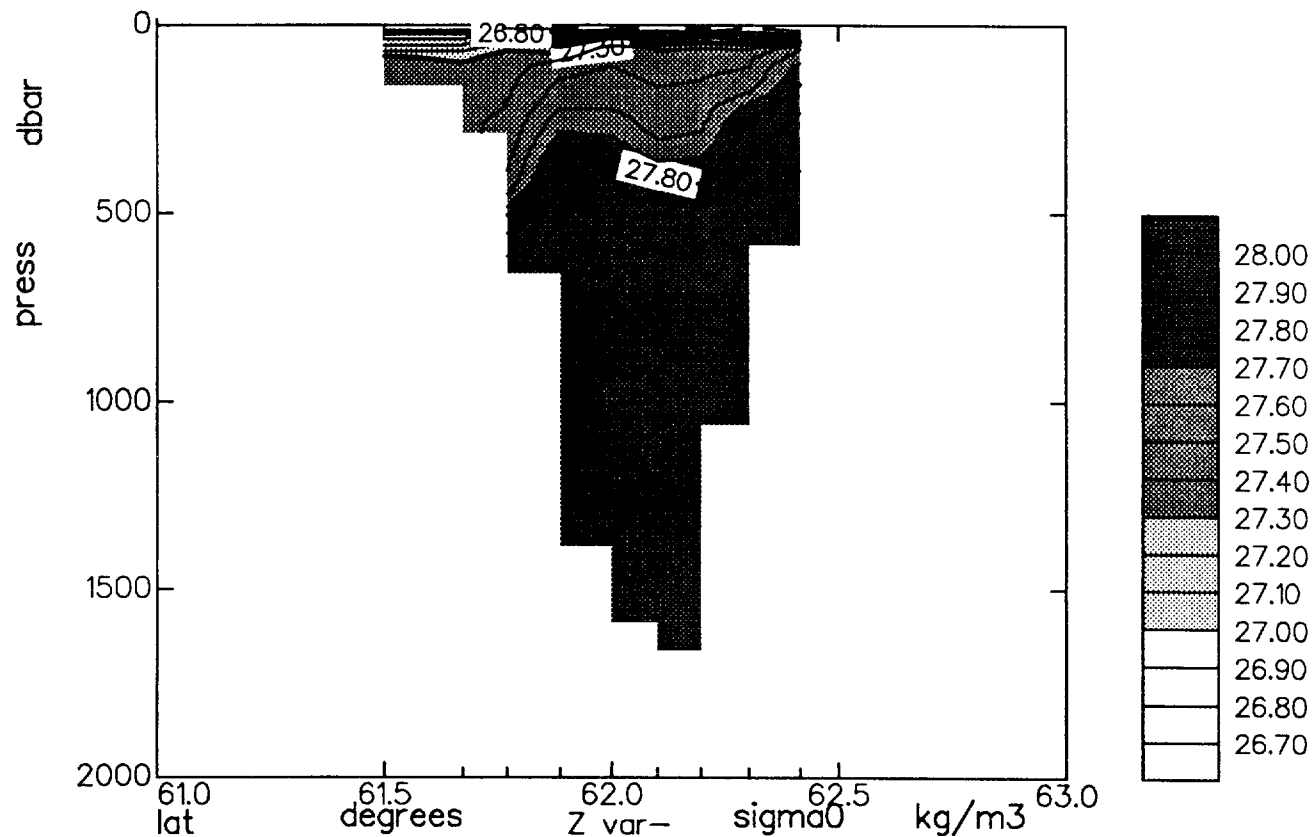
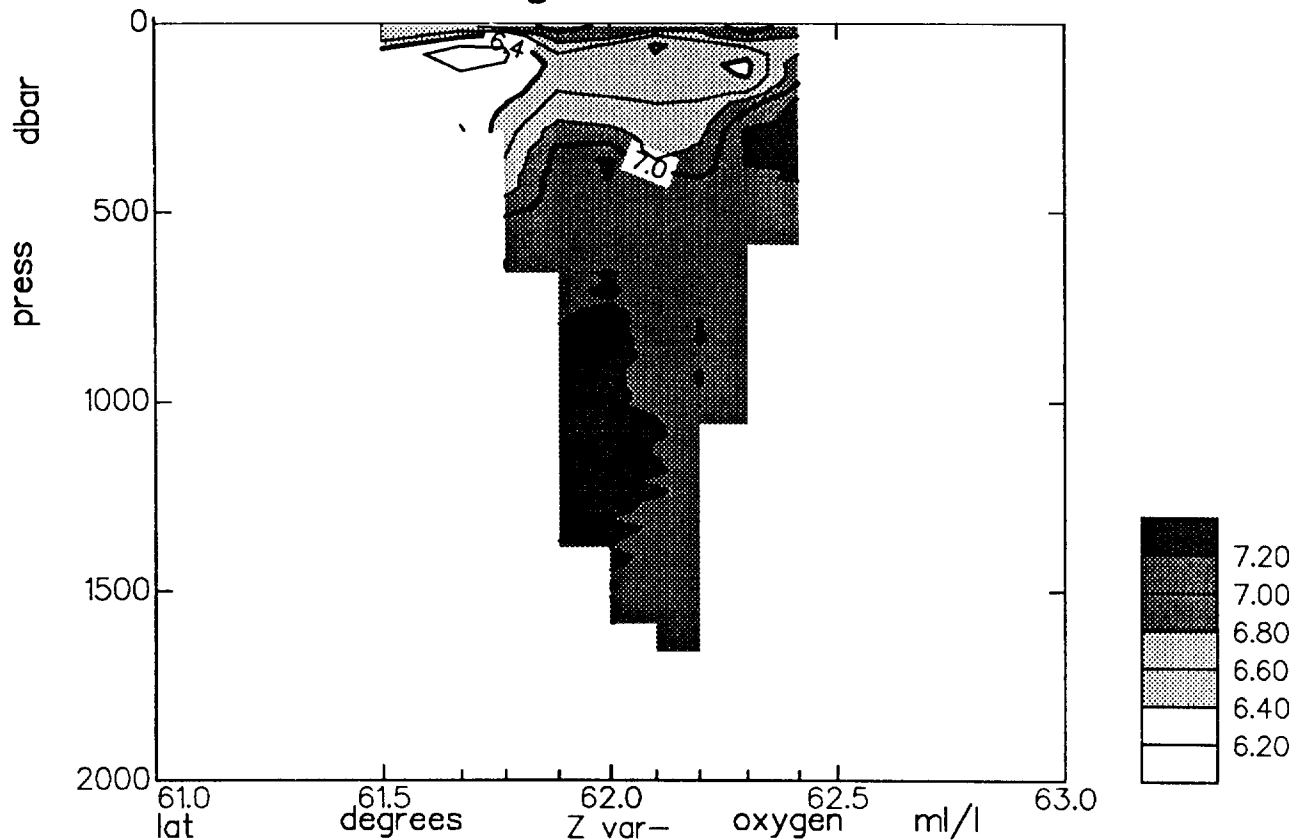




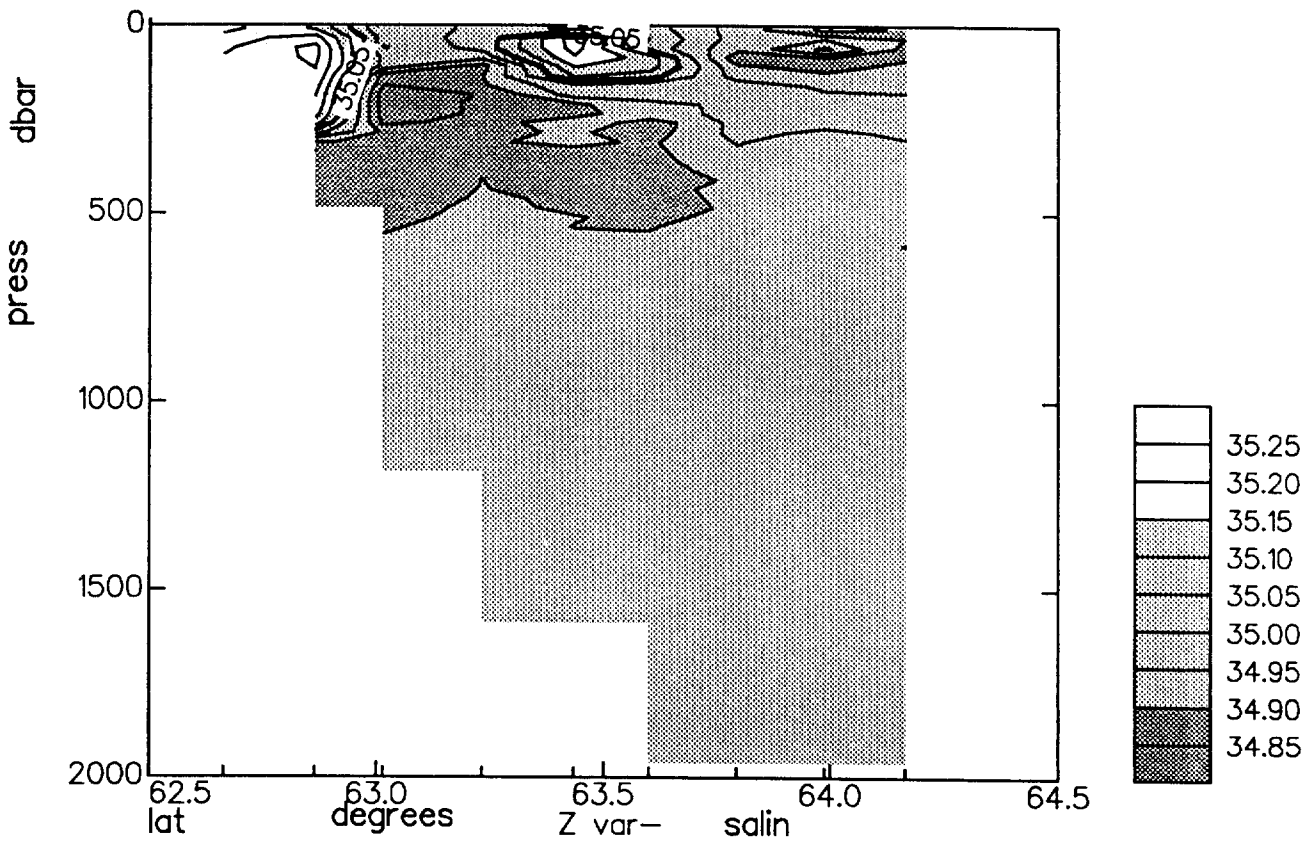
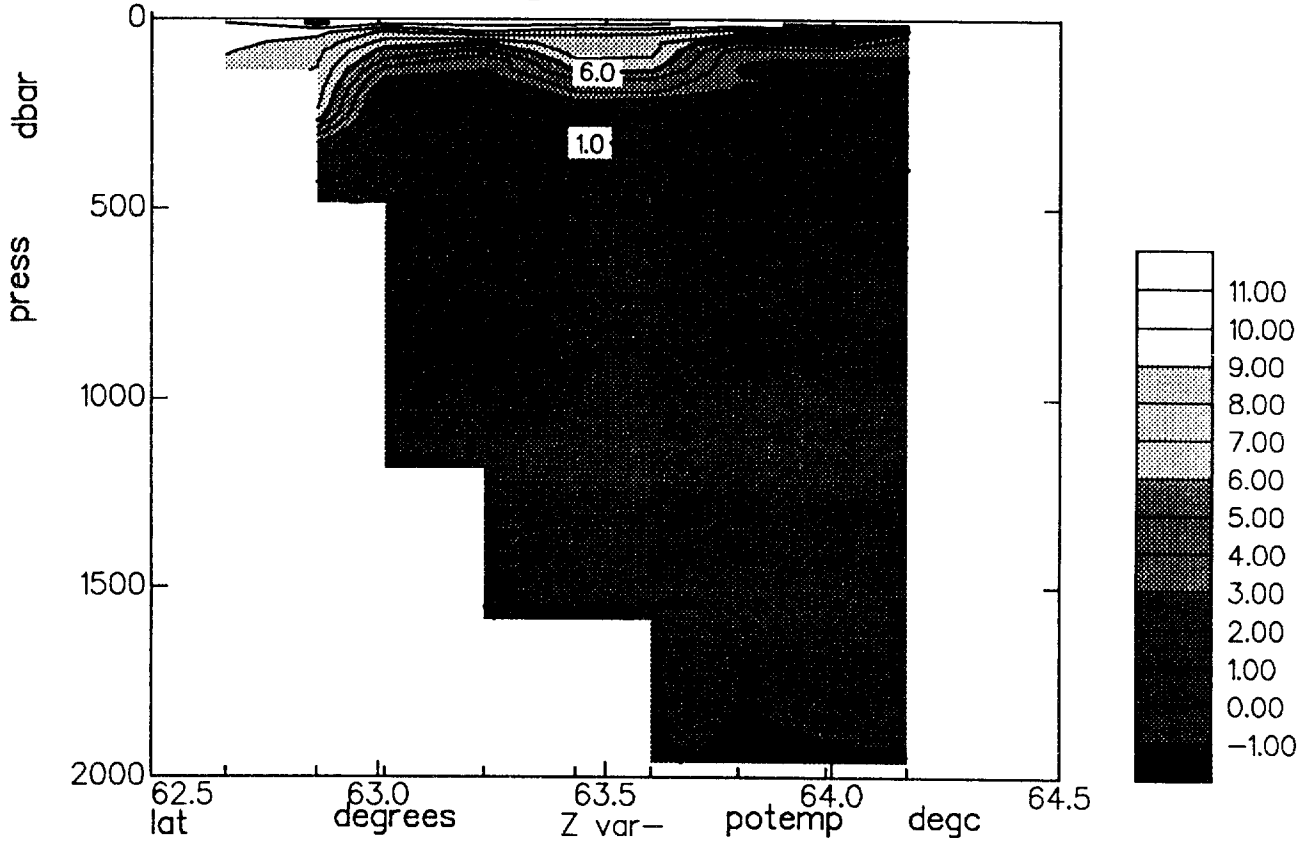
leg ctd51ab



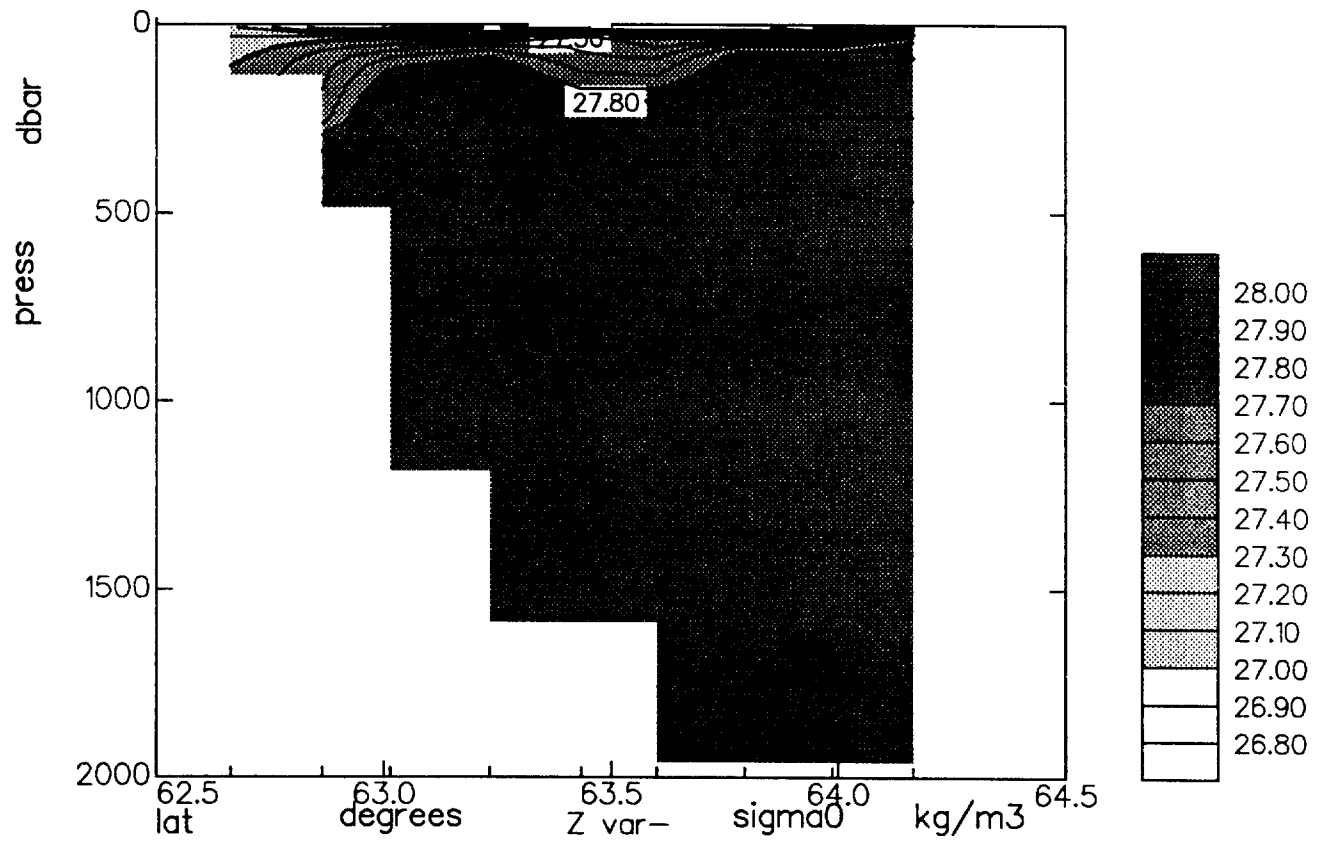
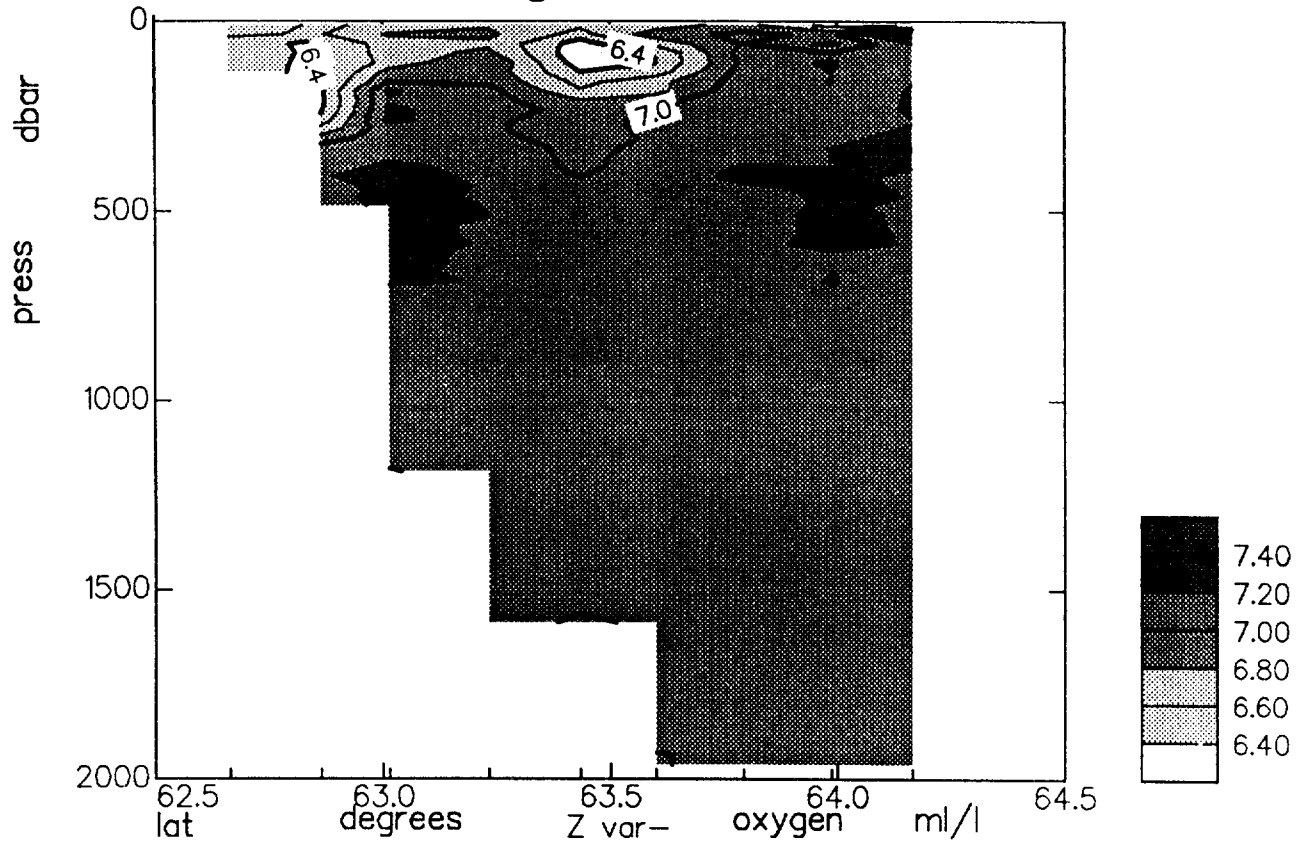
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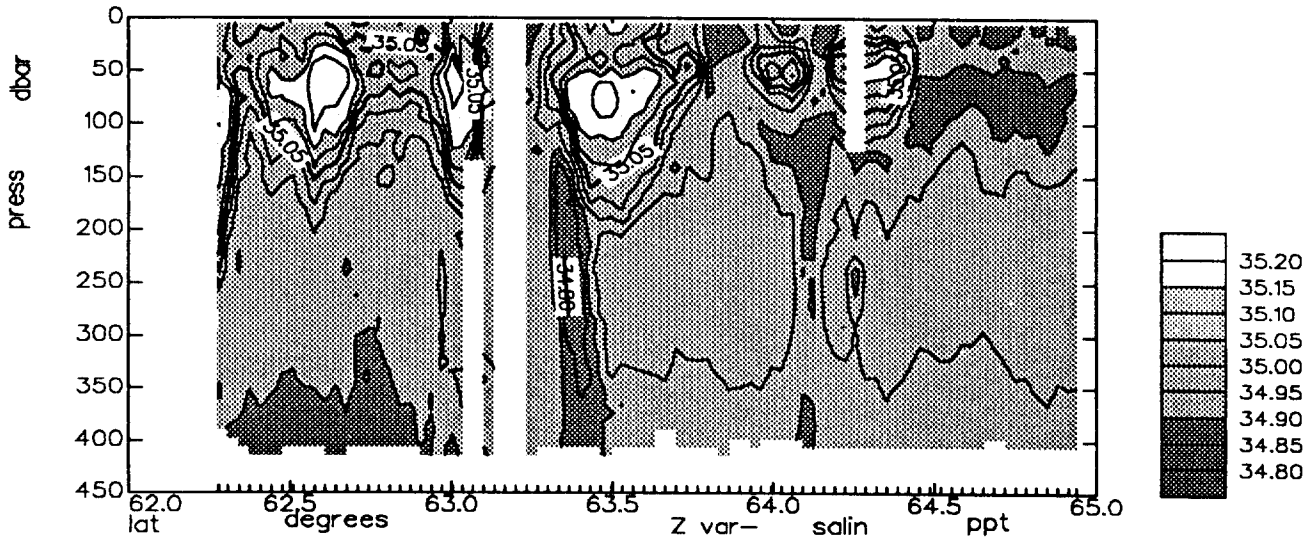
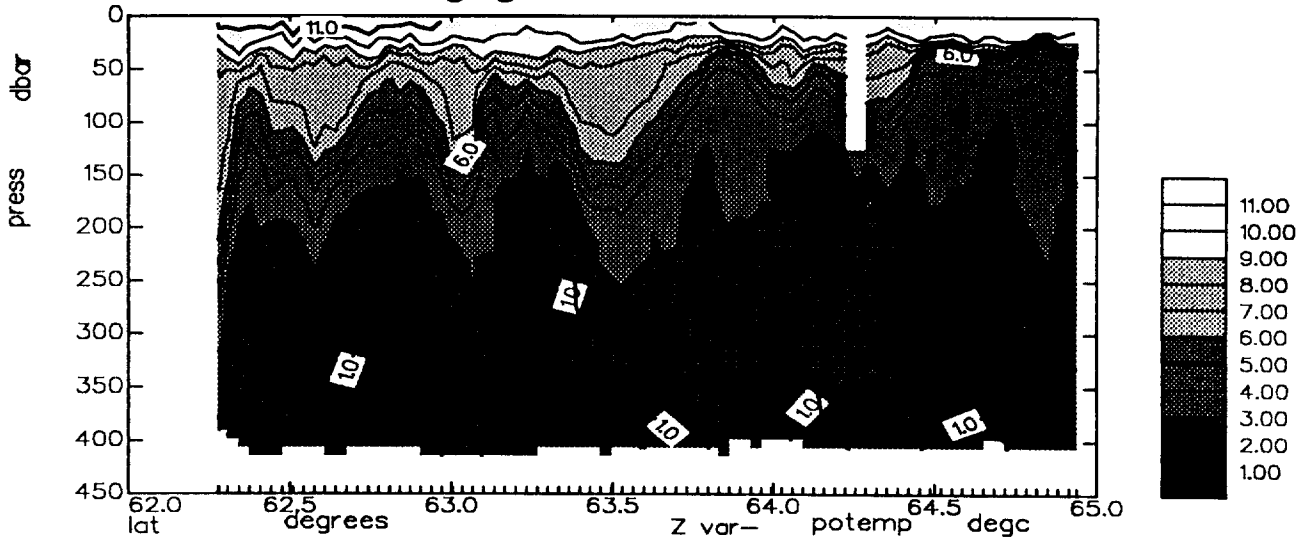
leg ctd51hi



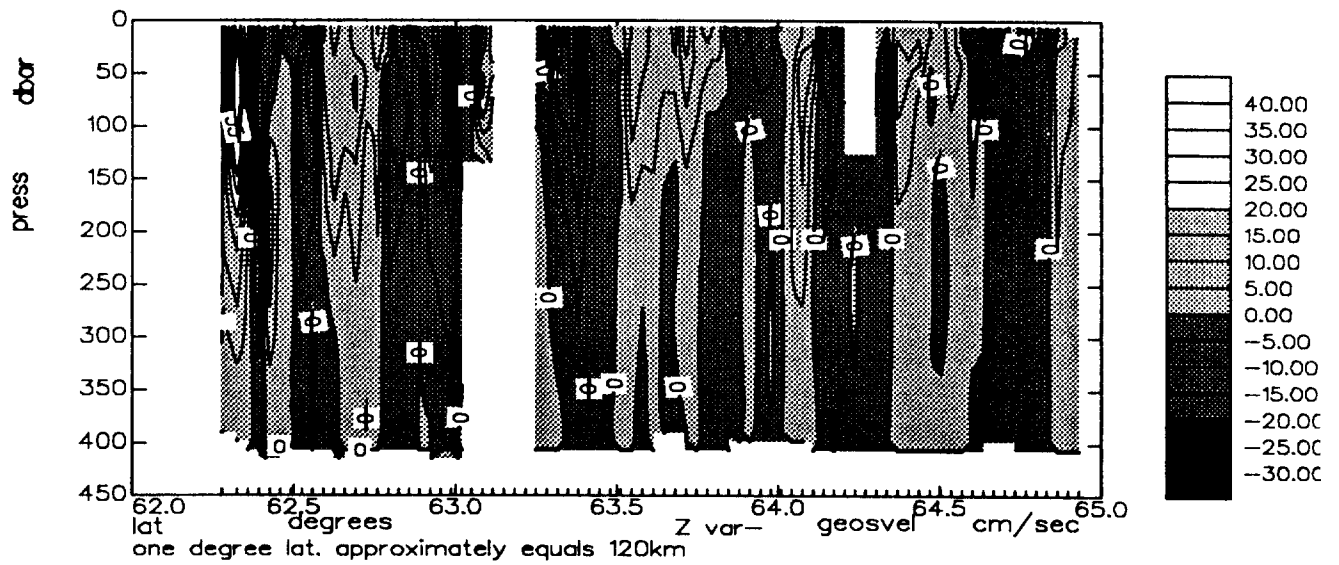
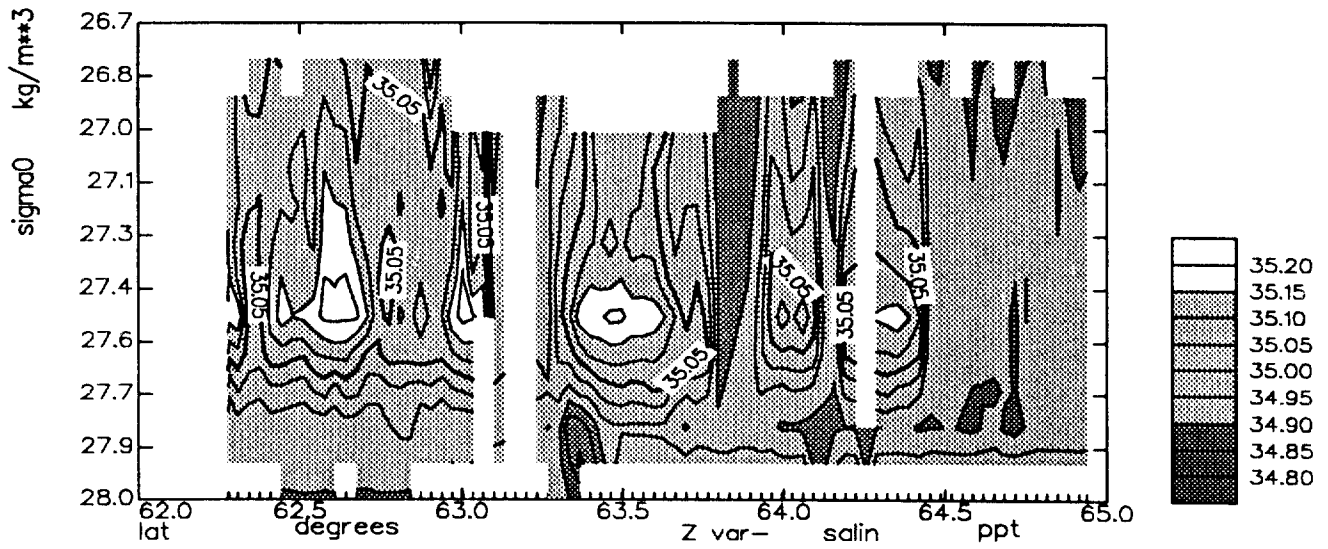
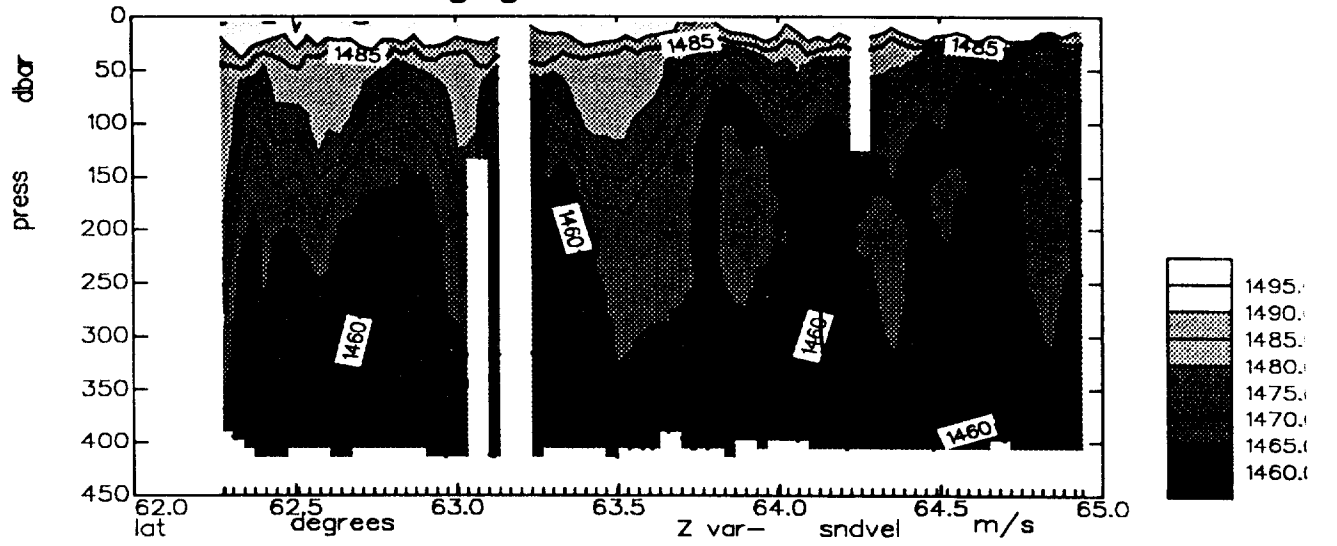
leg ctd51hi



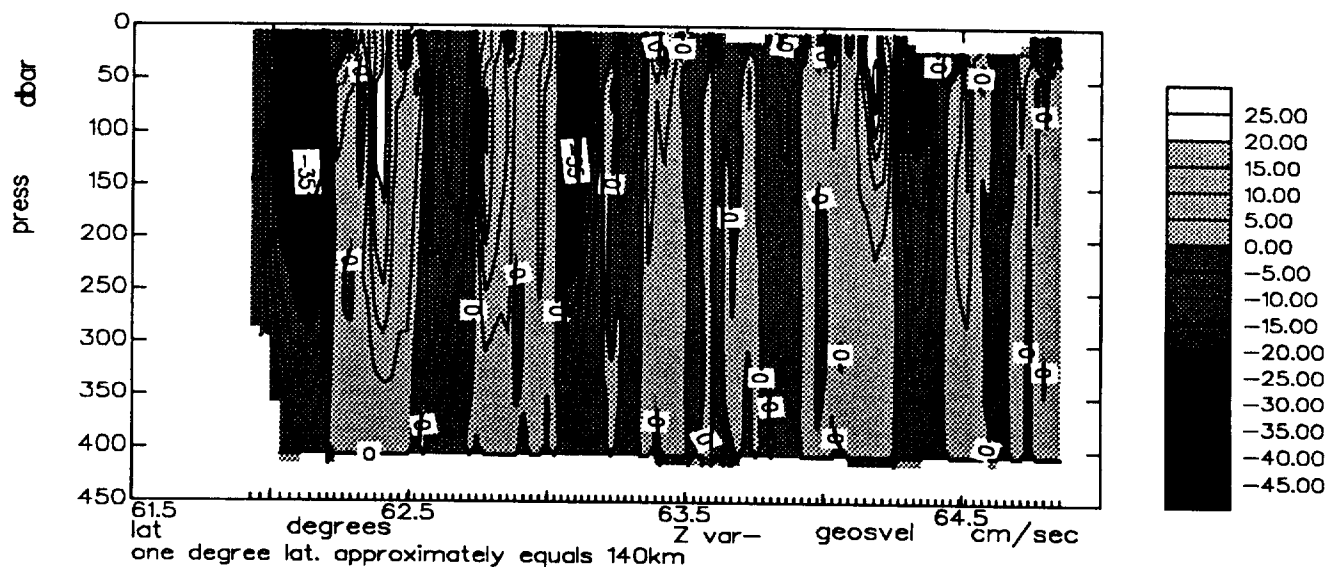
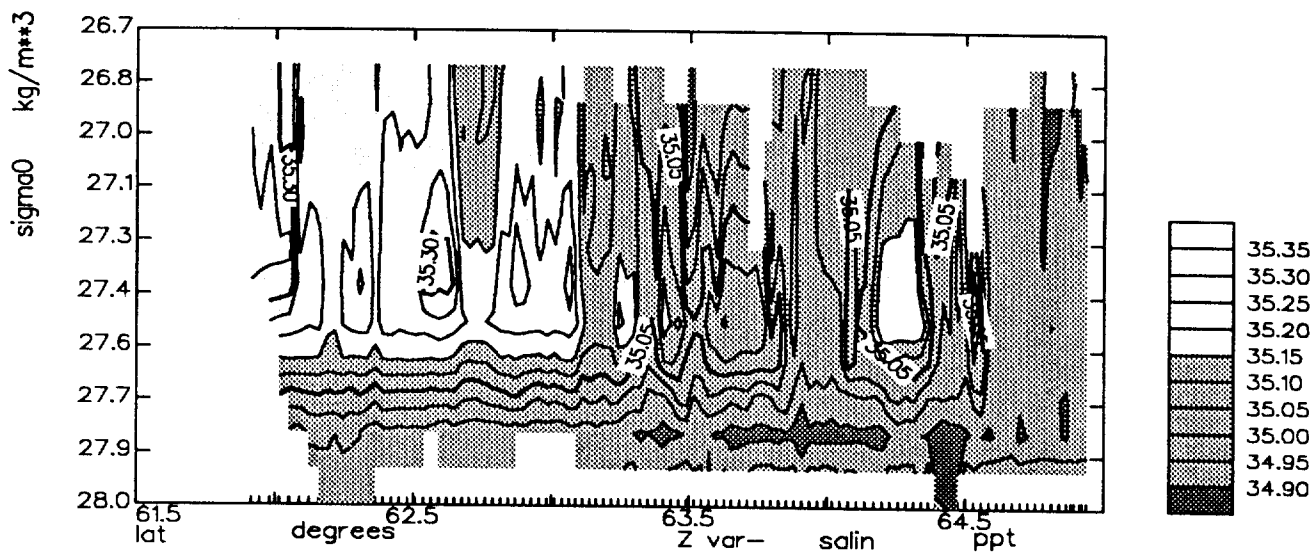
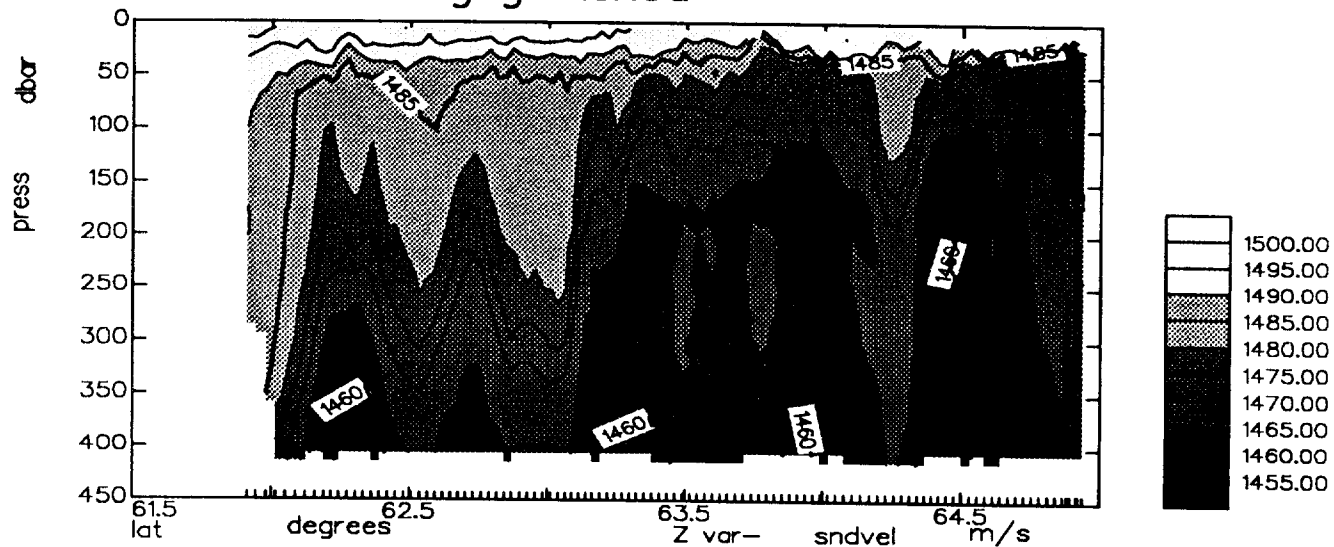
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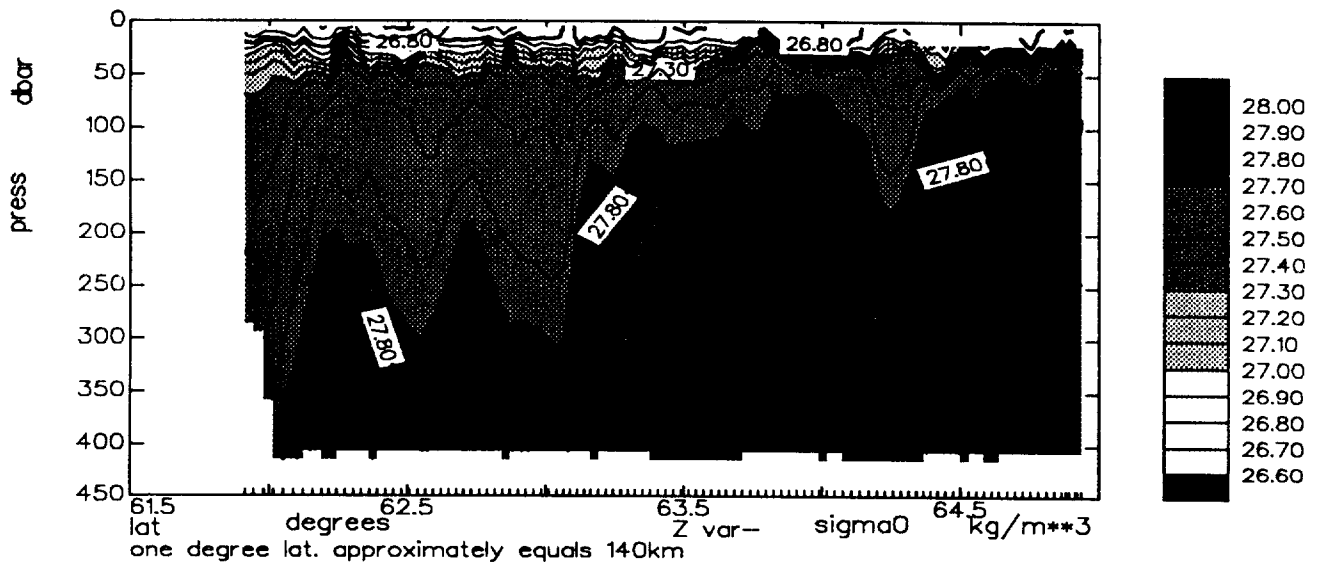
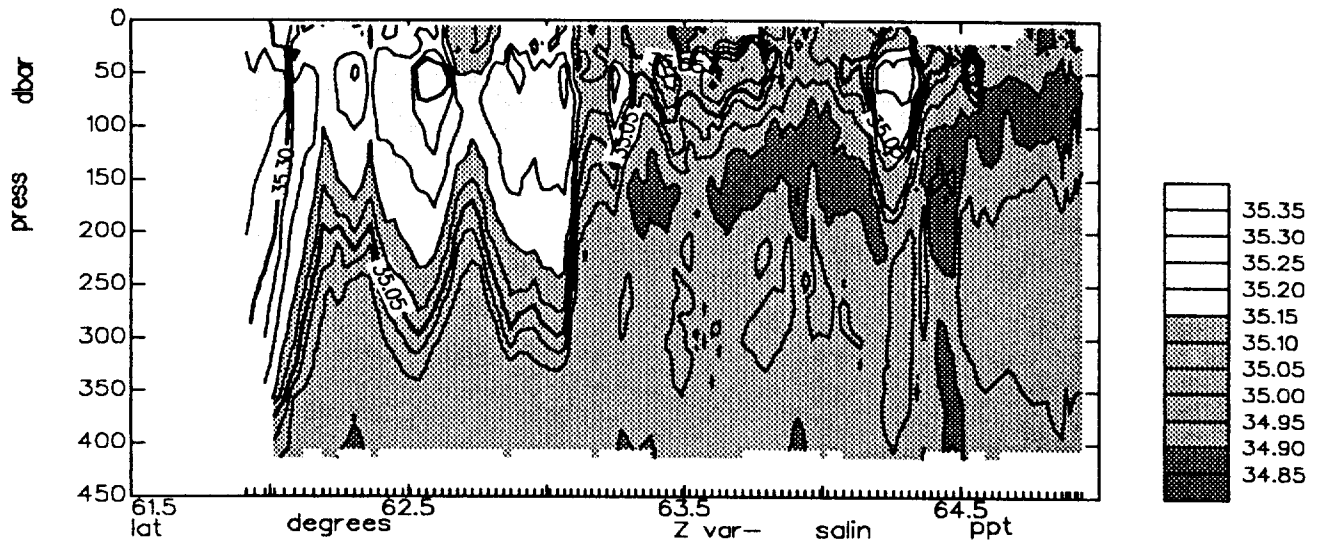
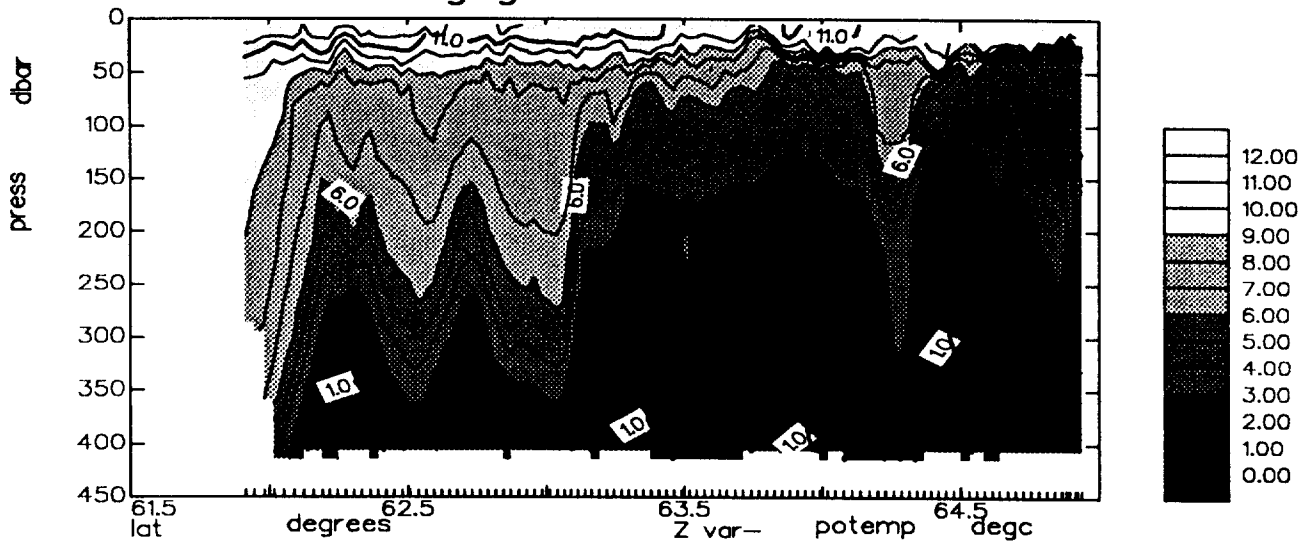
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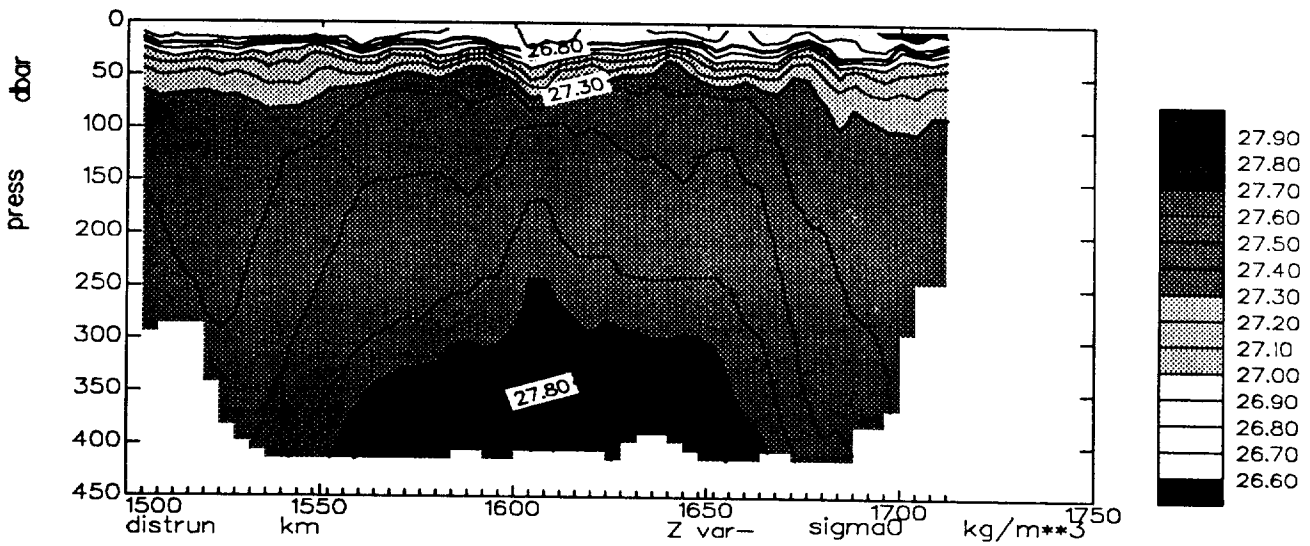
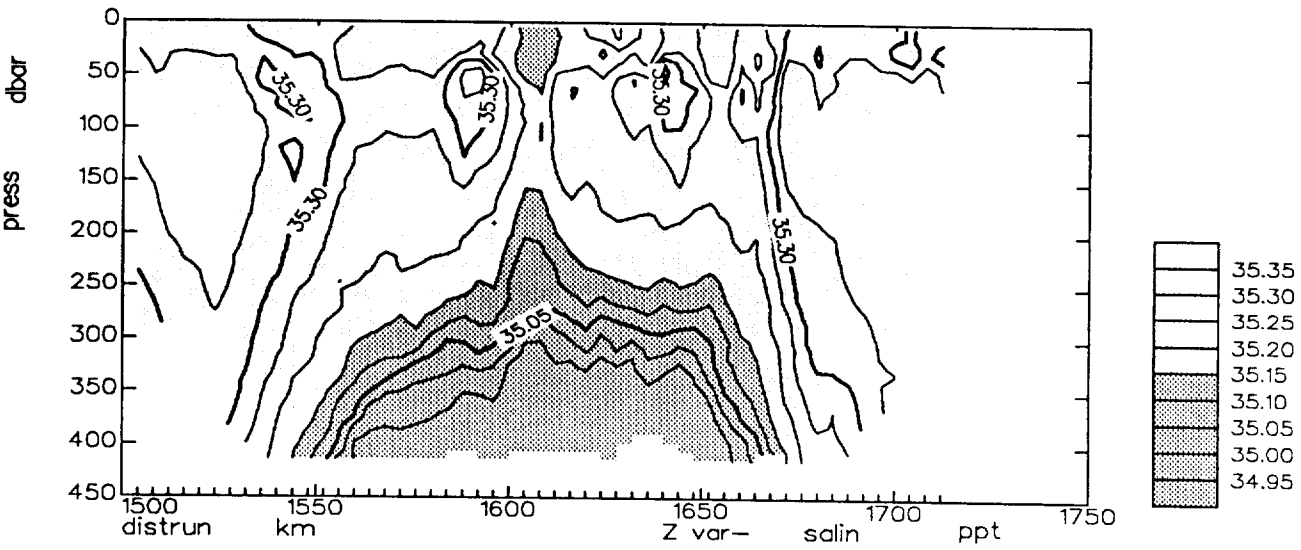
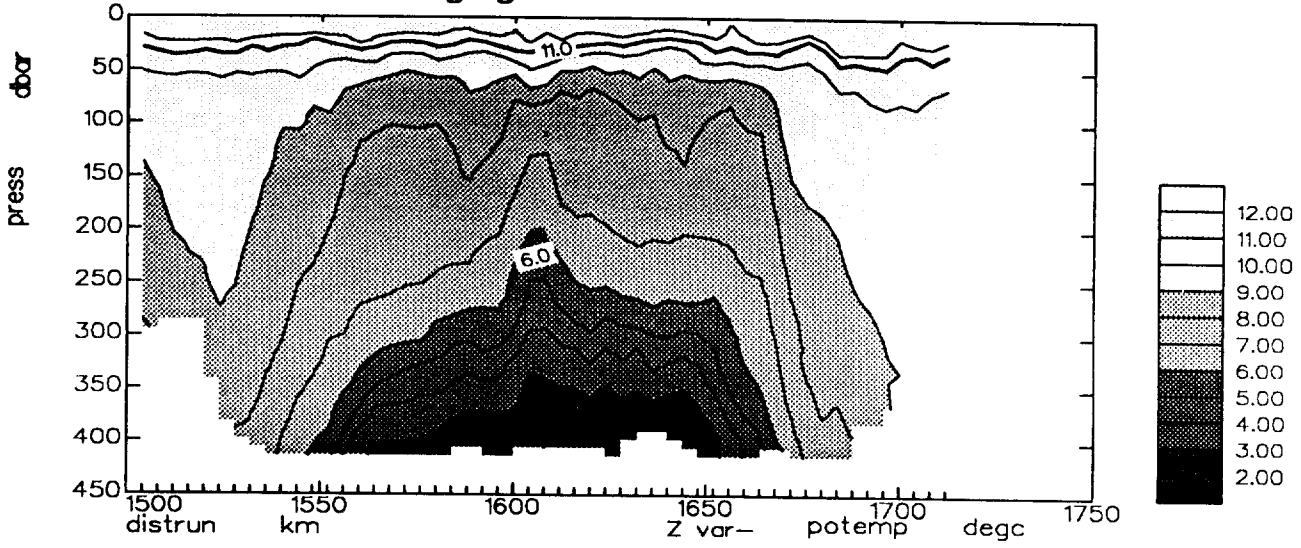
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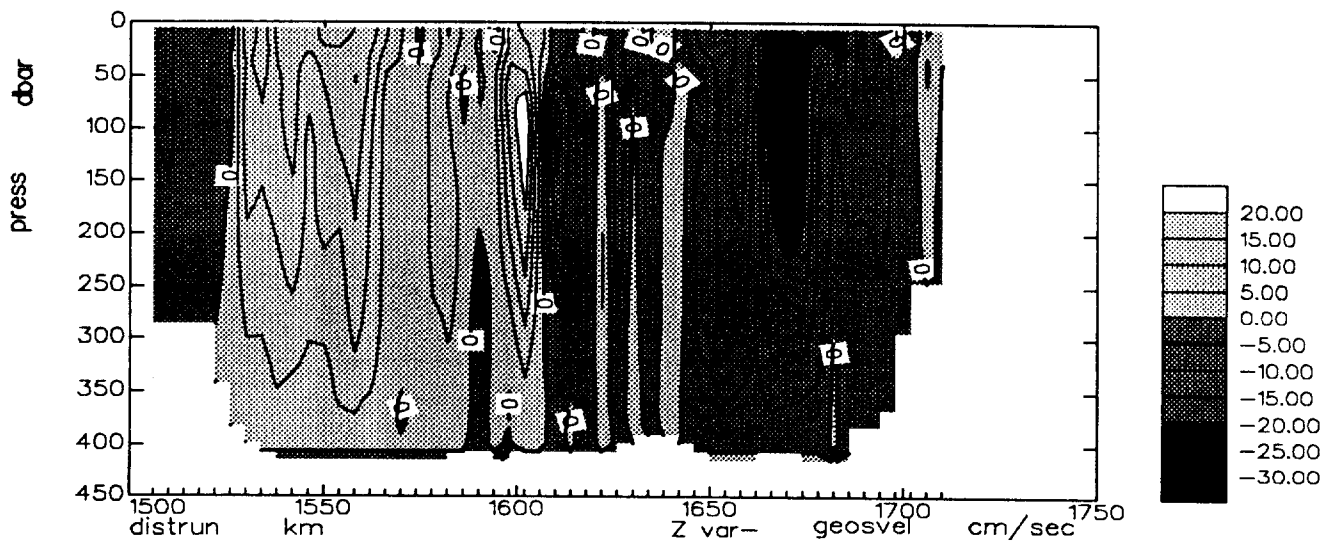
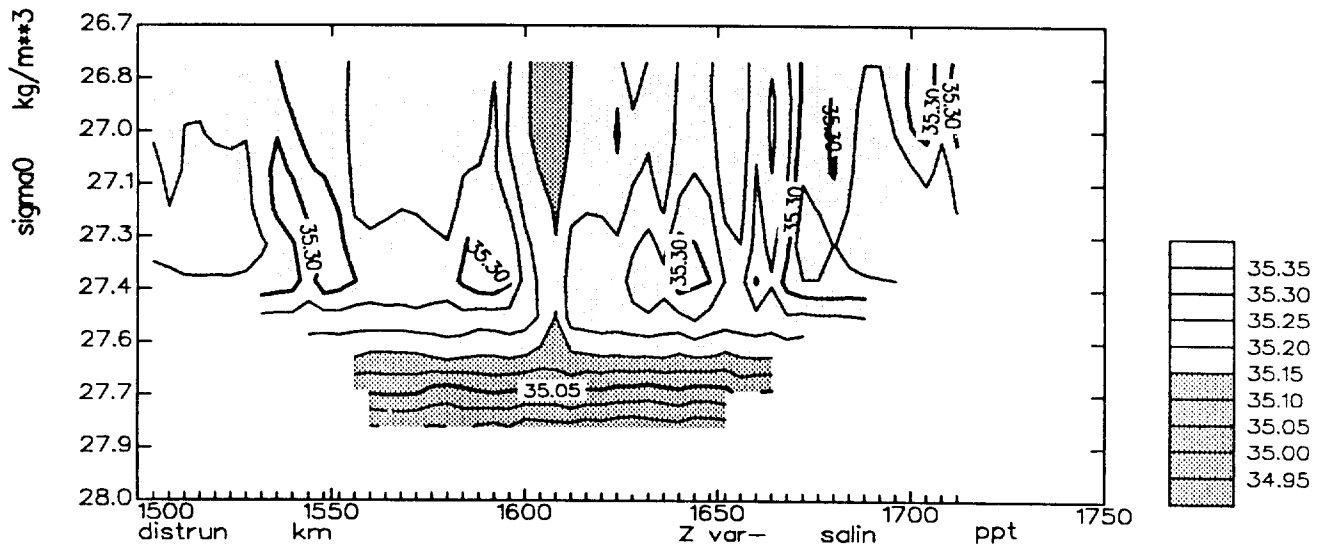
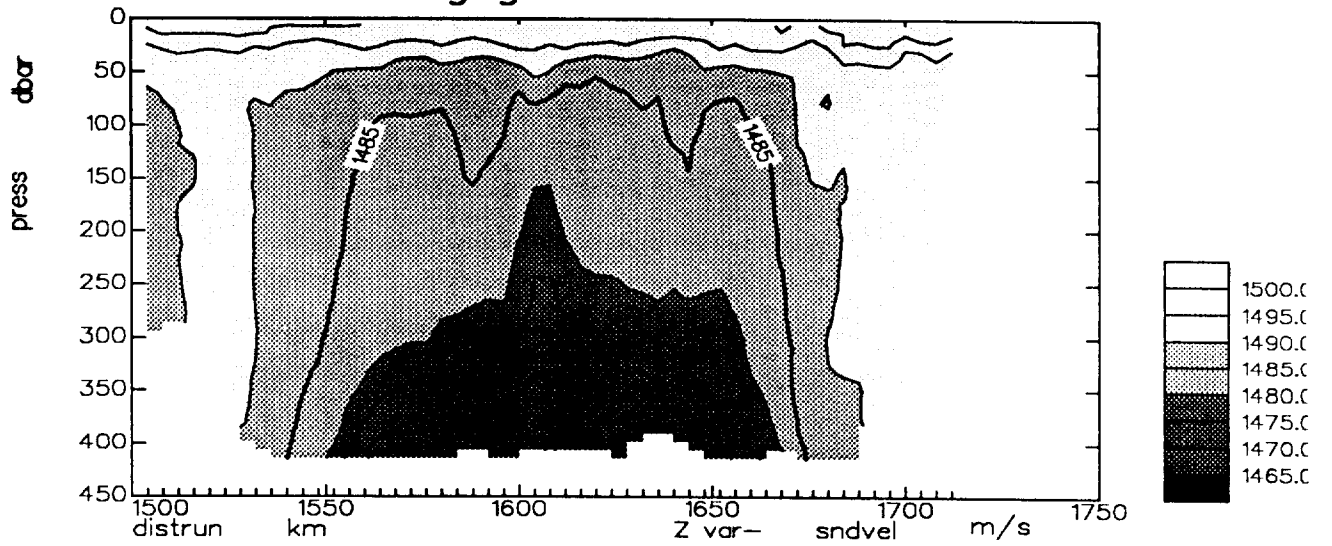
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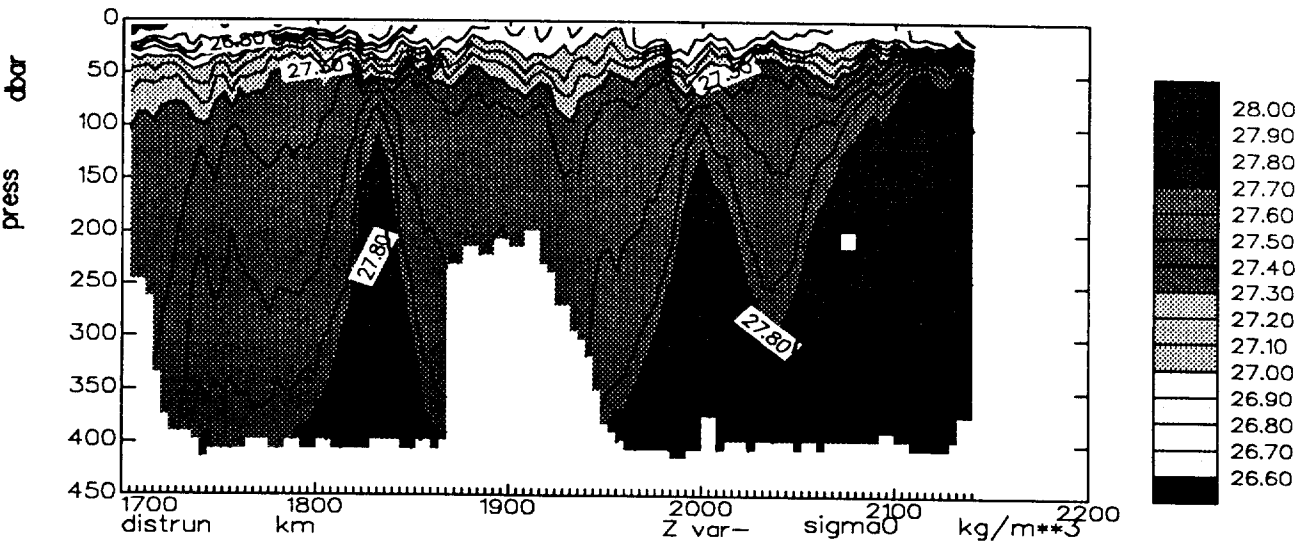
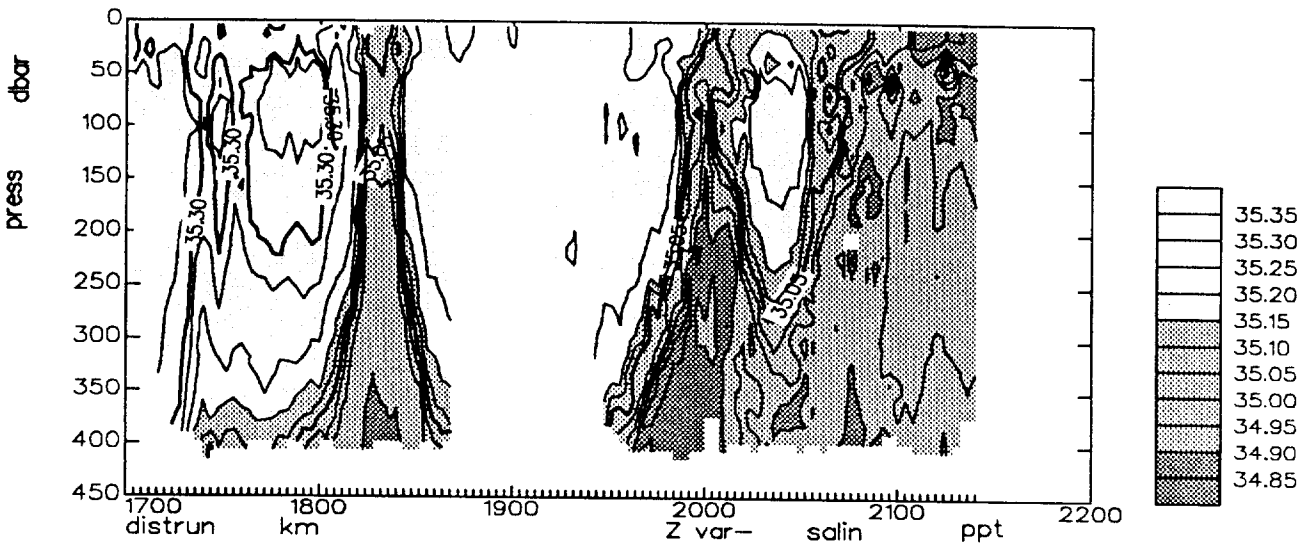
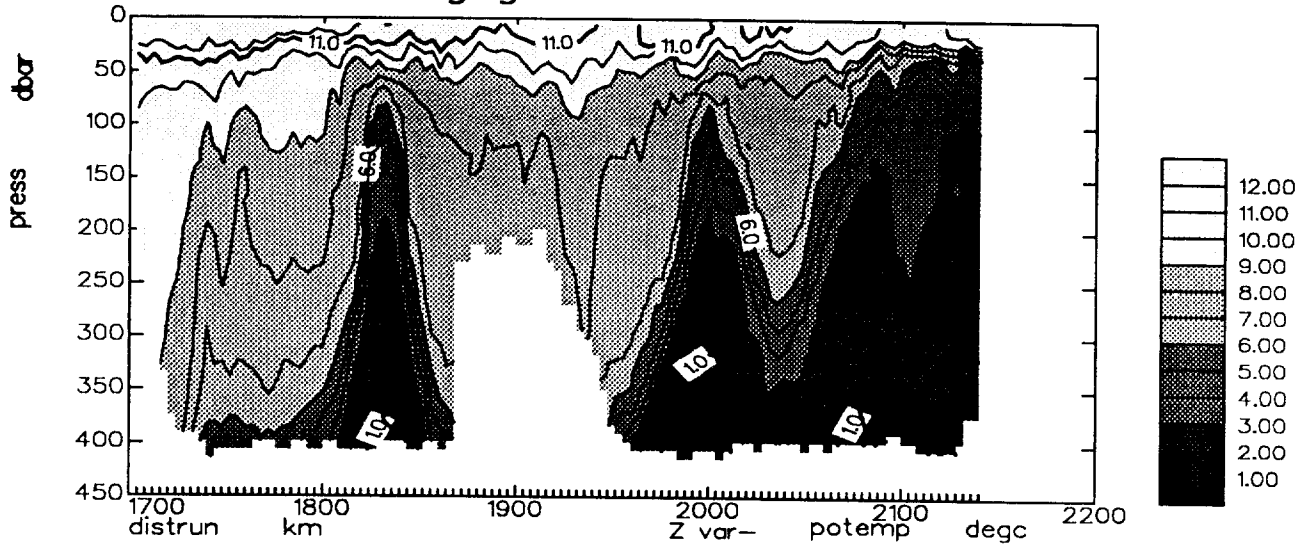
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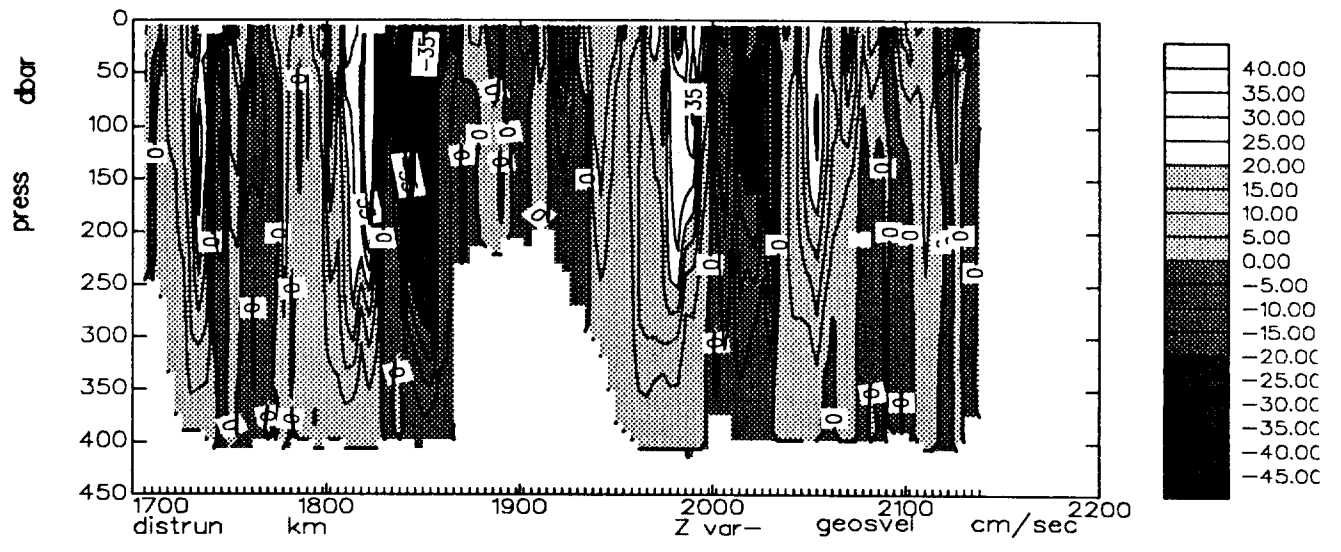
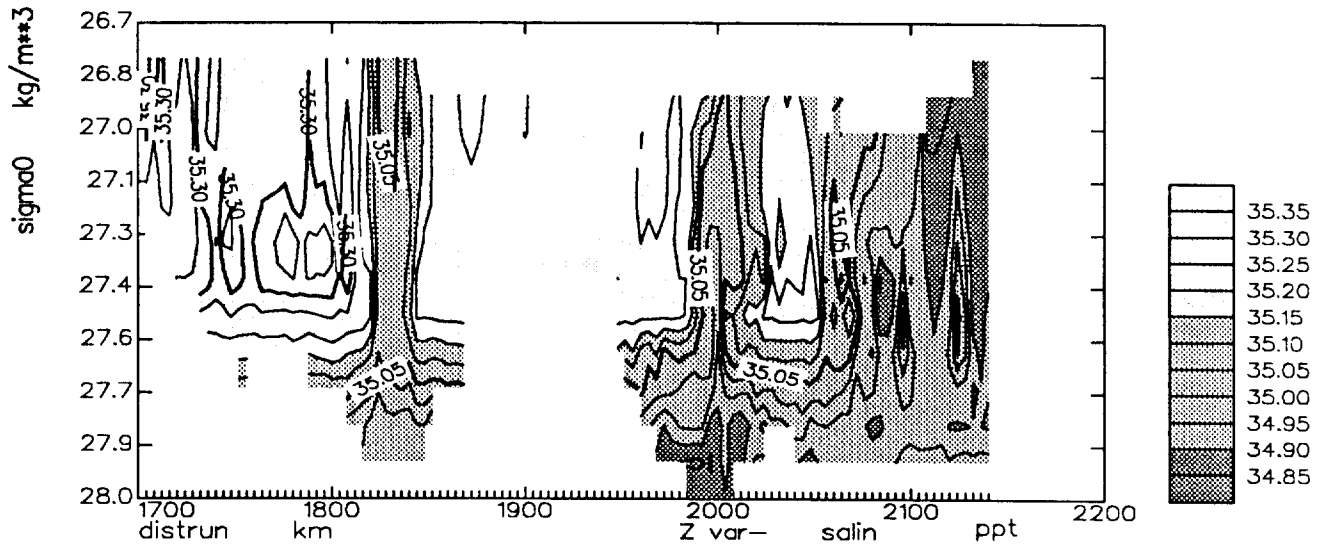
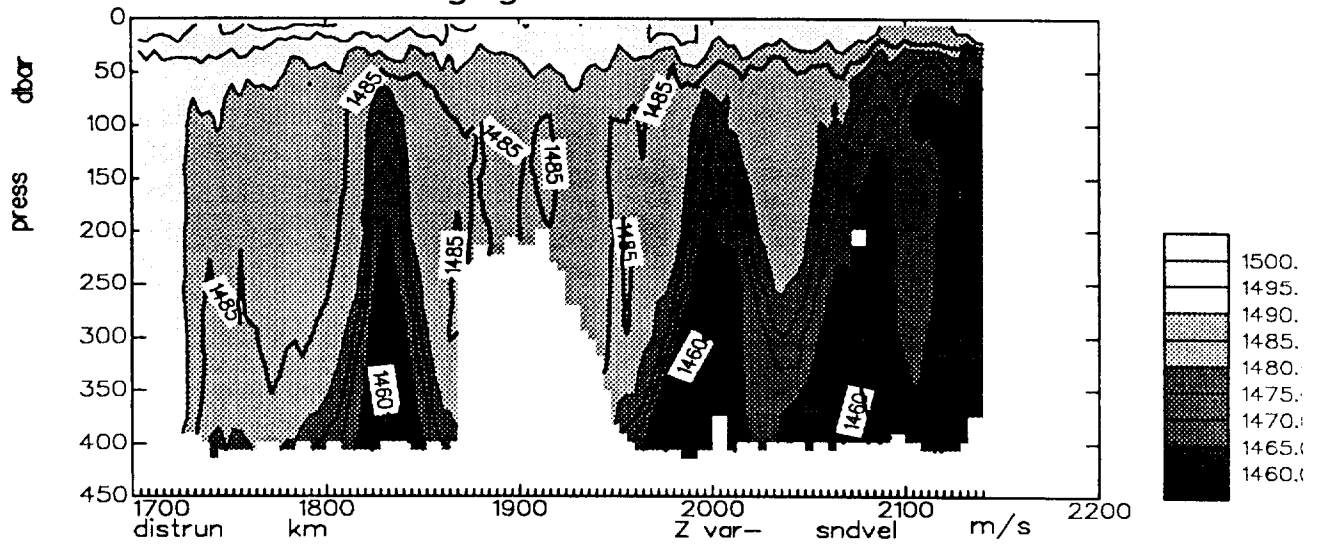
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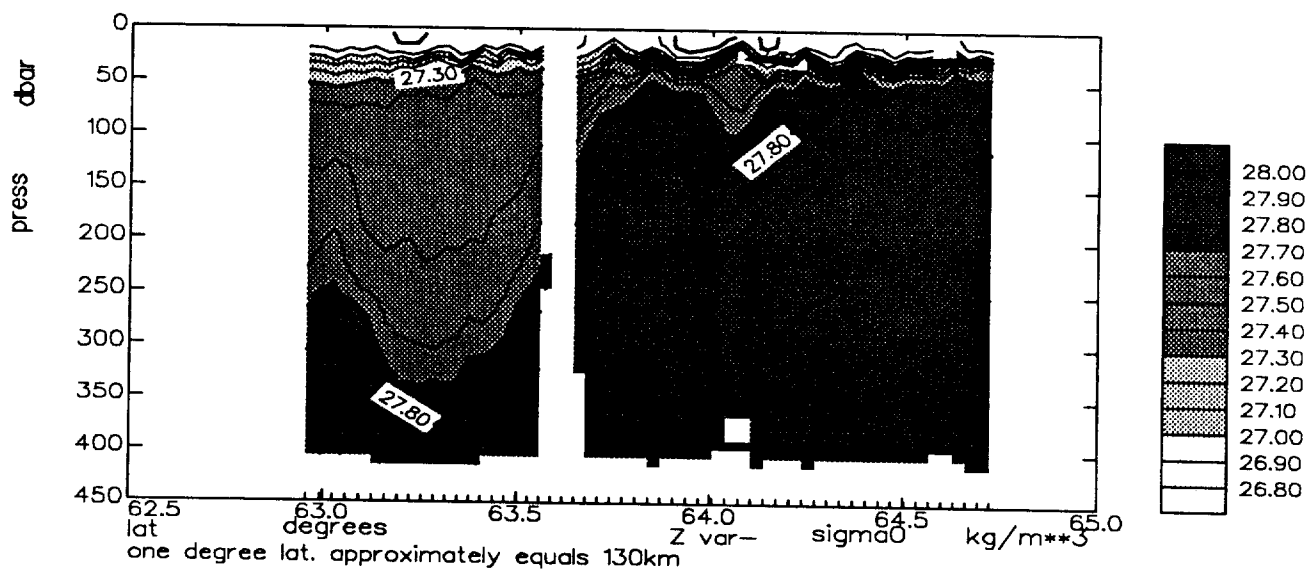
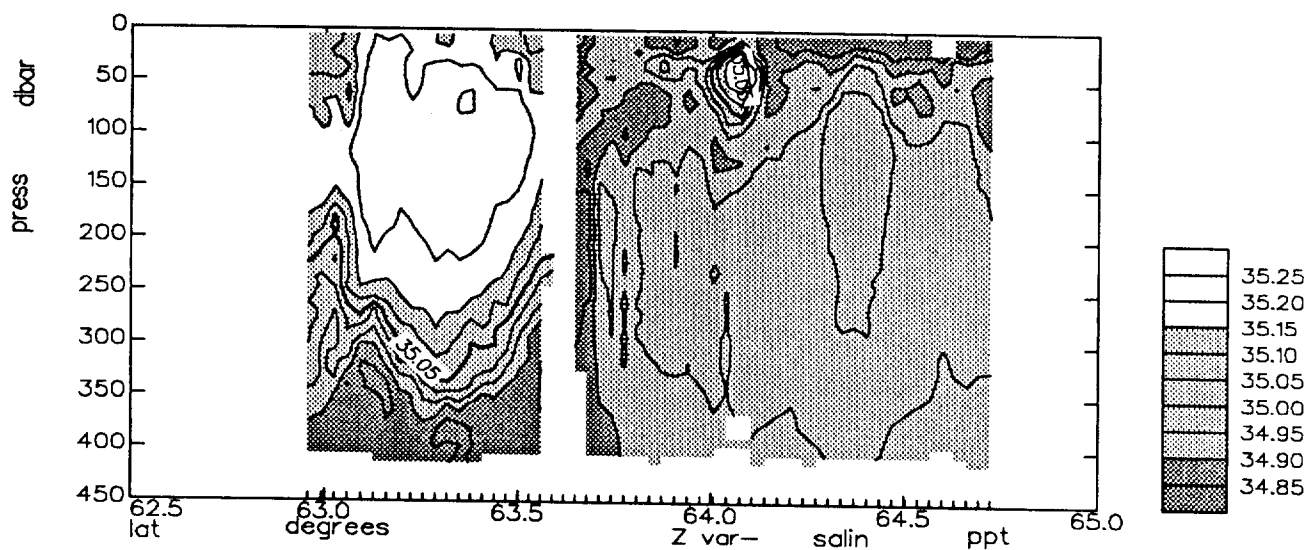
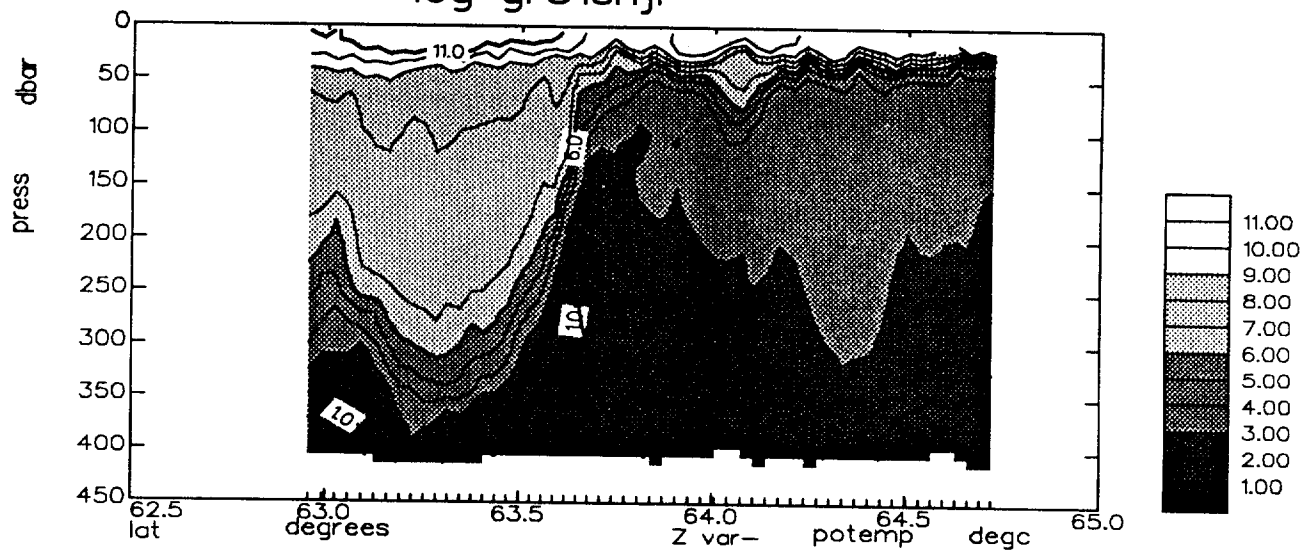
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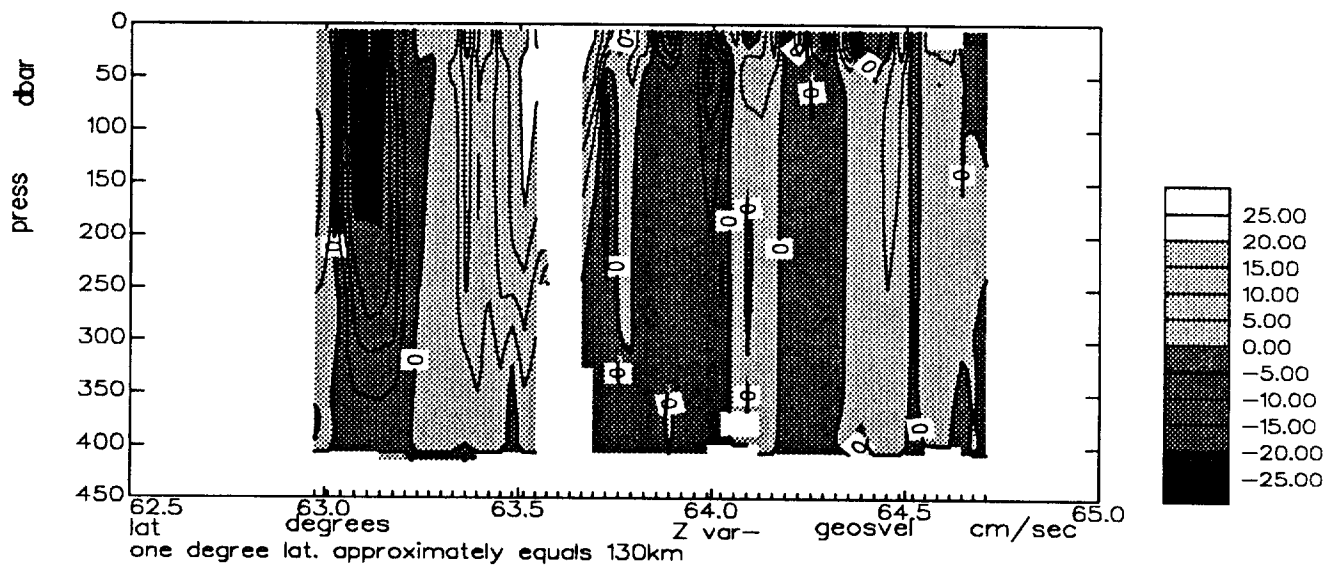
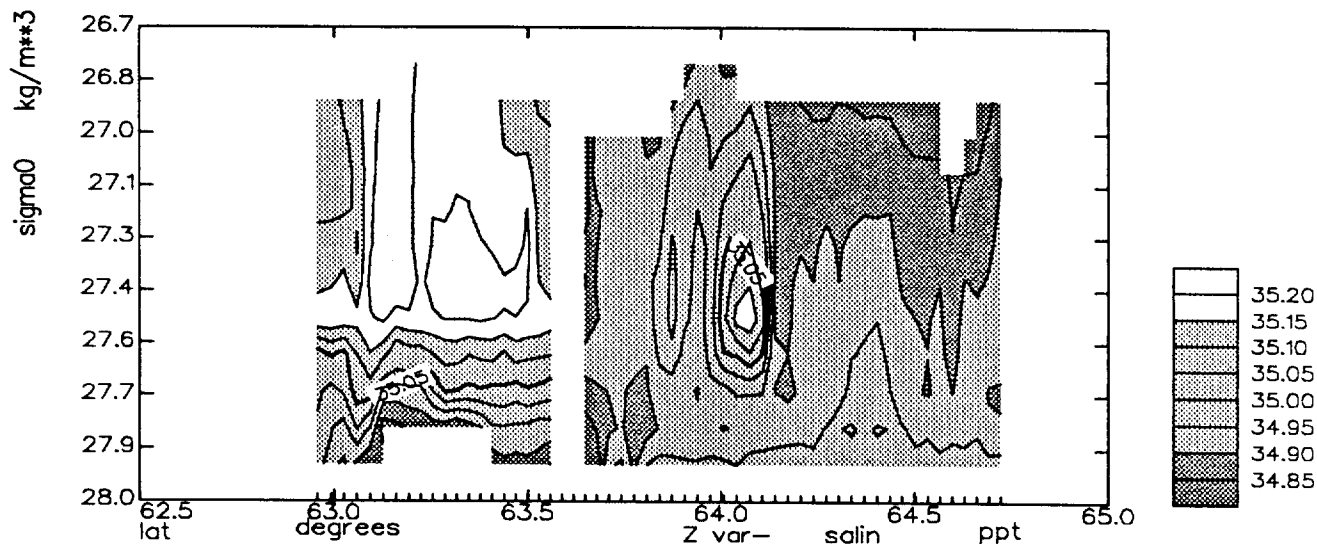
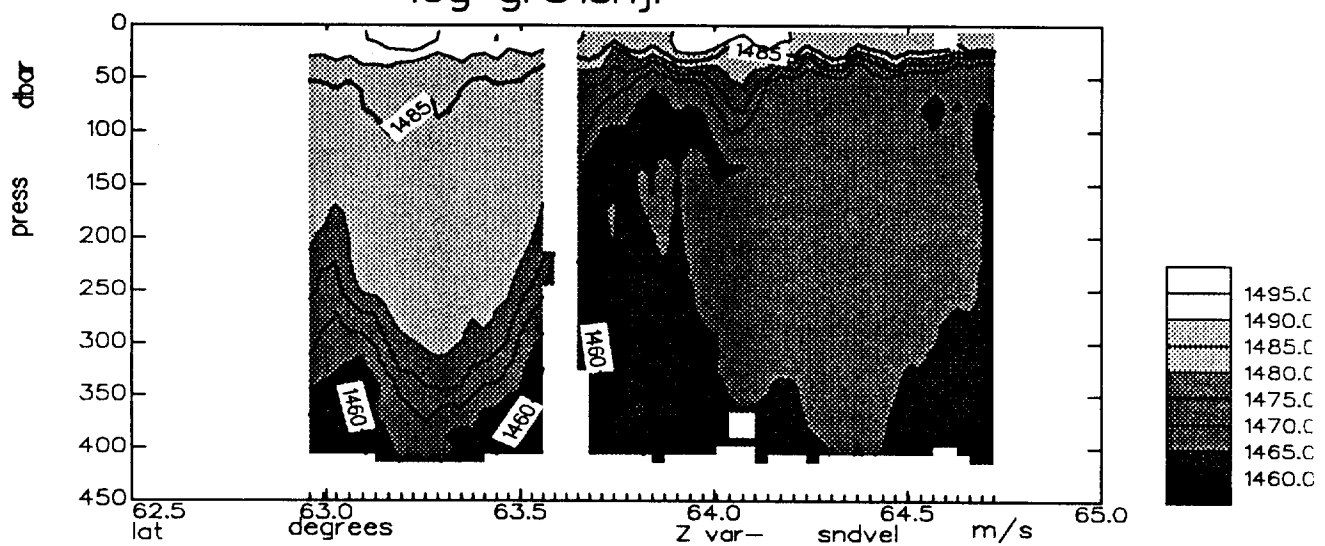
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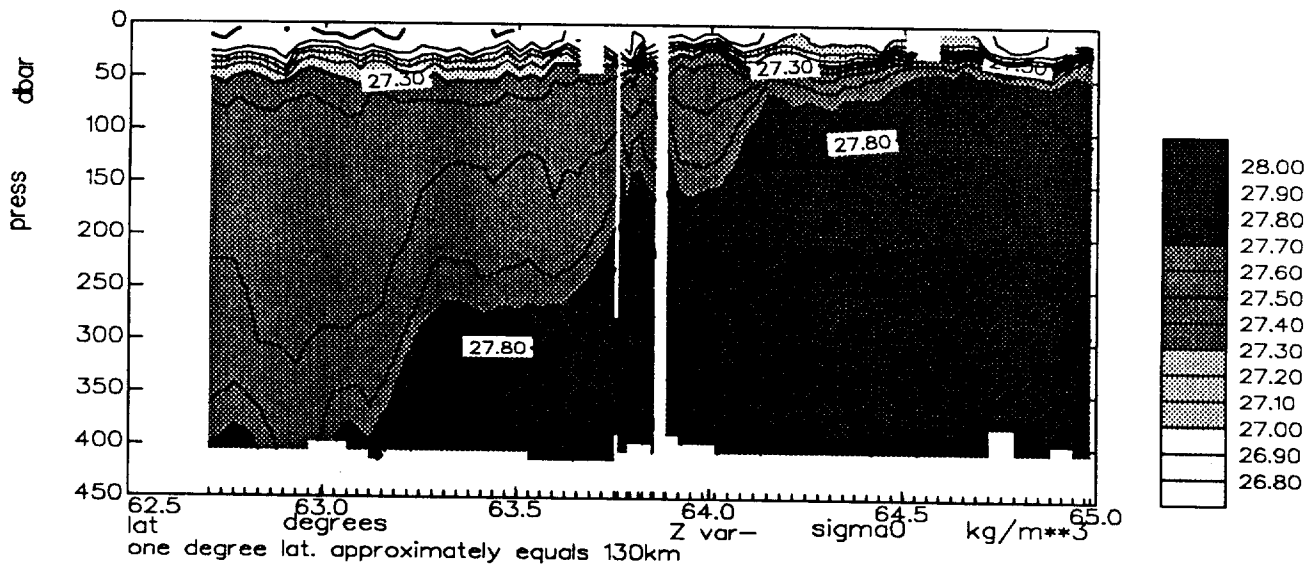
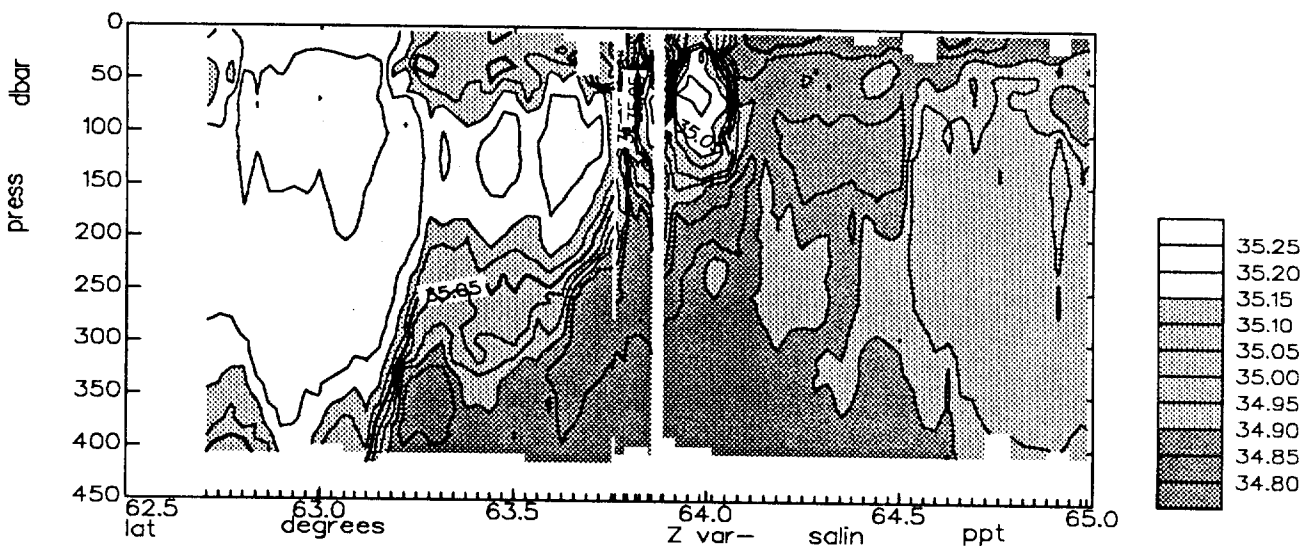
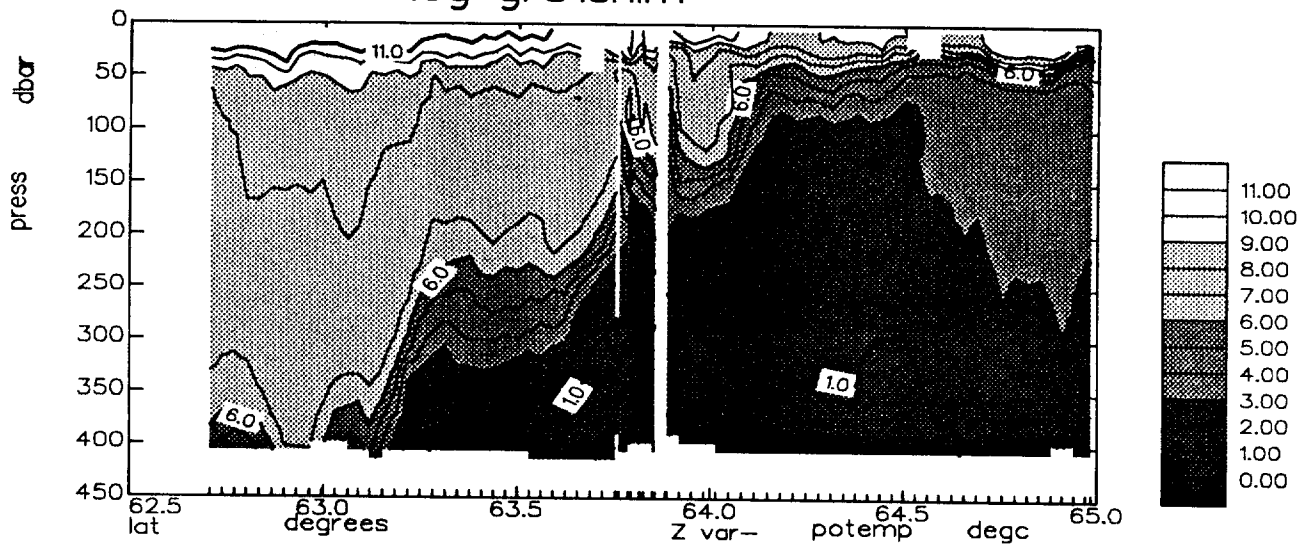
leg gr51snjl



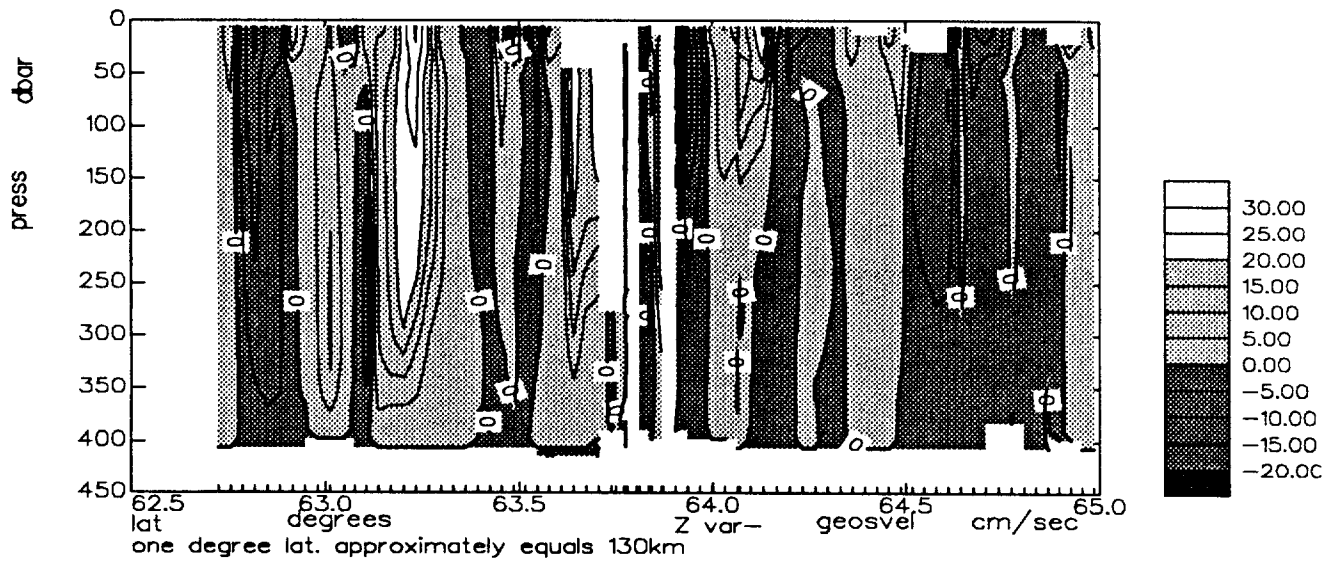
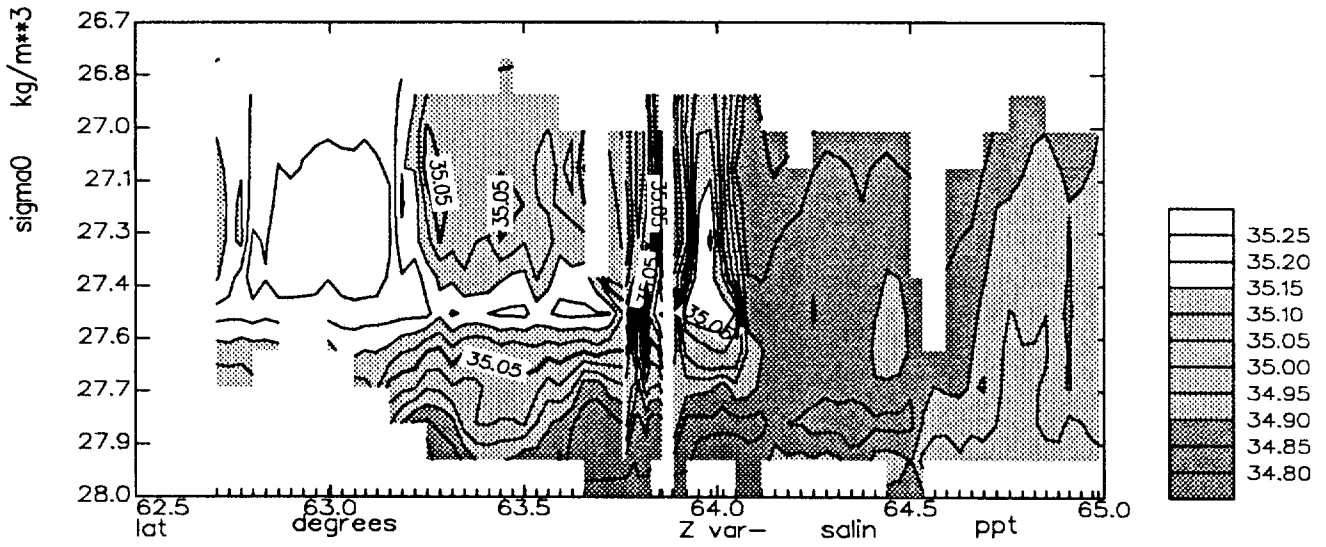
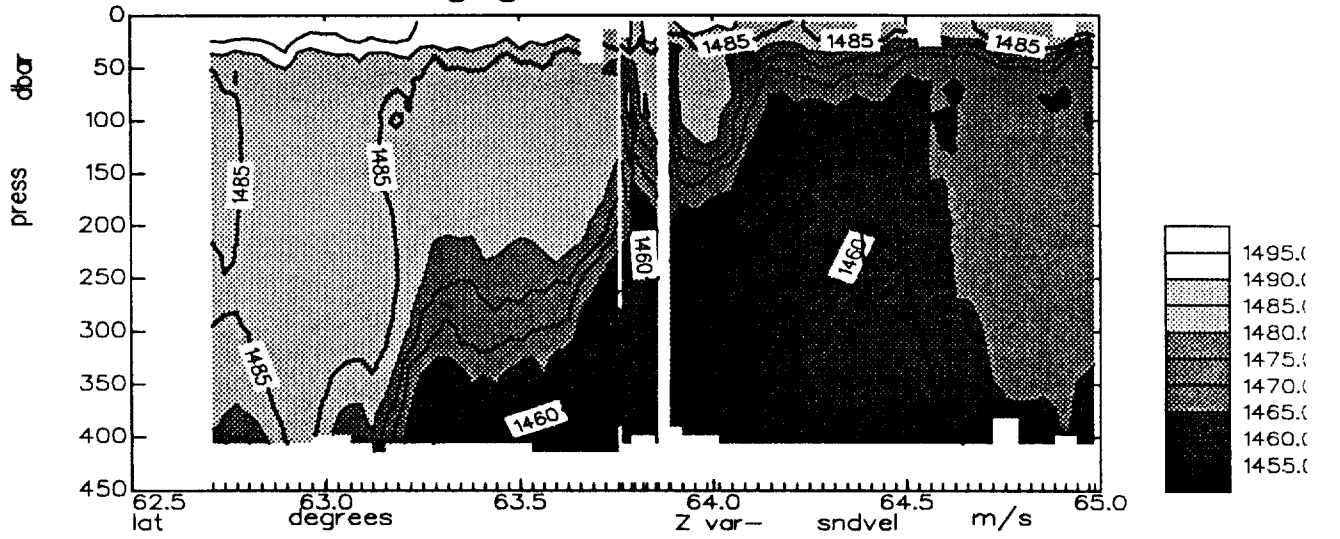
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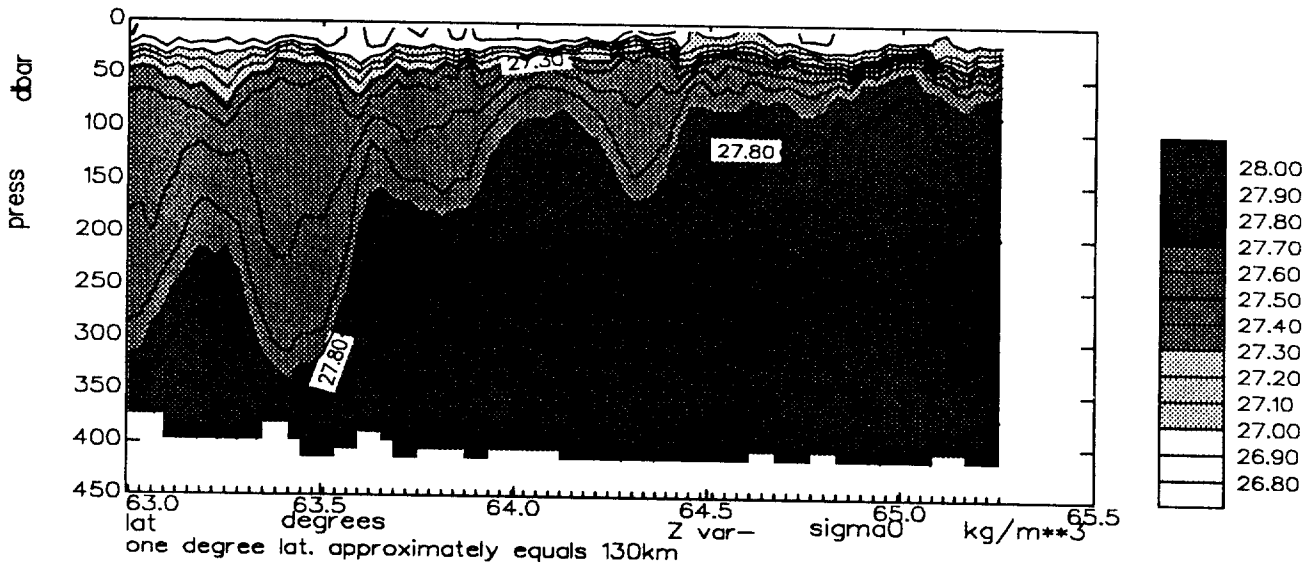
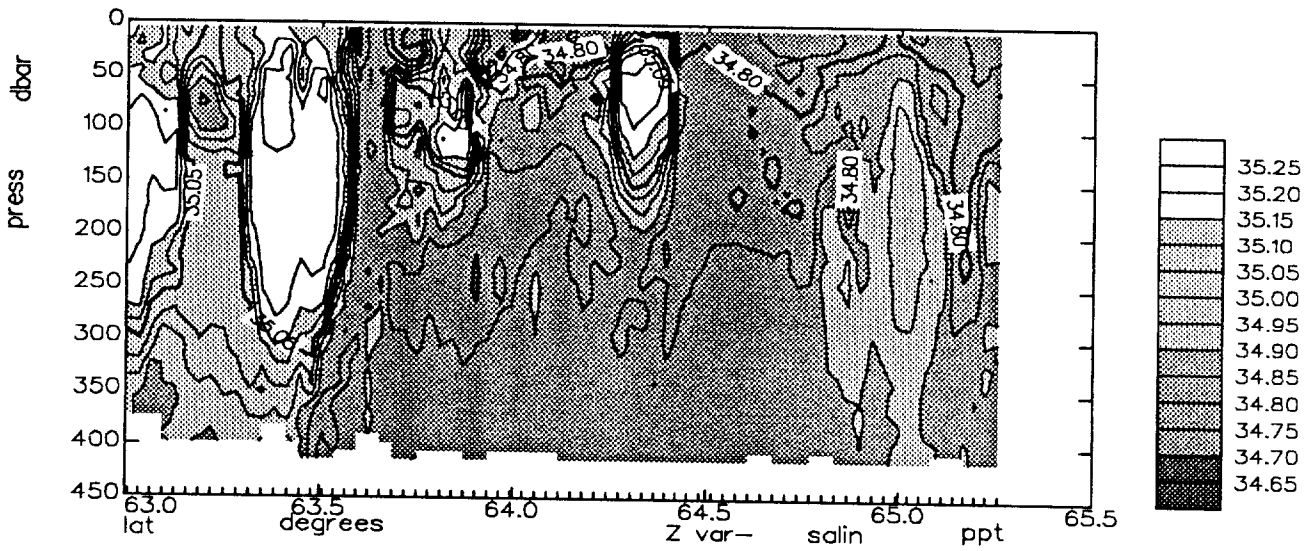
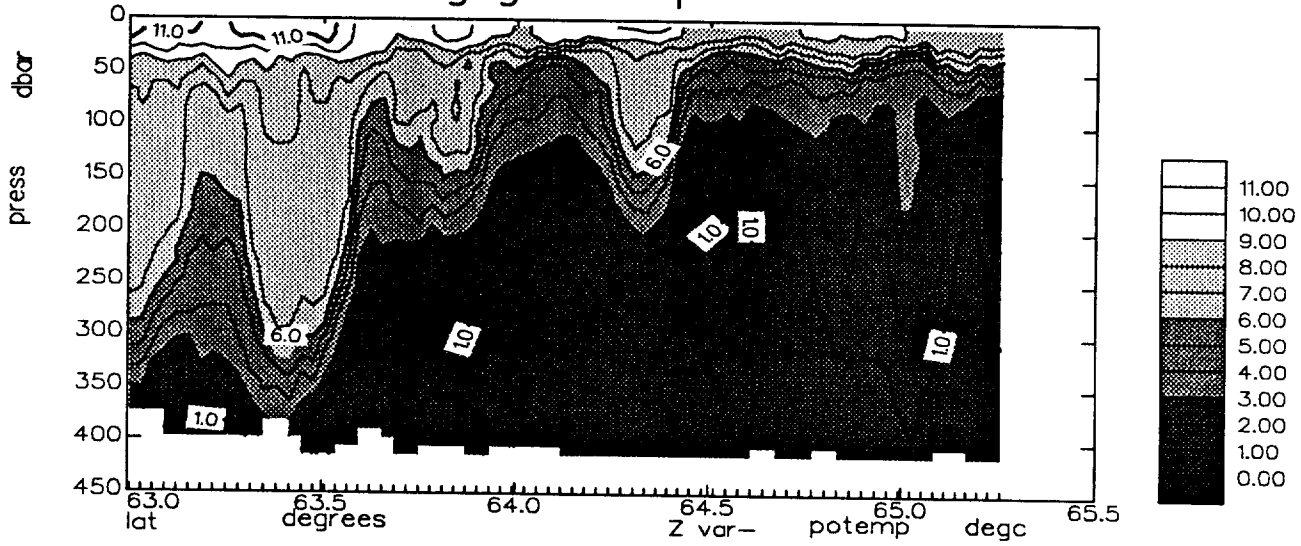
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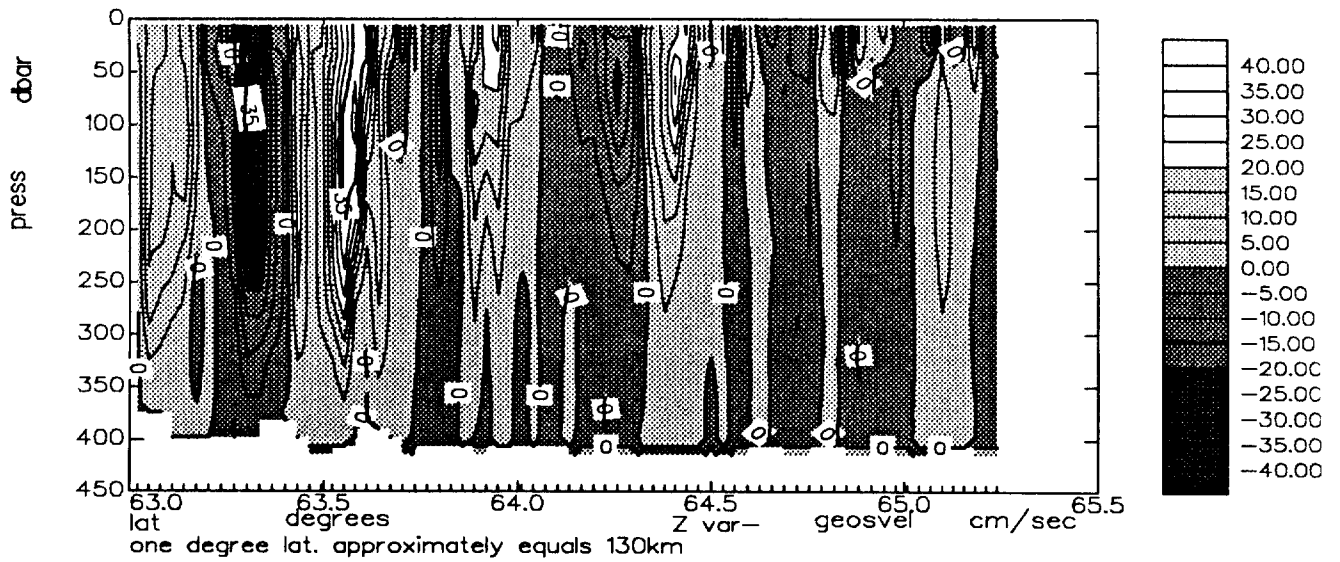
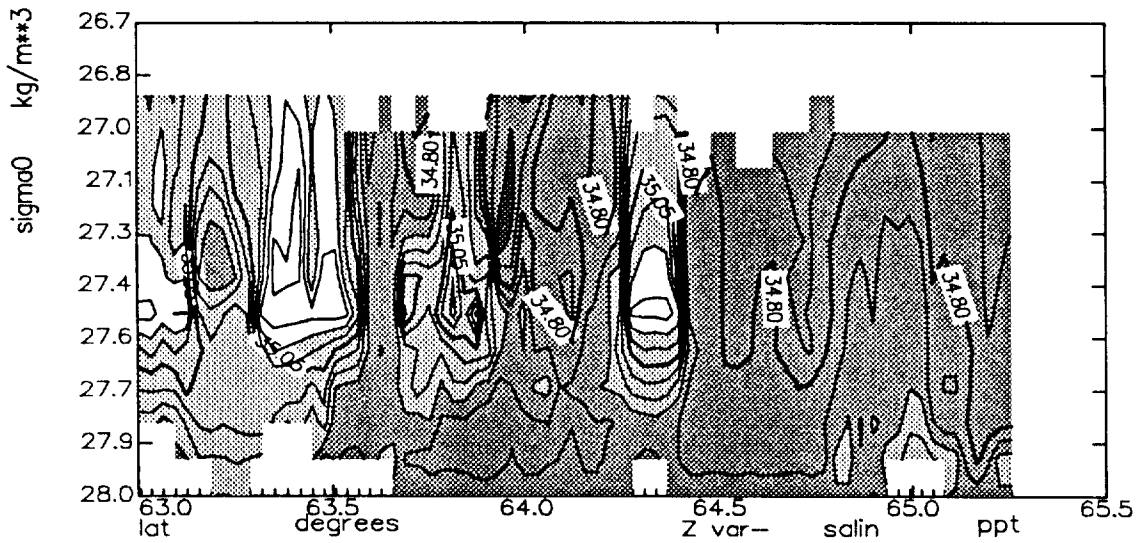
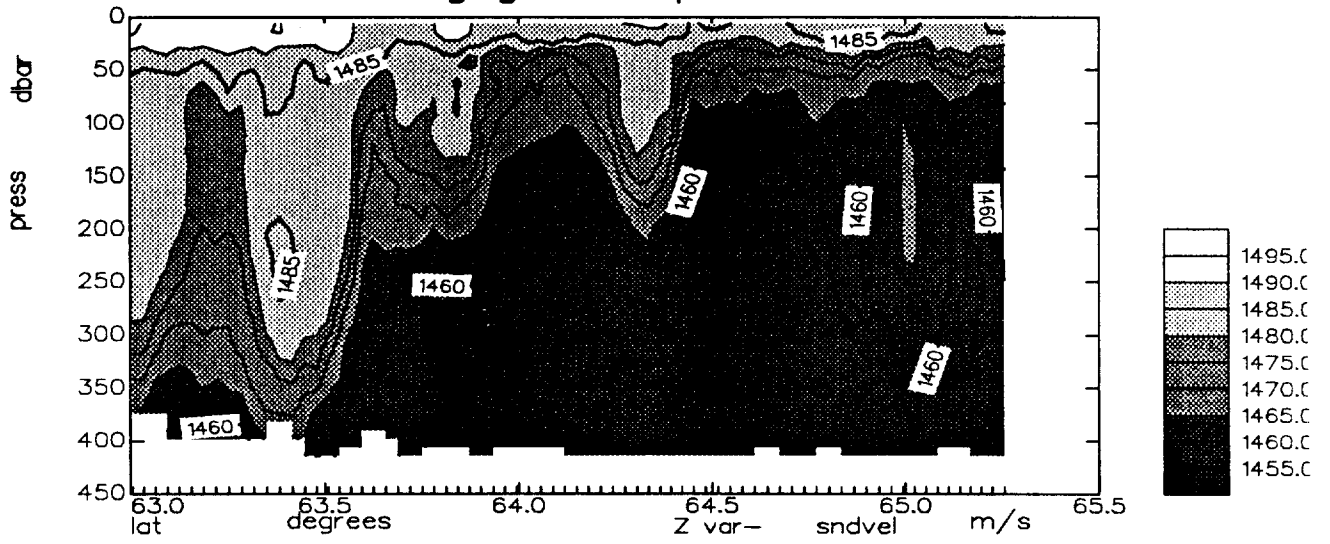
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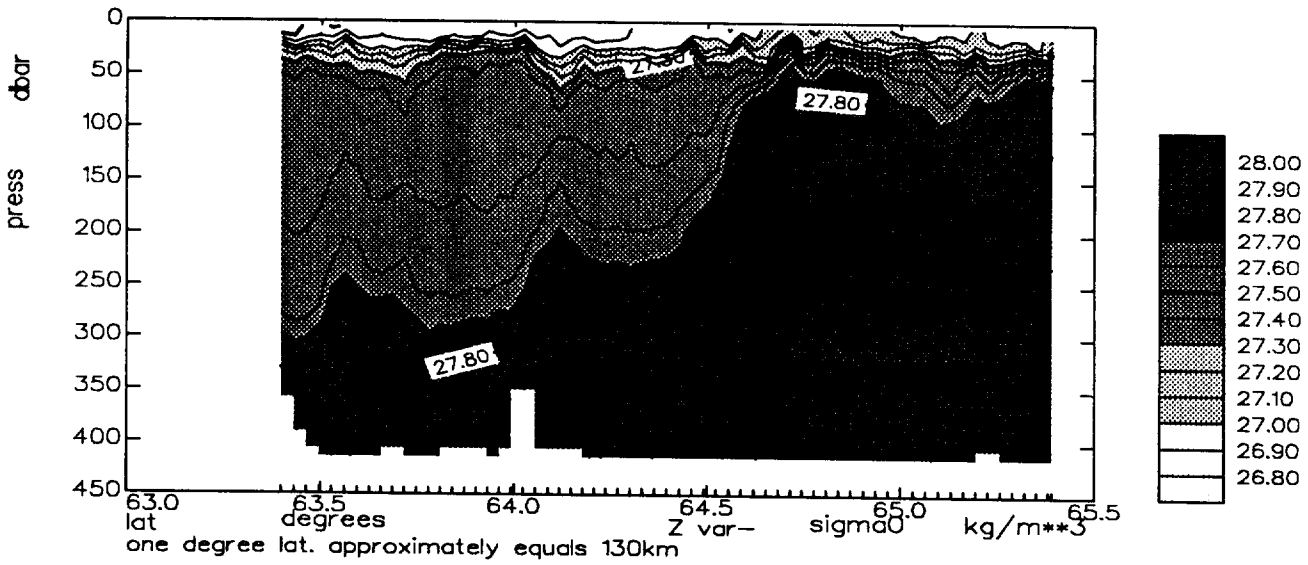
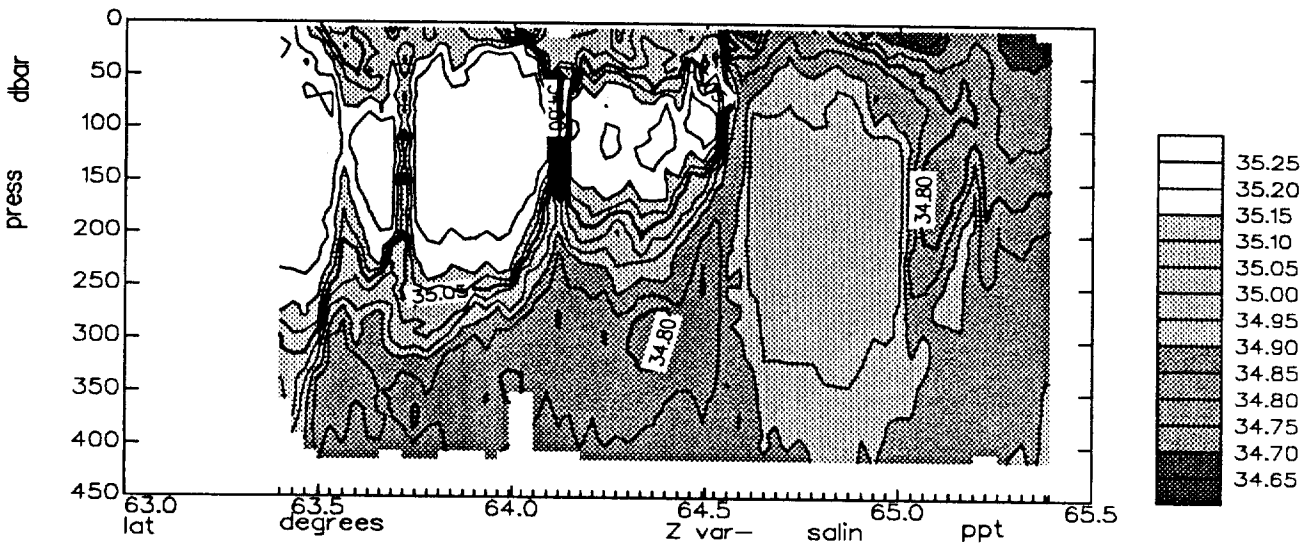
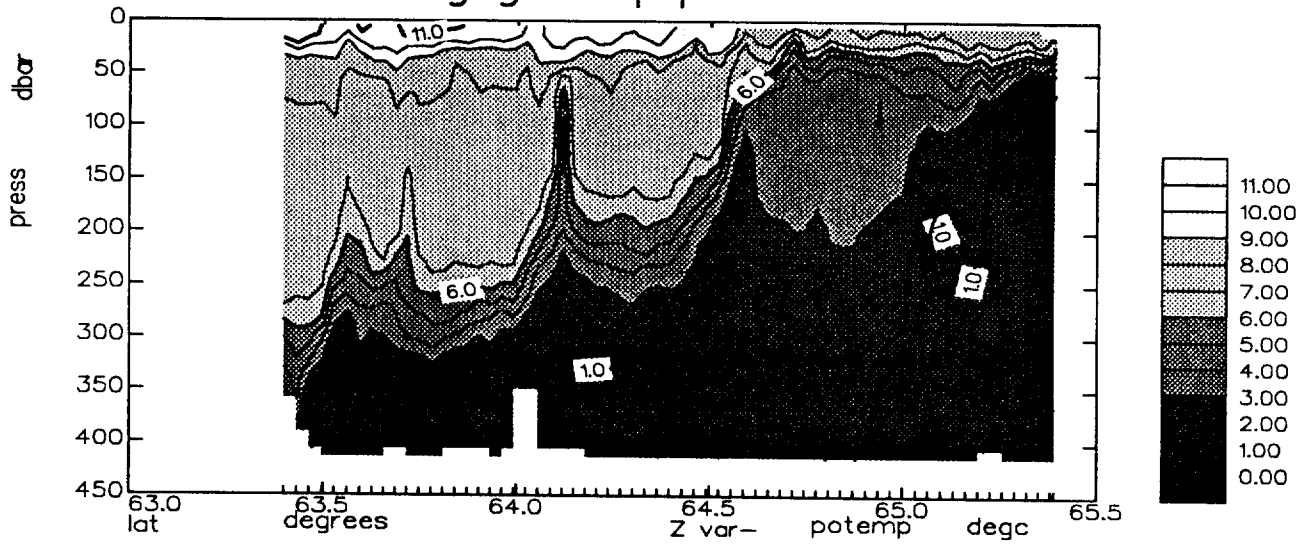
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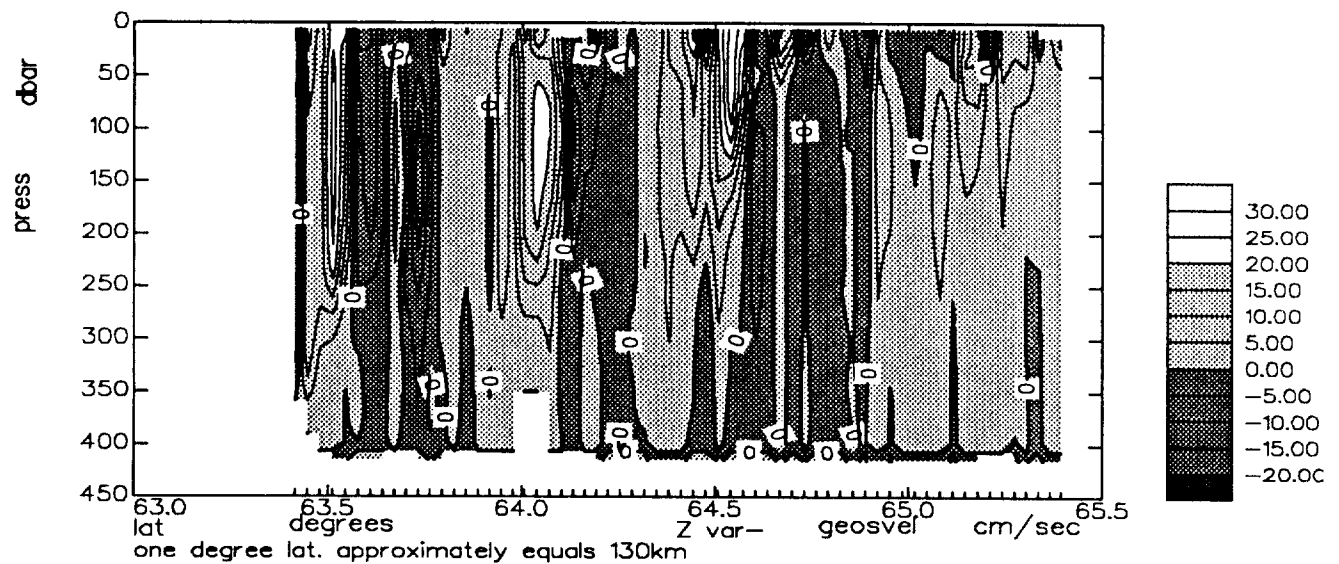
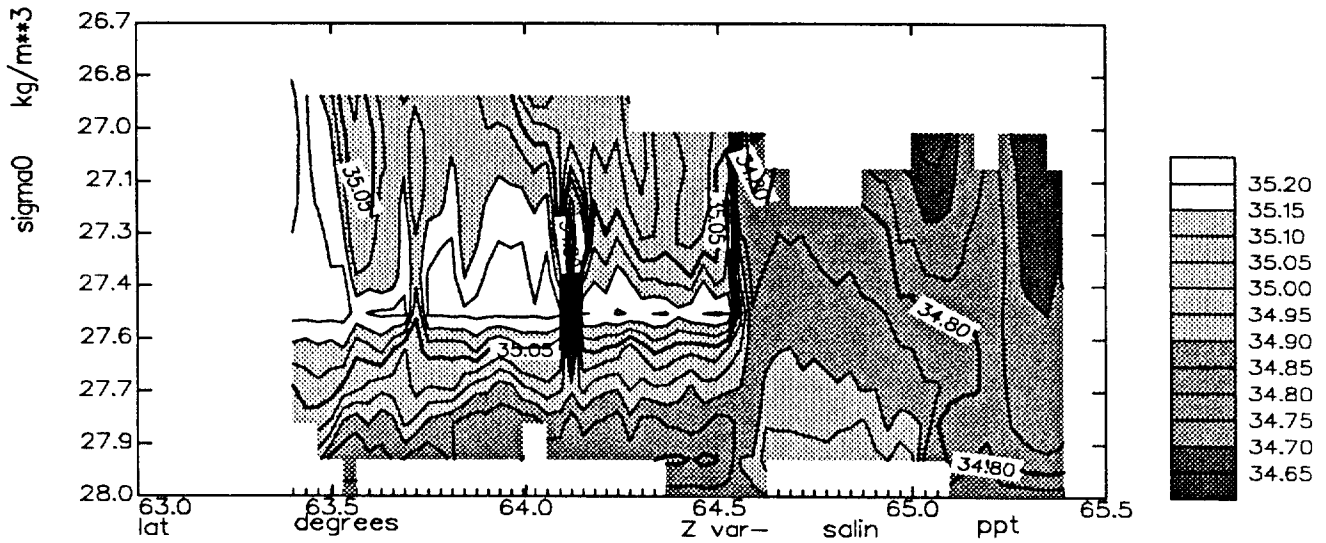
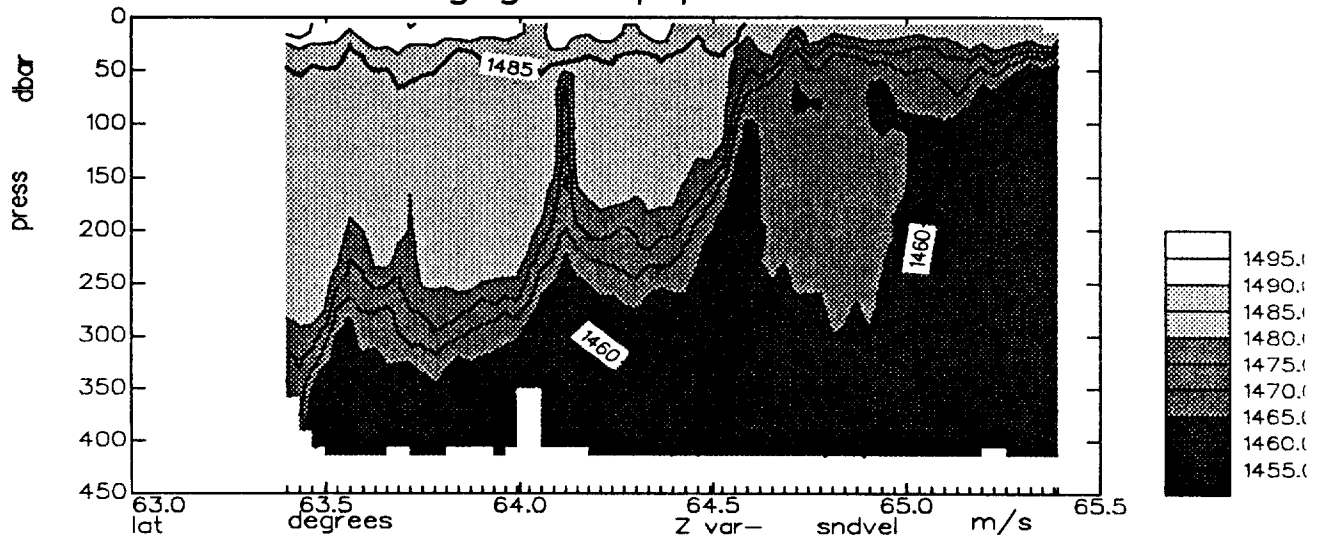
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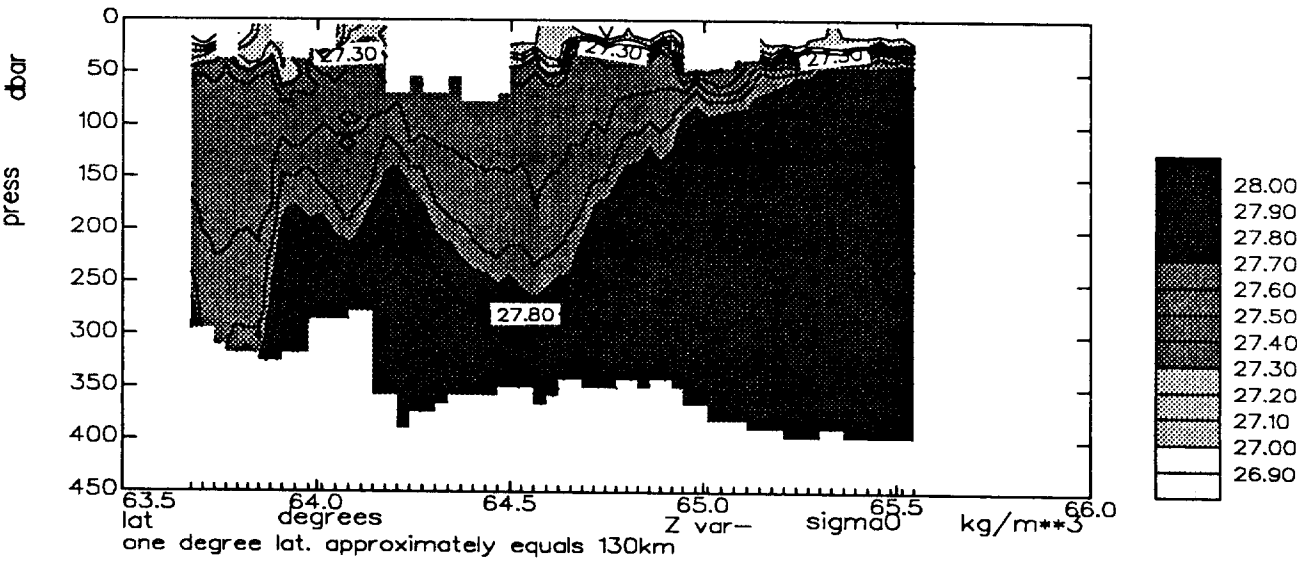
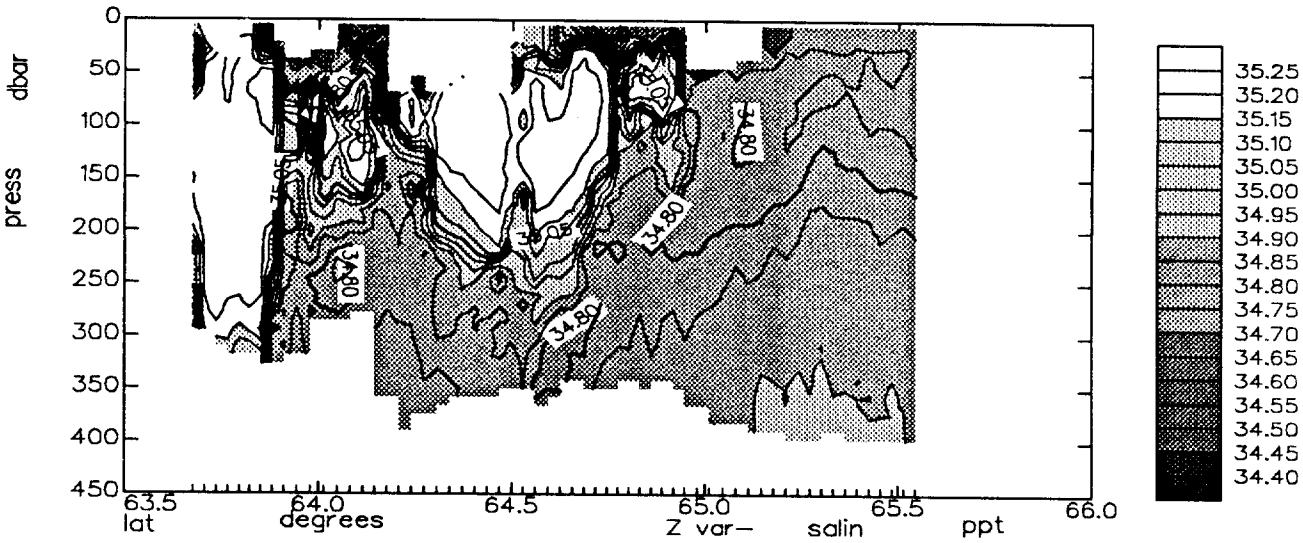
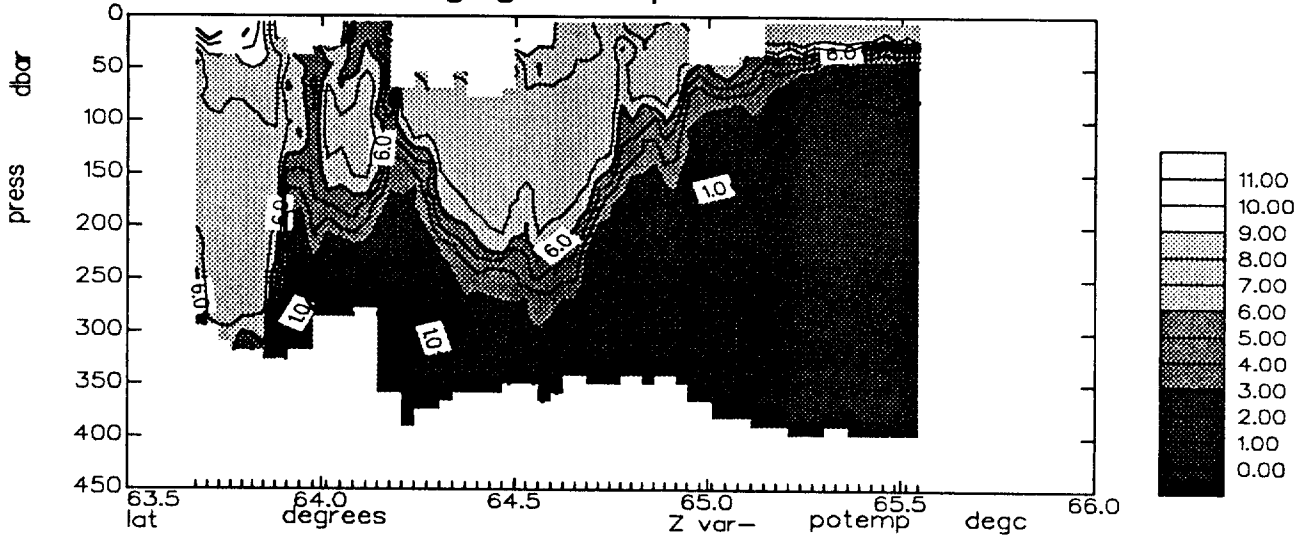
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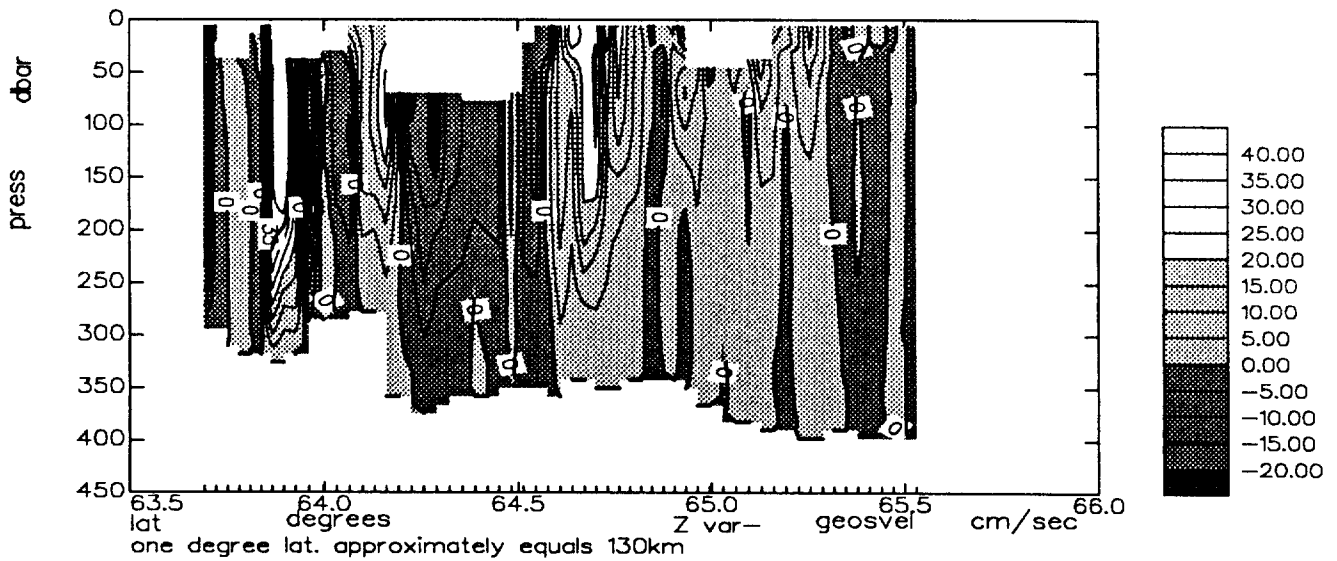
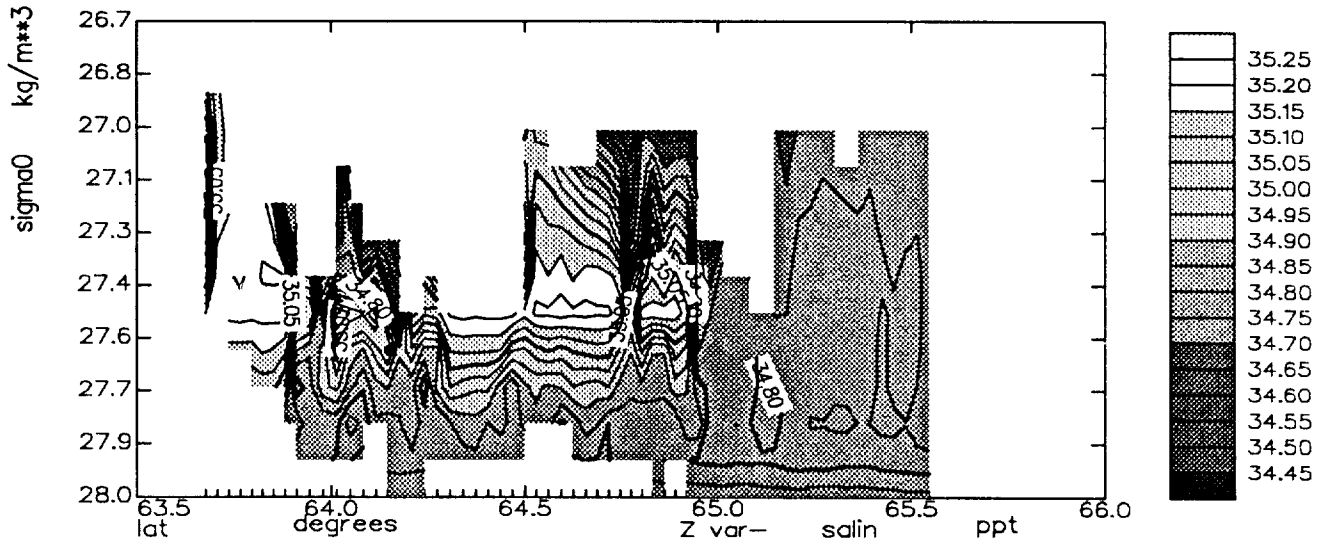
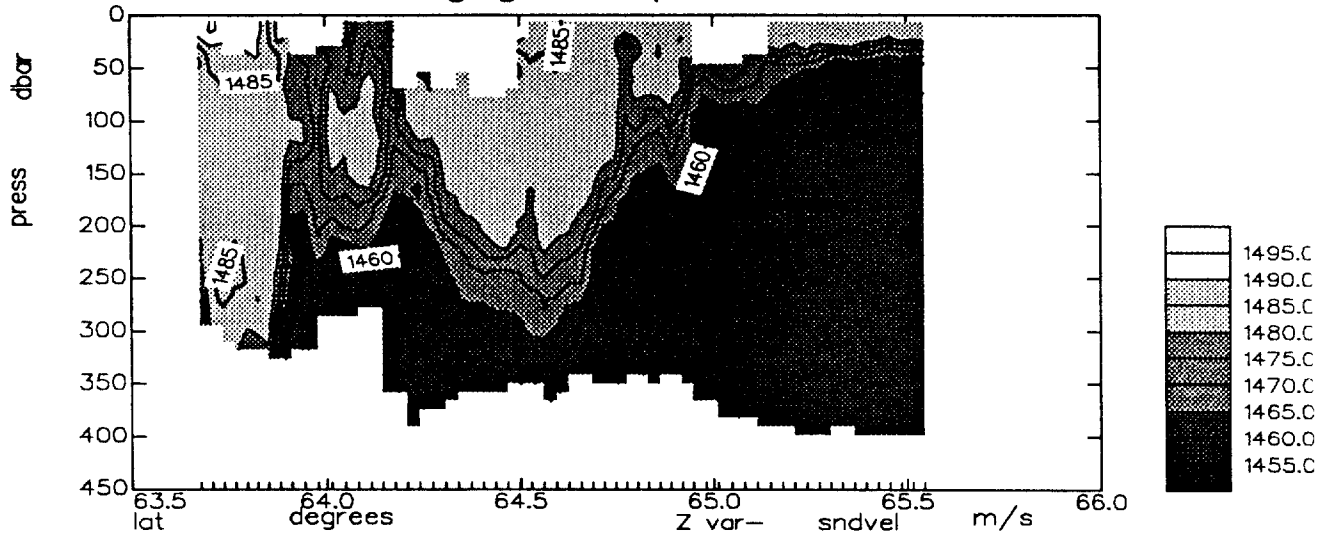
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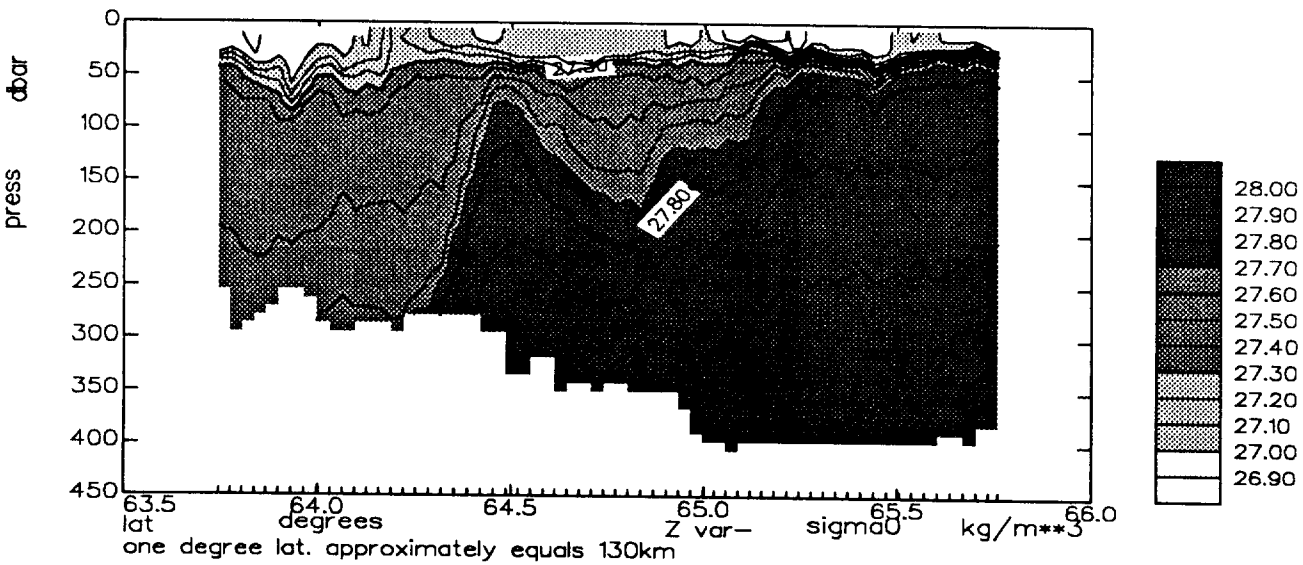
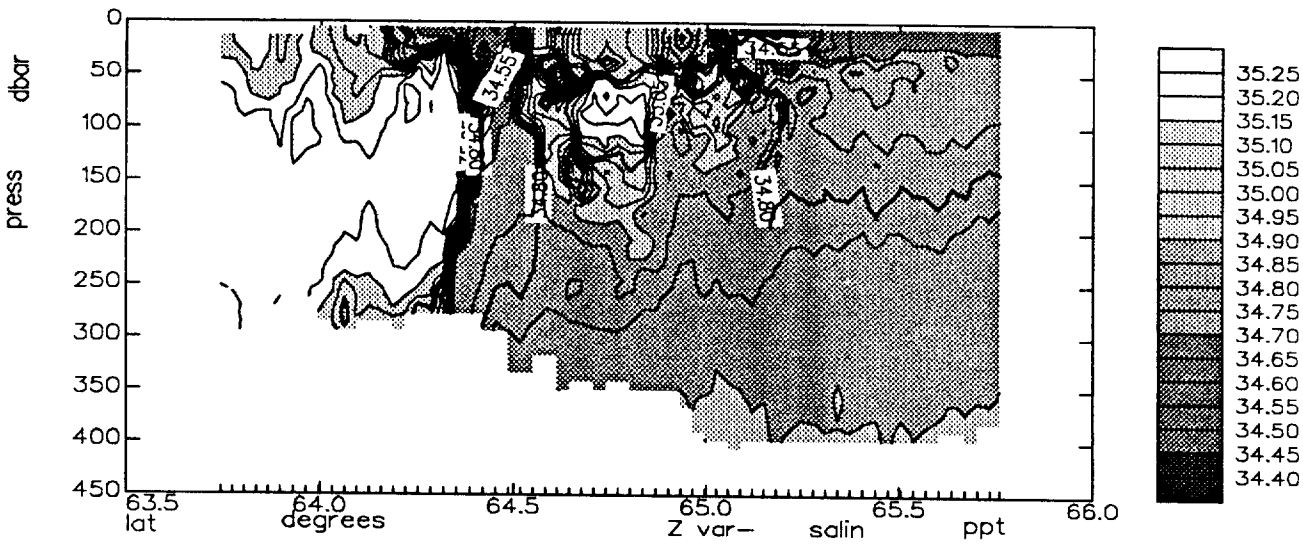
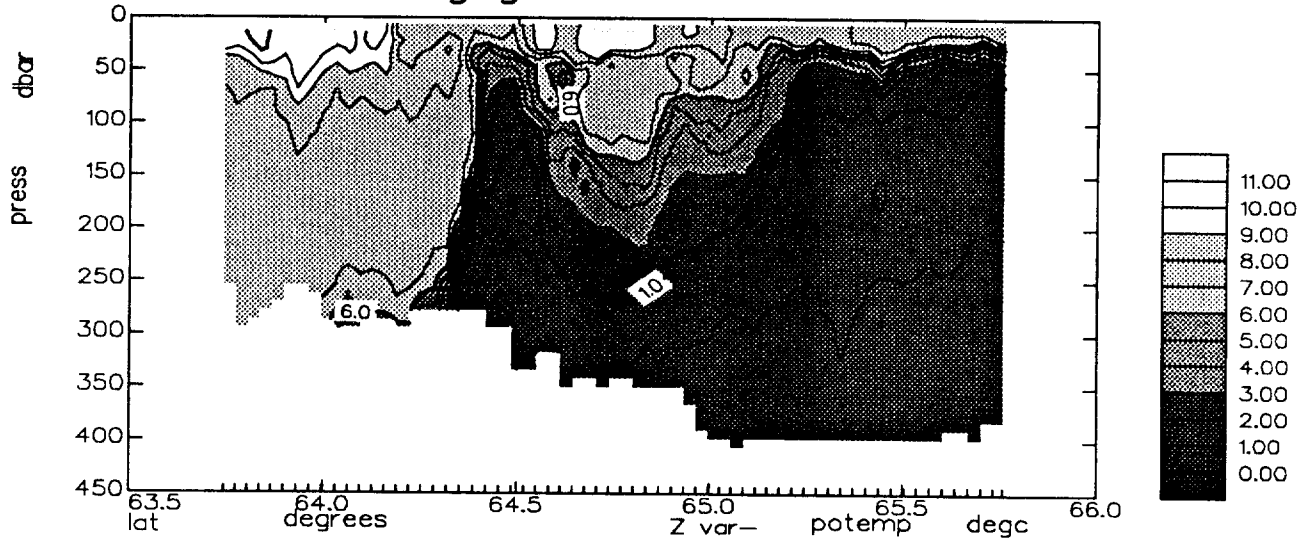
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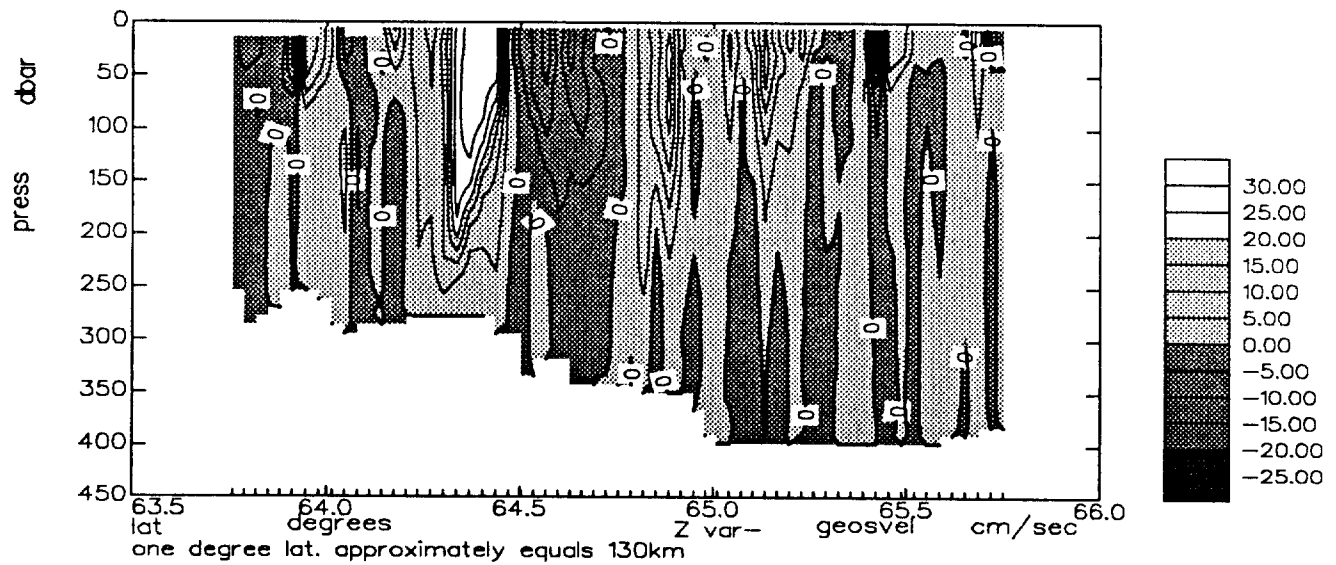
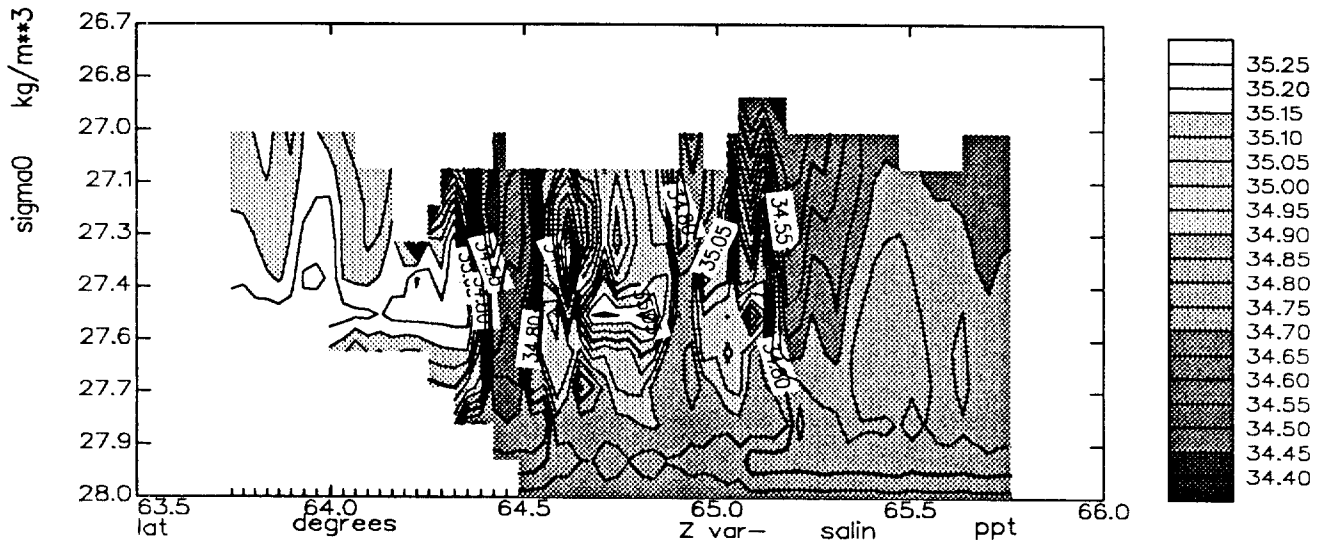
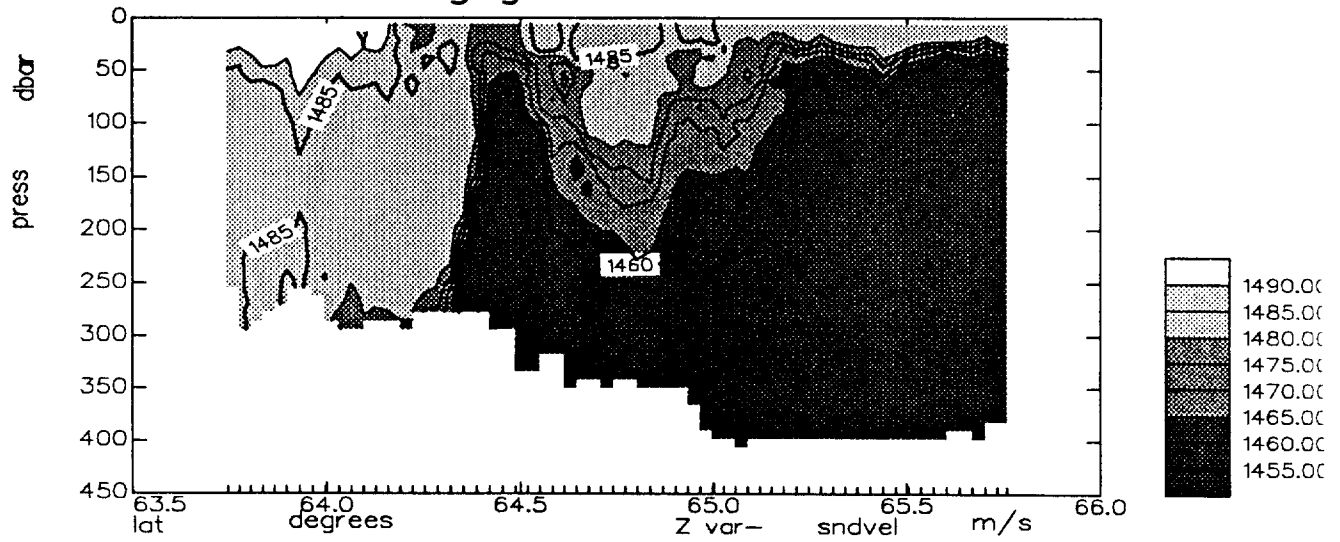
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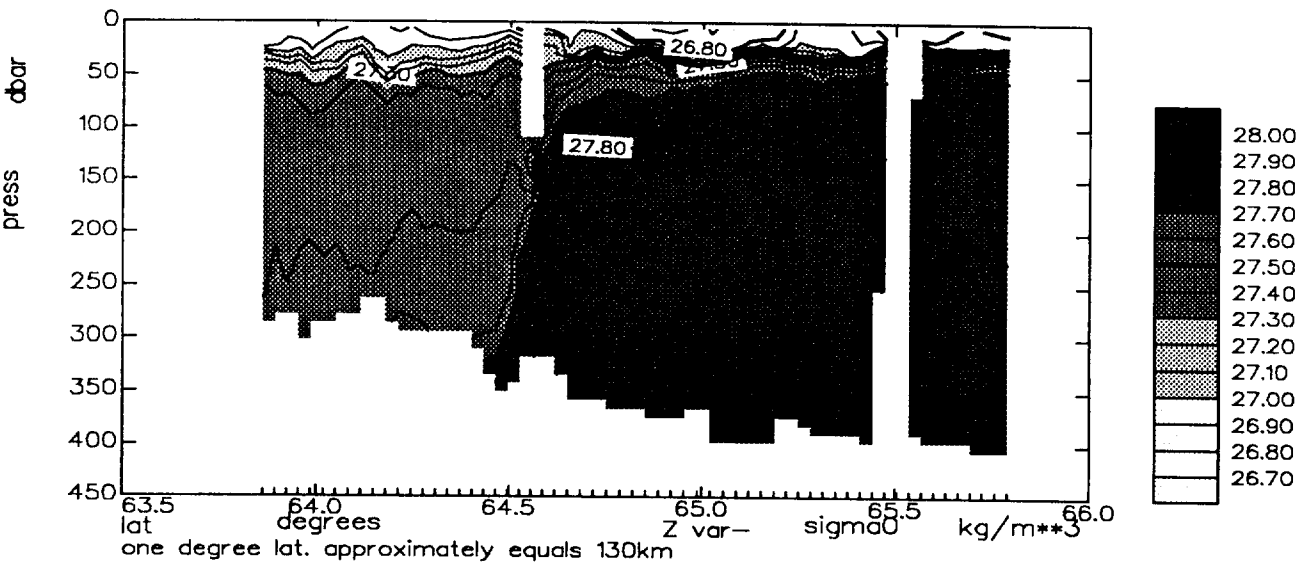
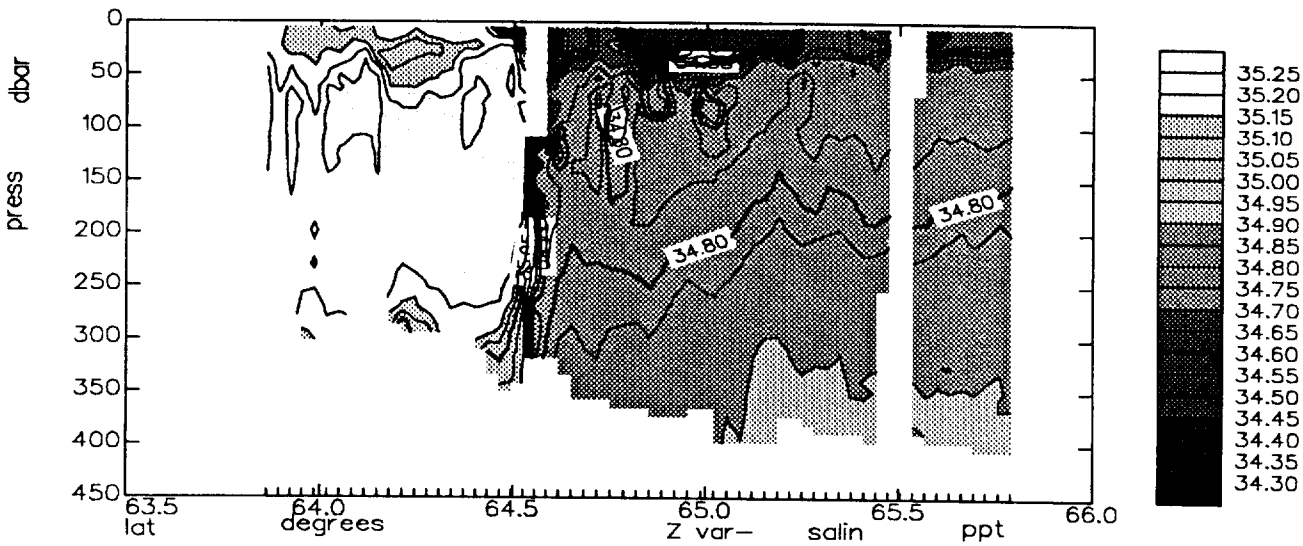
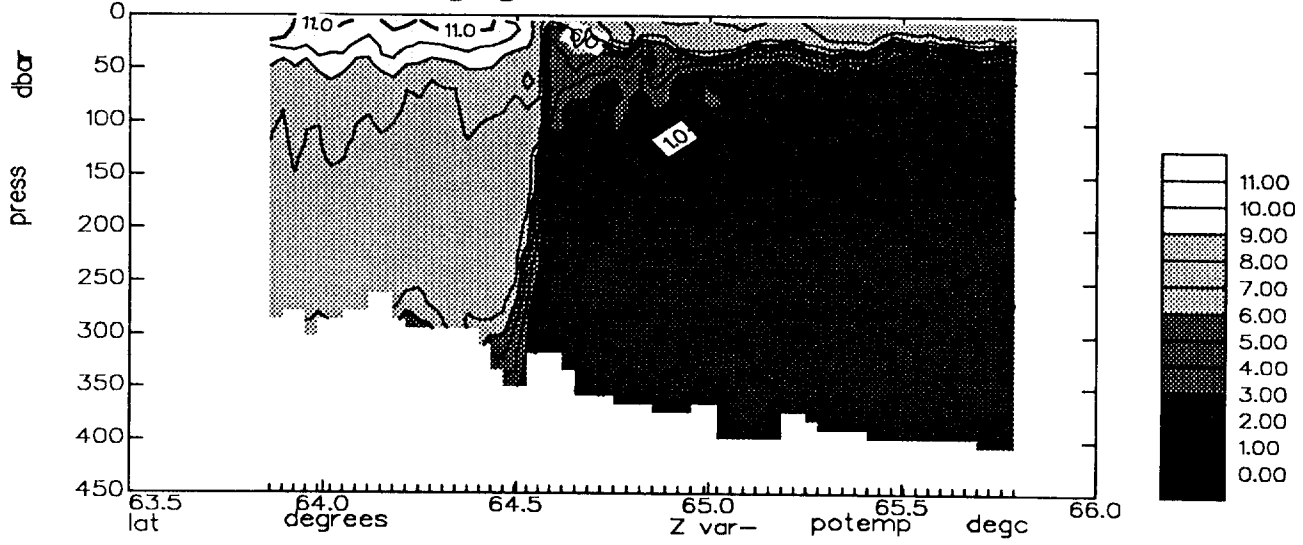
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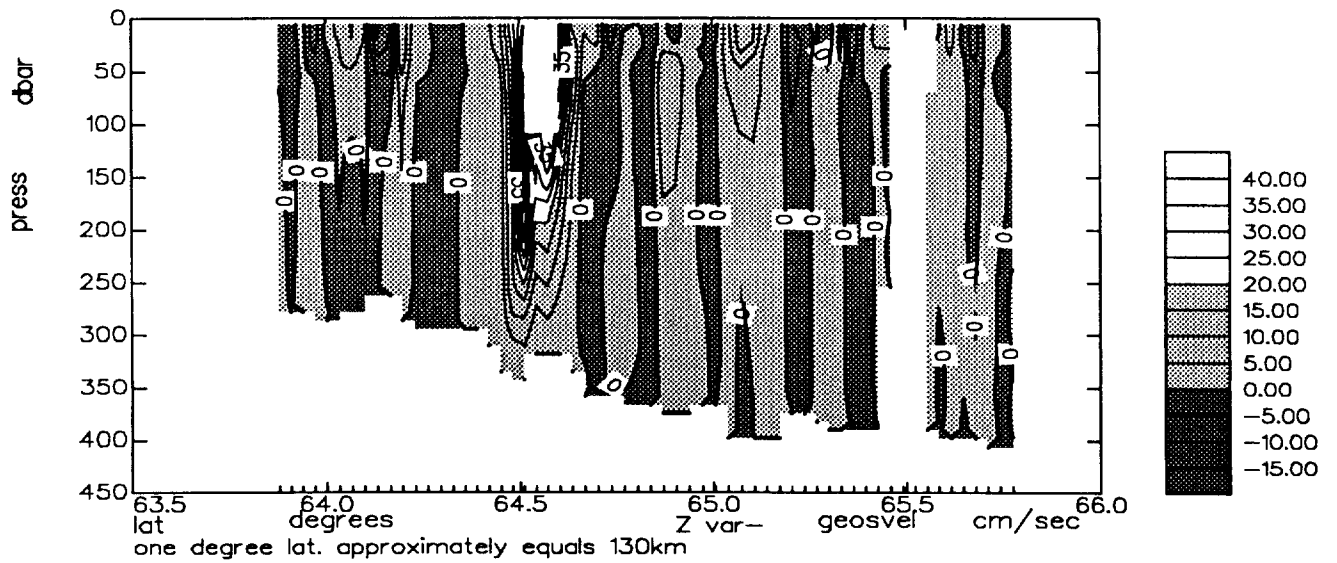
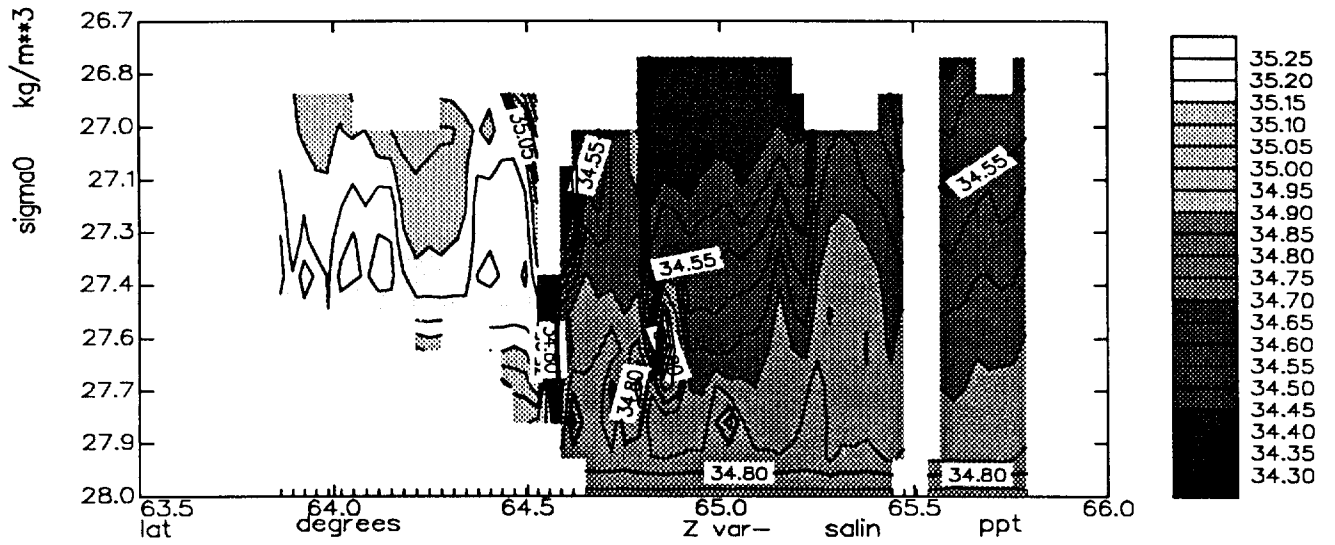
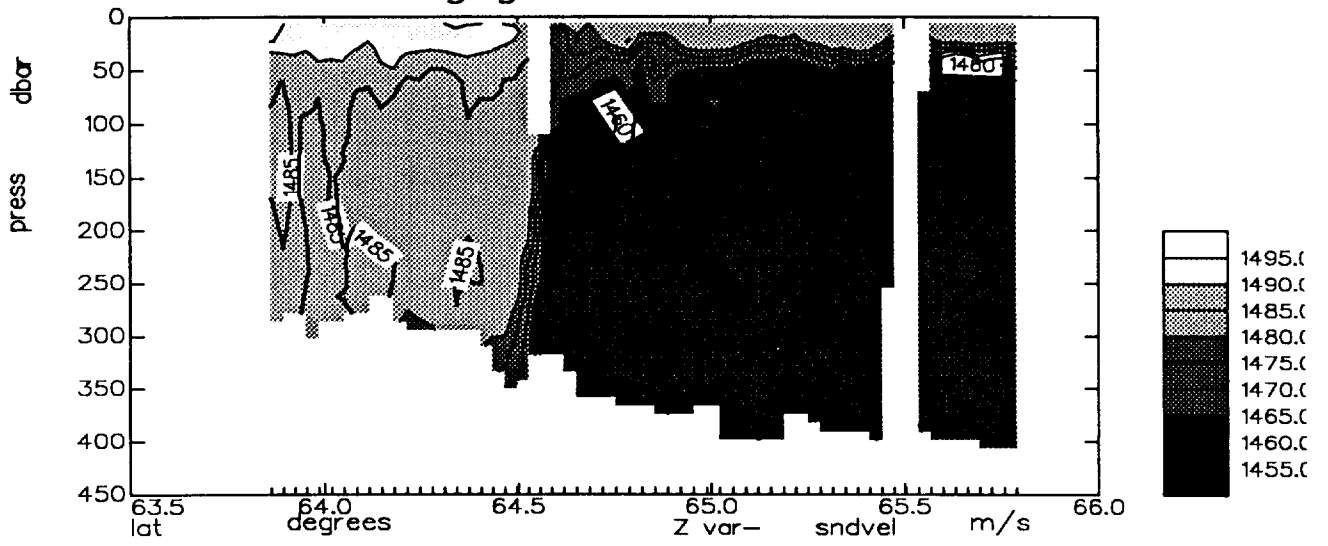
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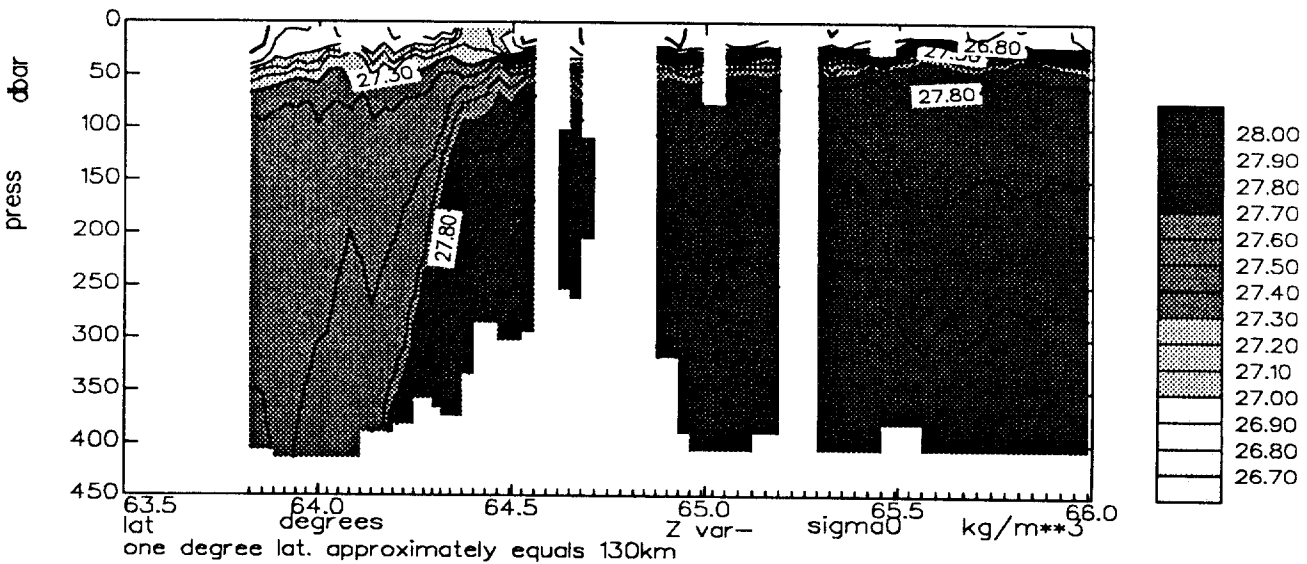
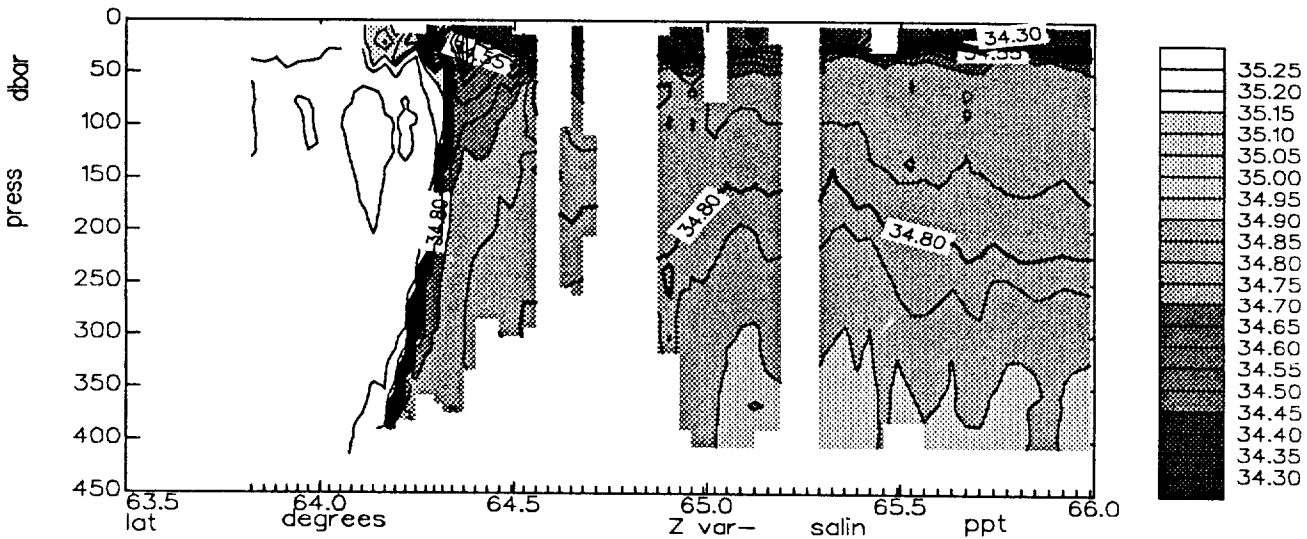
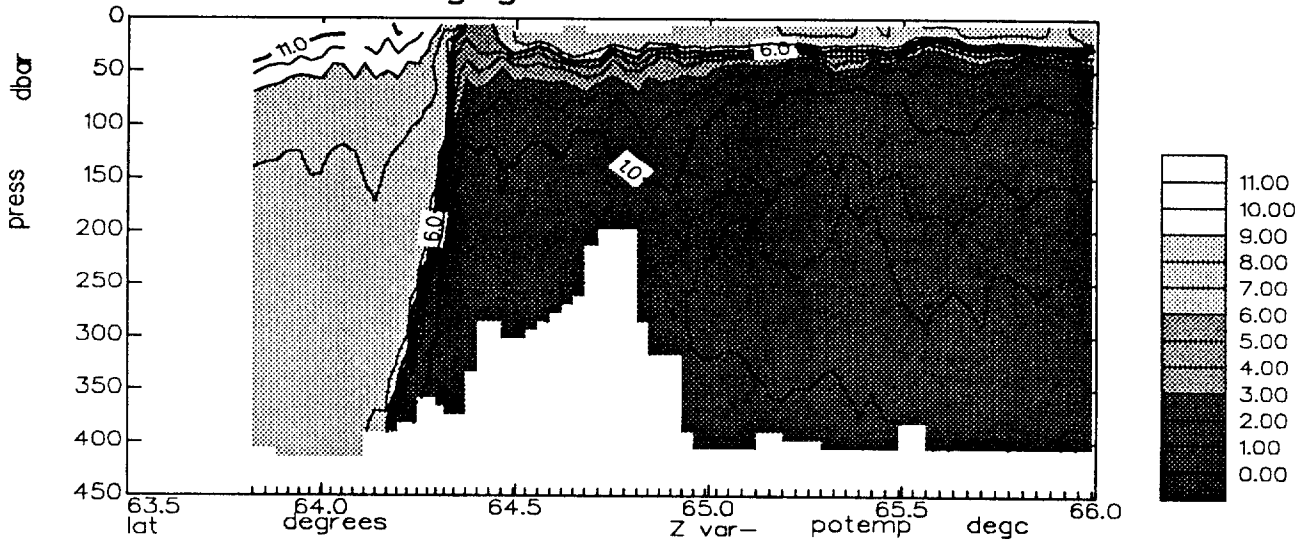
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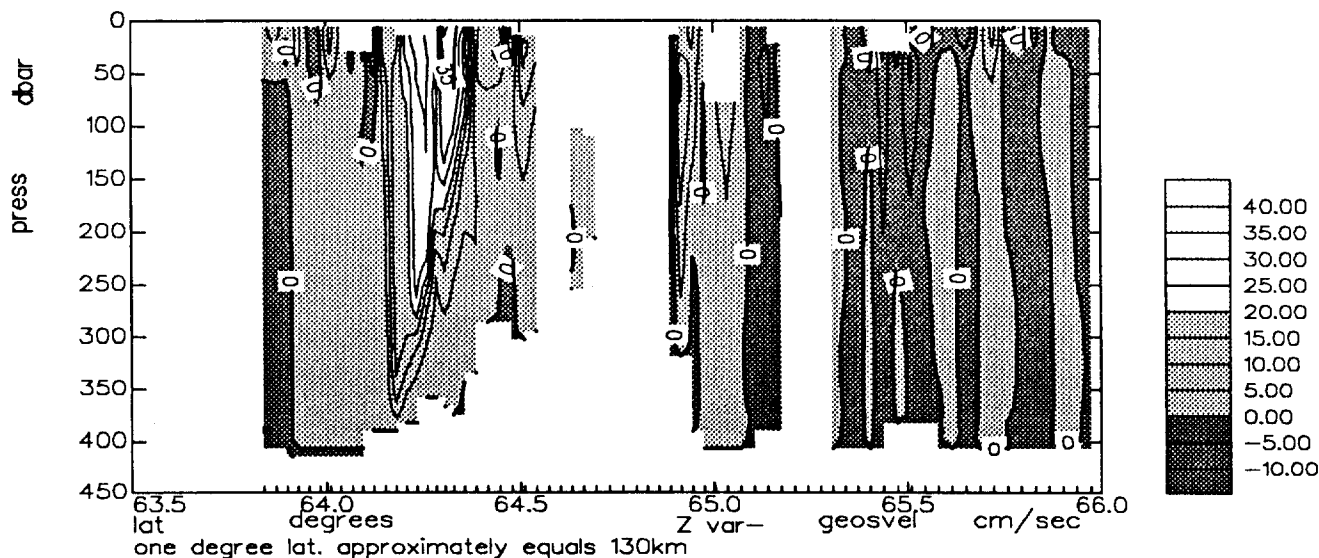
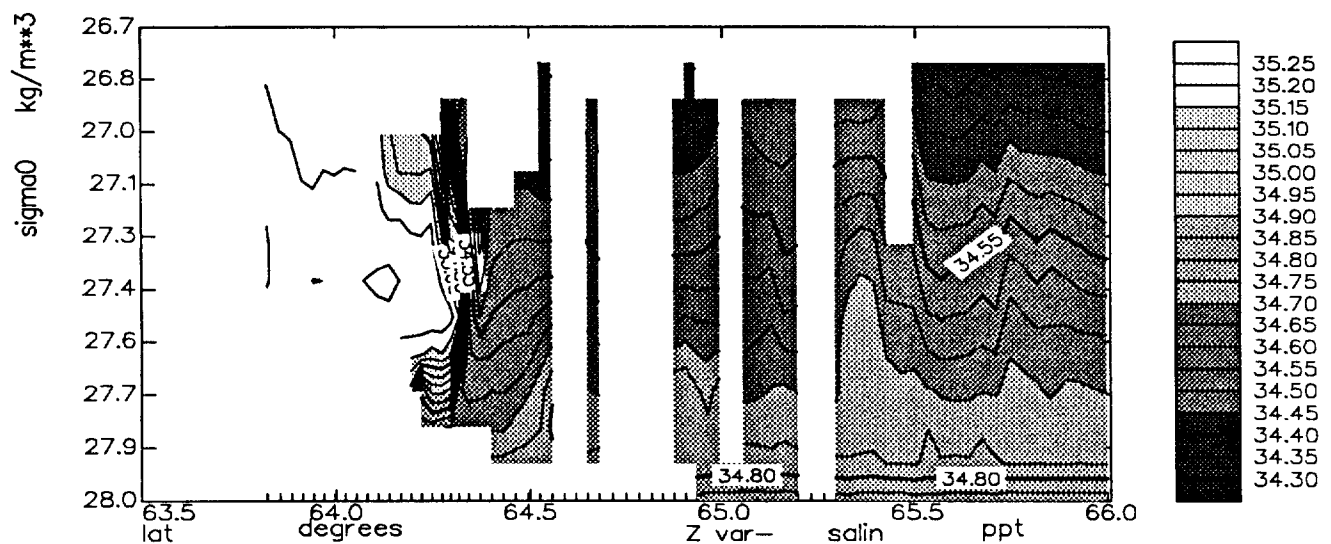
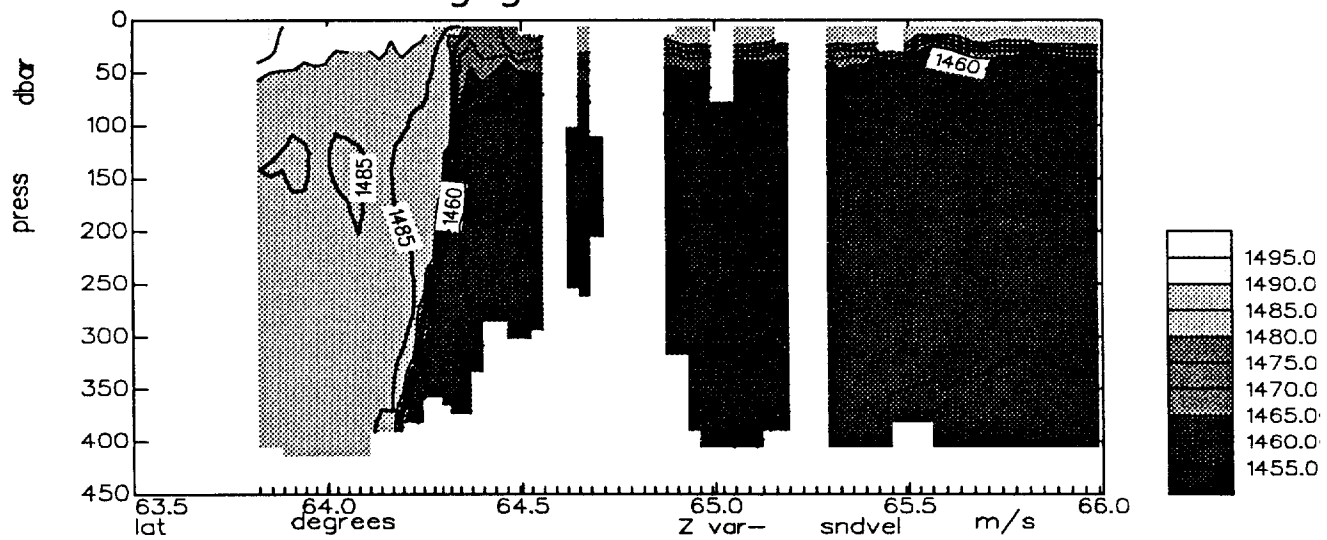
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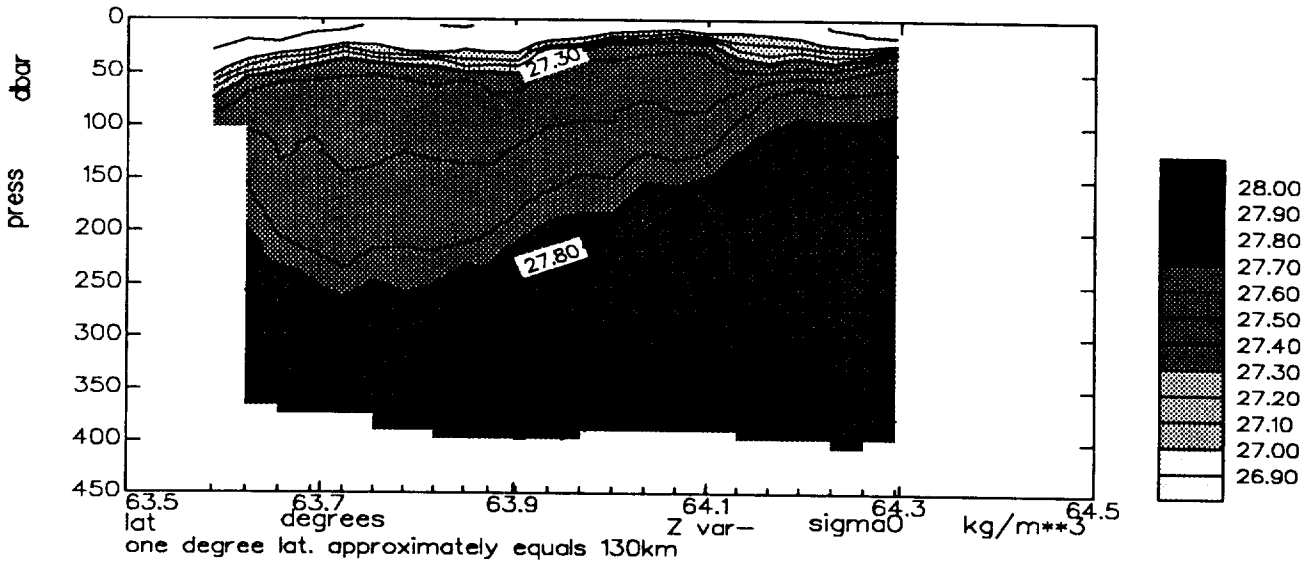
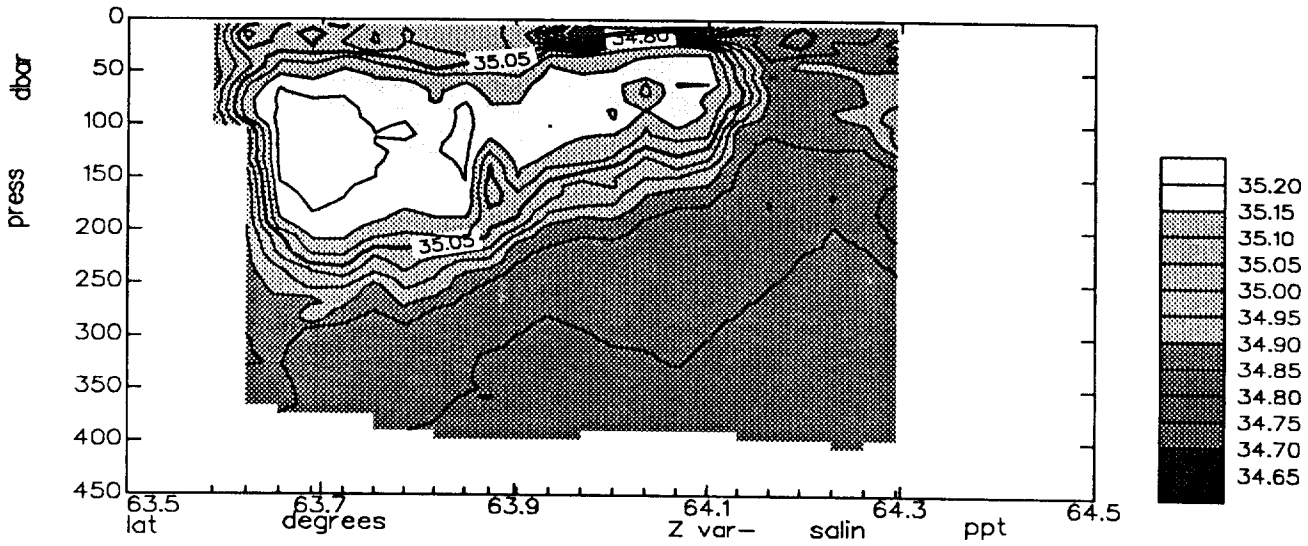
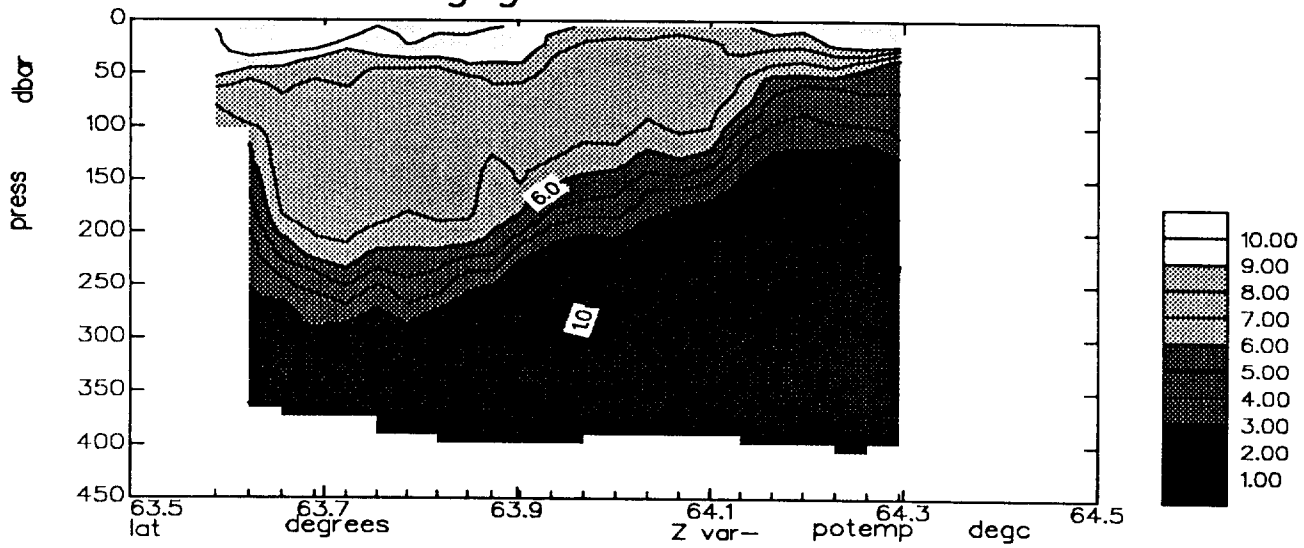
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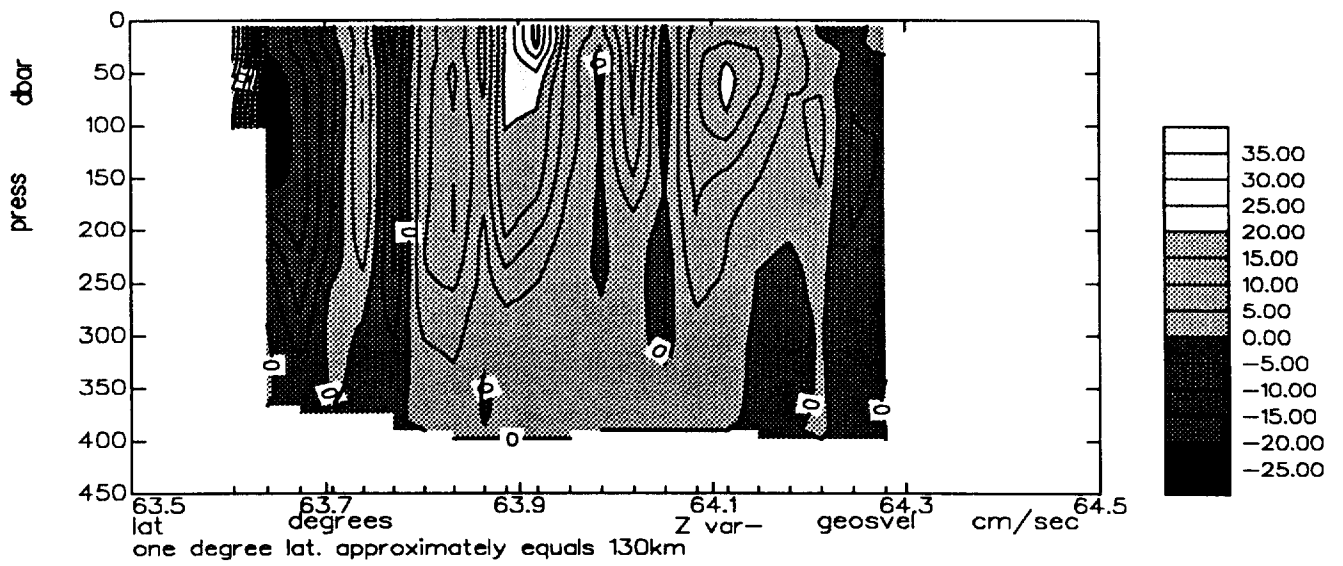
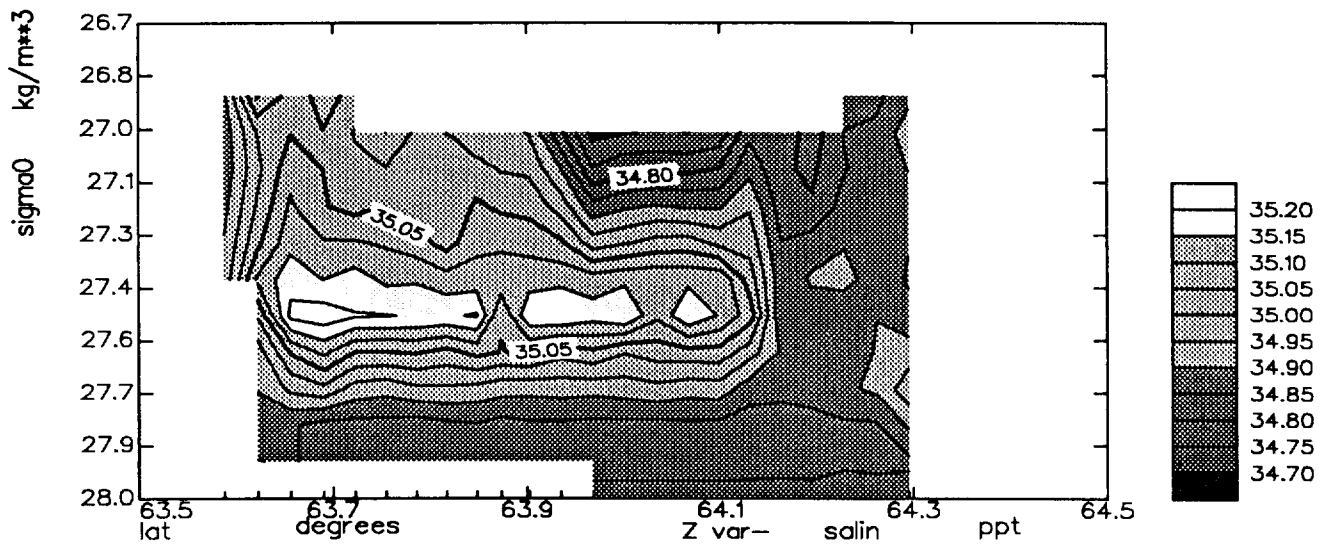
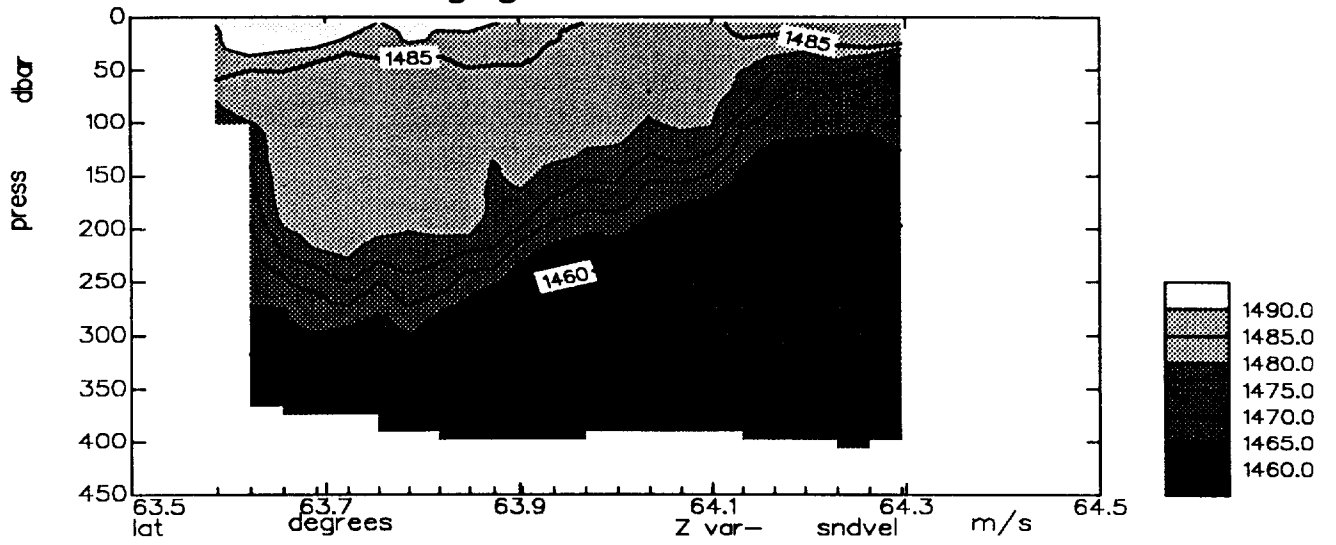
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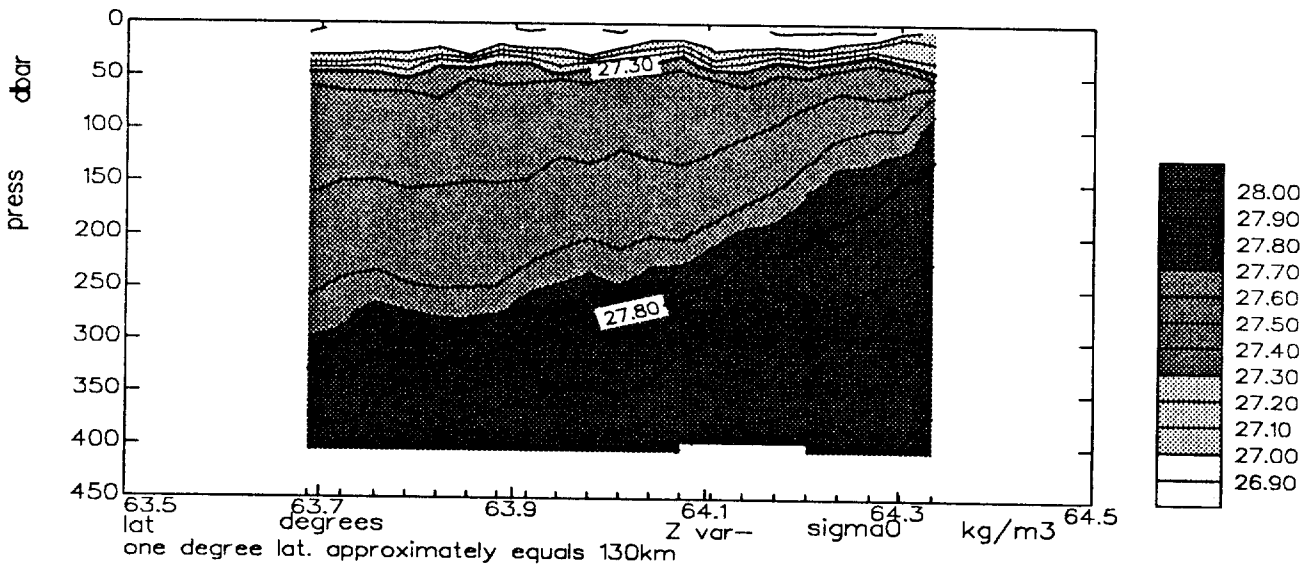
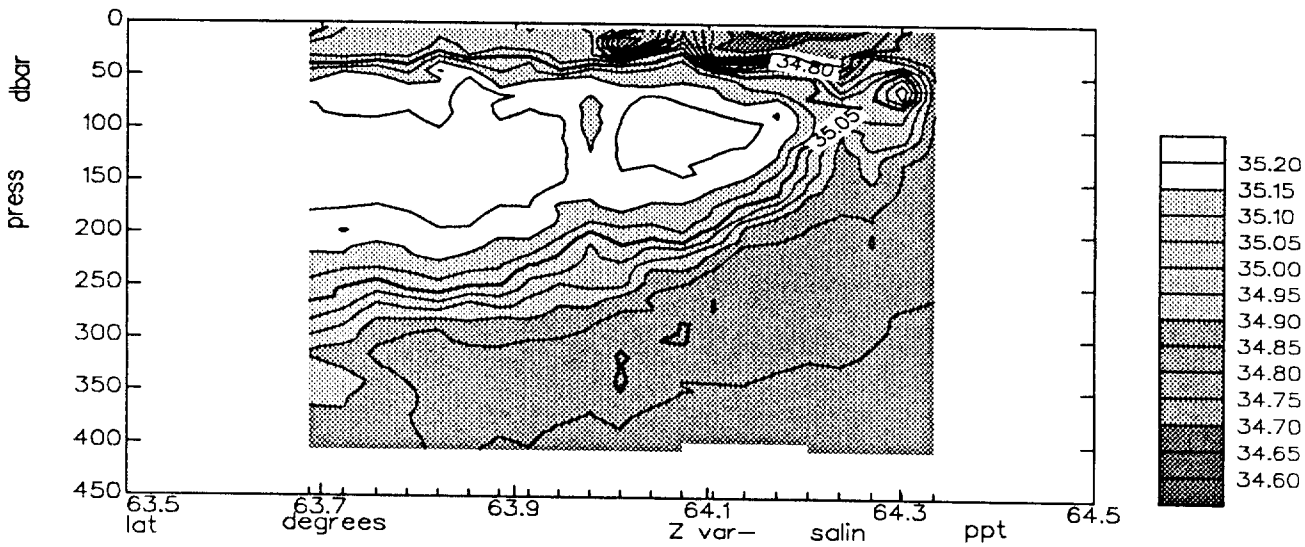
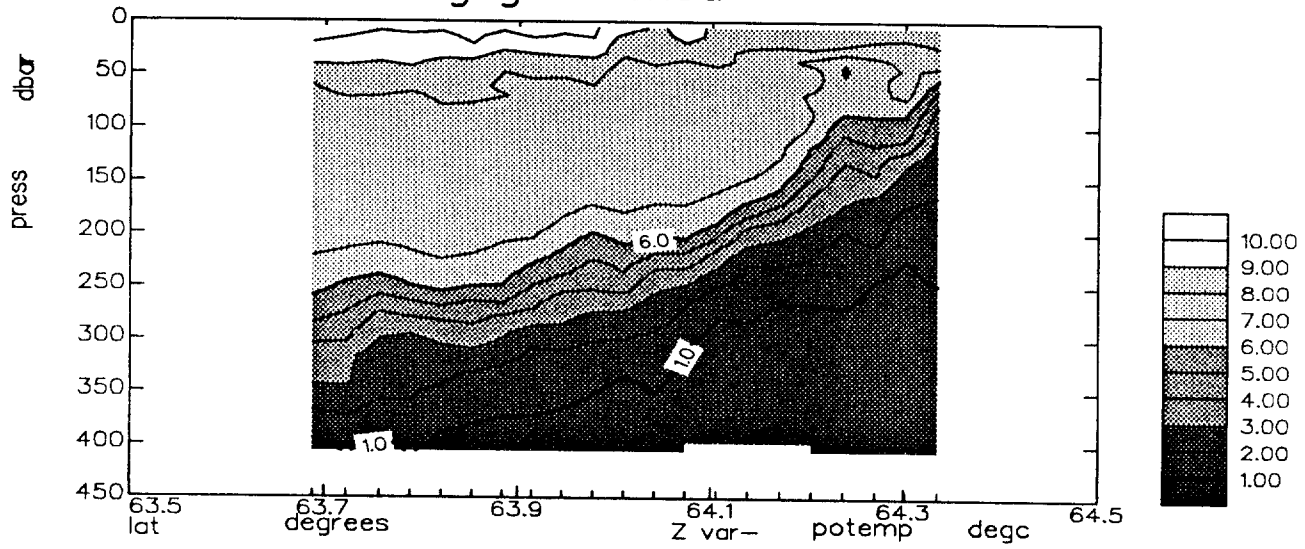
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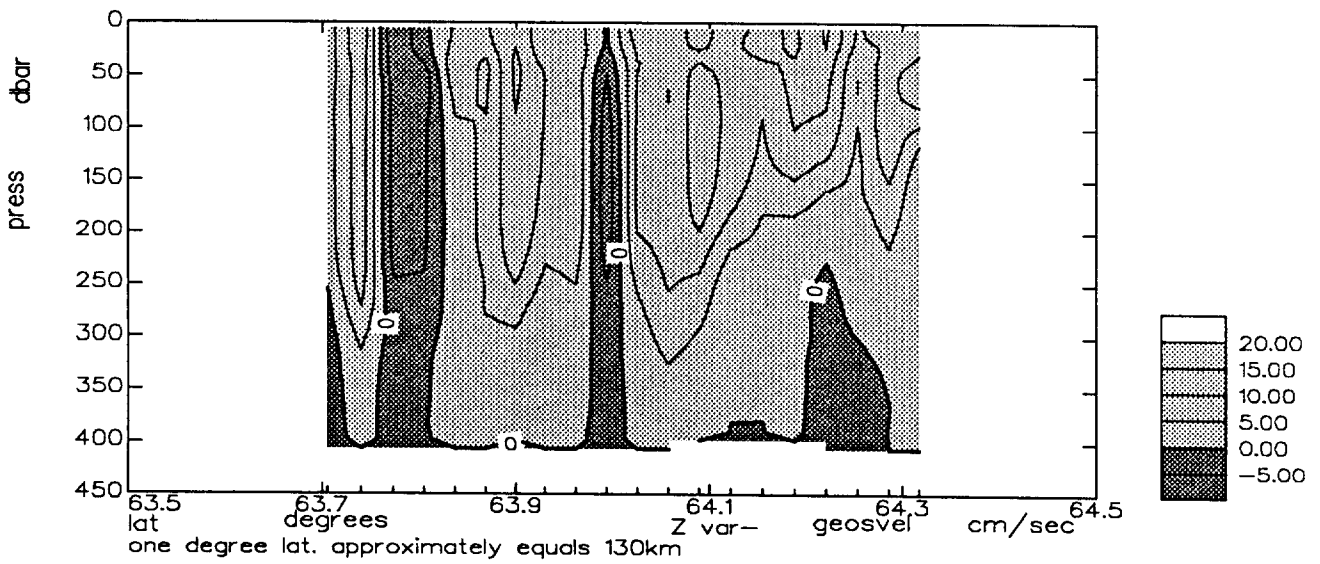
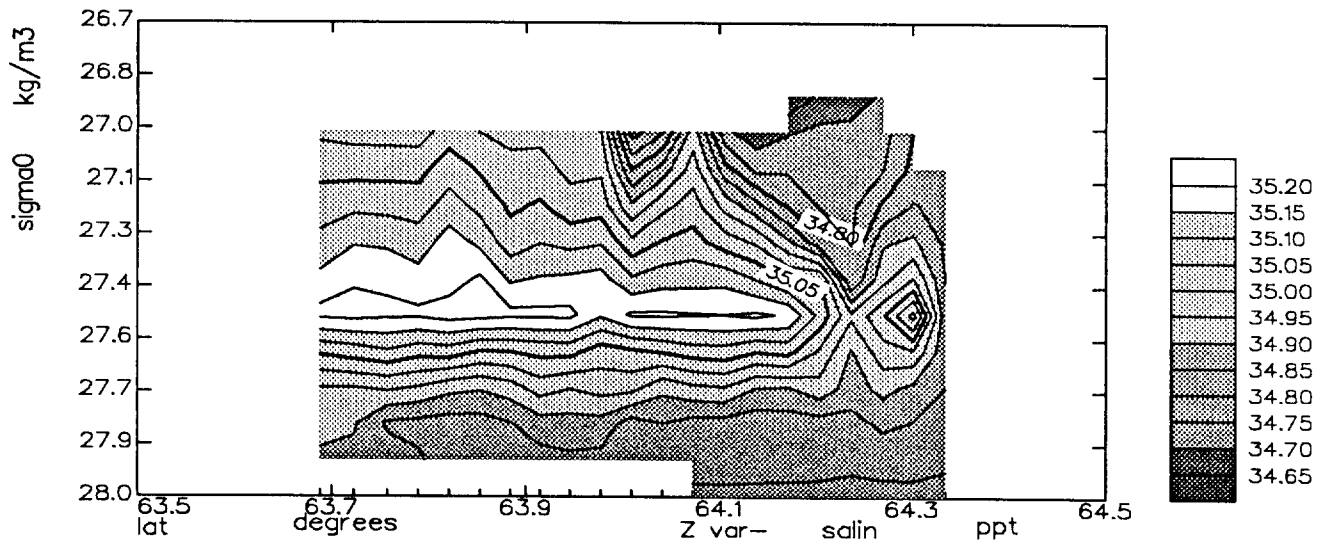
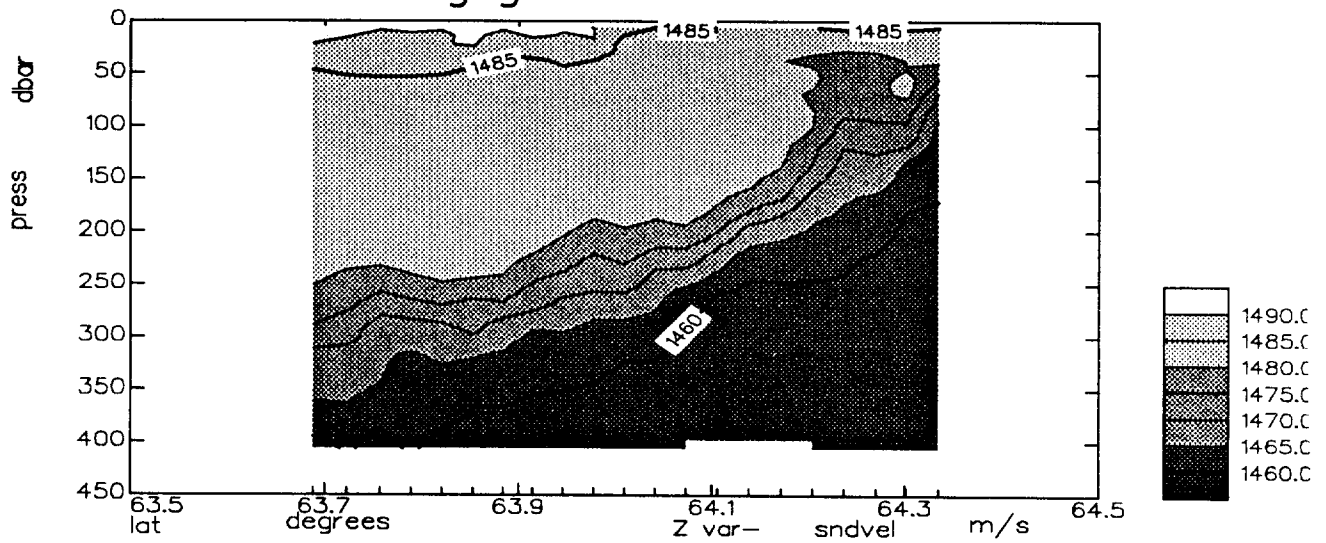
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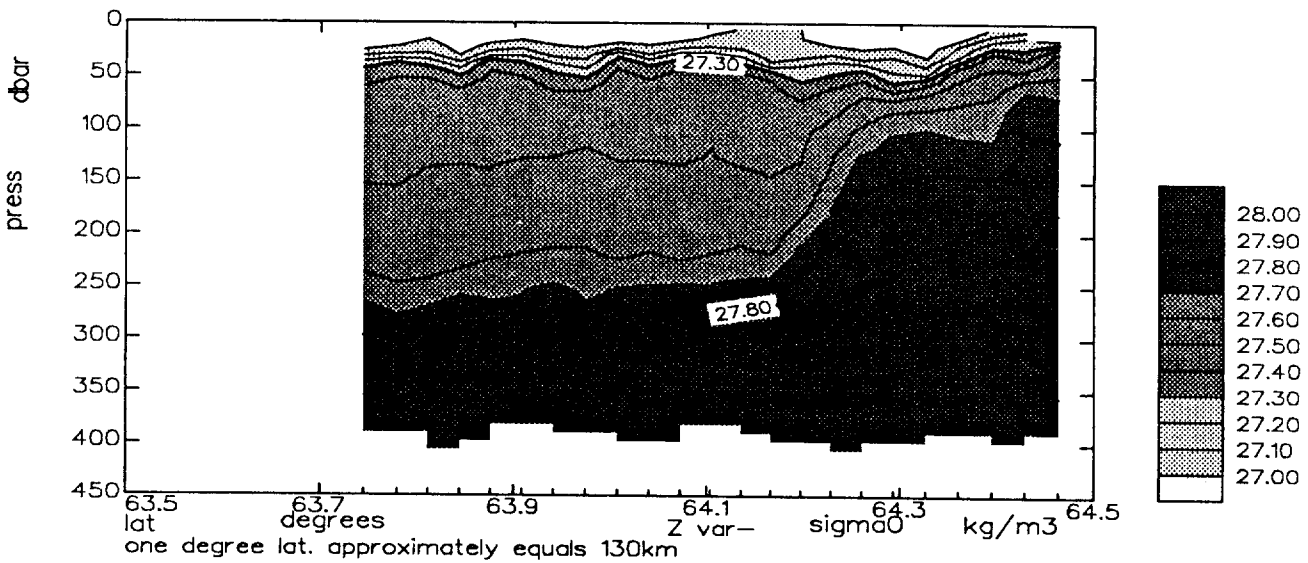
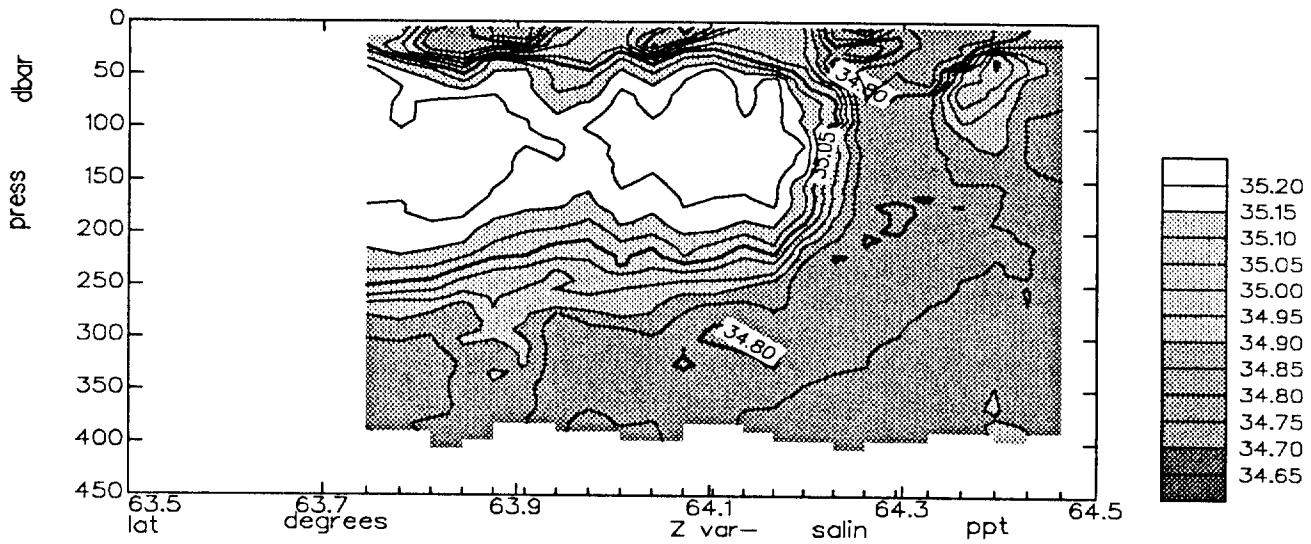
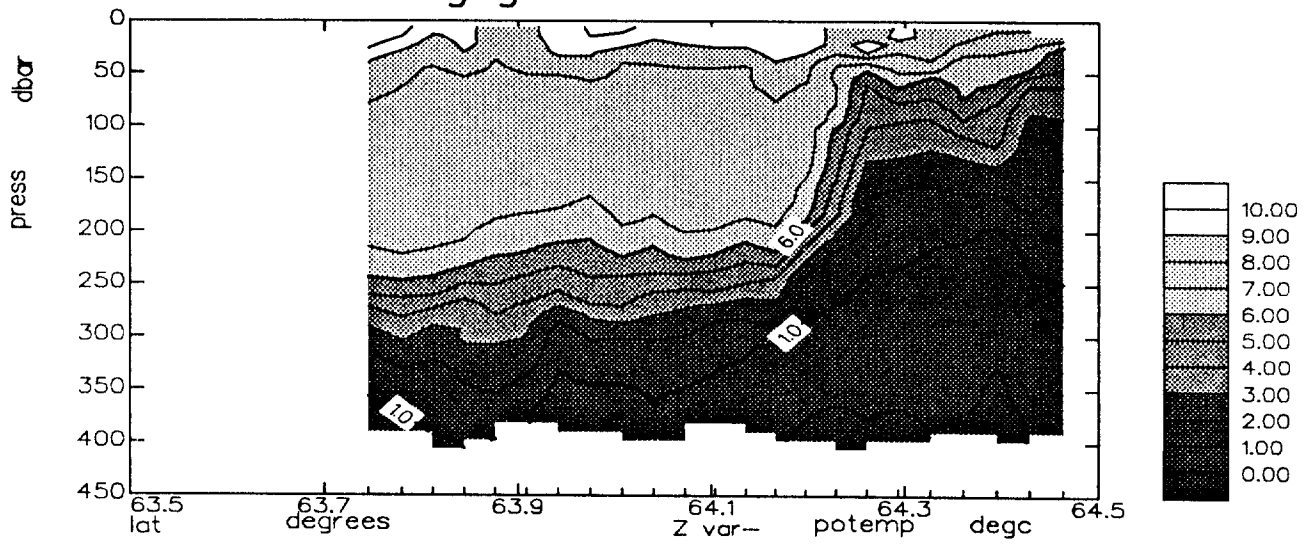
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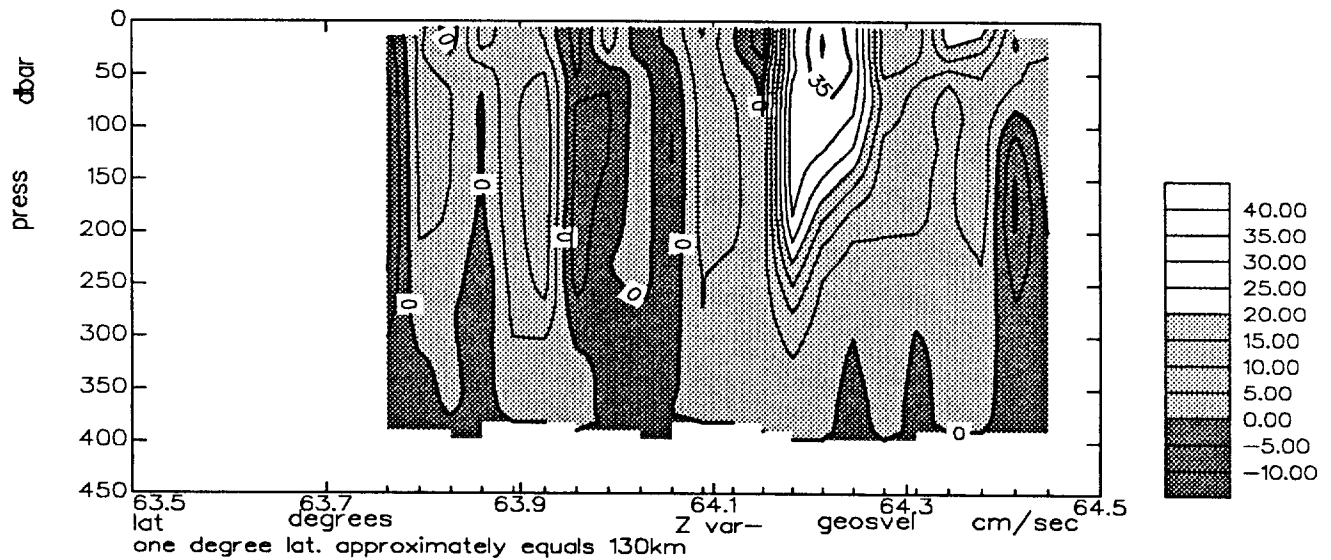
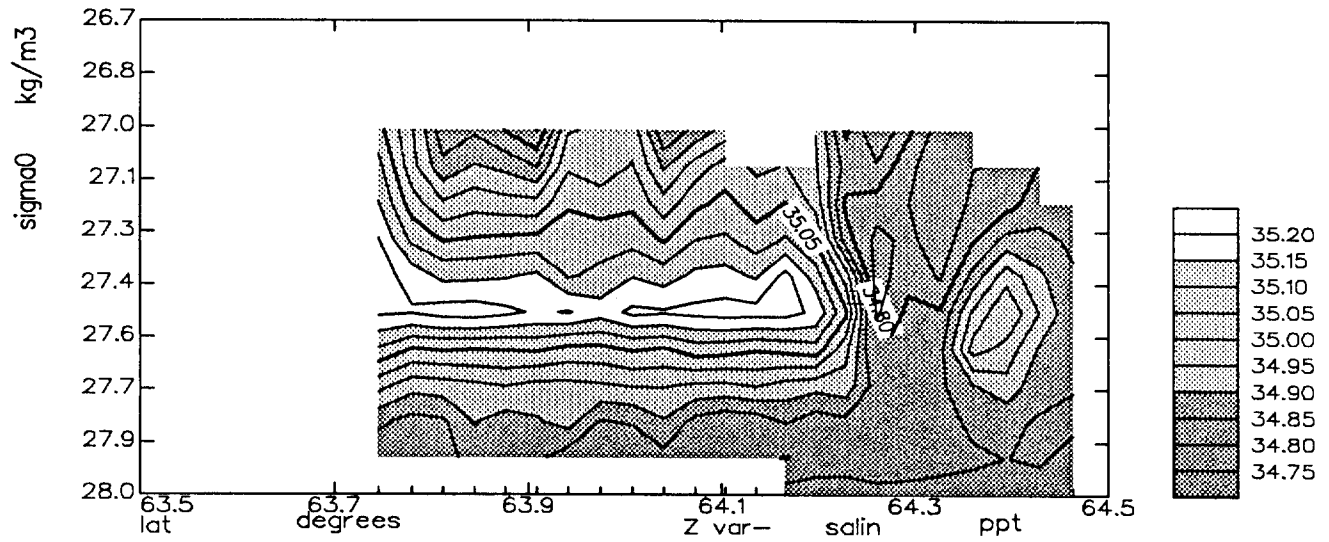
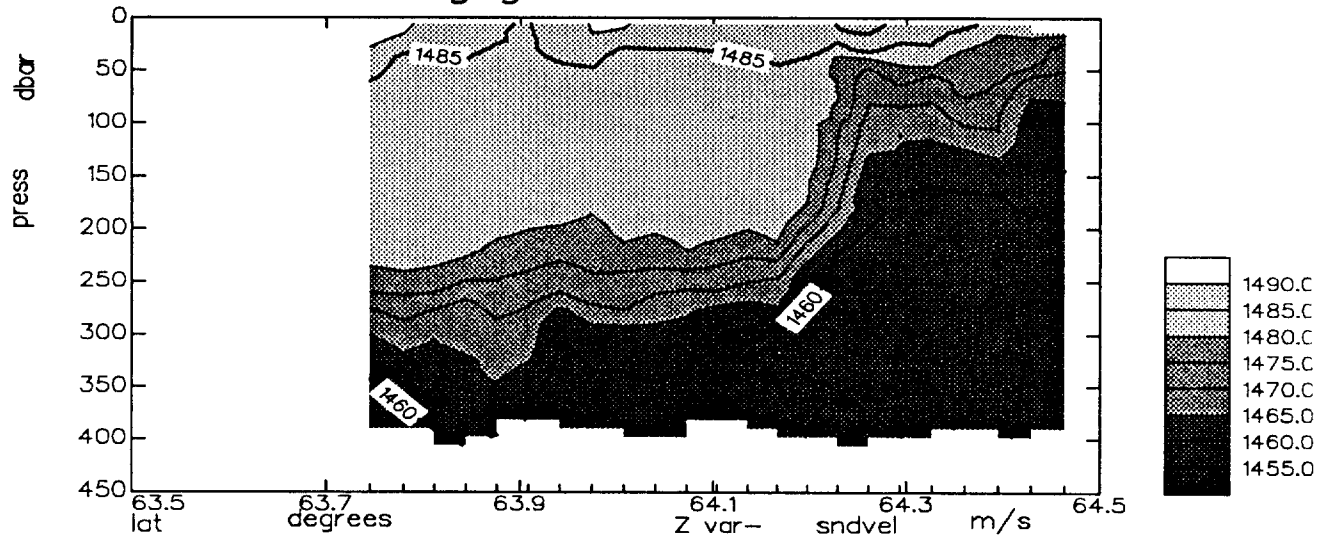
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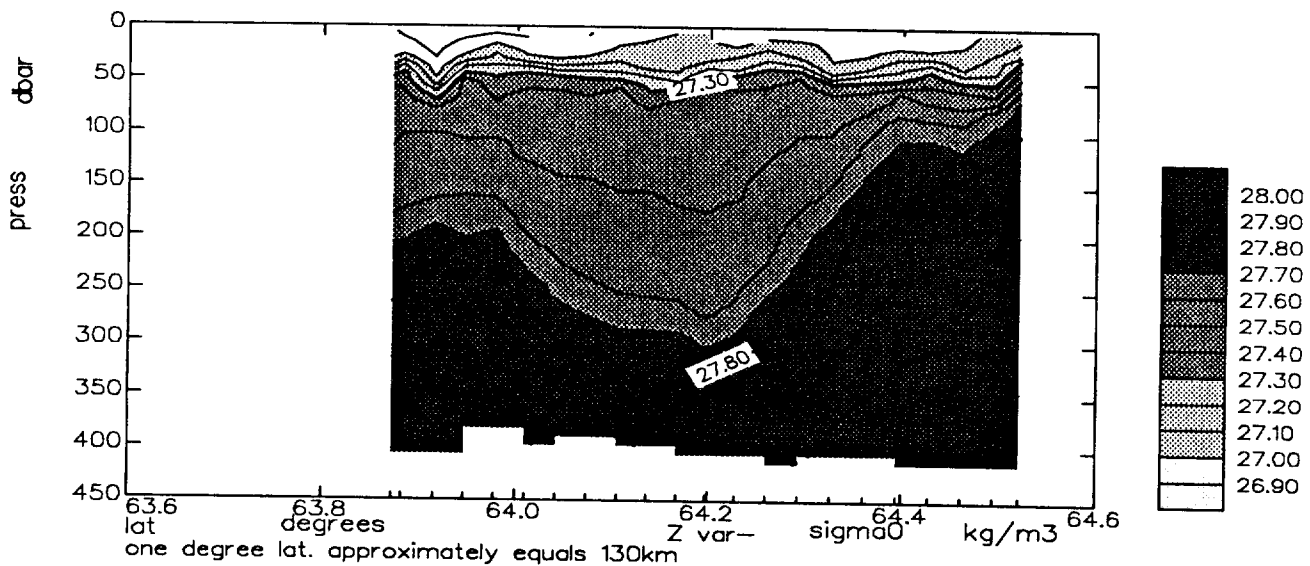
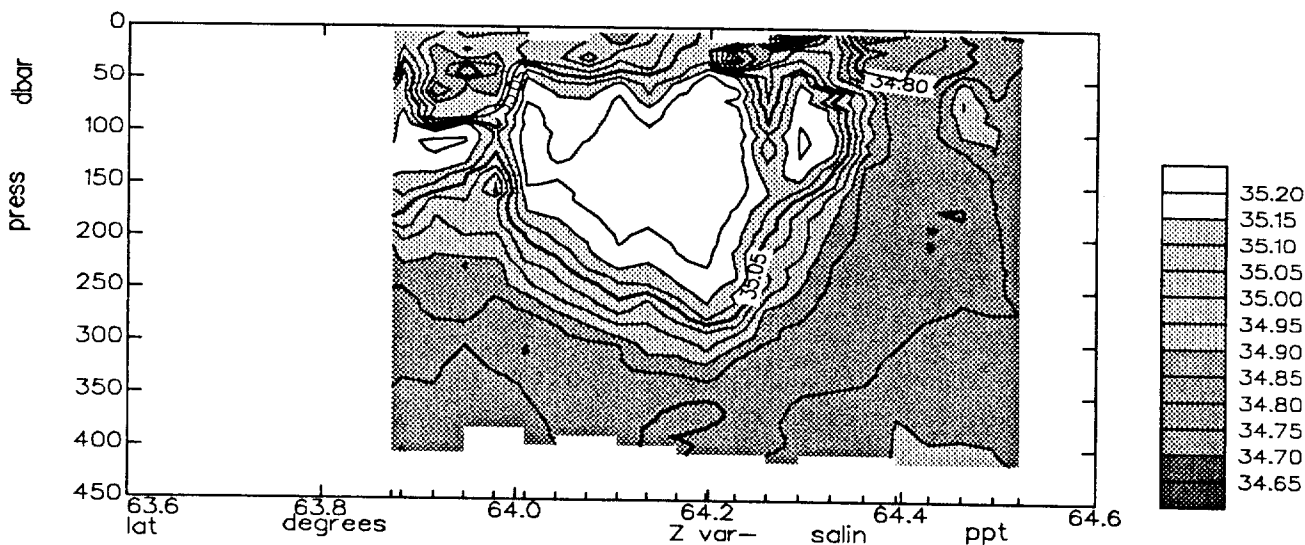
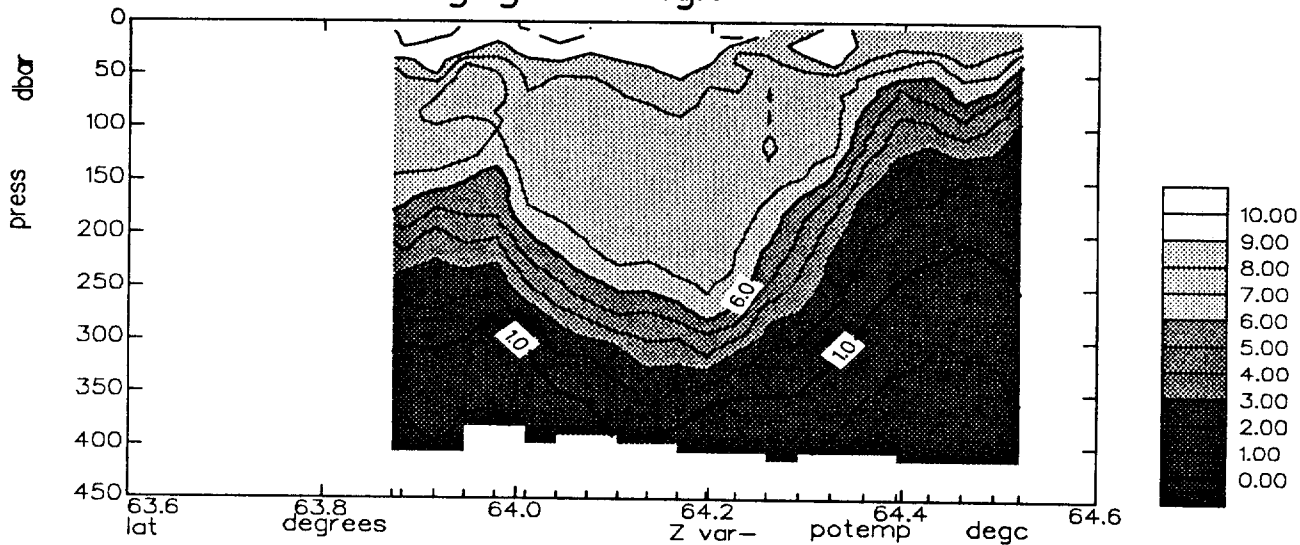
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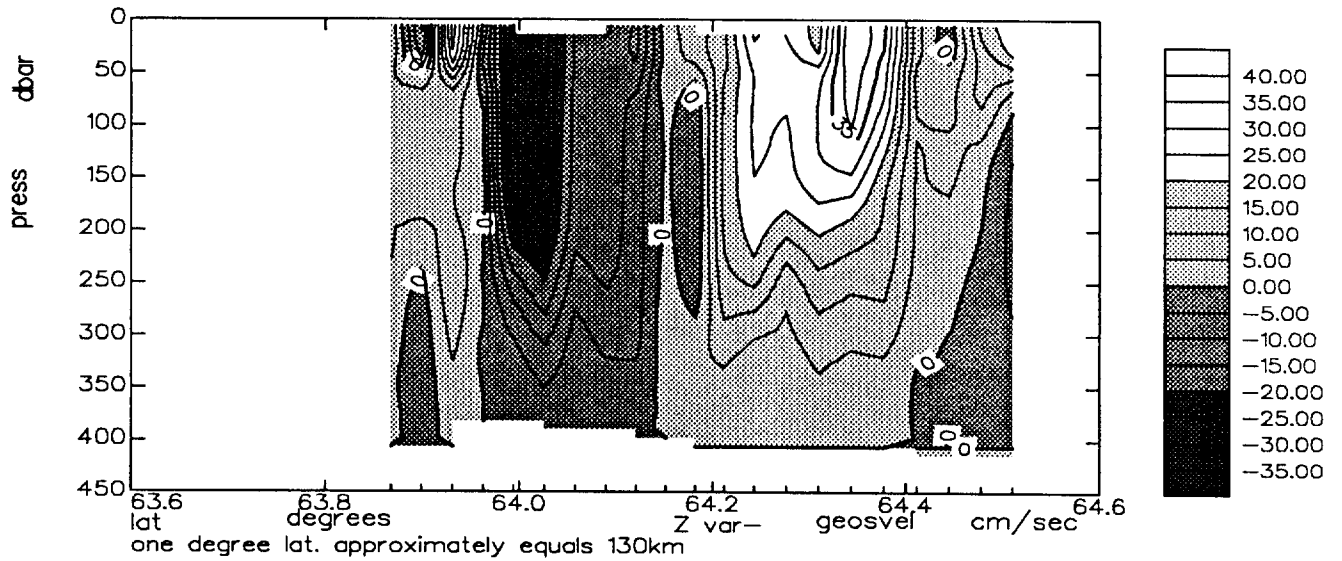
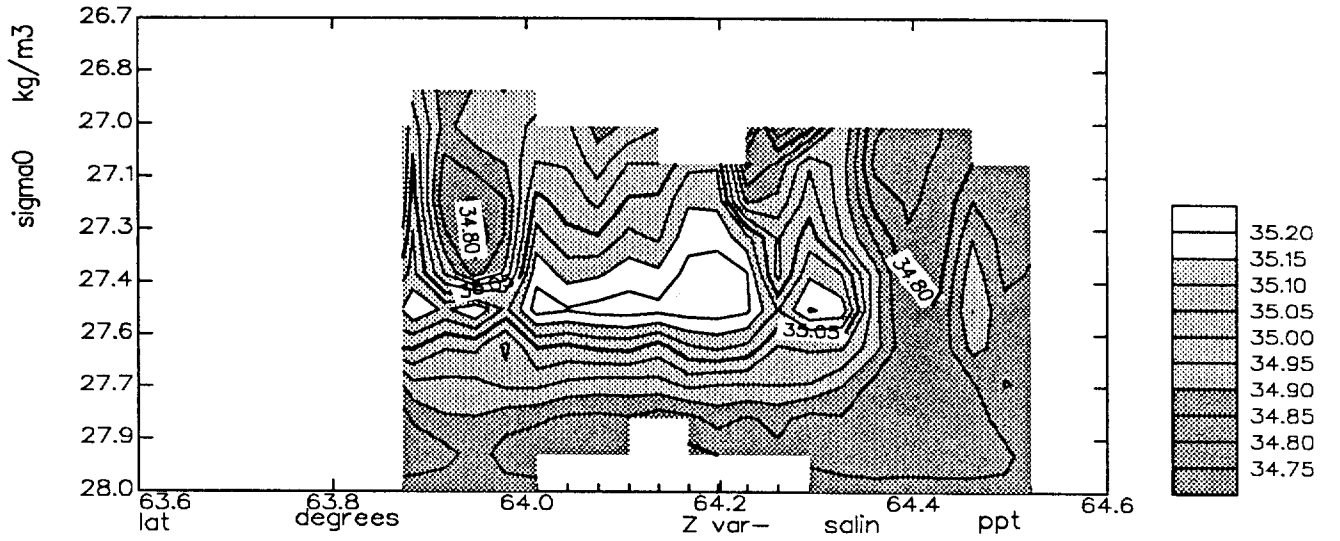
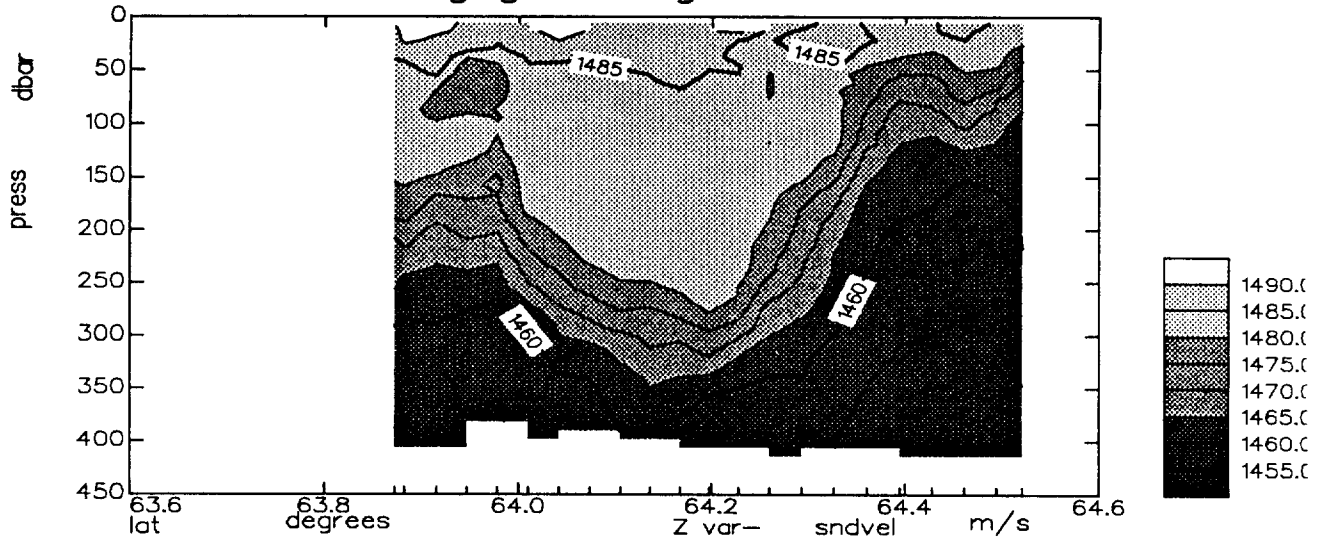
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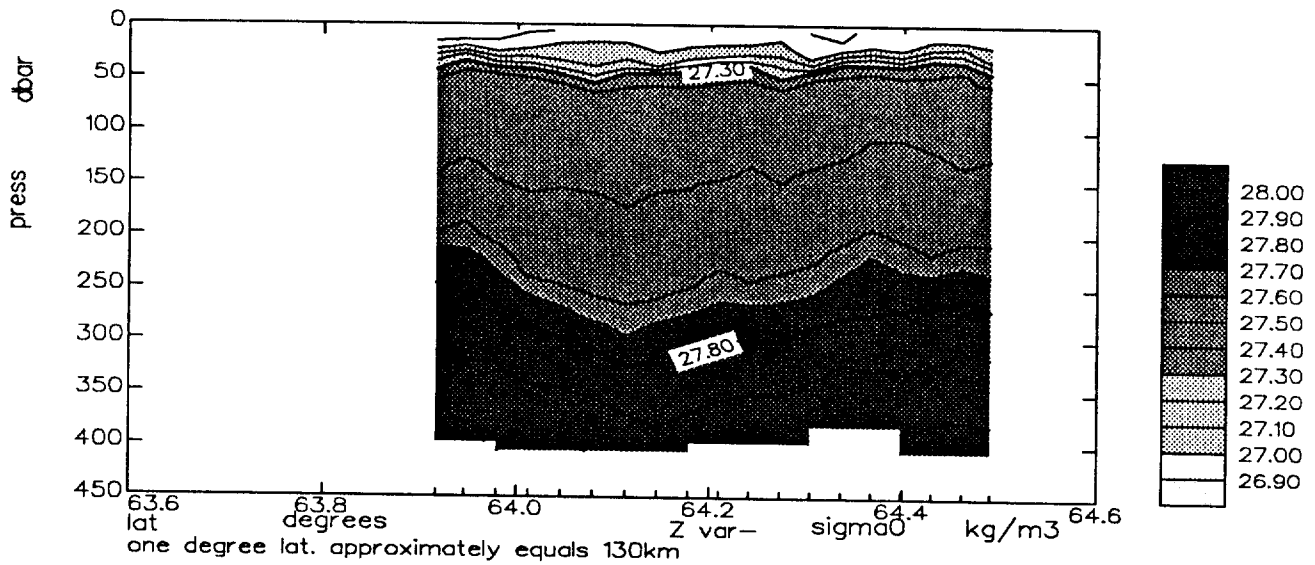
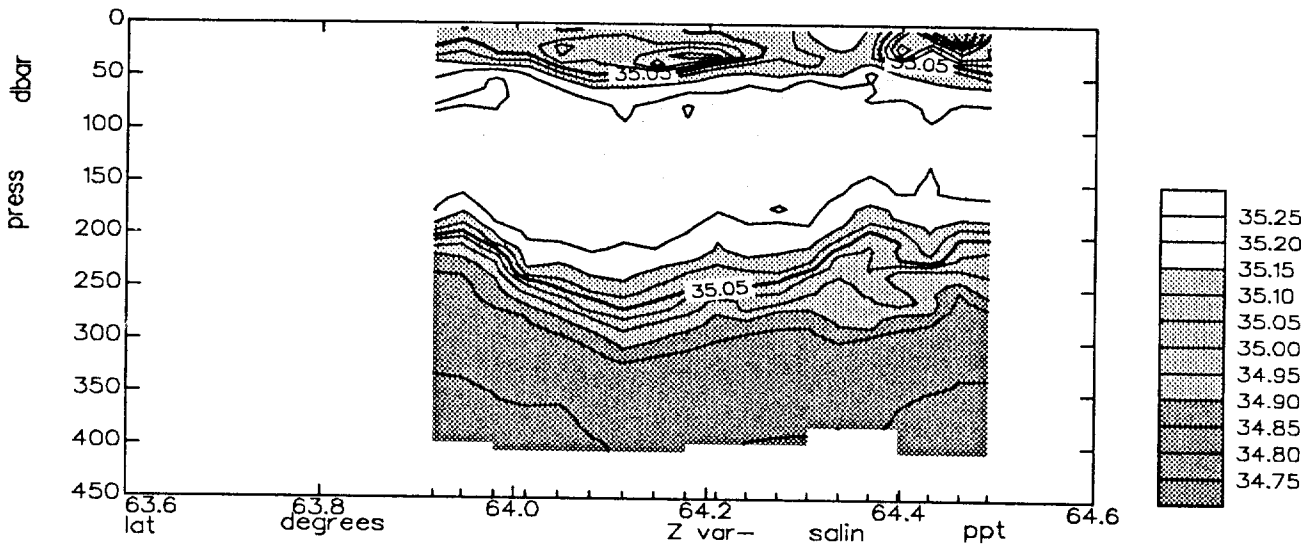
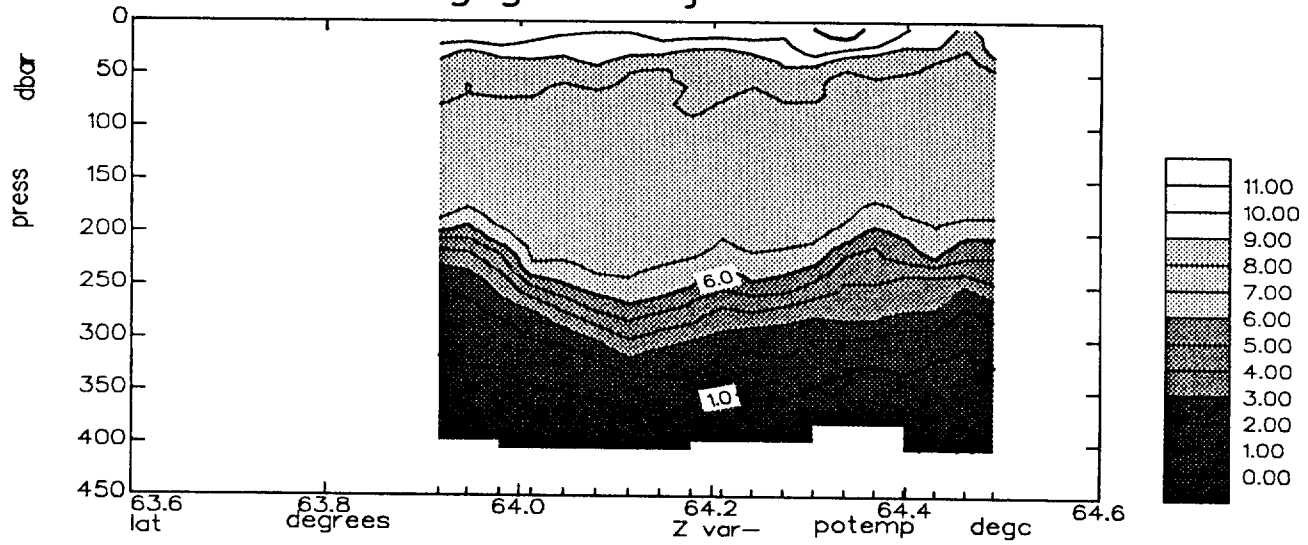
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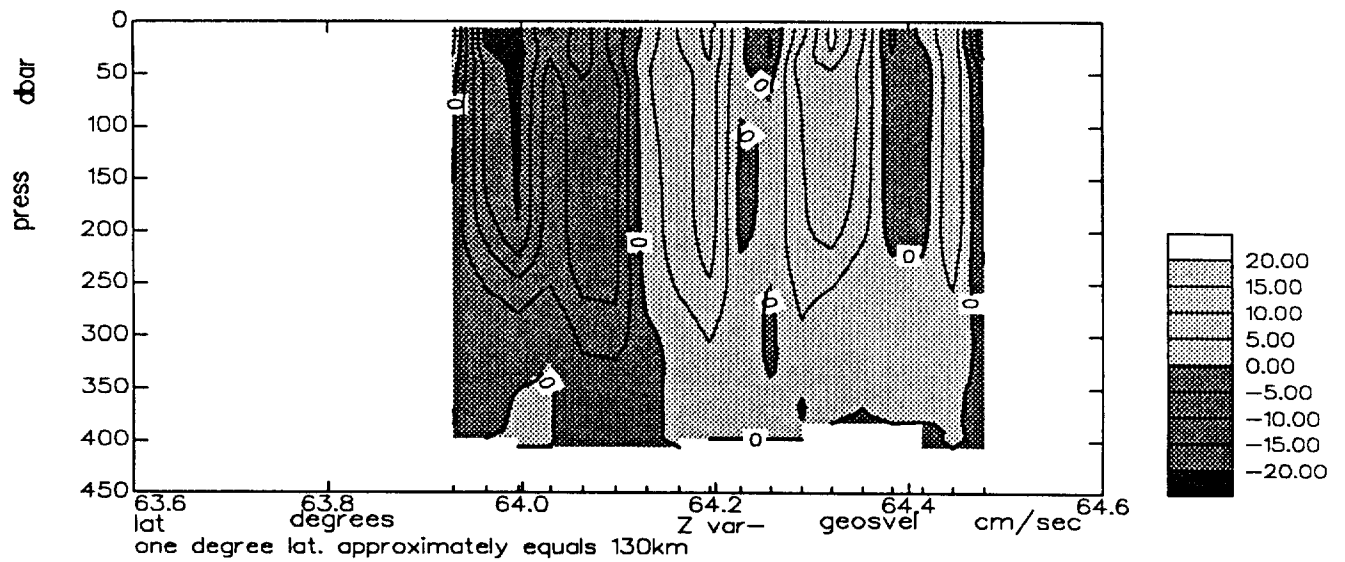
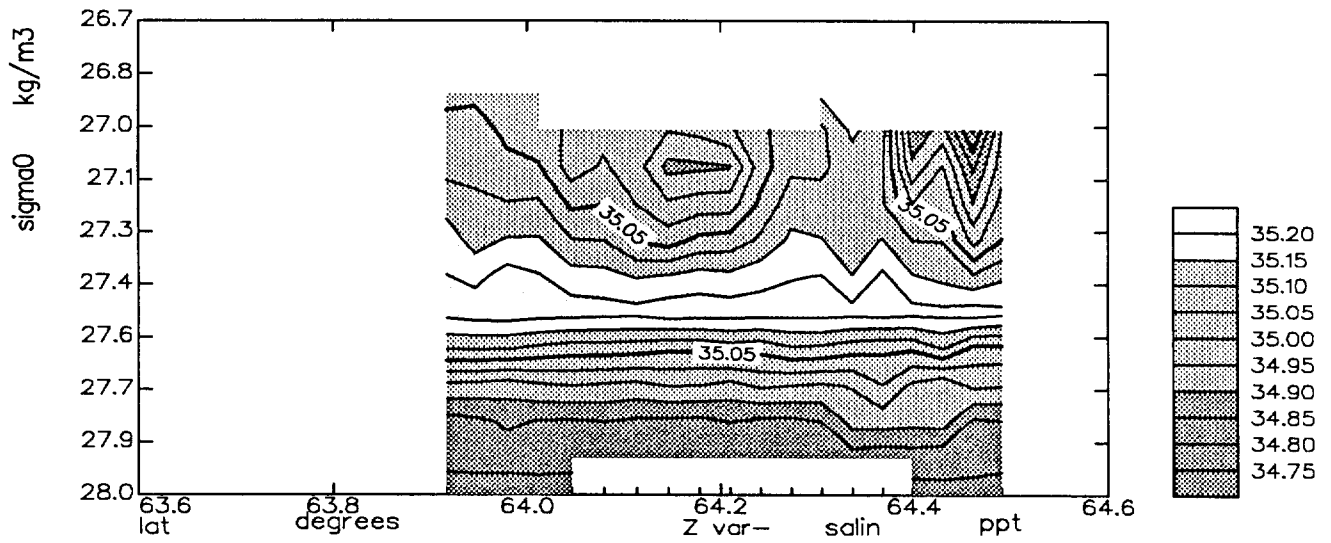
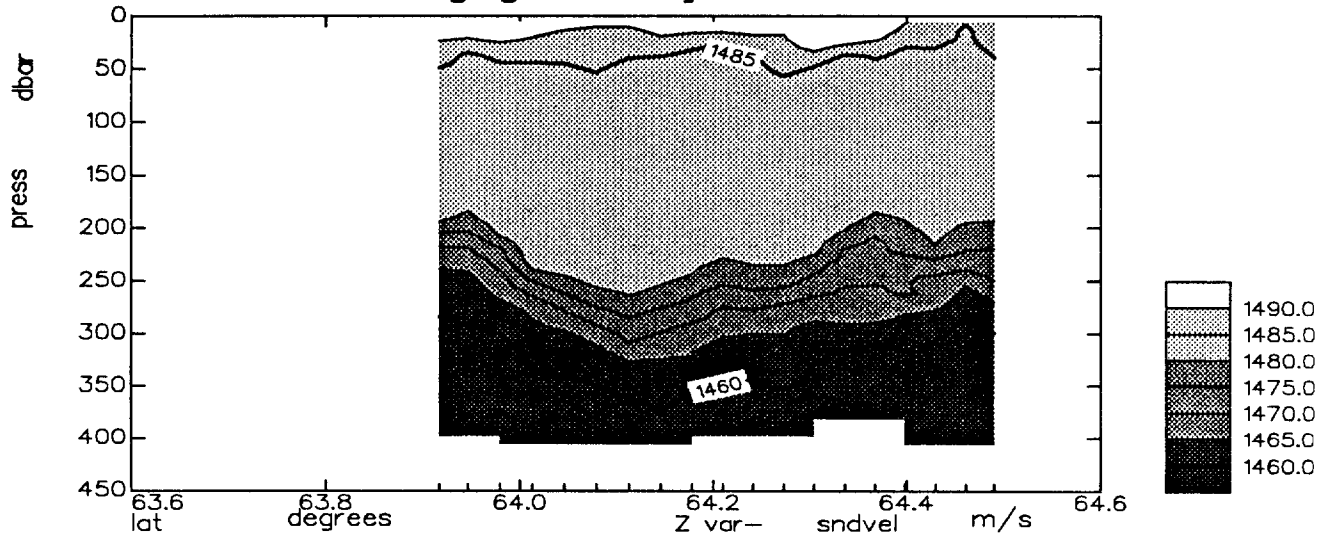
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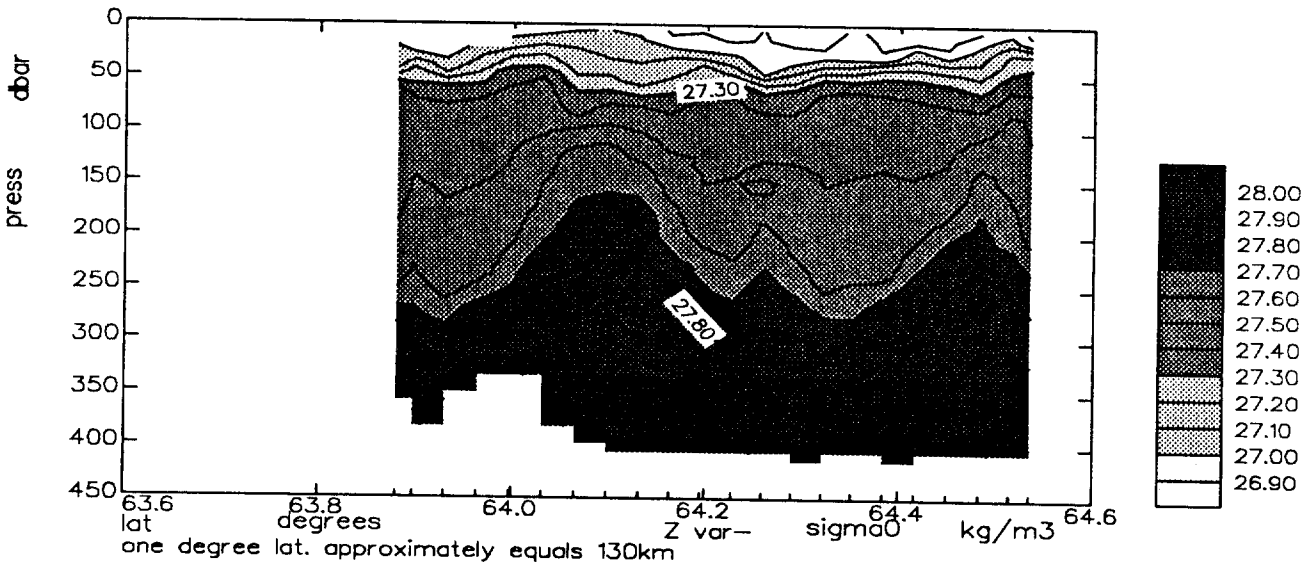
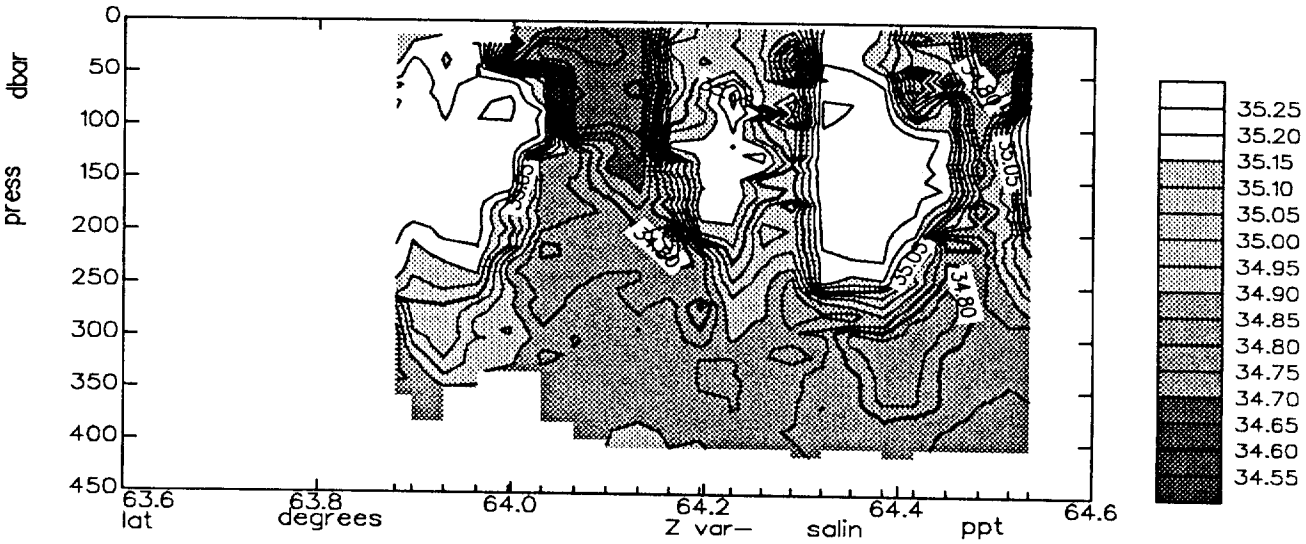
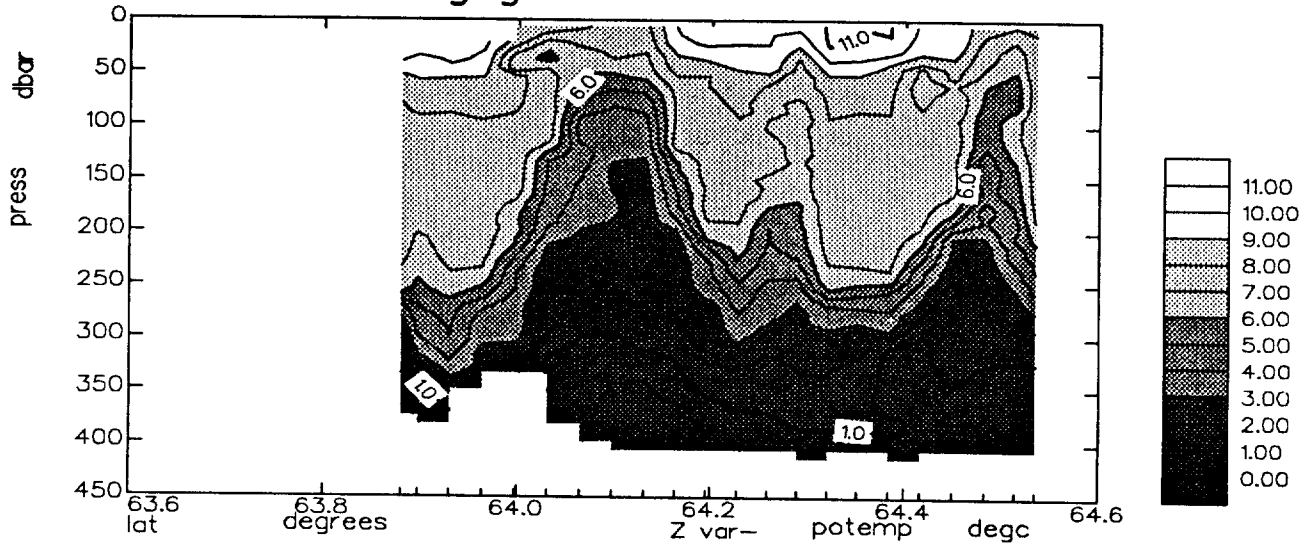
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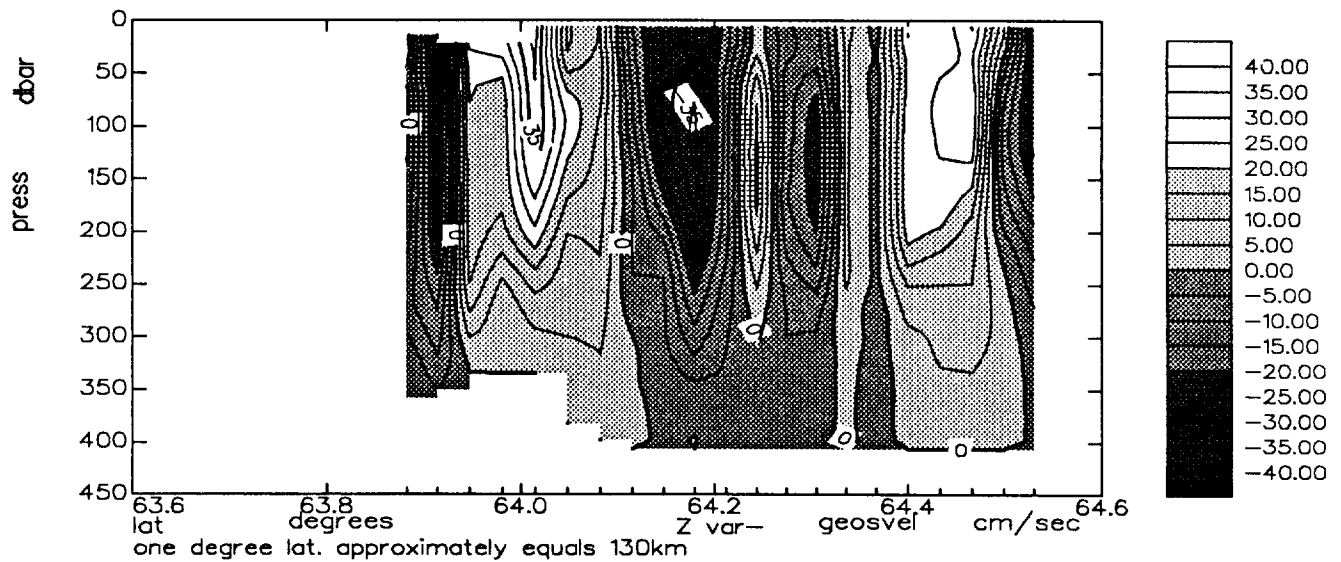
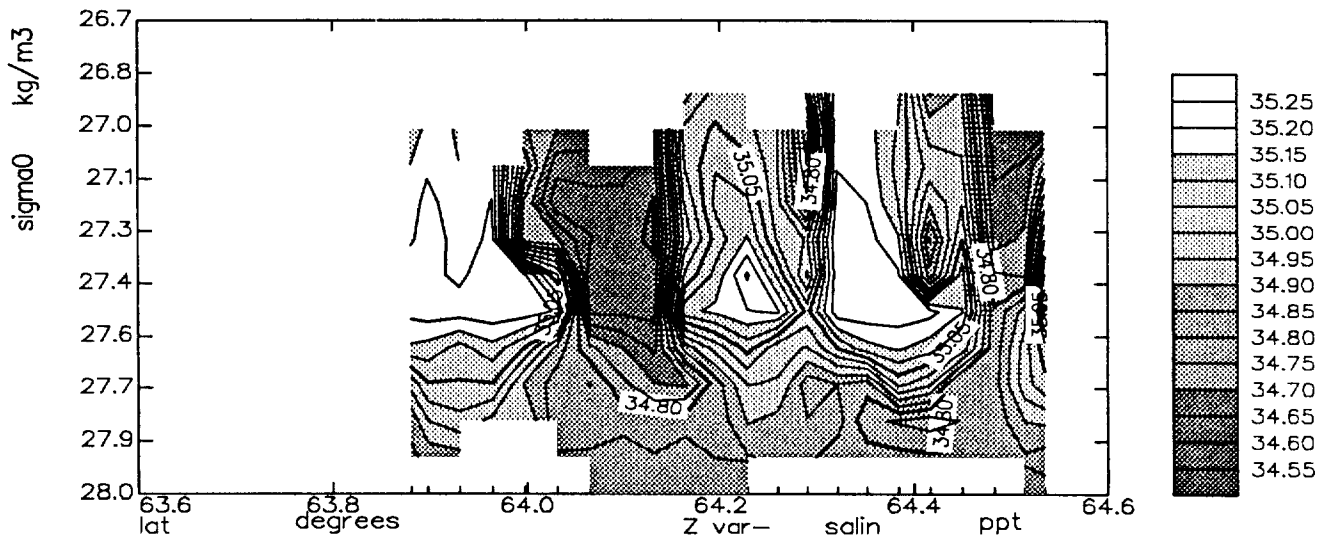
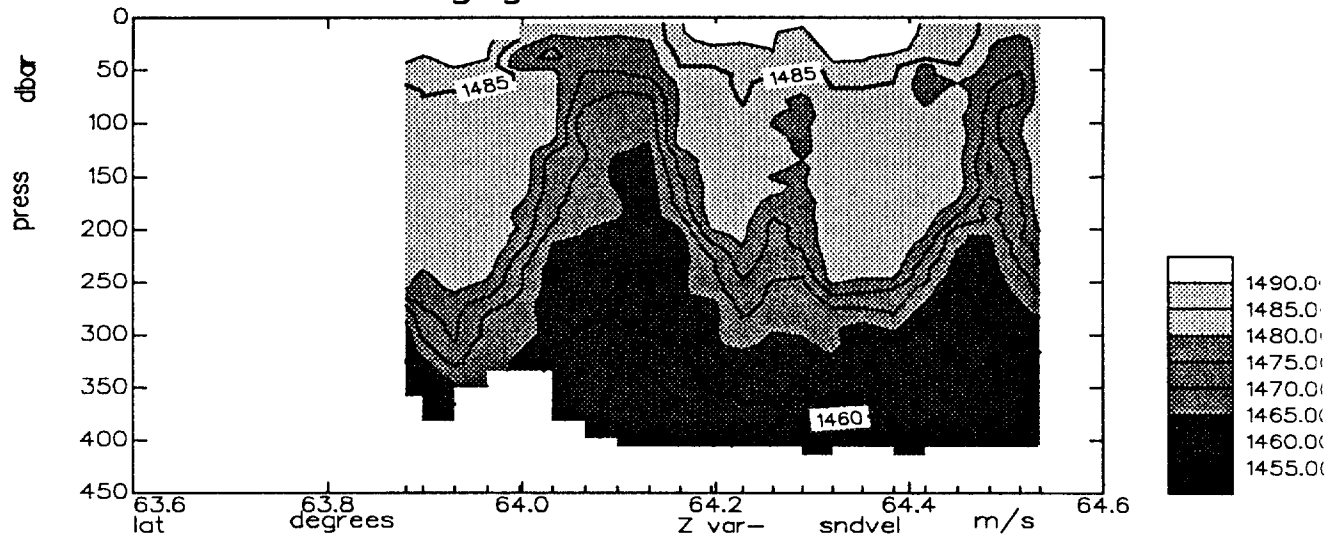
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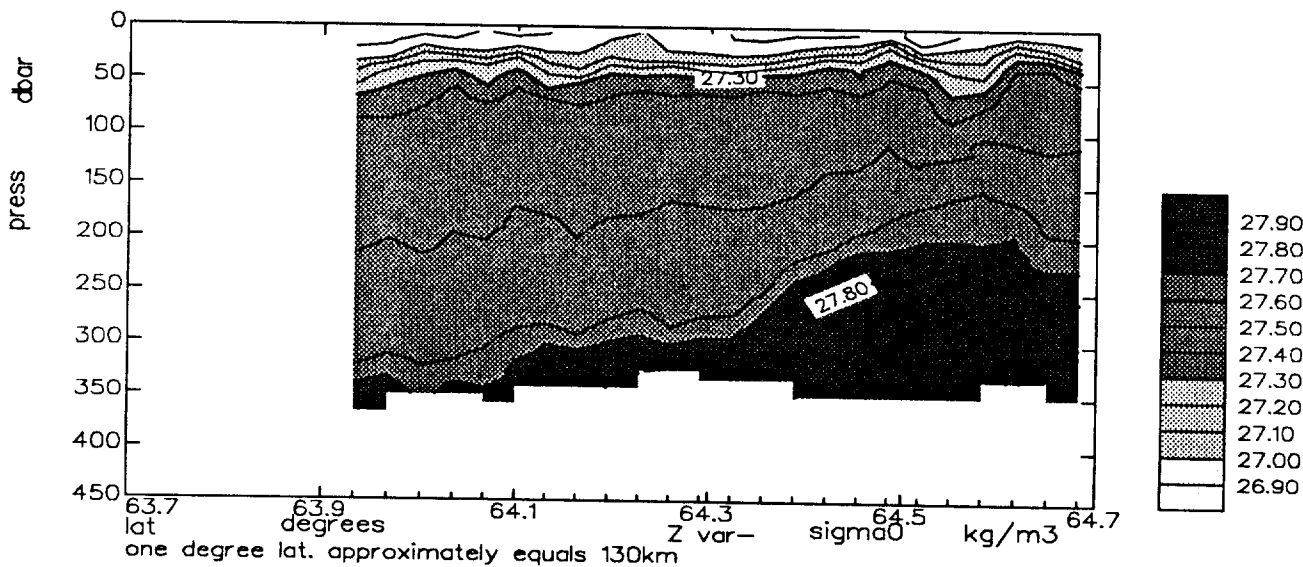
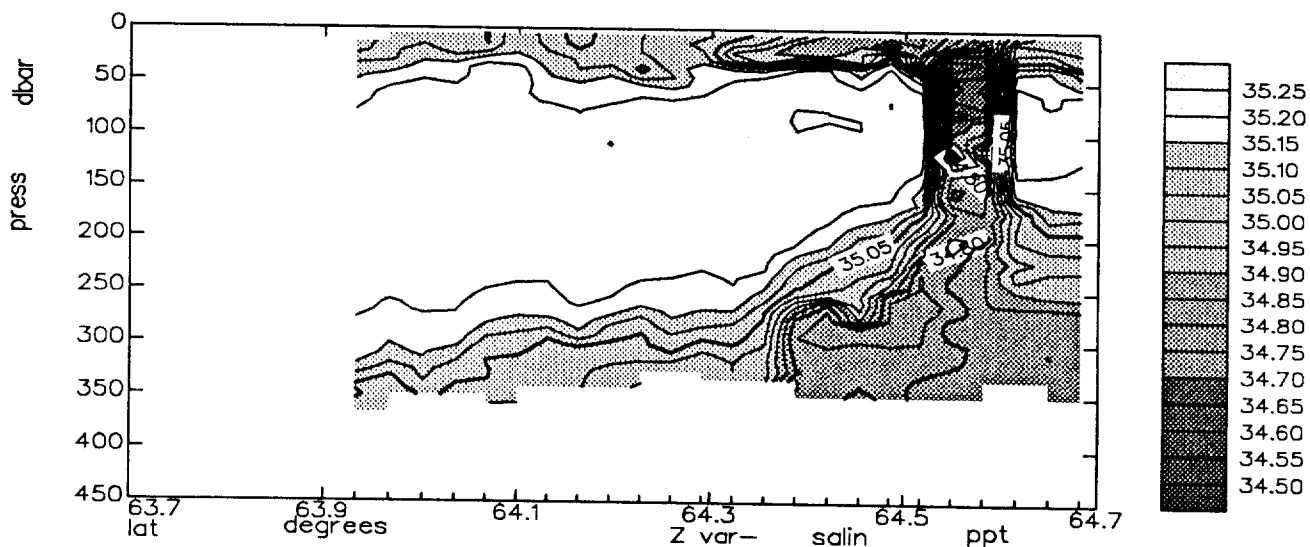
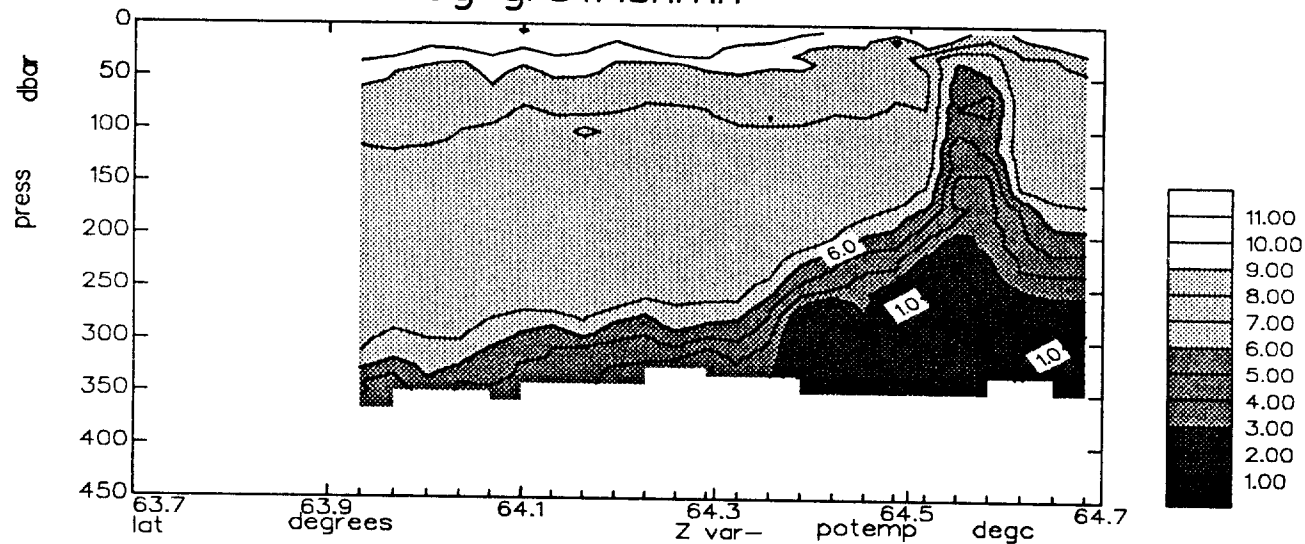
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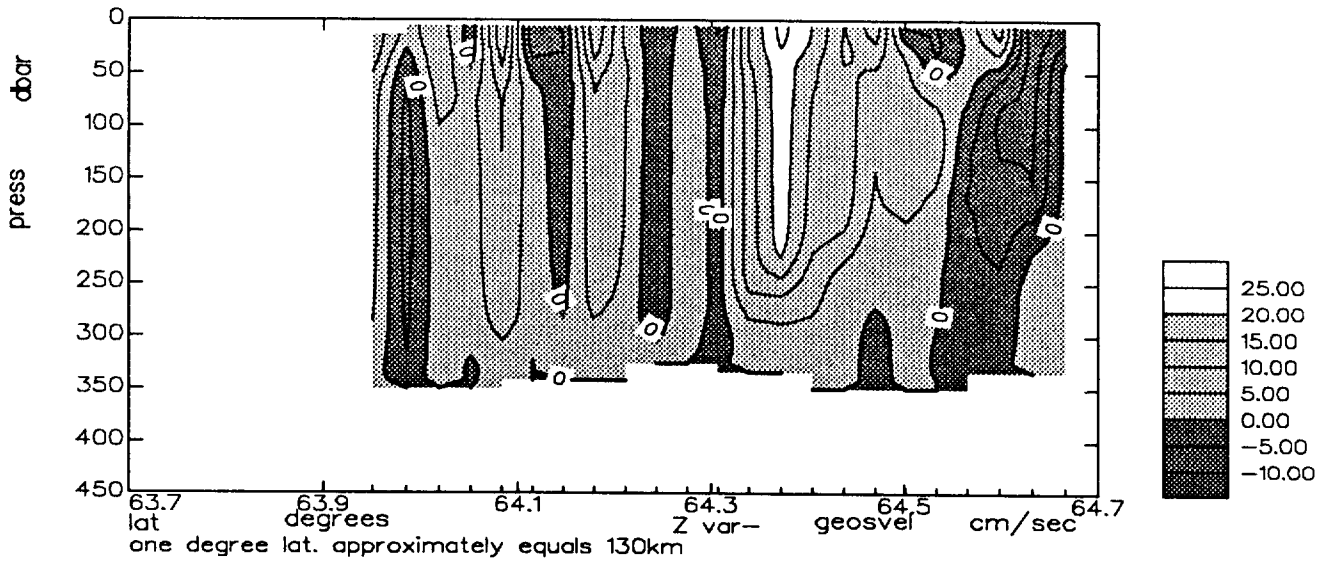
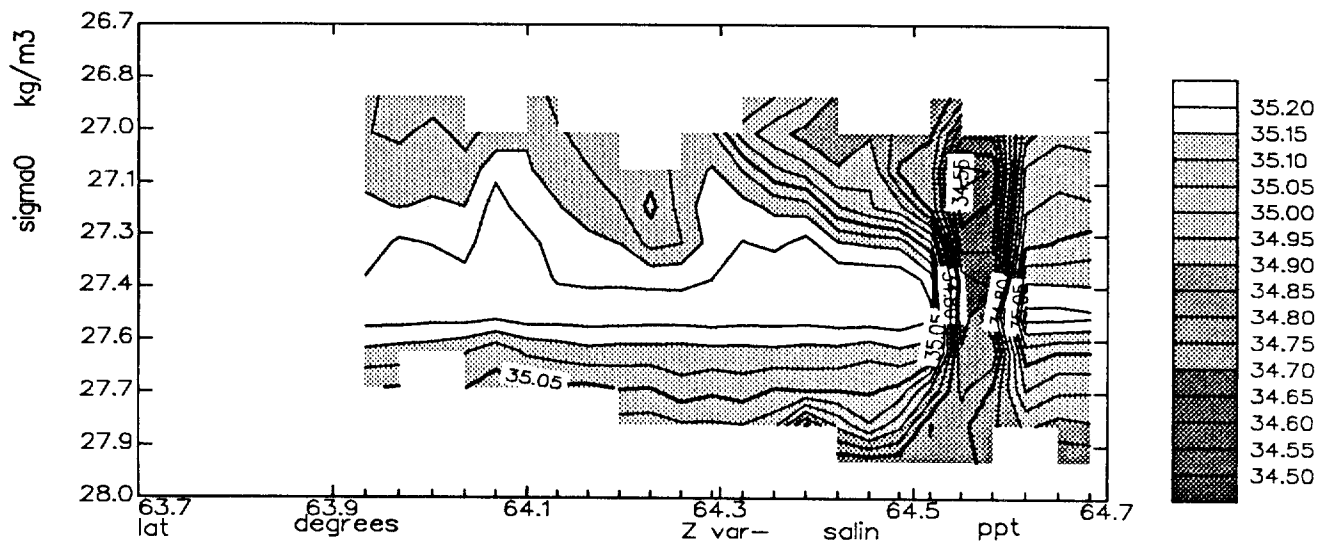
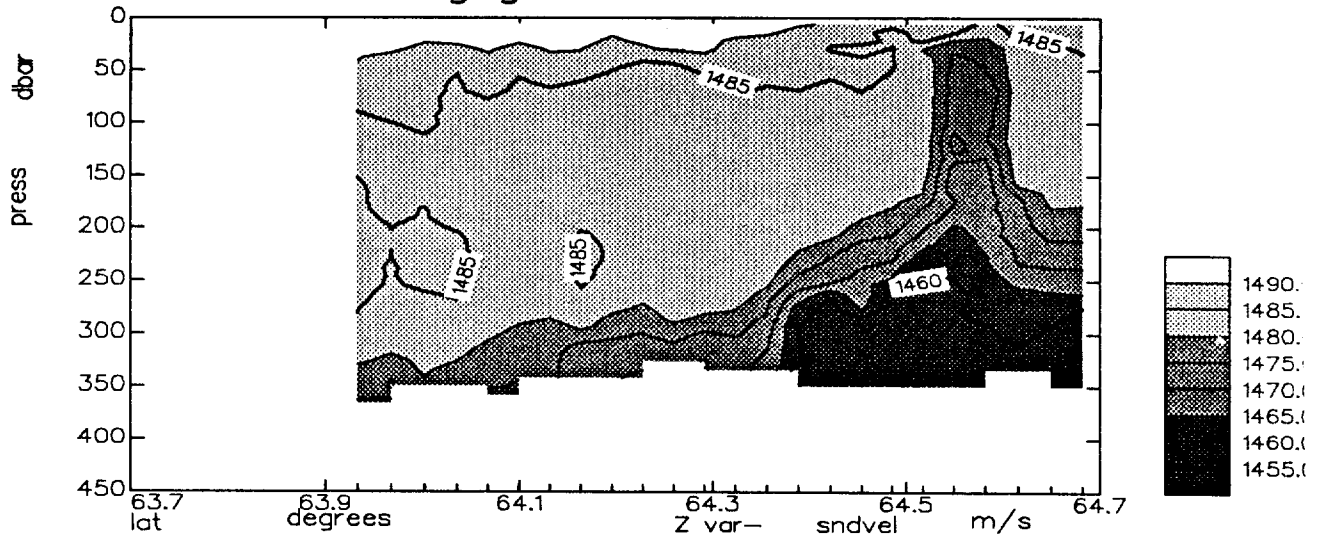
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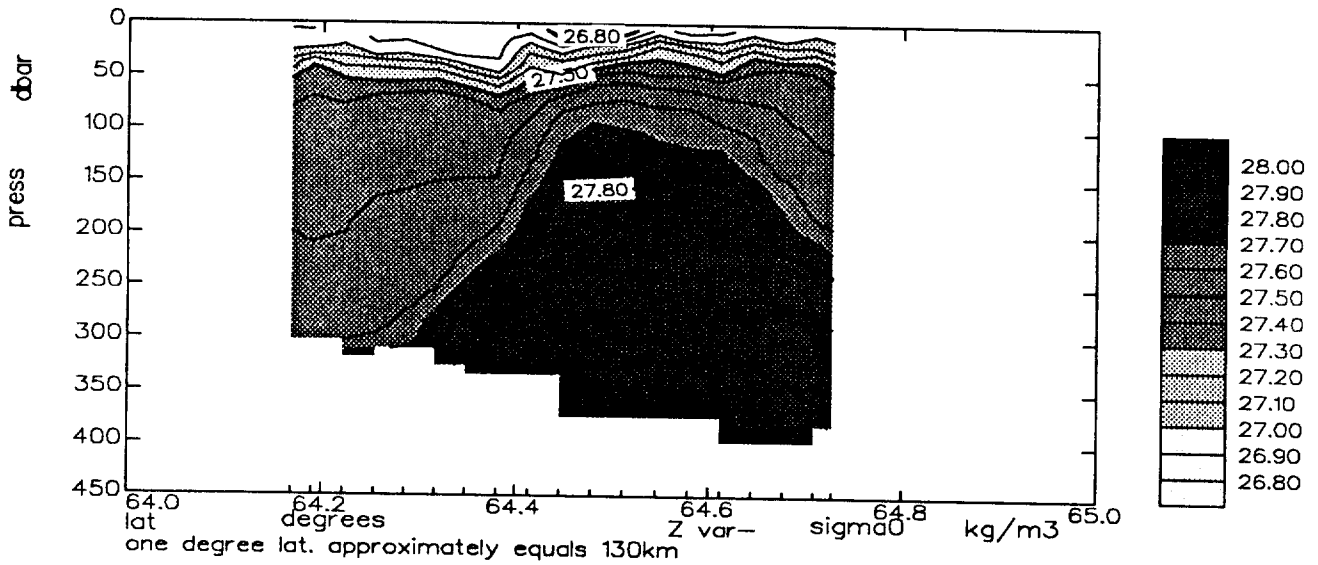
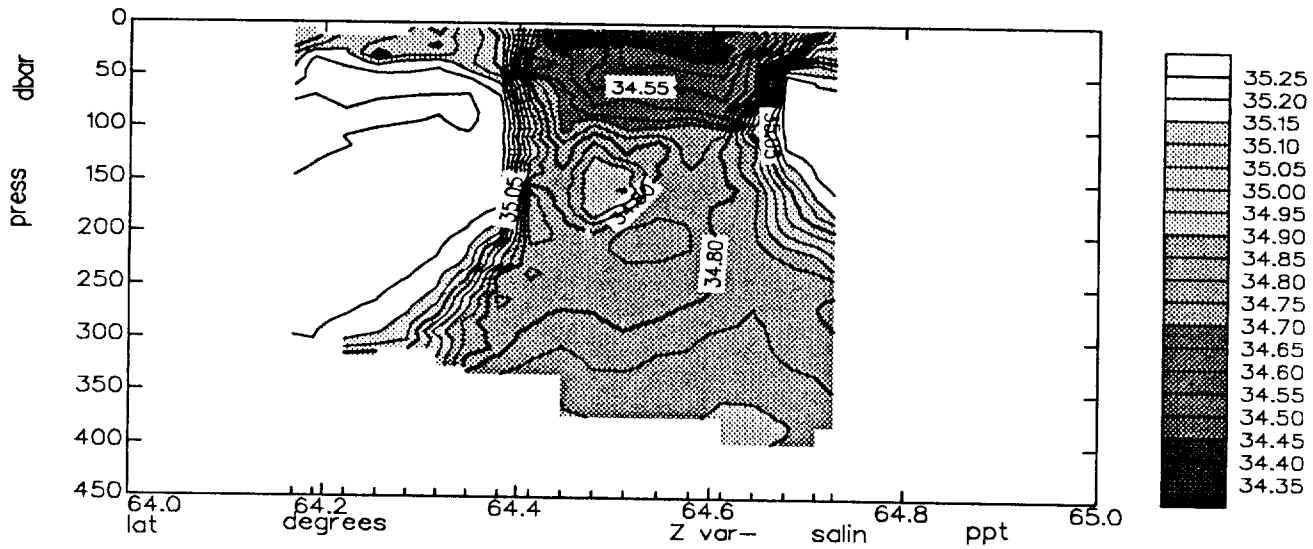
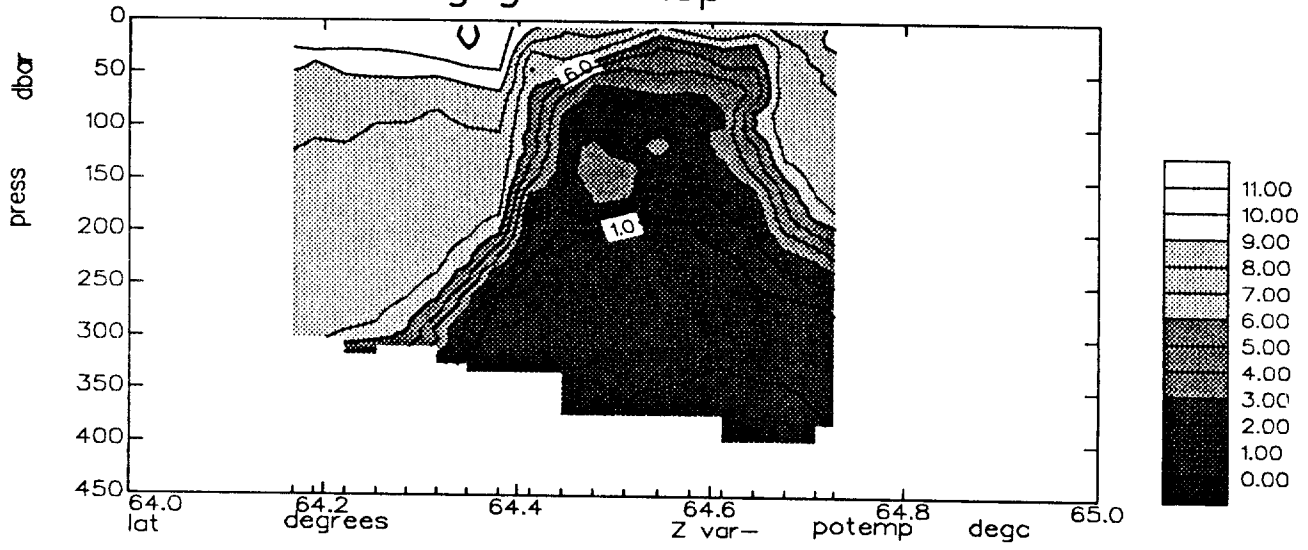
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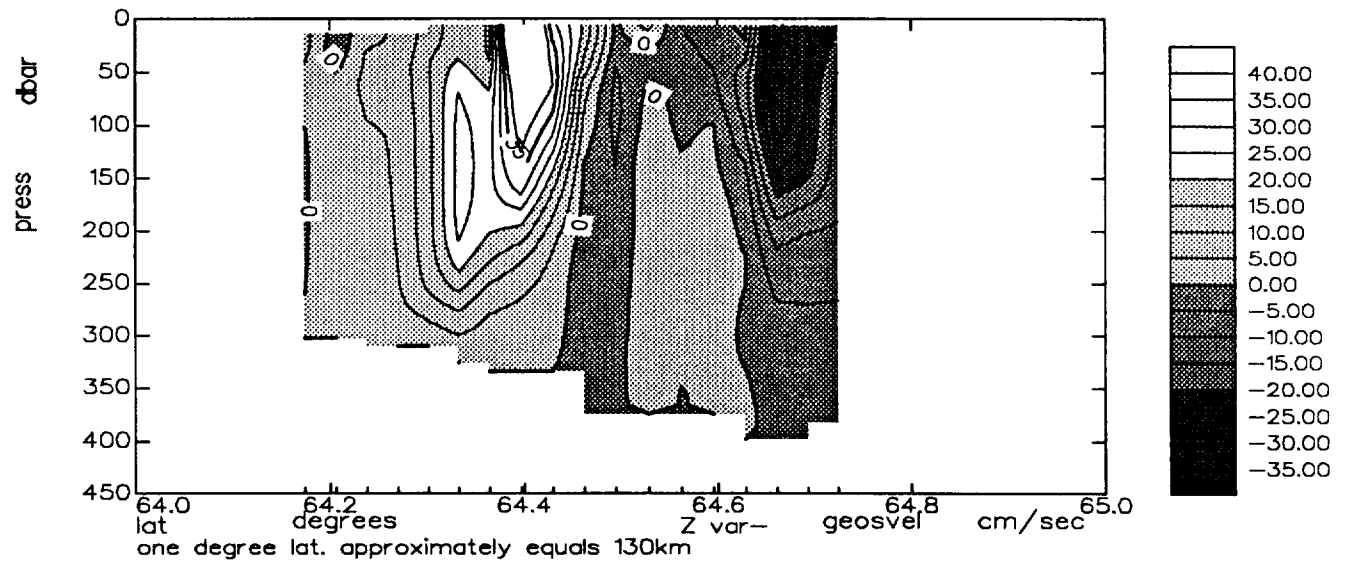
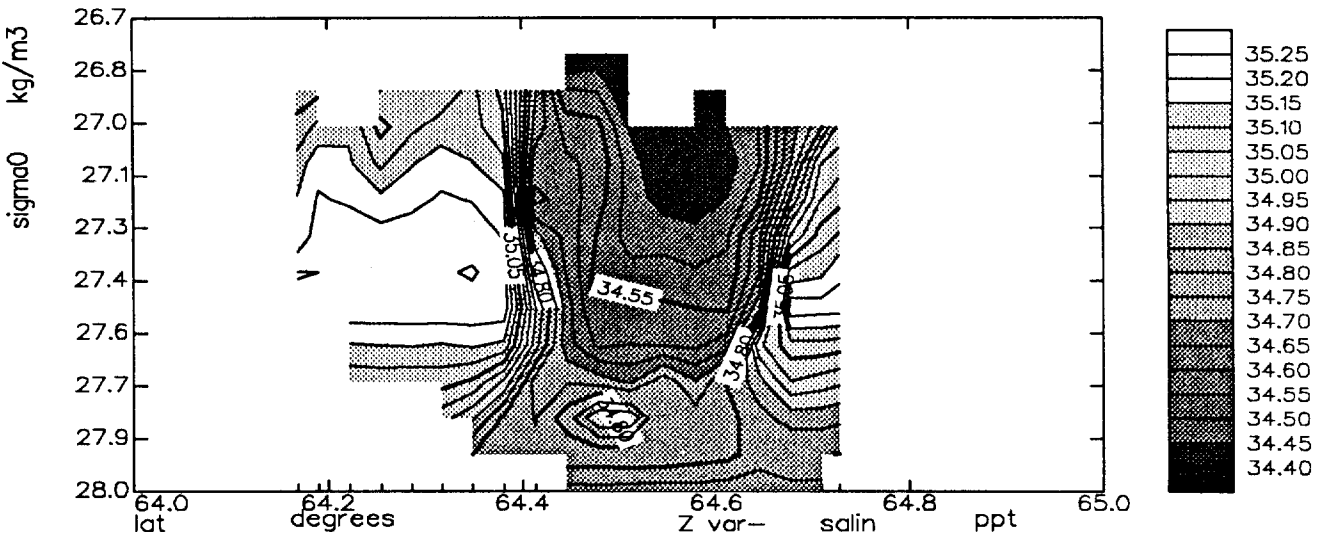
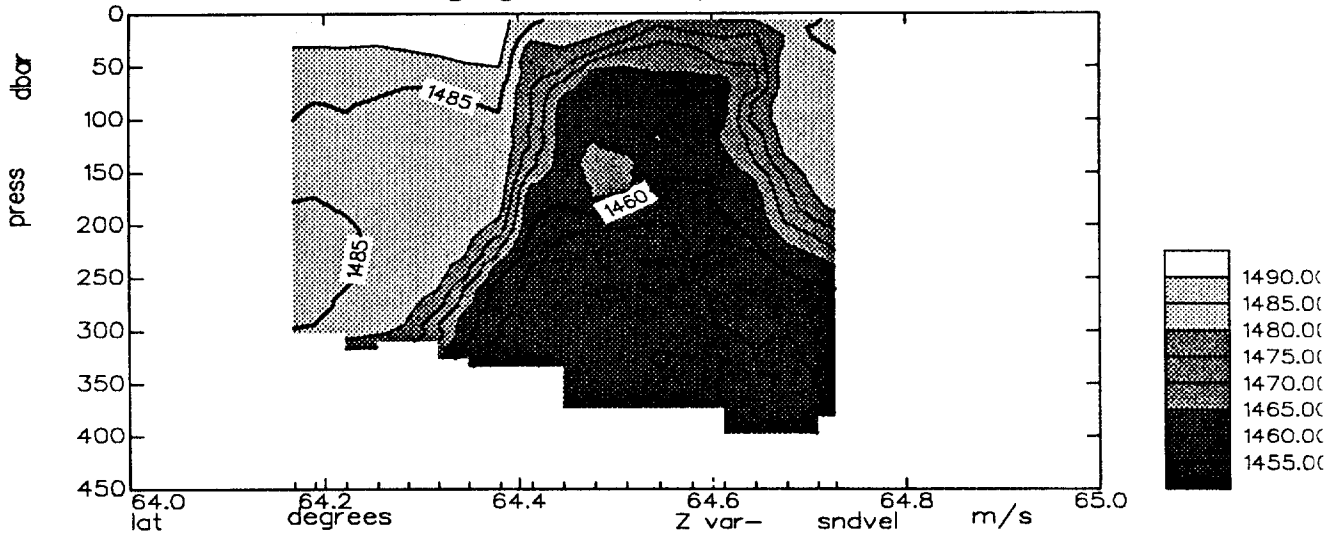
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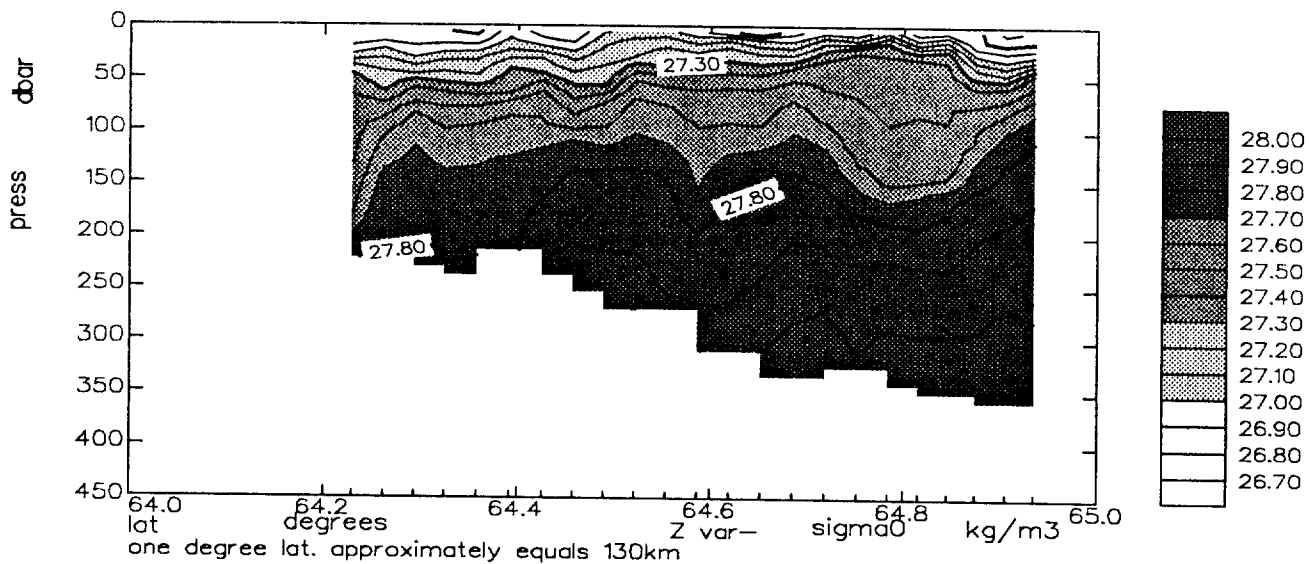
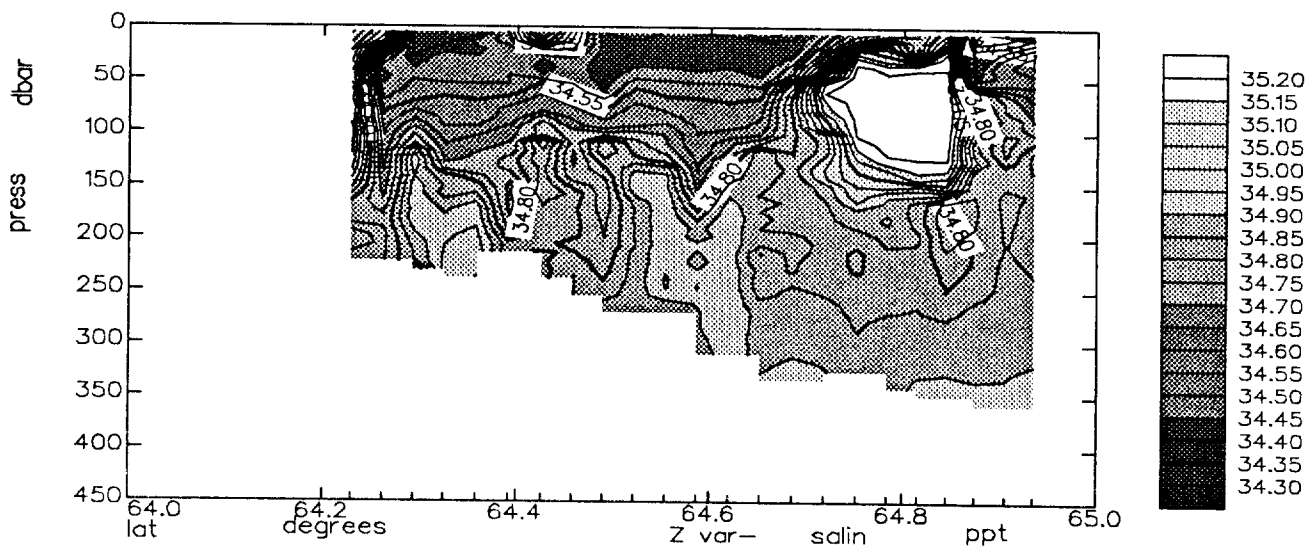
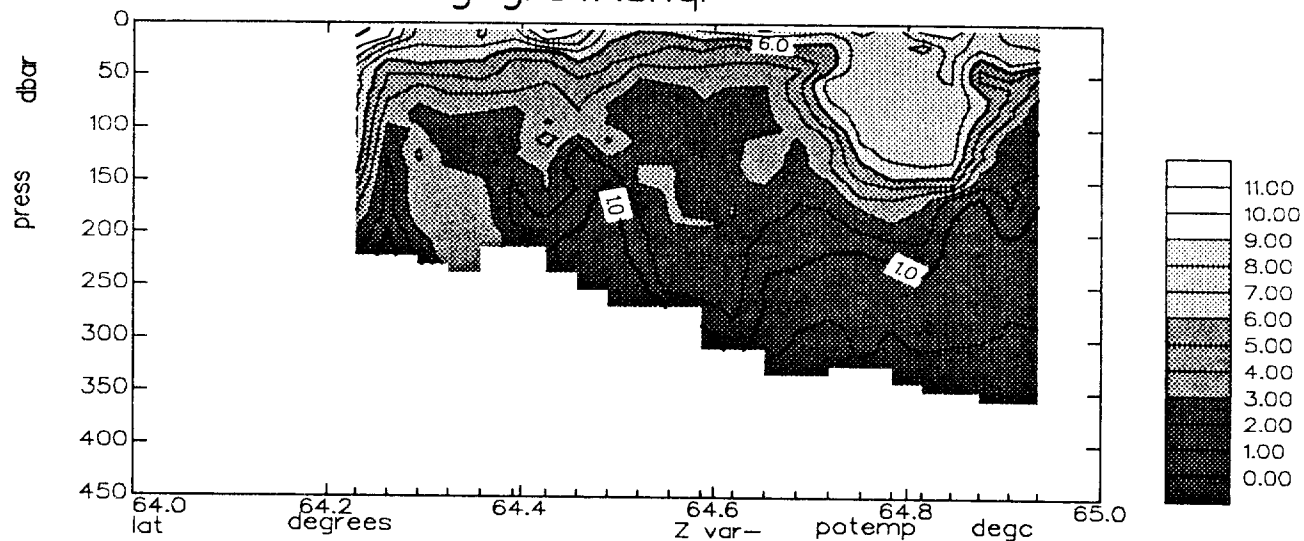
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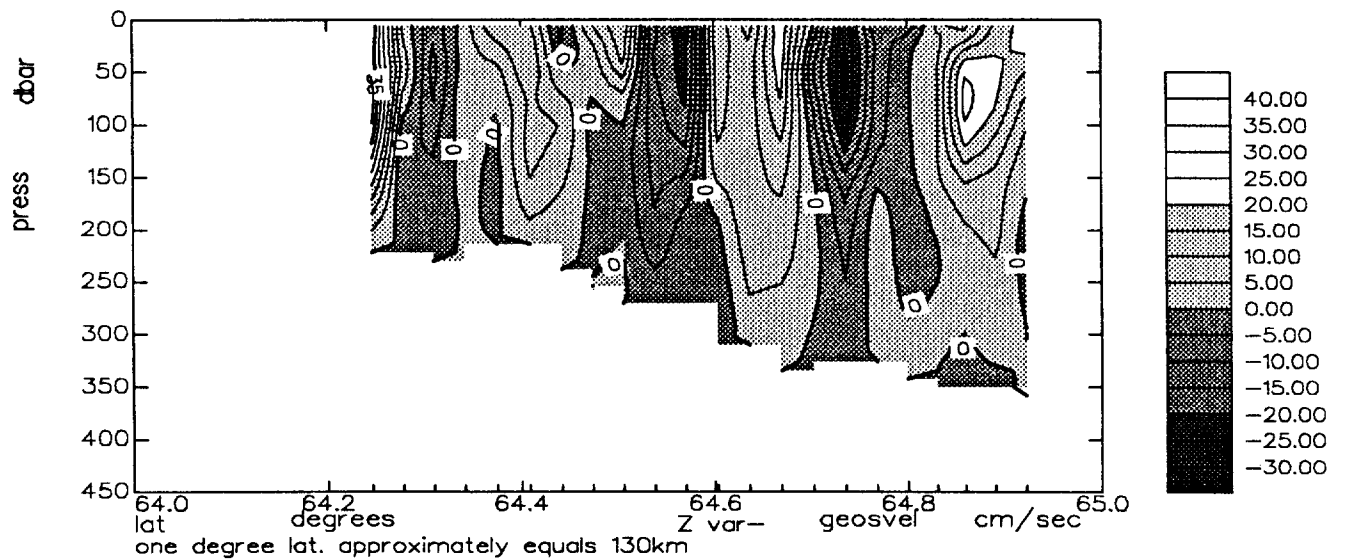
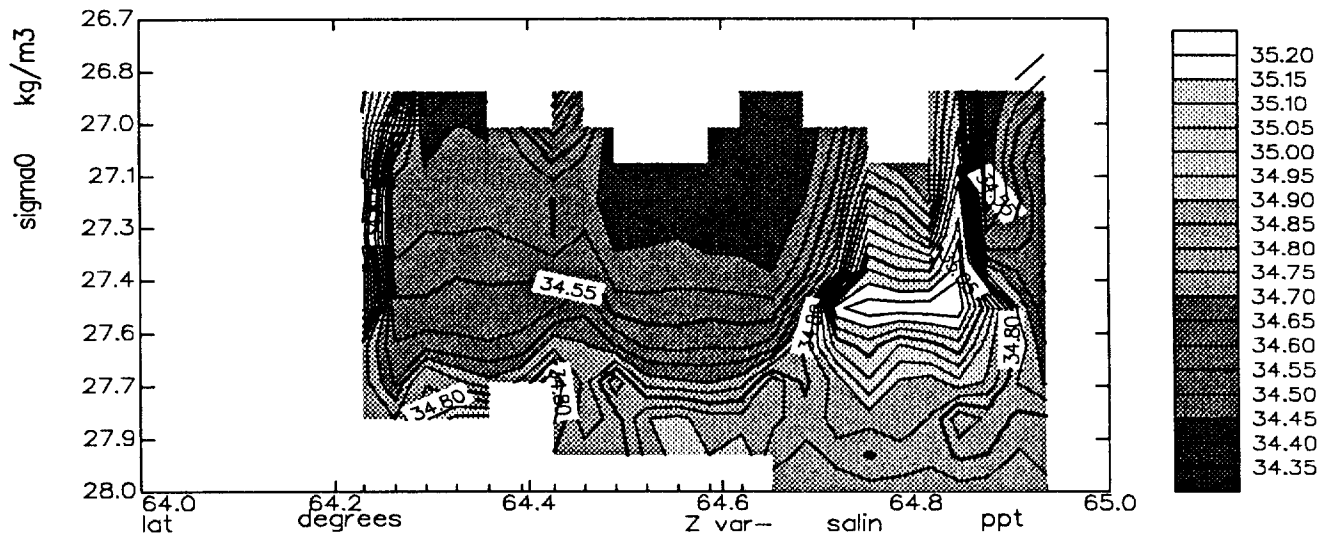
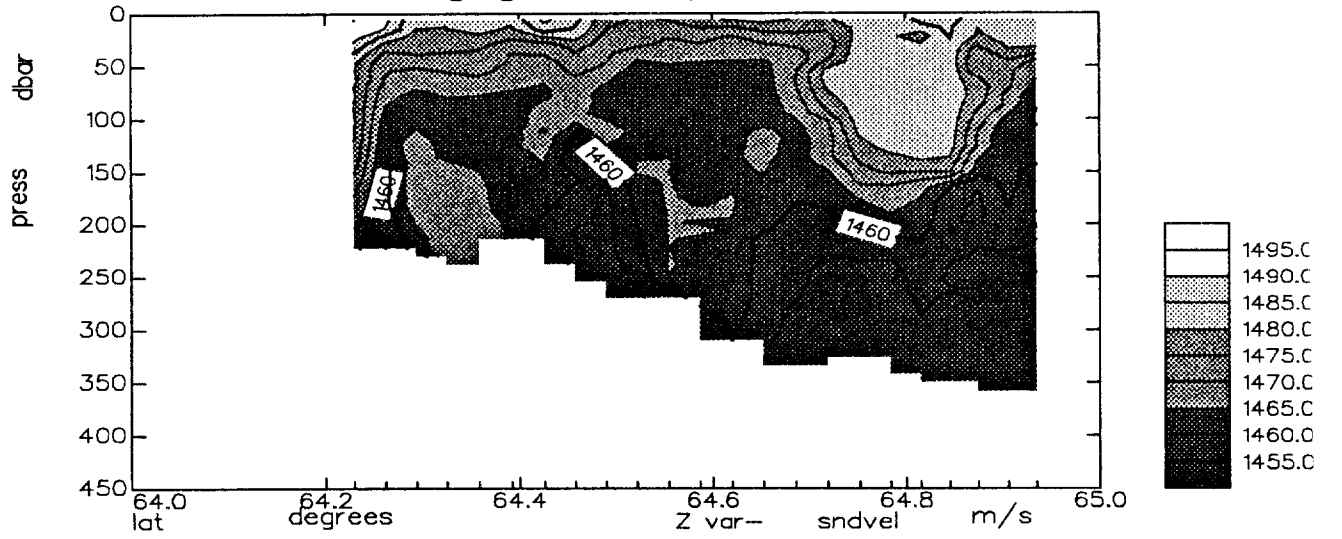
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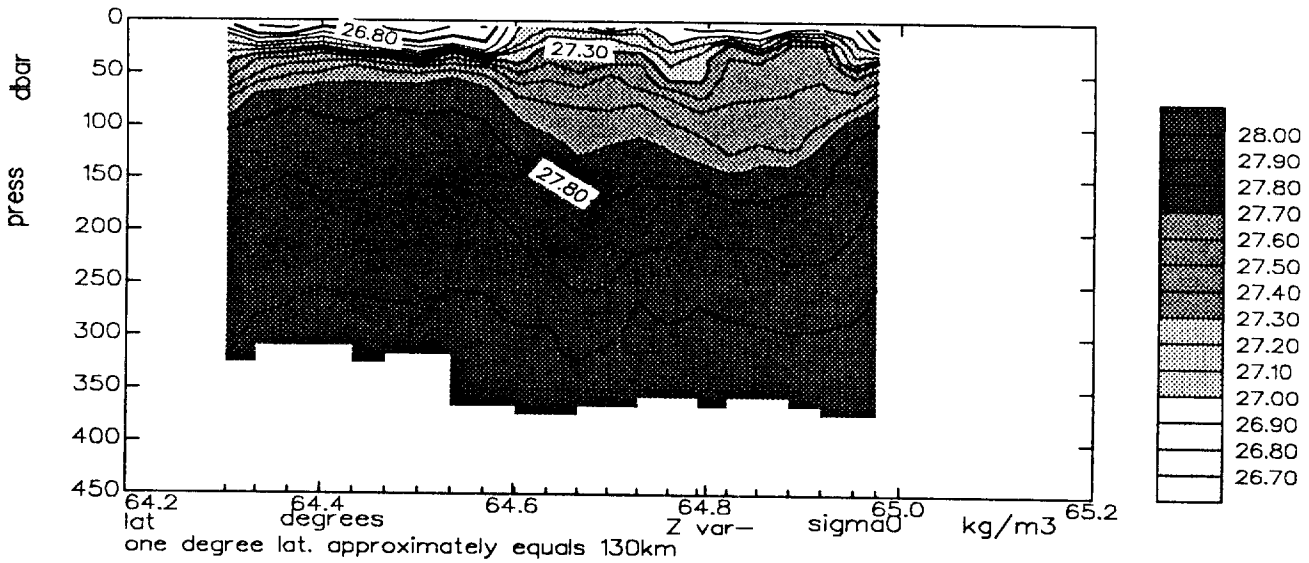
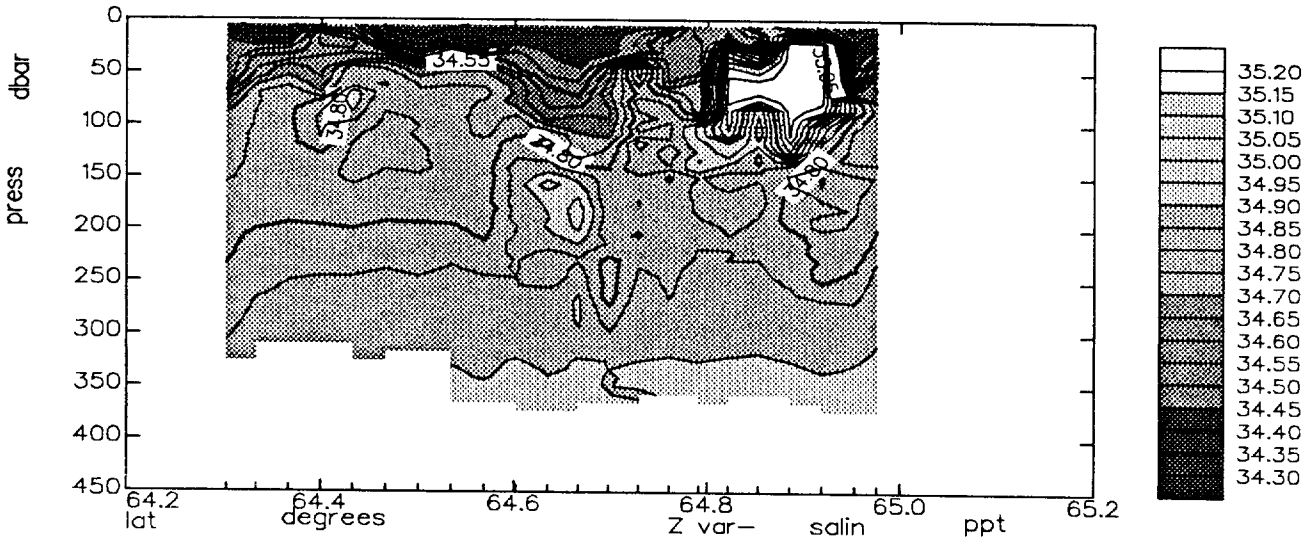
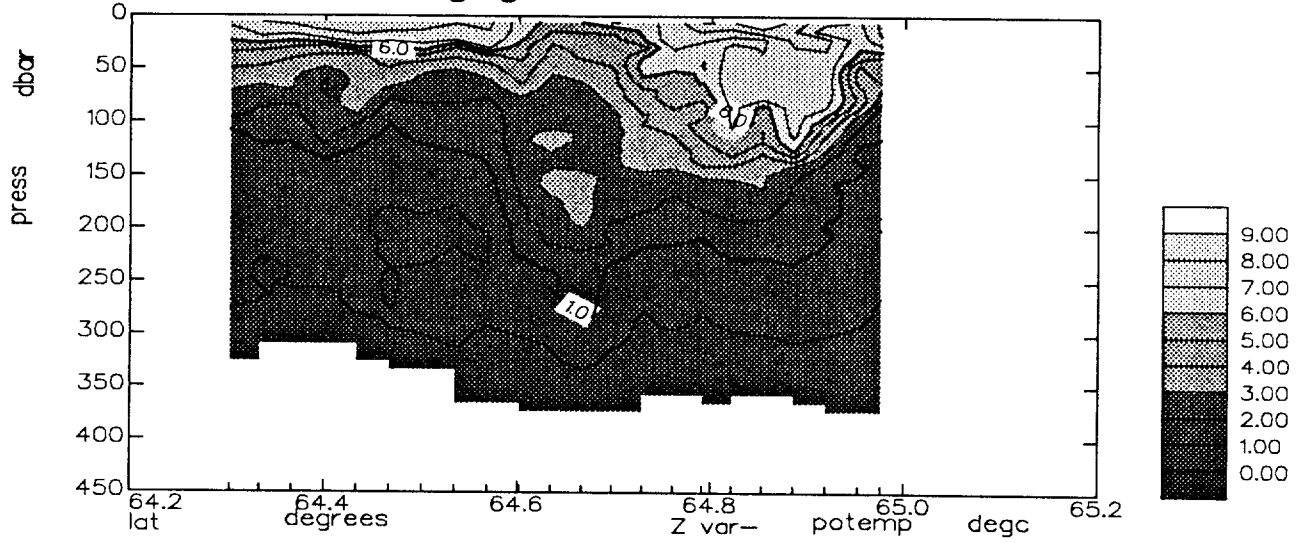
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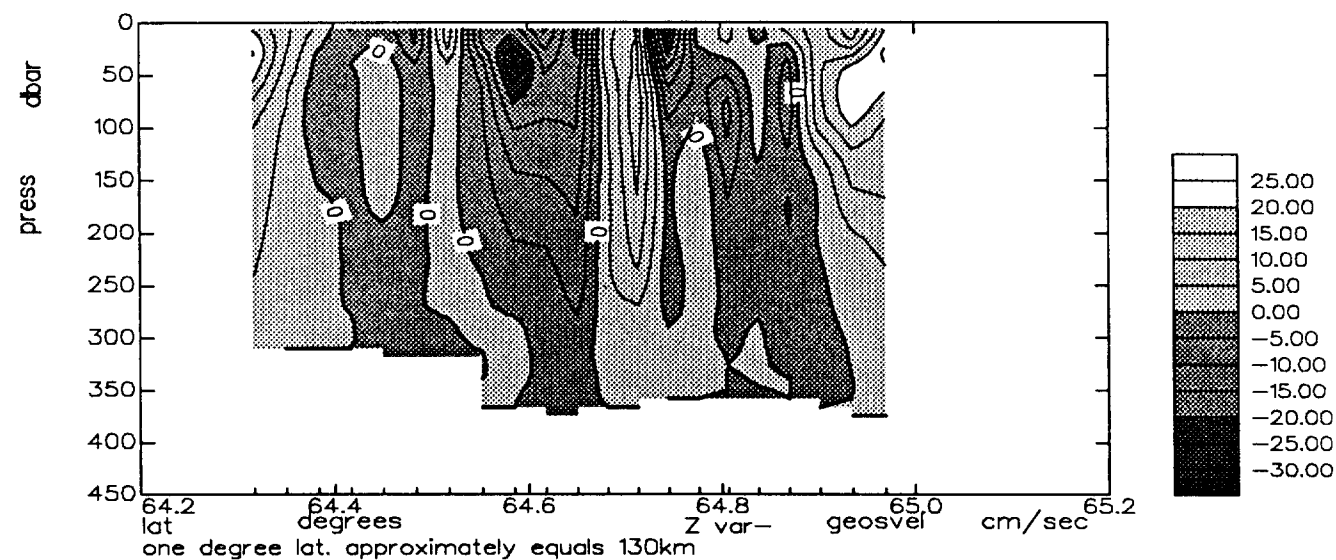
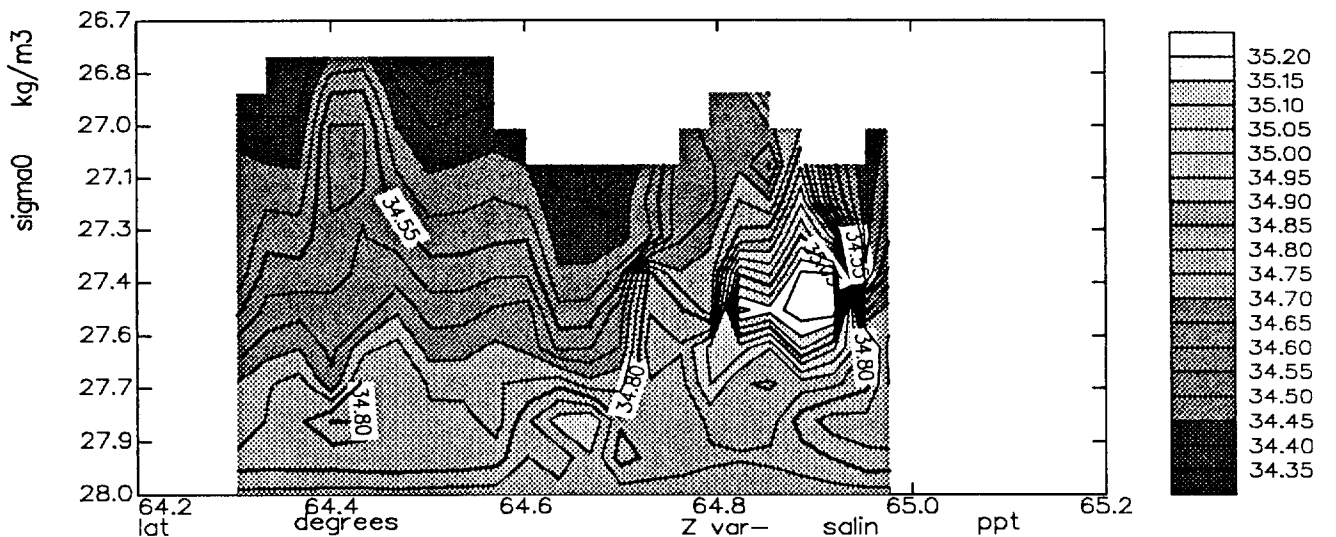
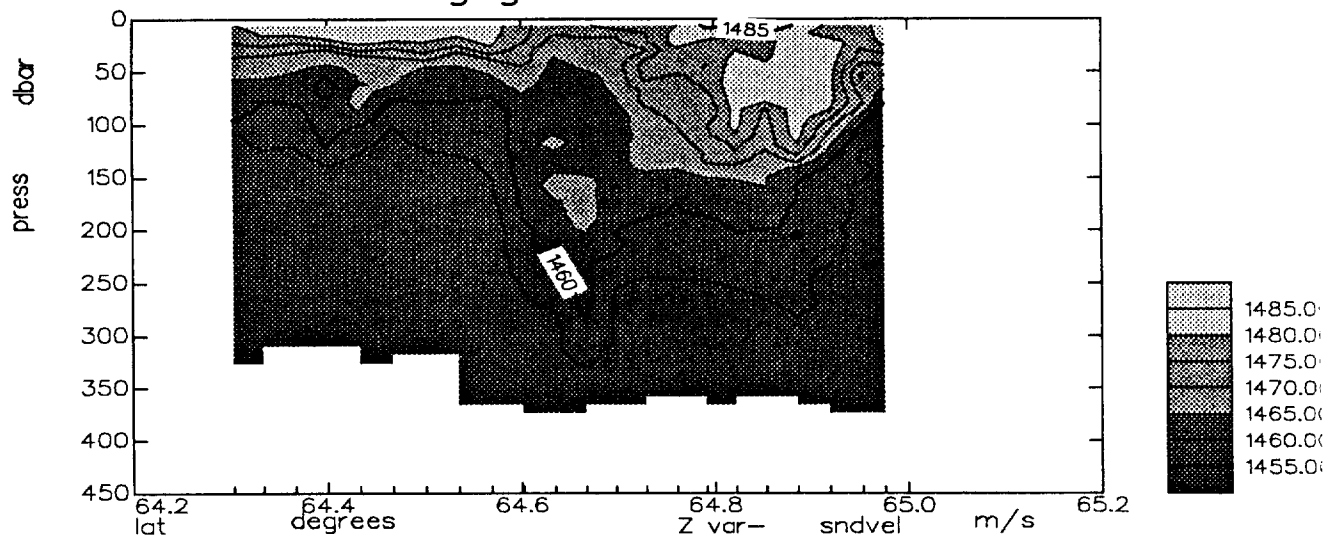
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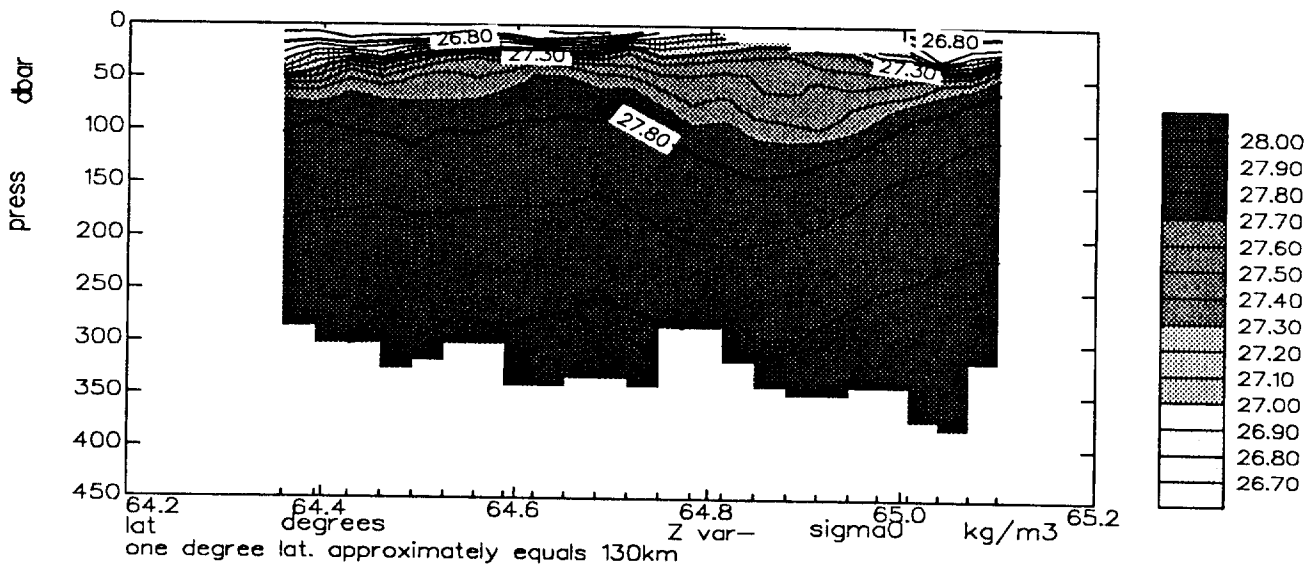
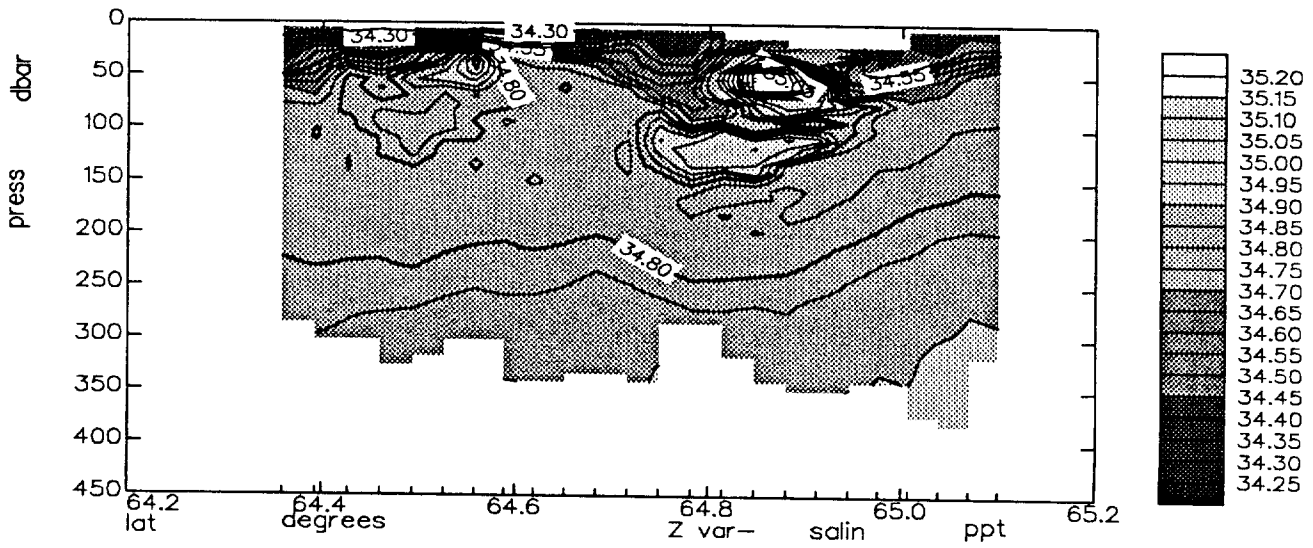
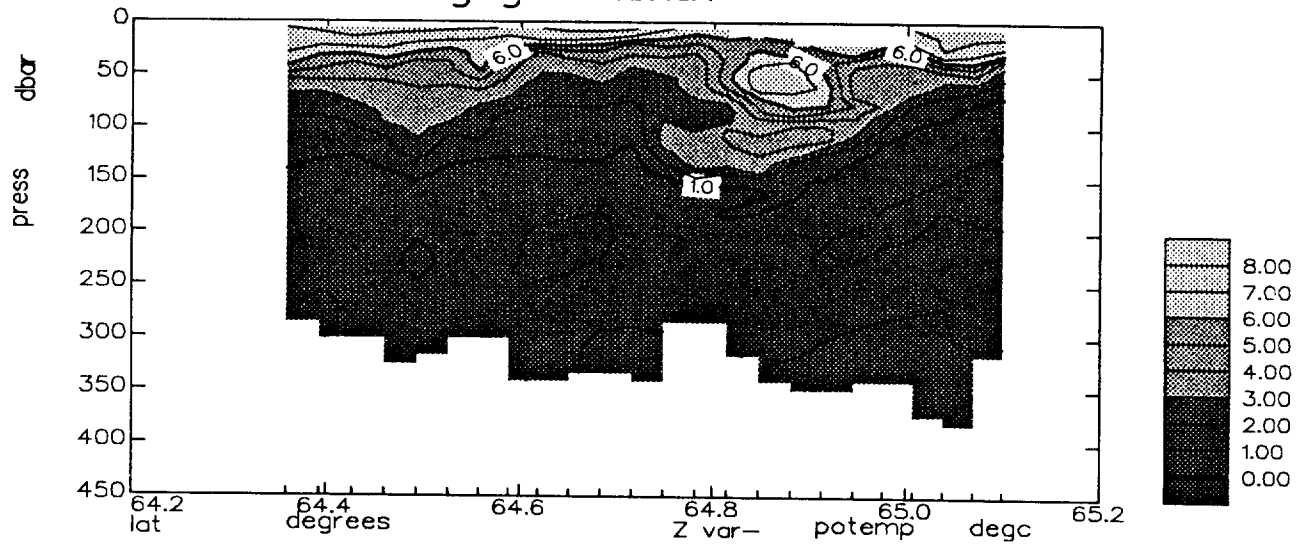
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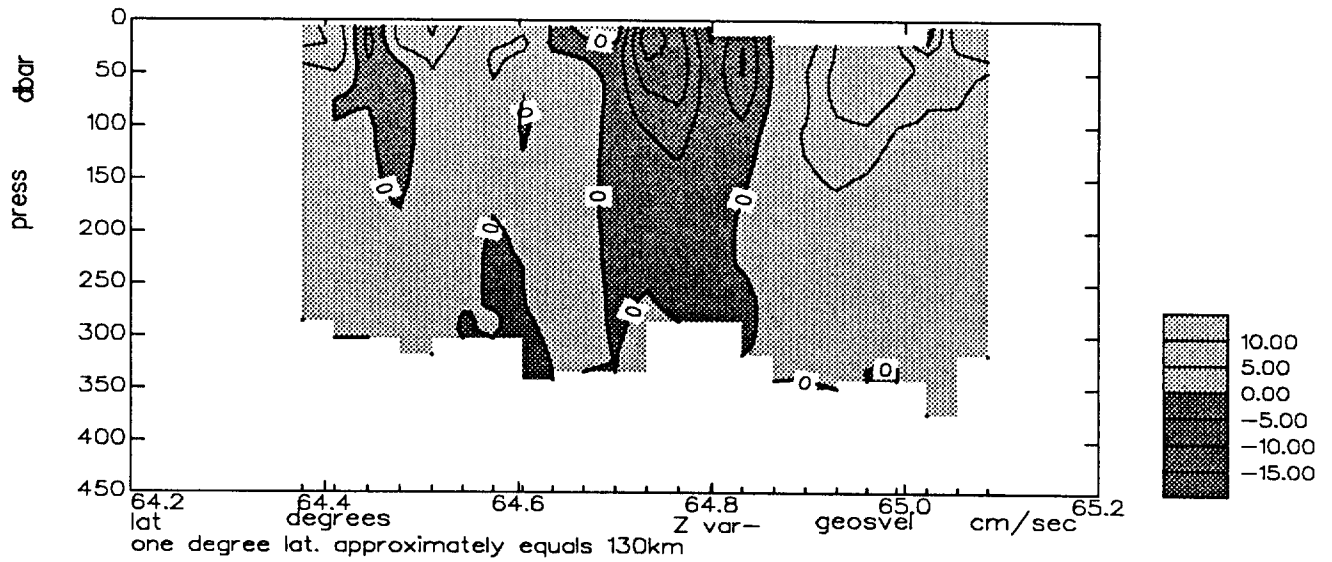
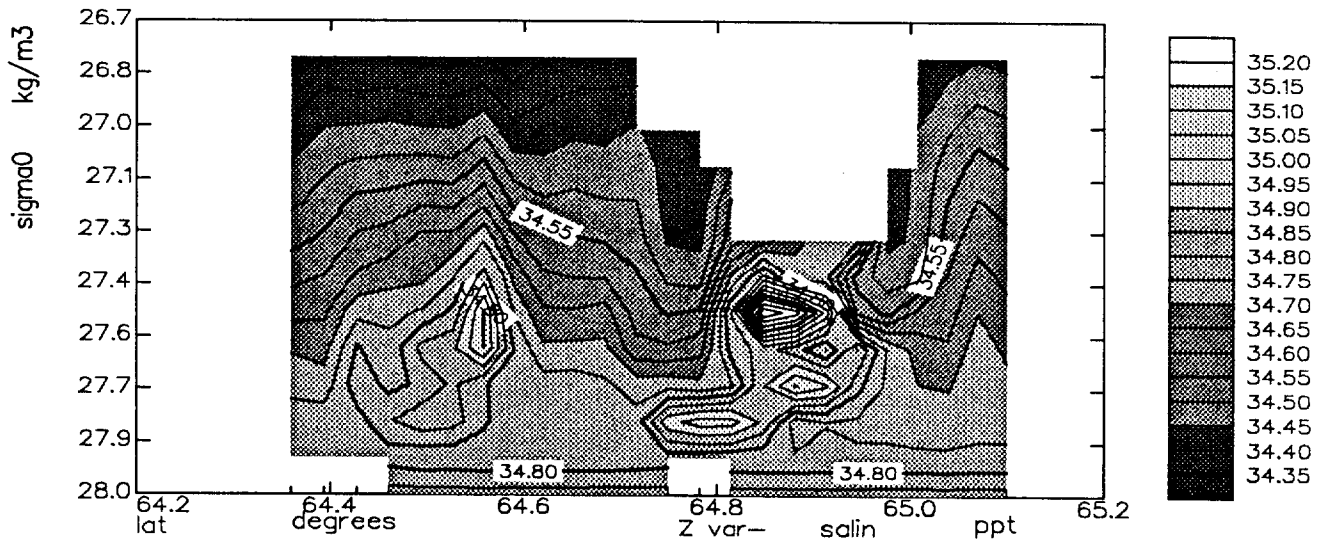
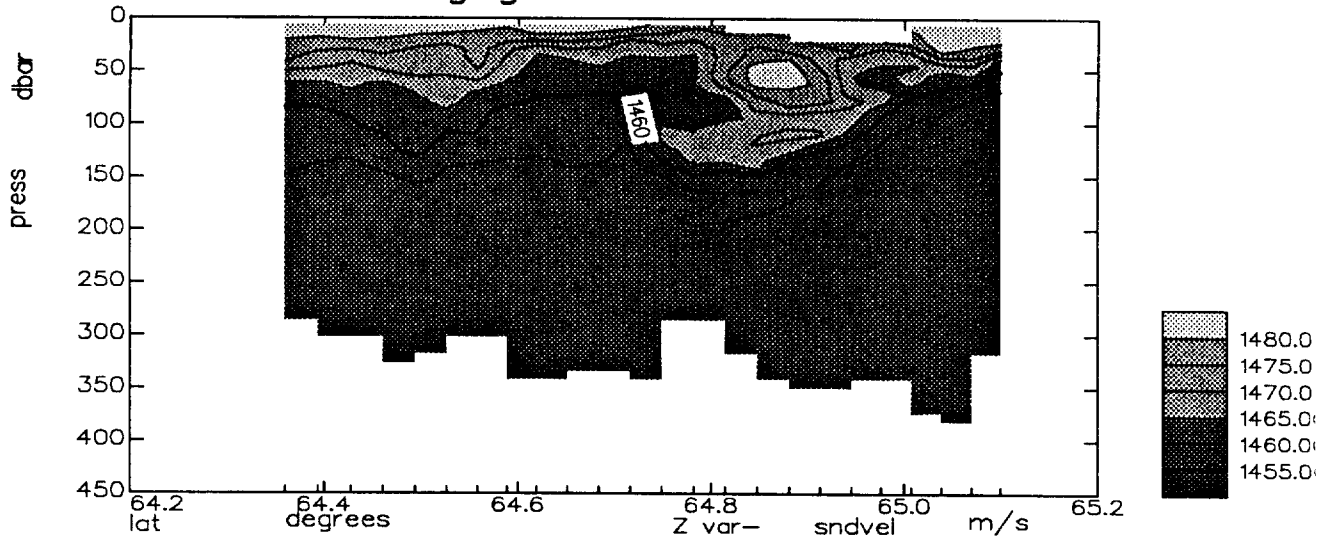
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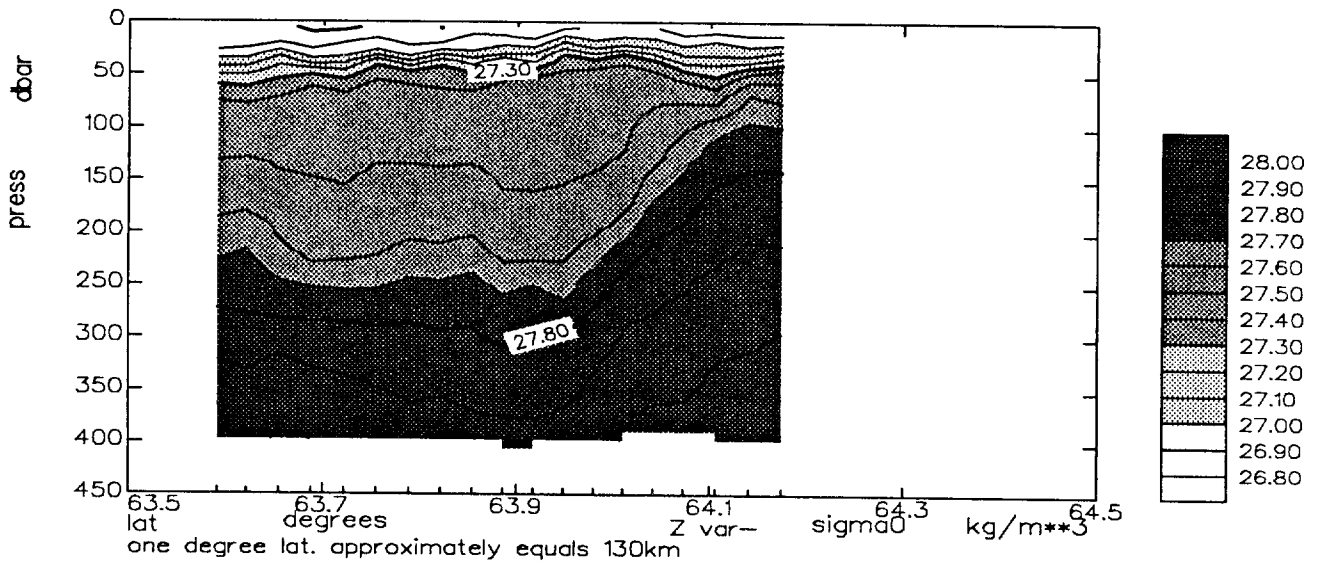
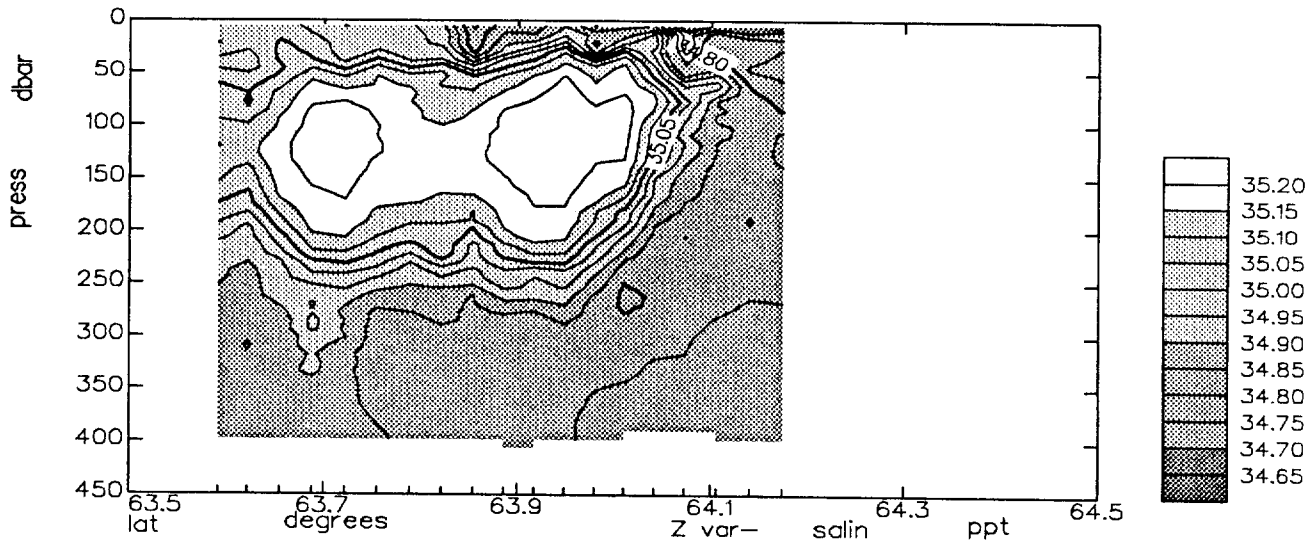
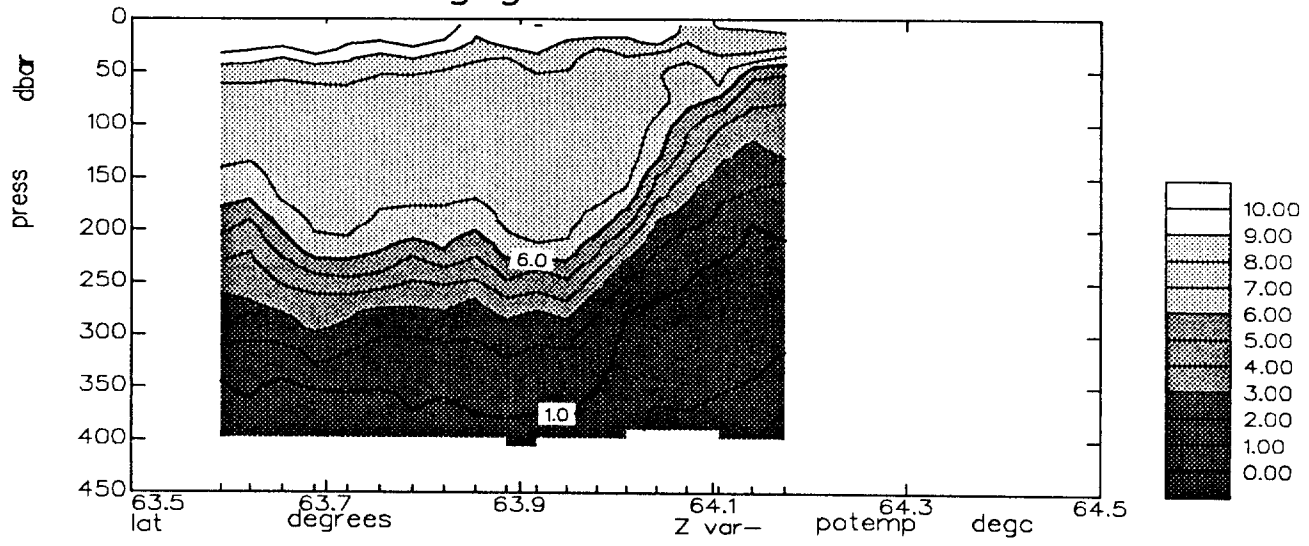
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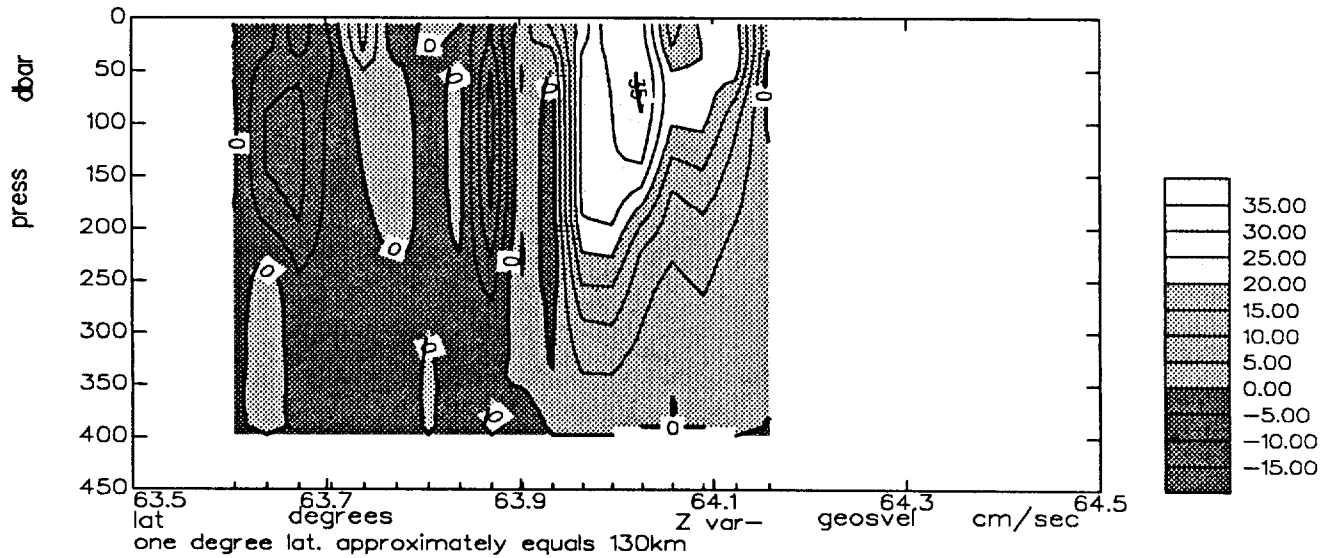
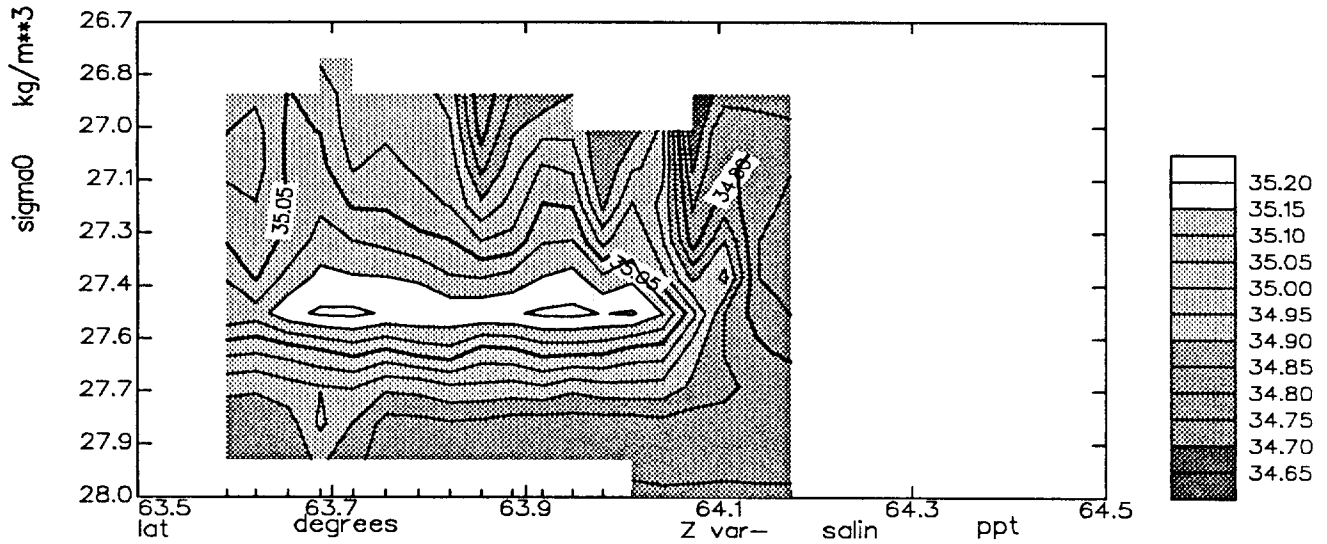
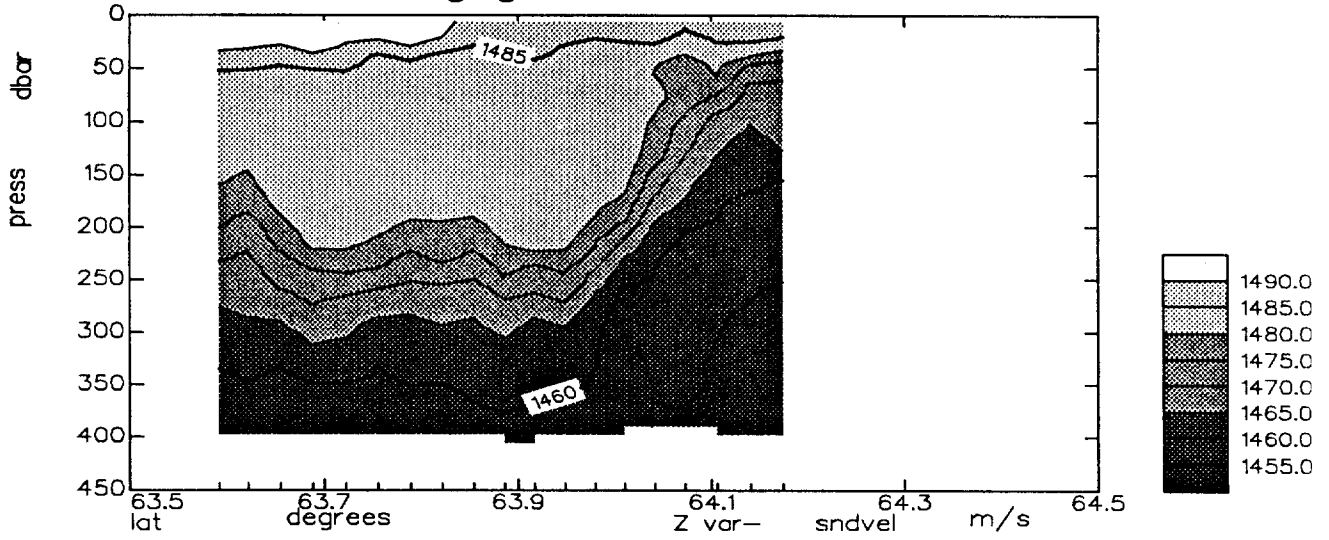
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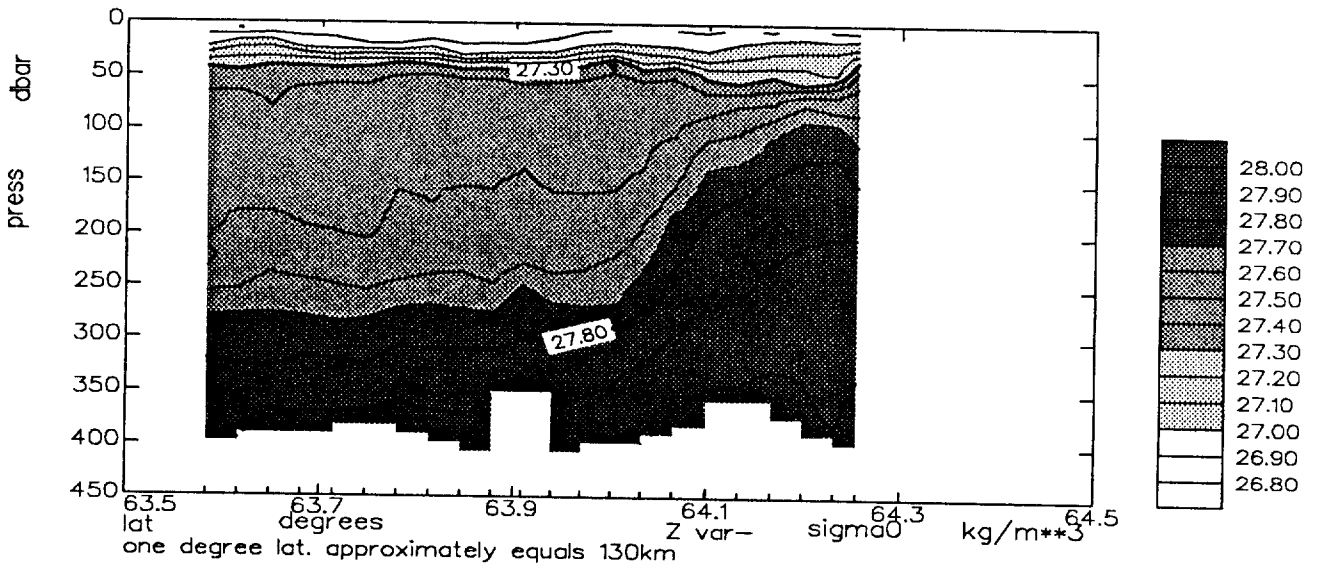
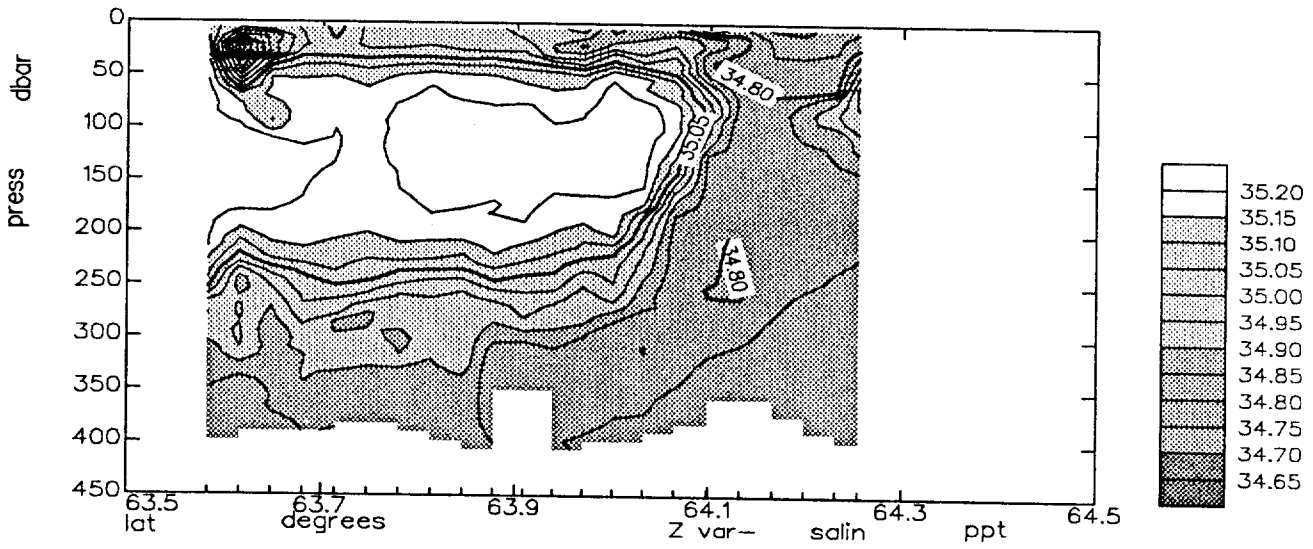
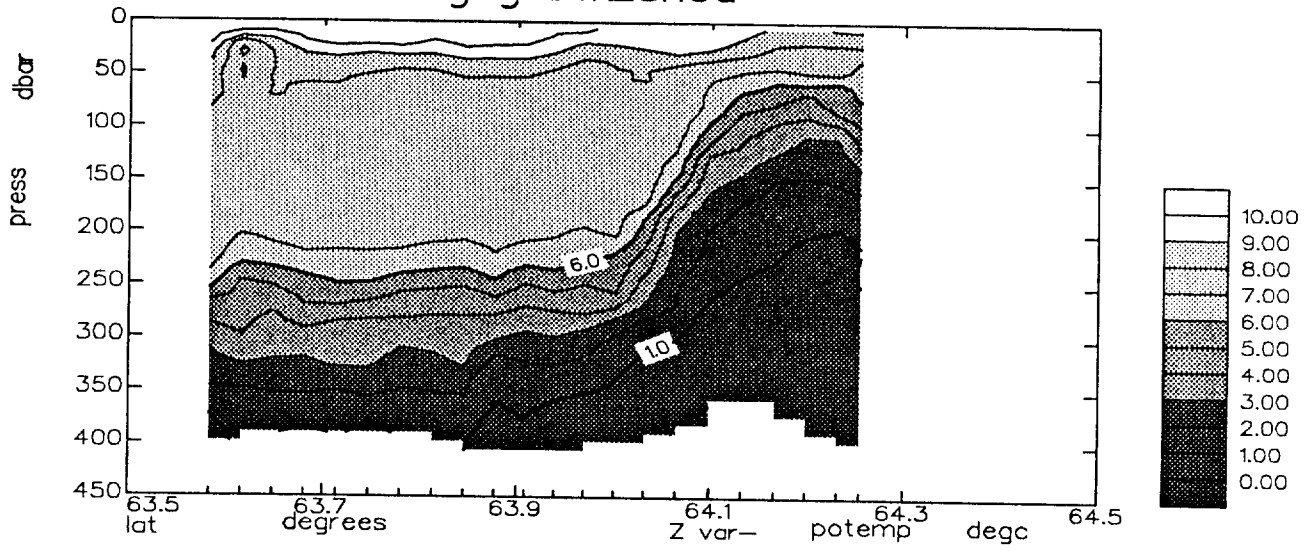
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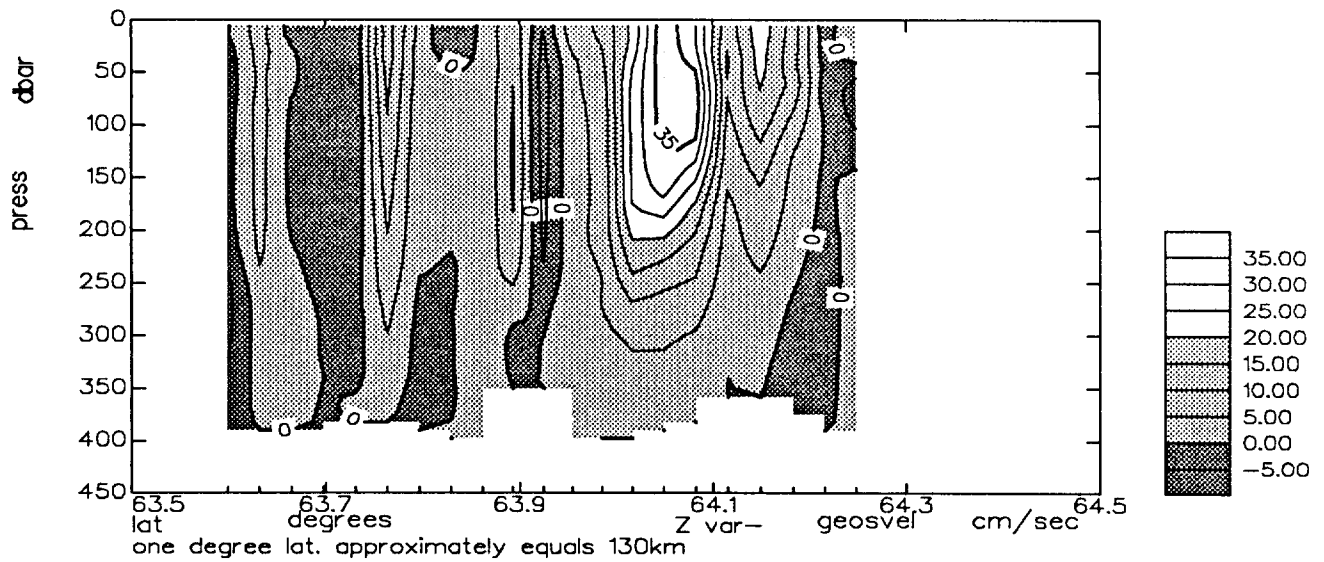
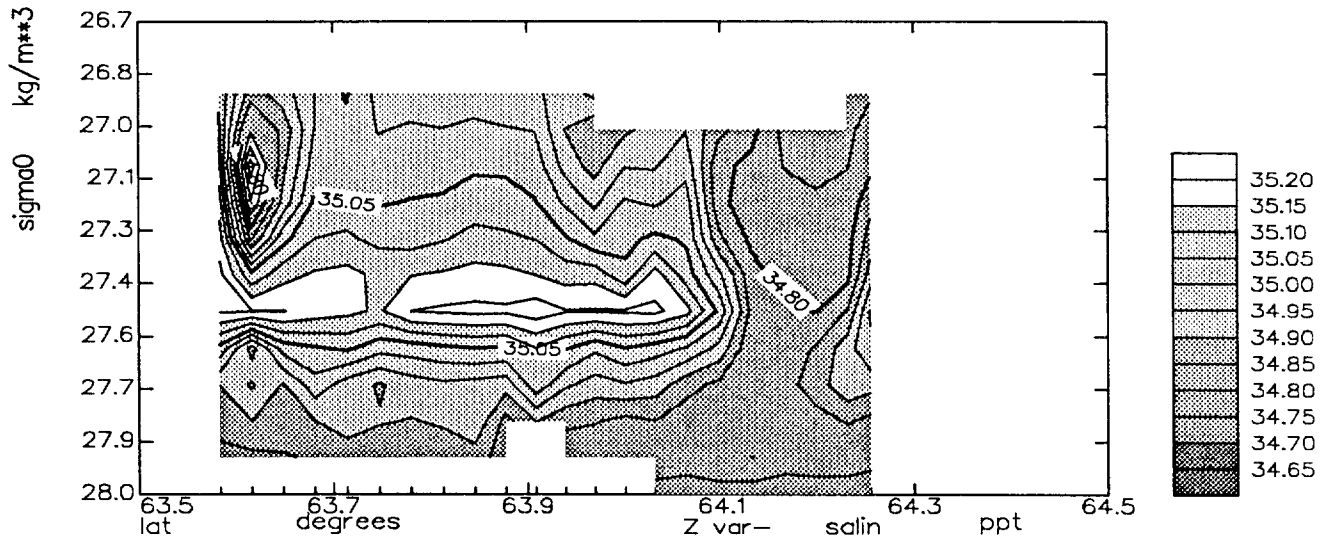
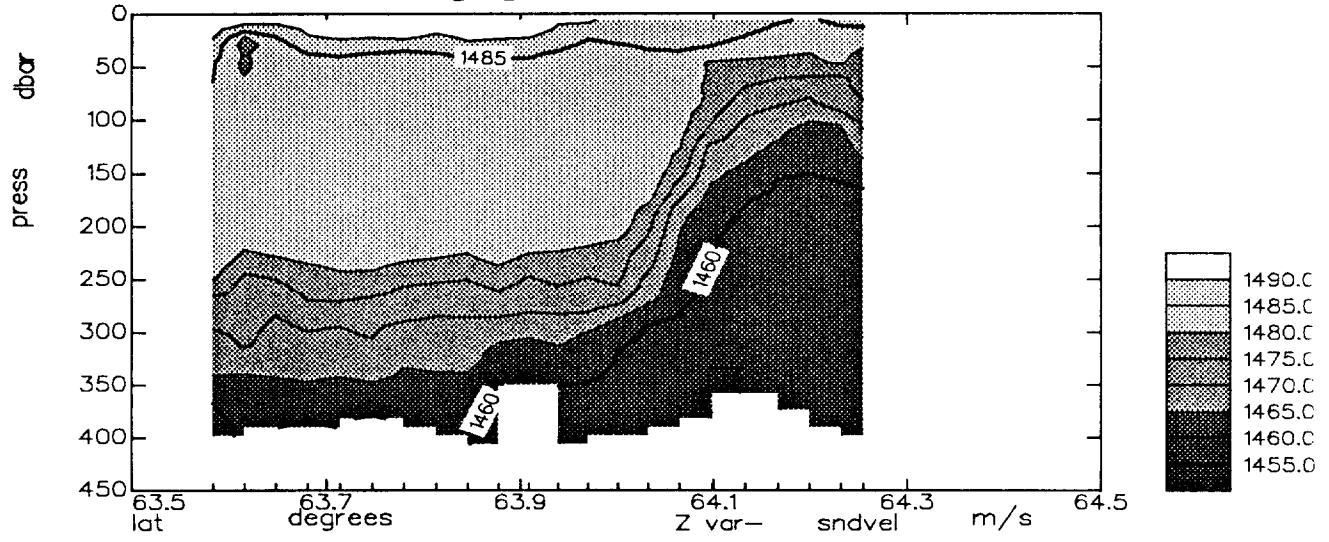
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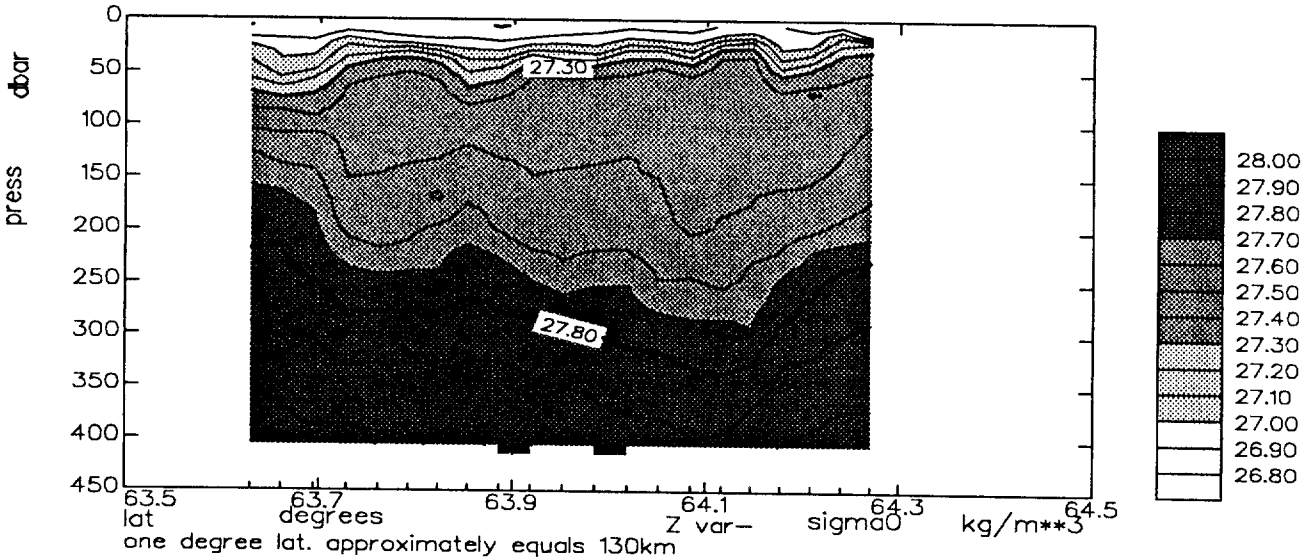
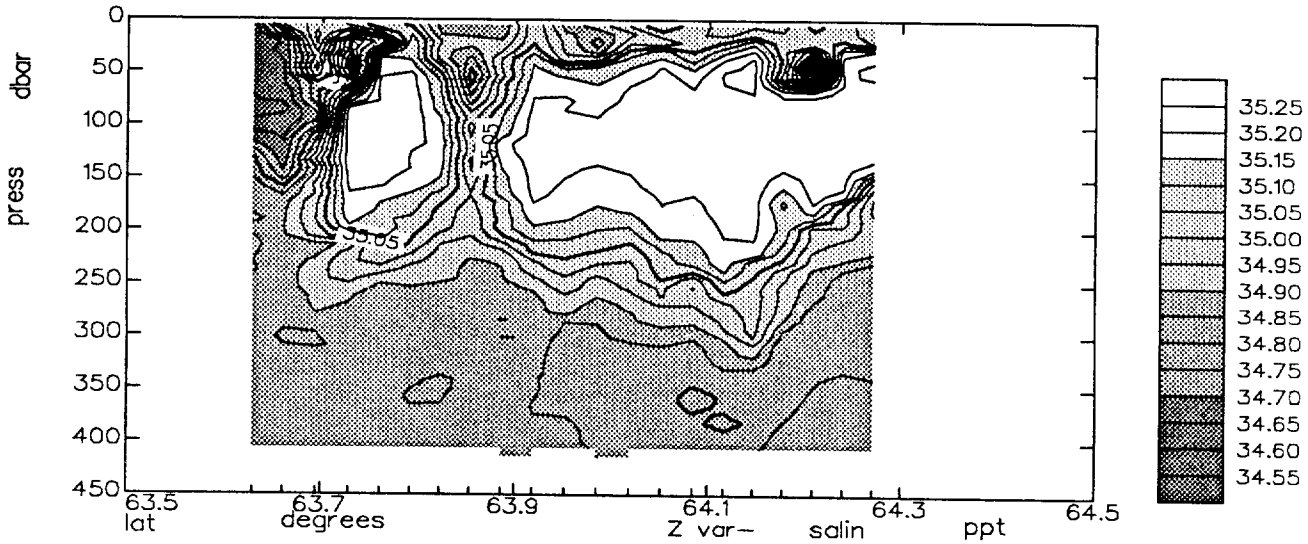
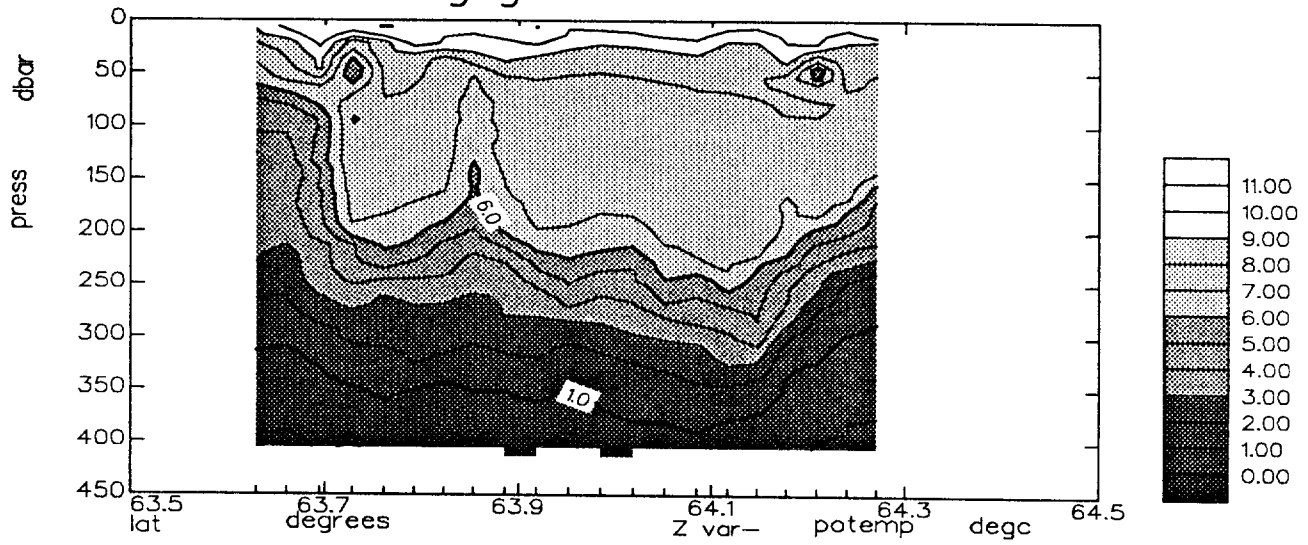
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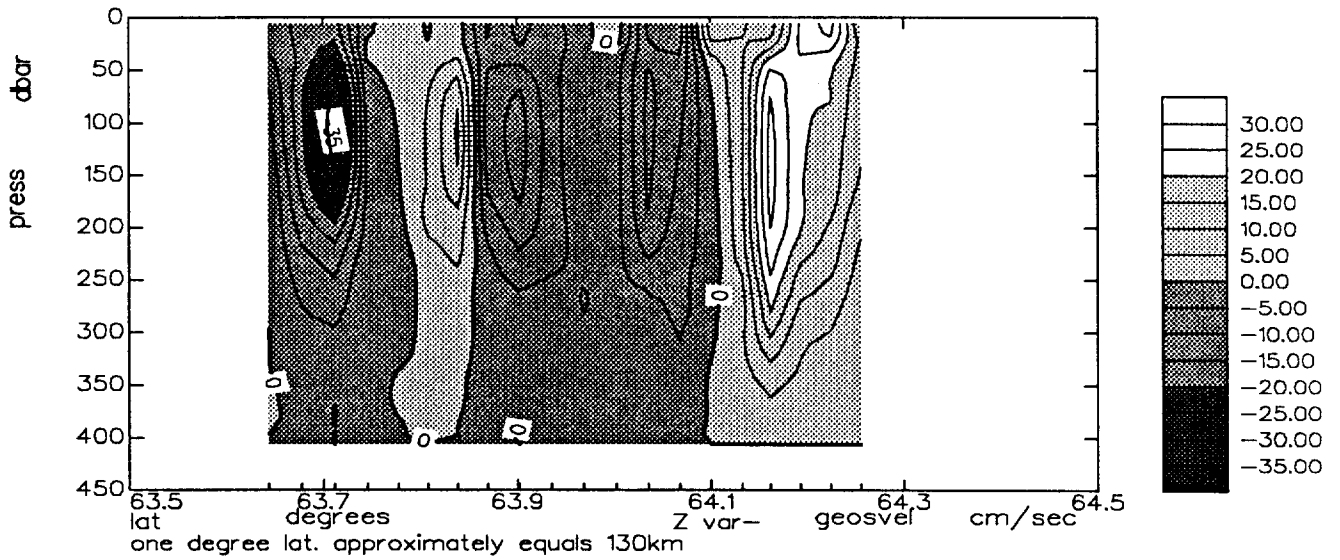
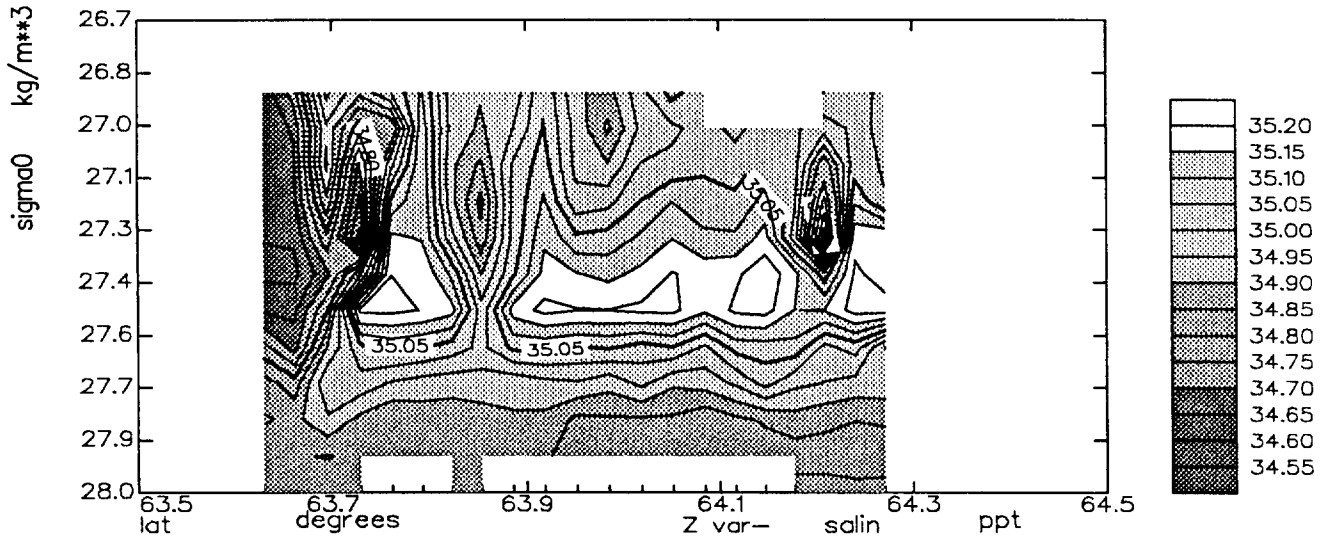
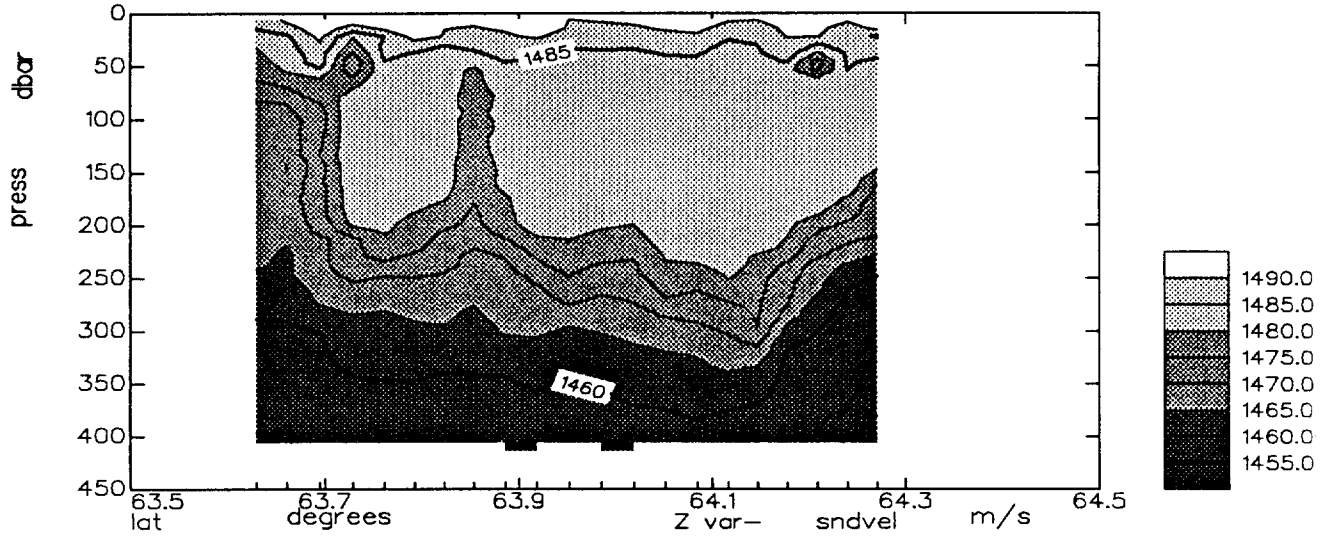
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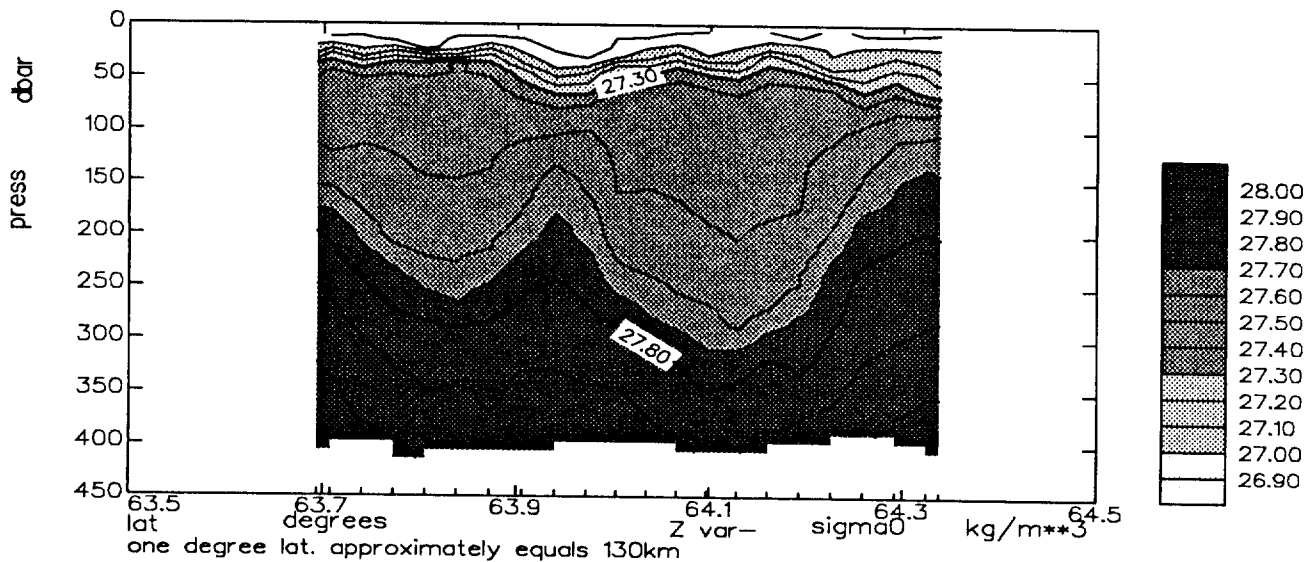
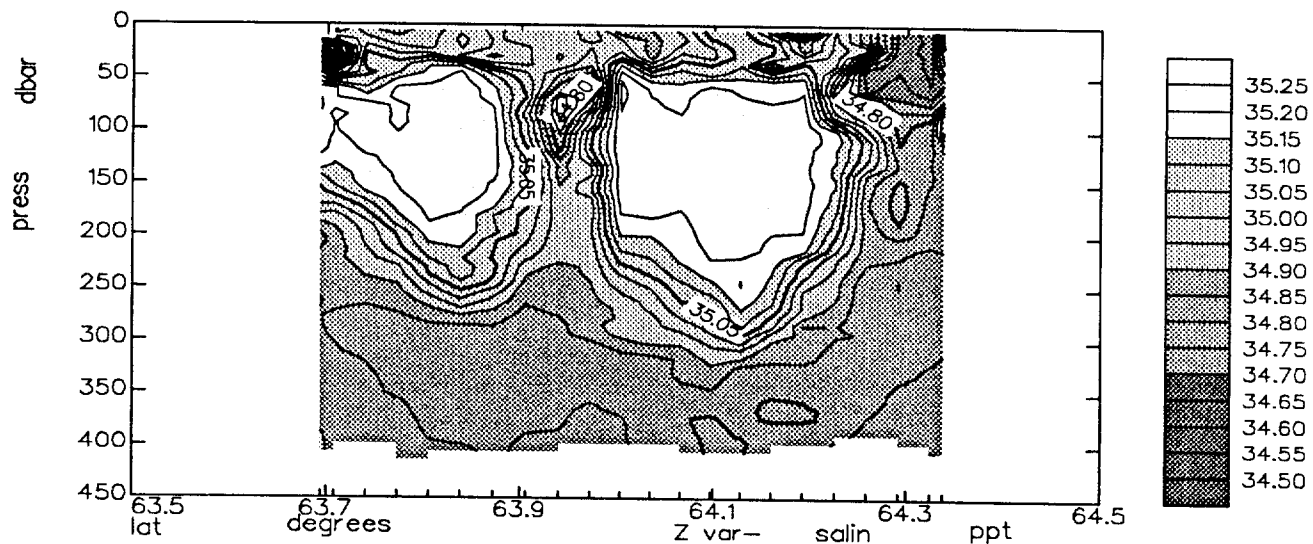
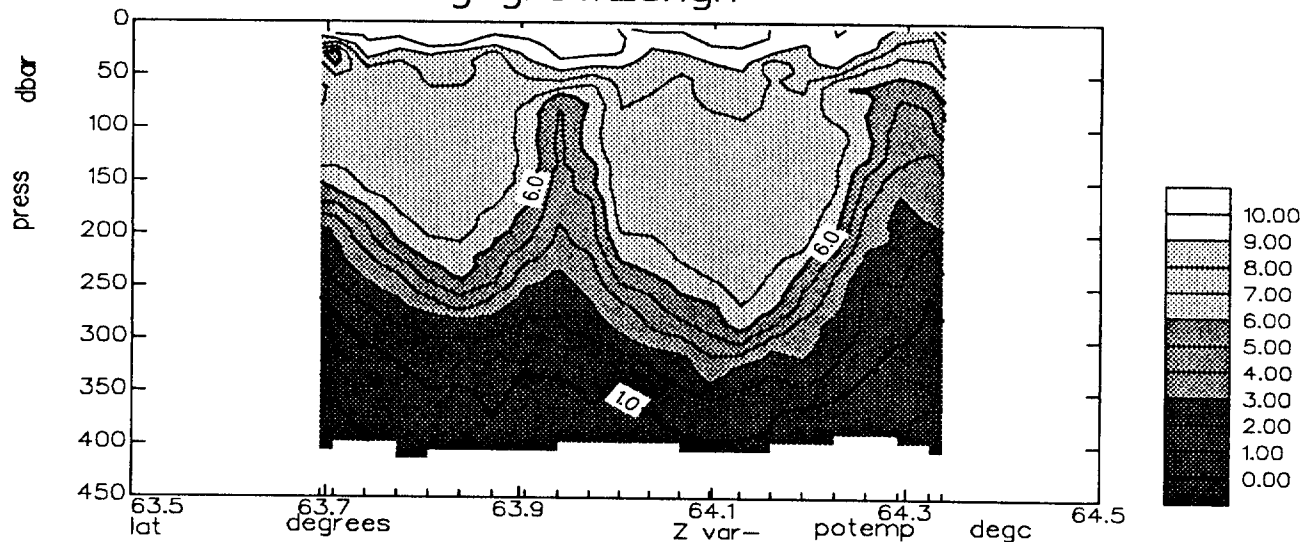
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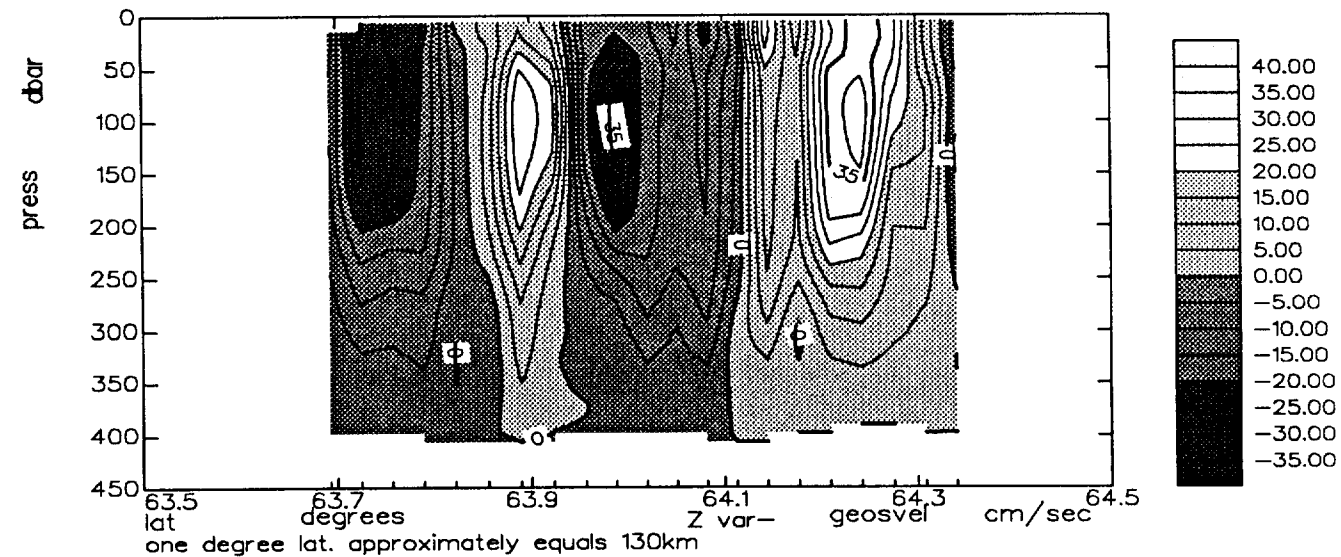
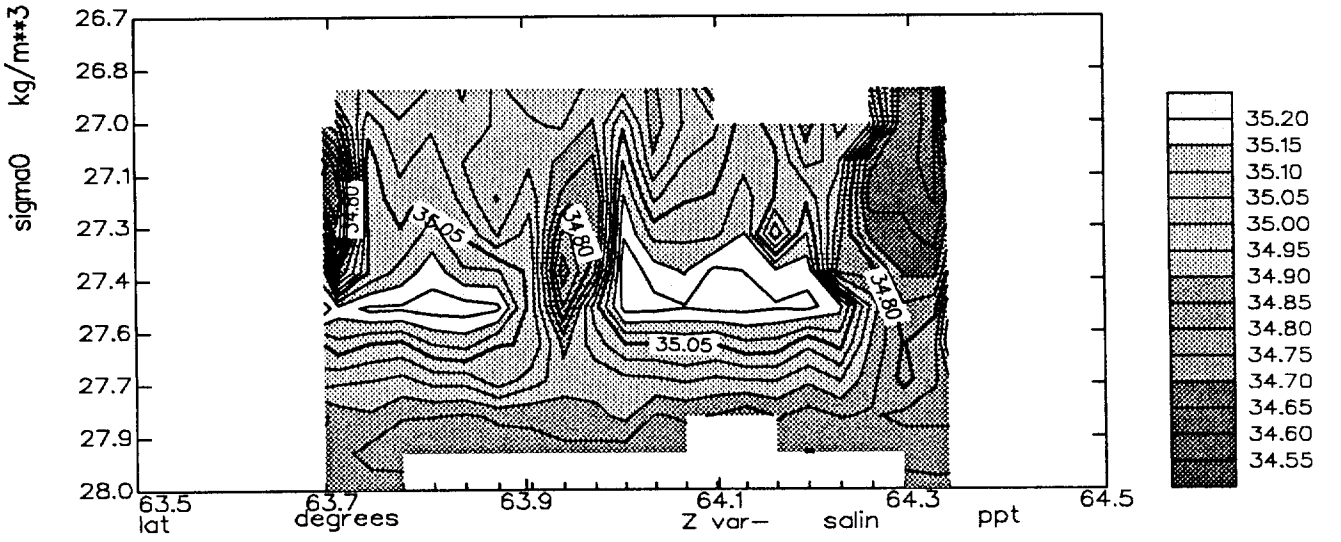
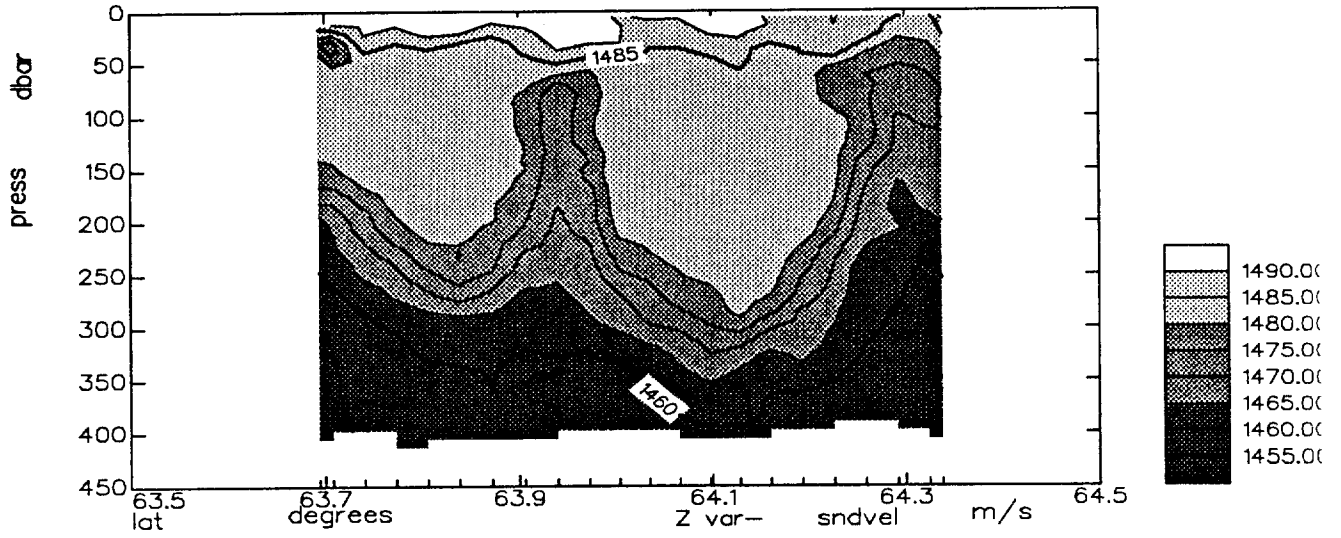
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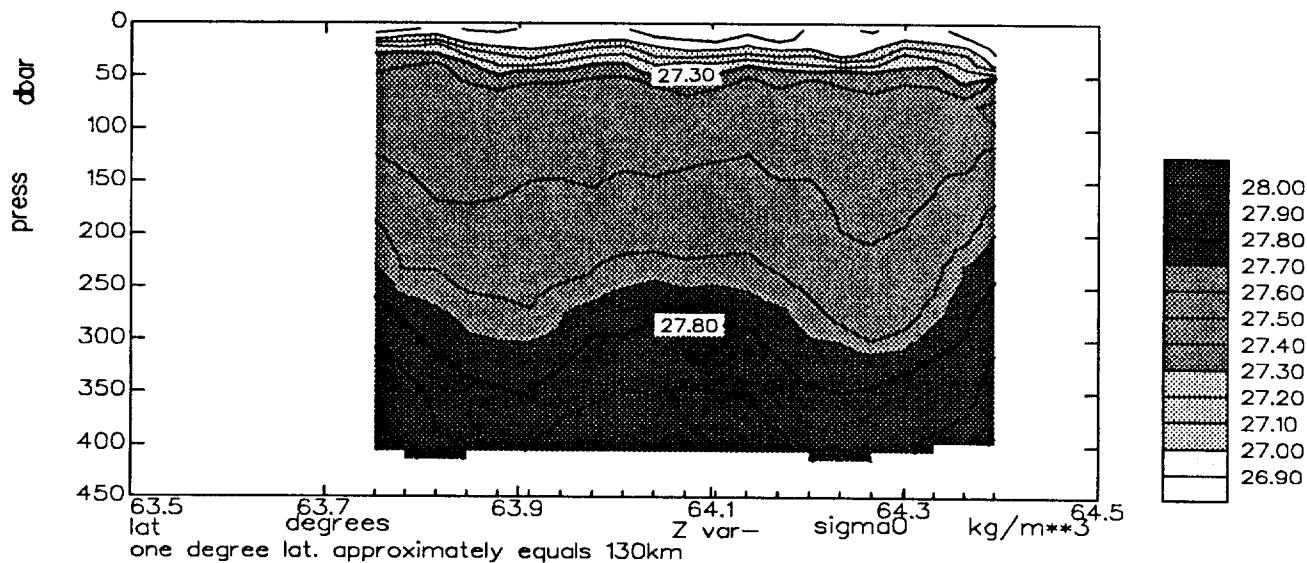
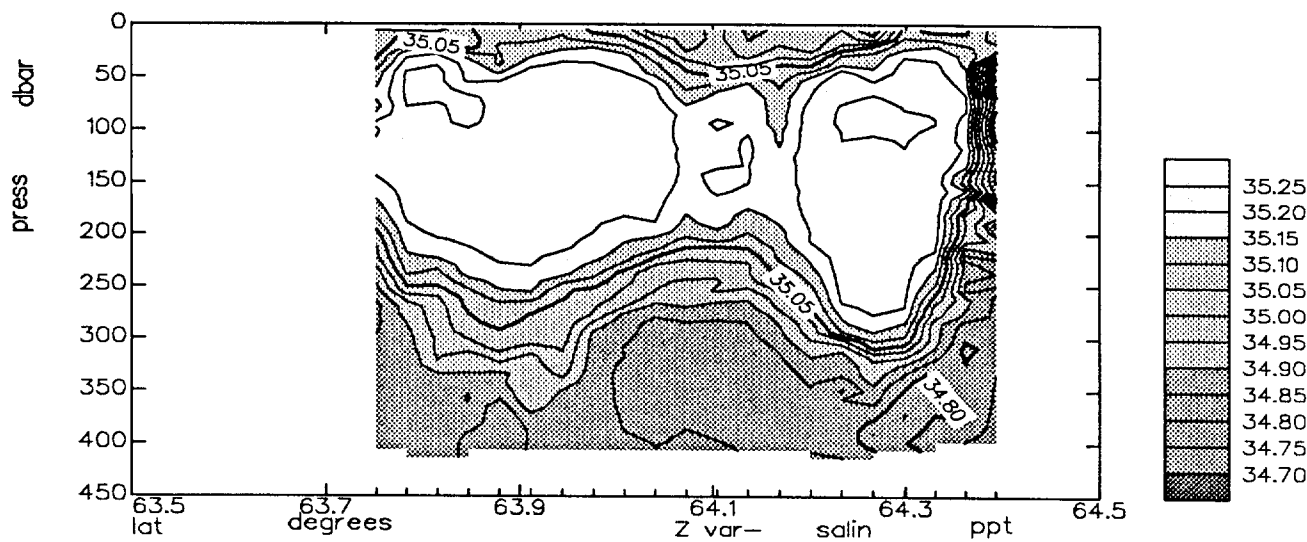
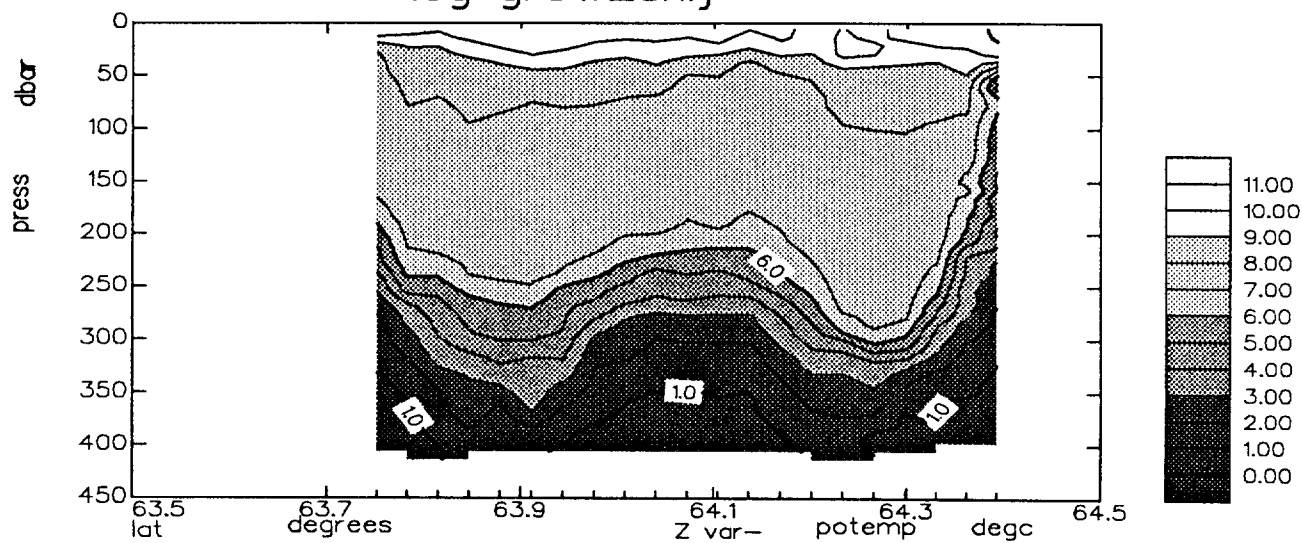
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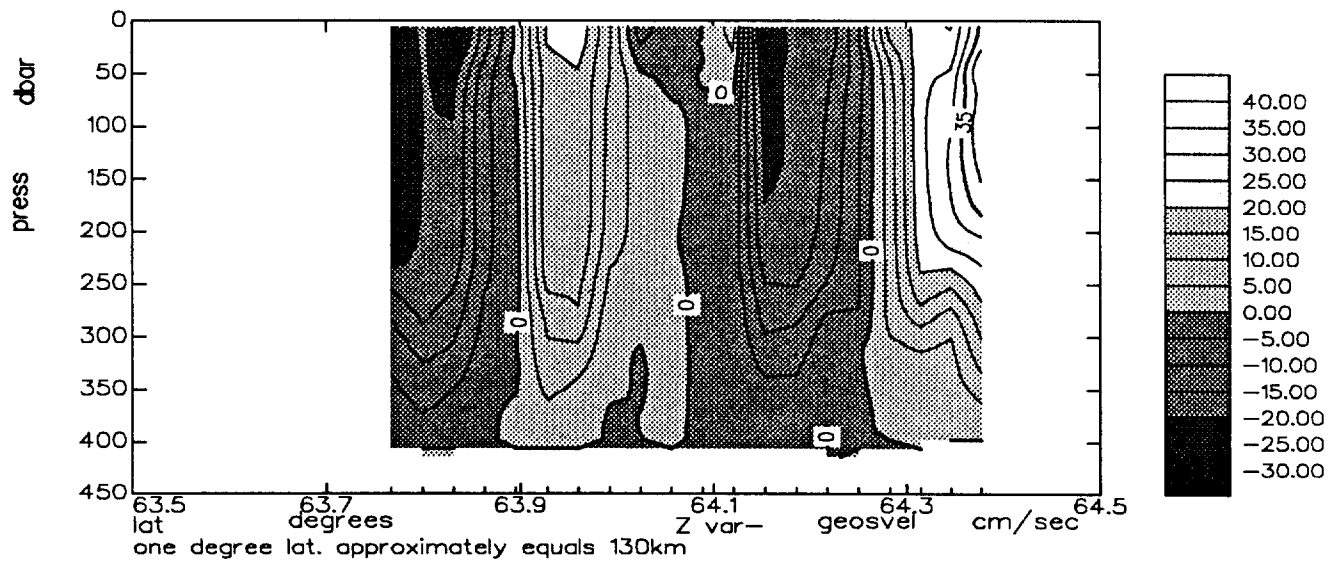
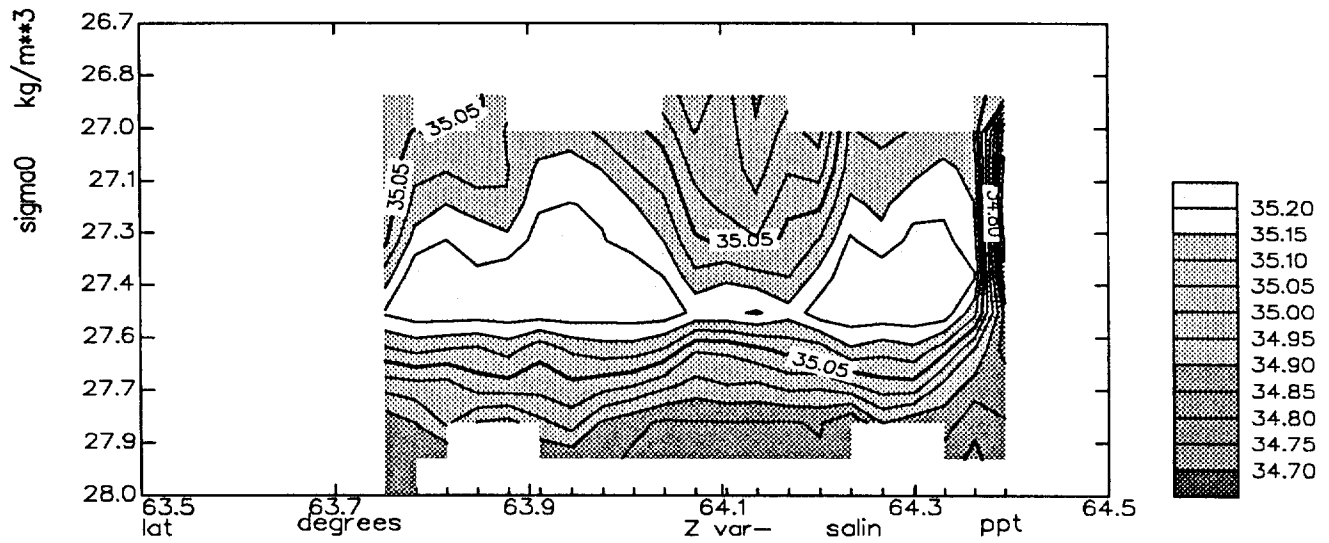
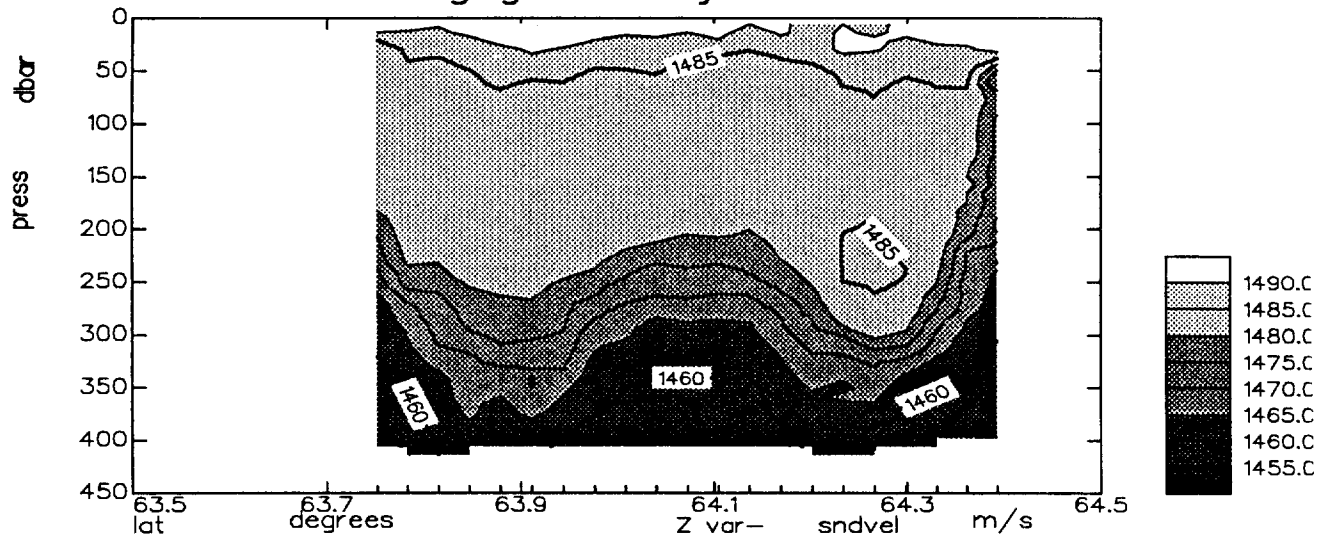
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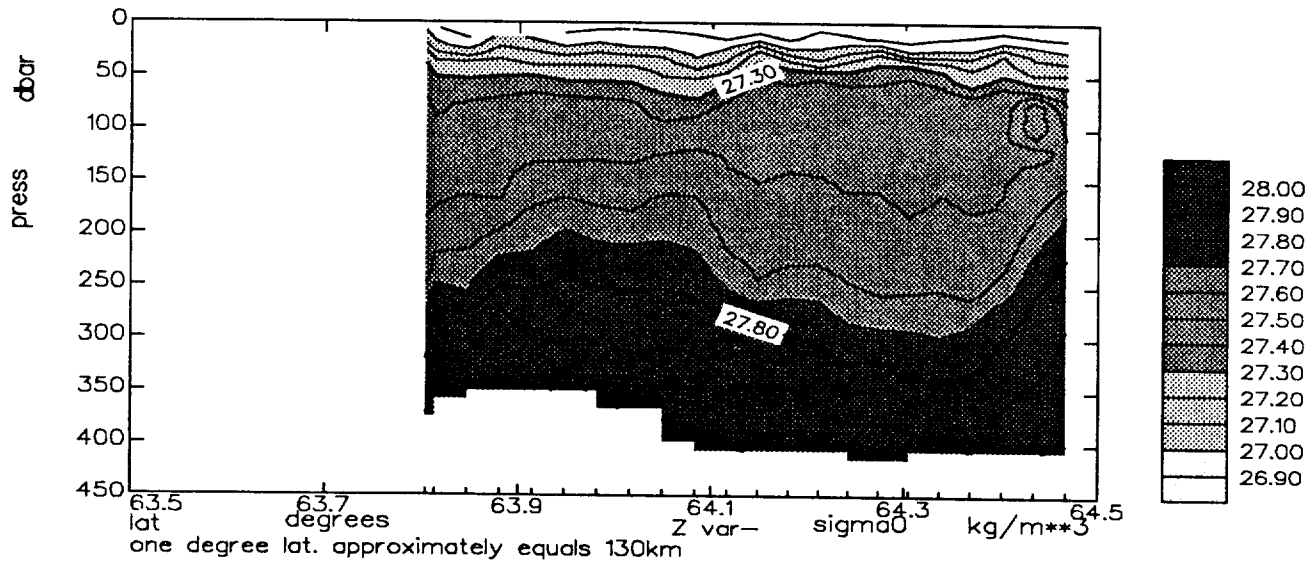
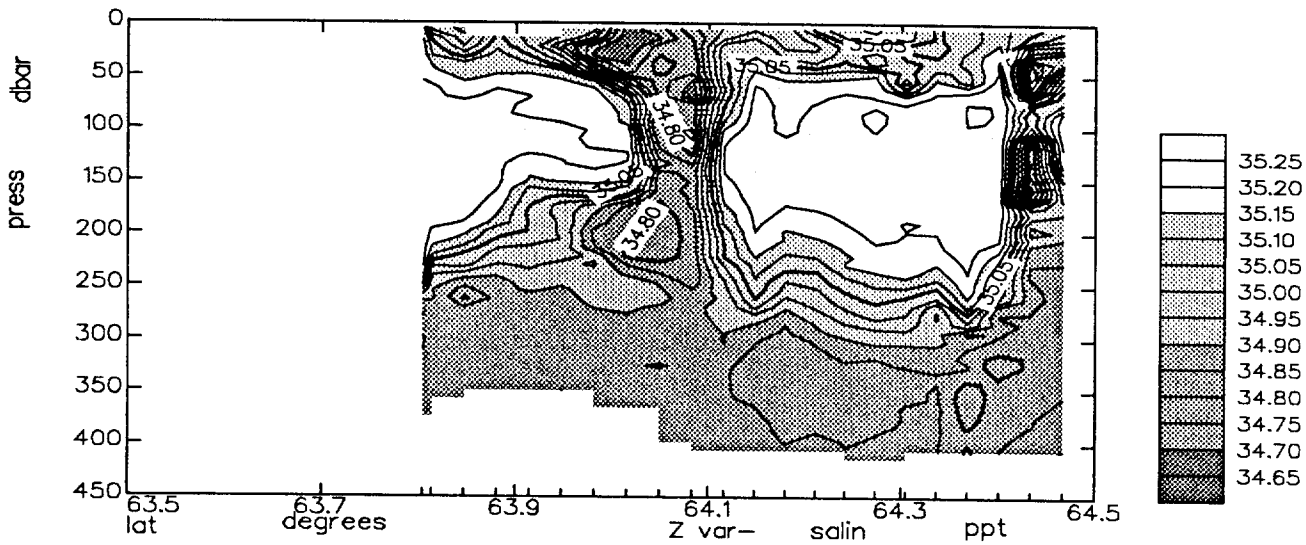
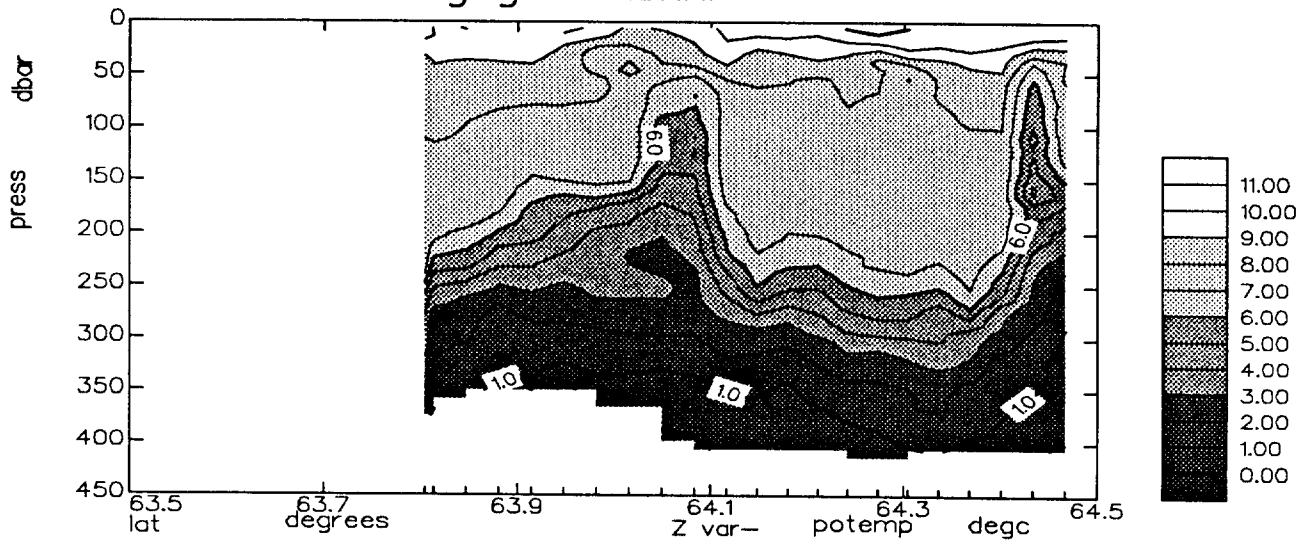
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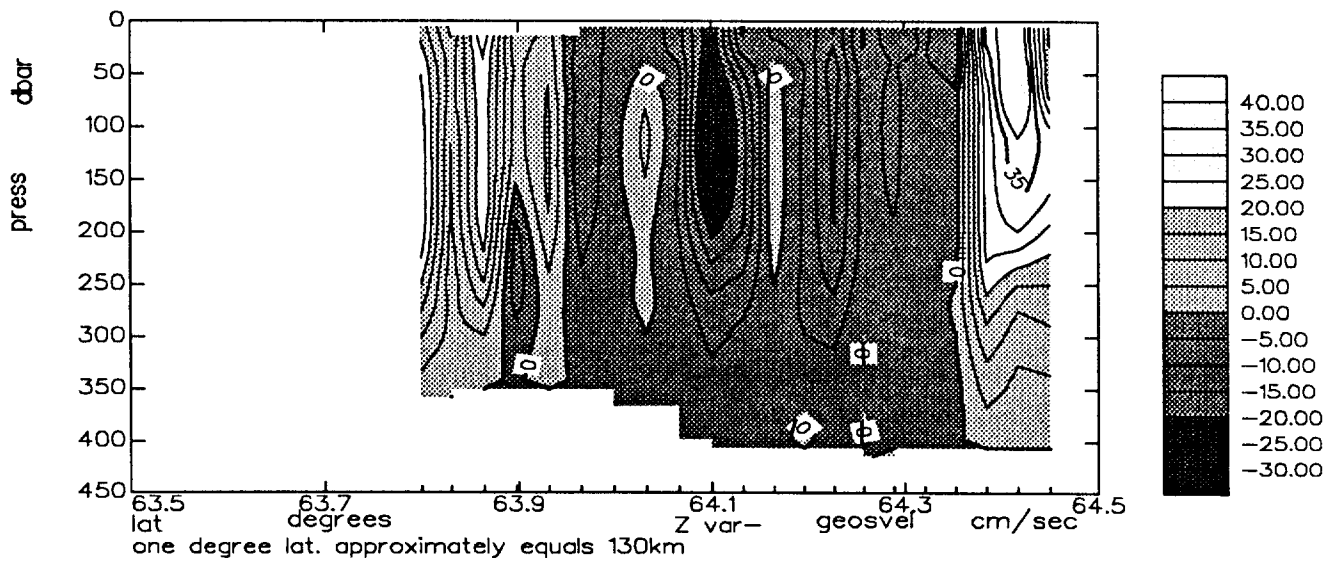
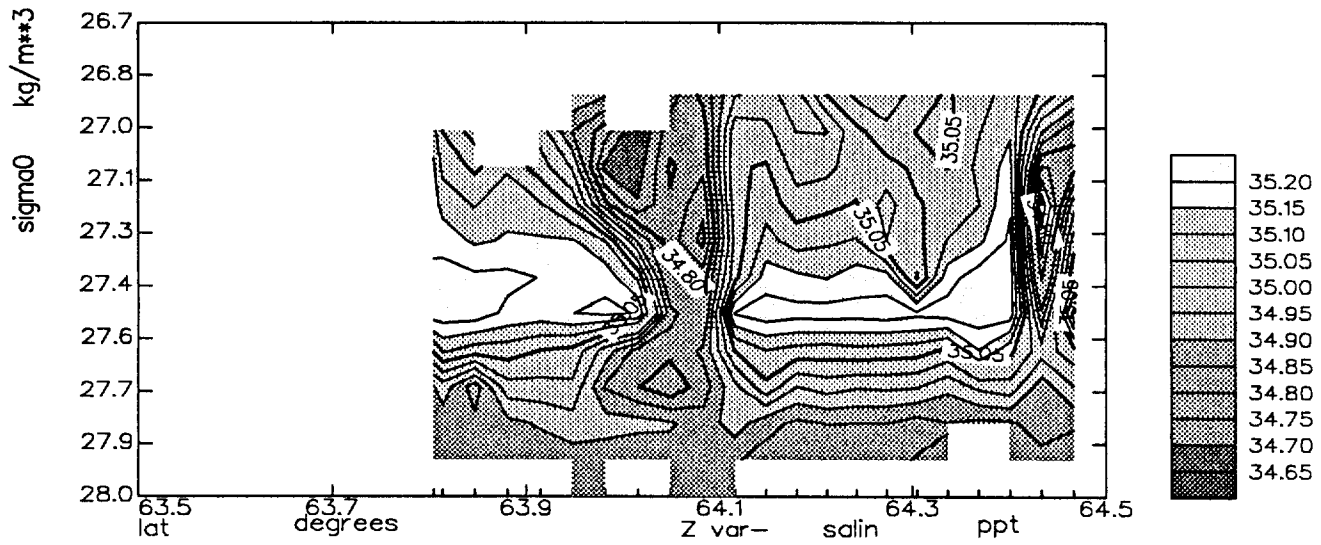
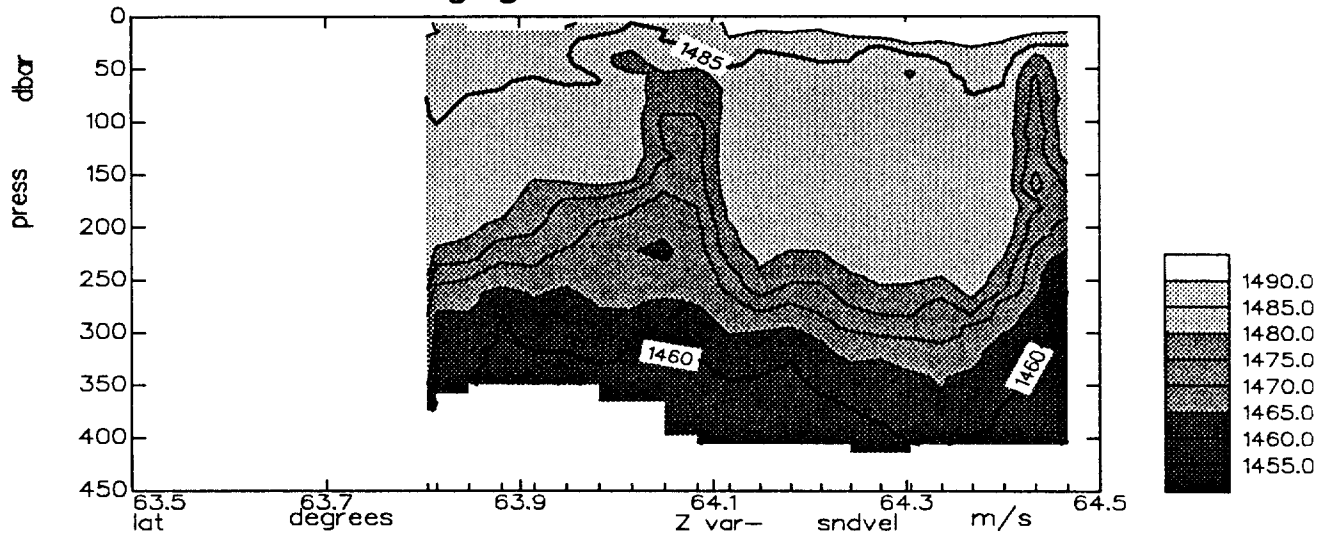
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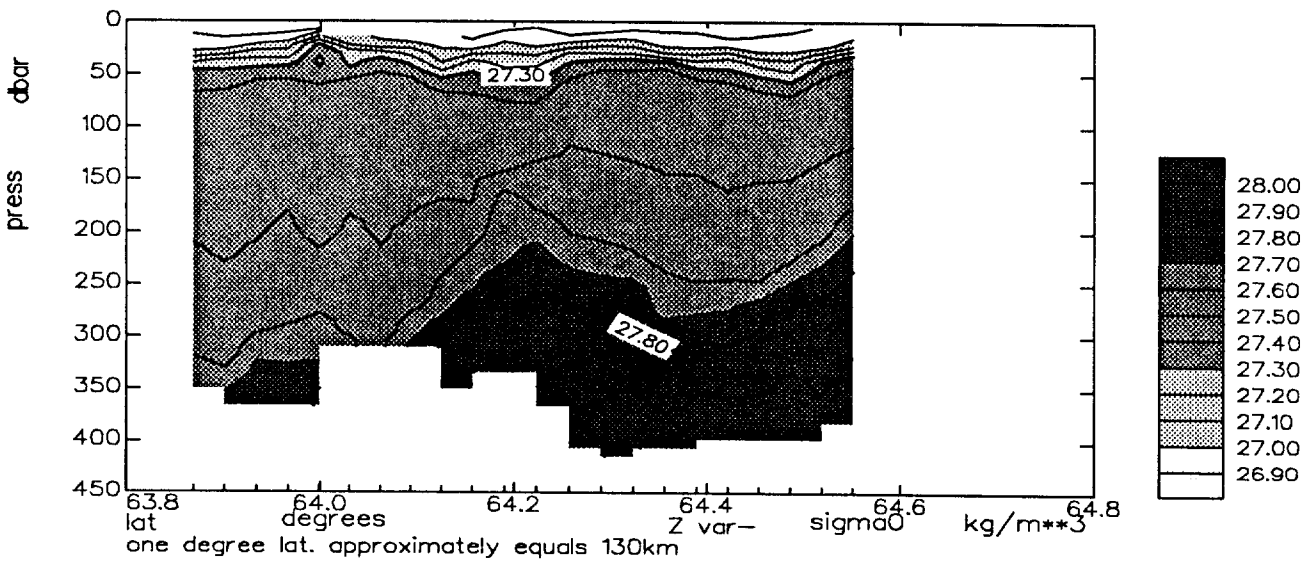
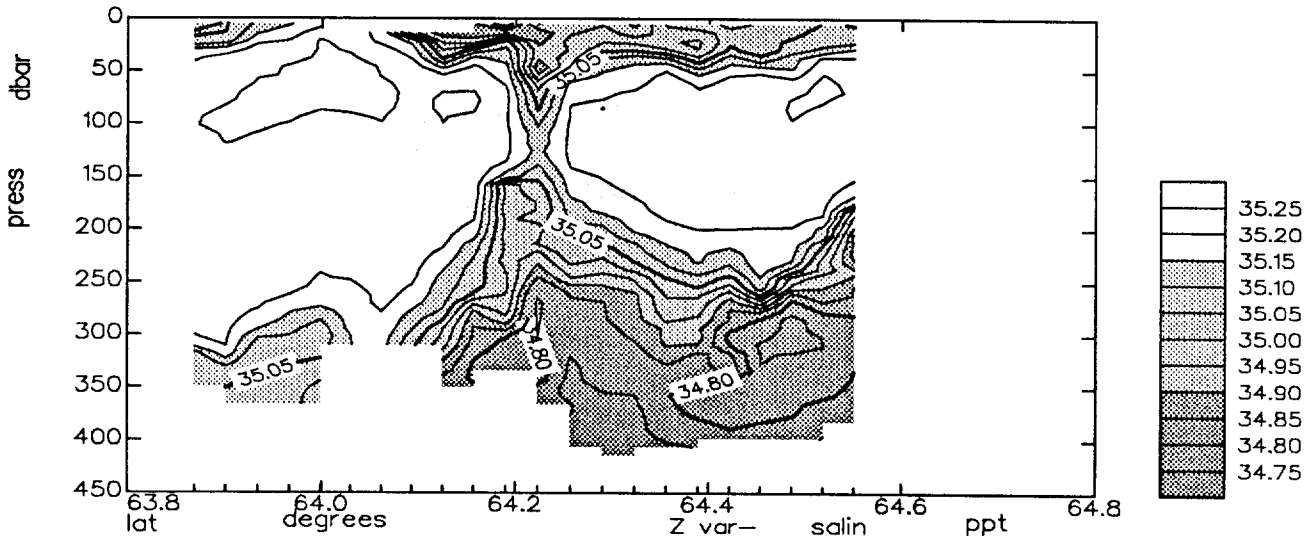
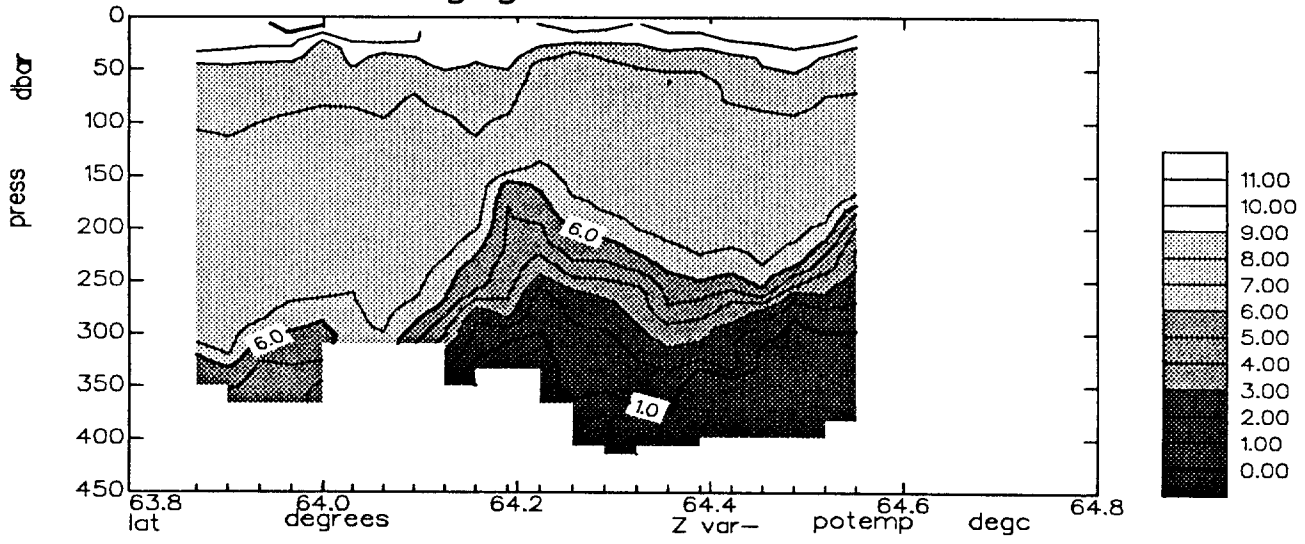
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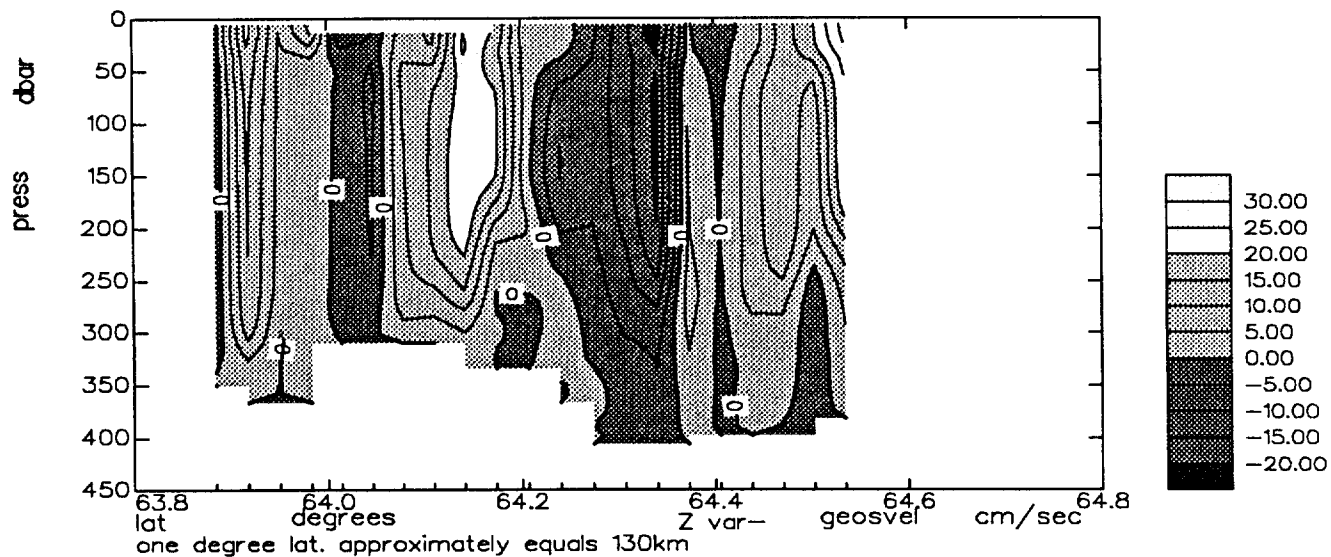
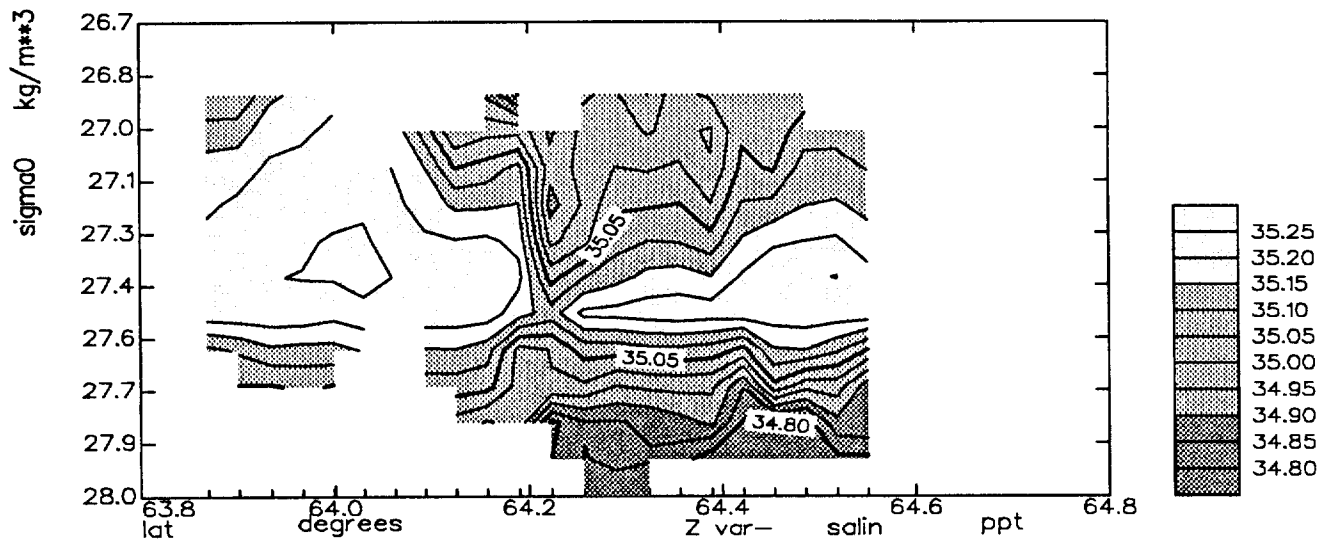
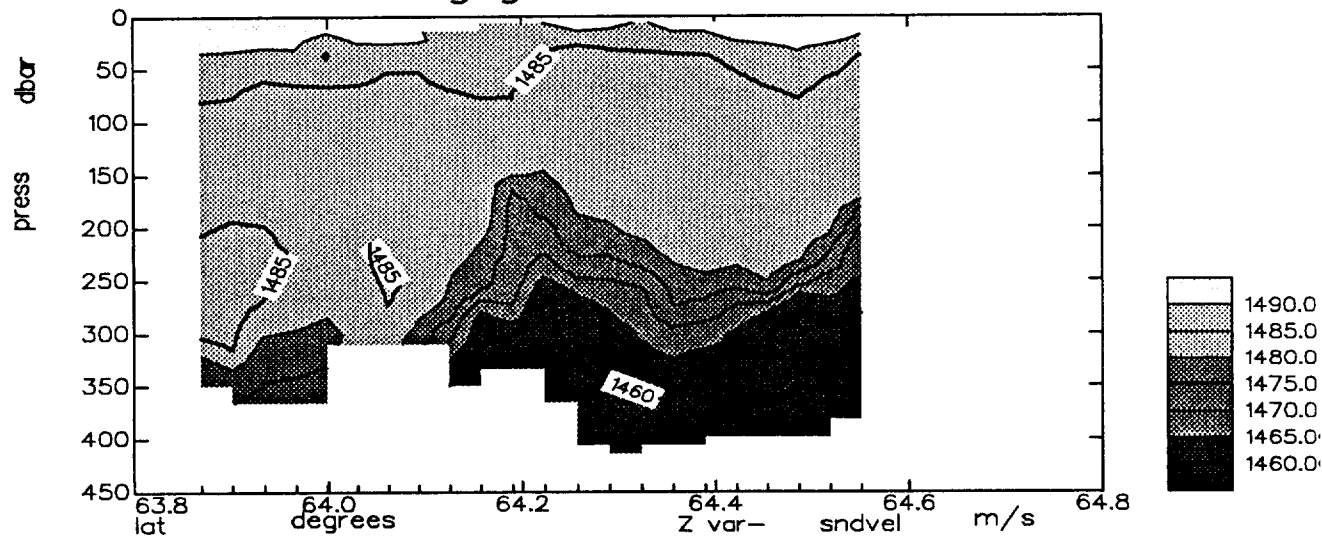
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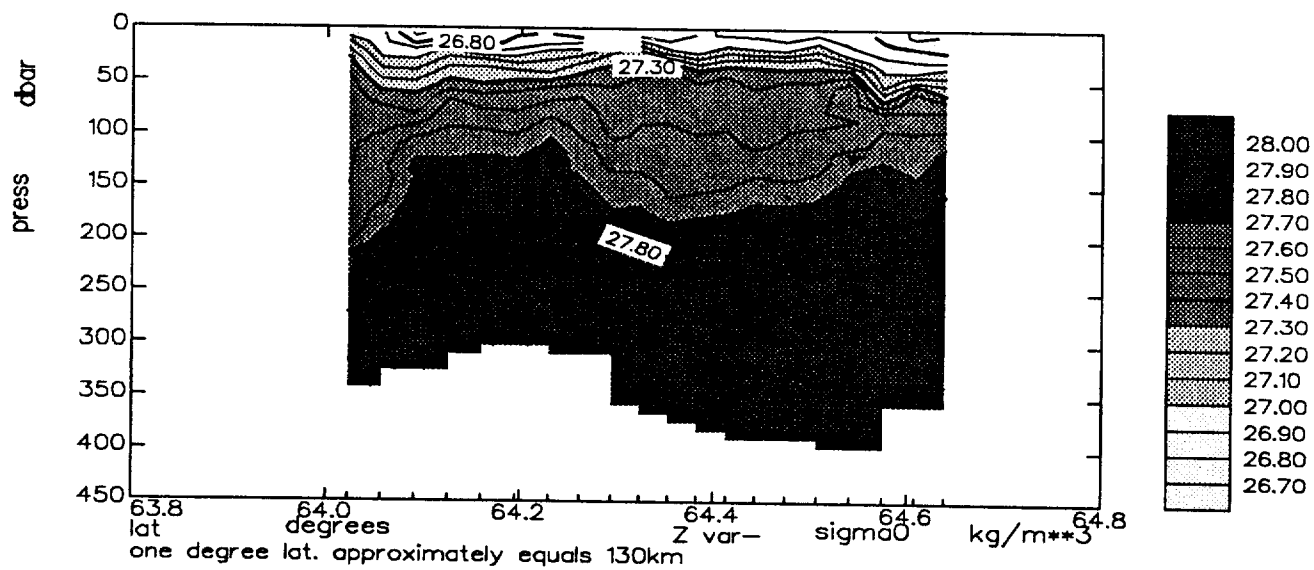
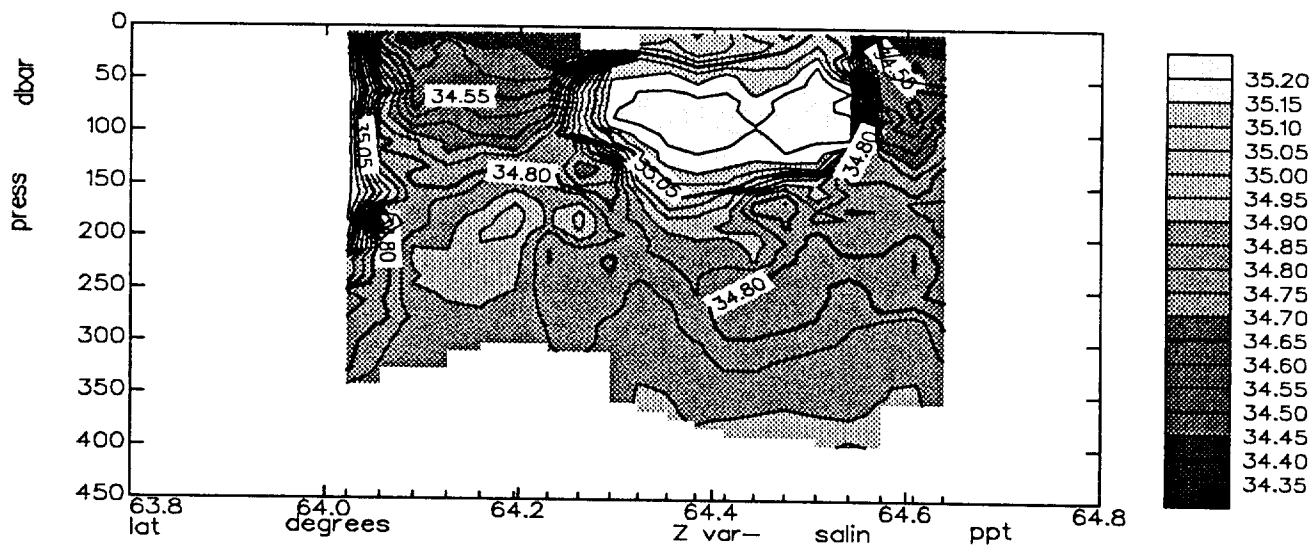
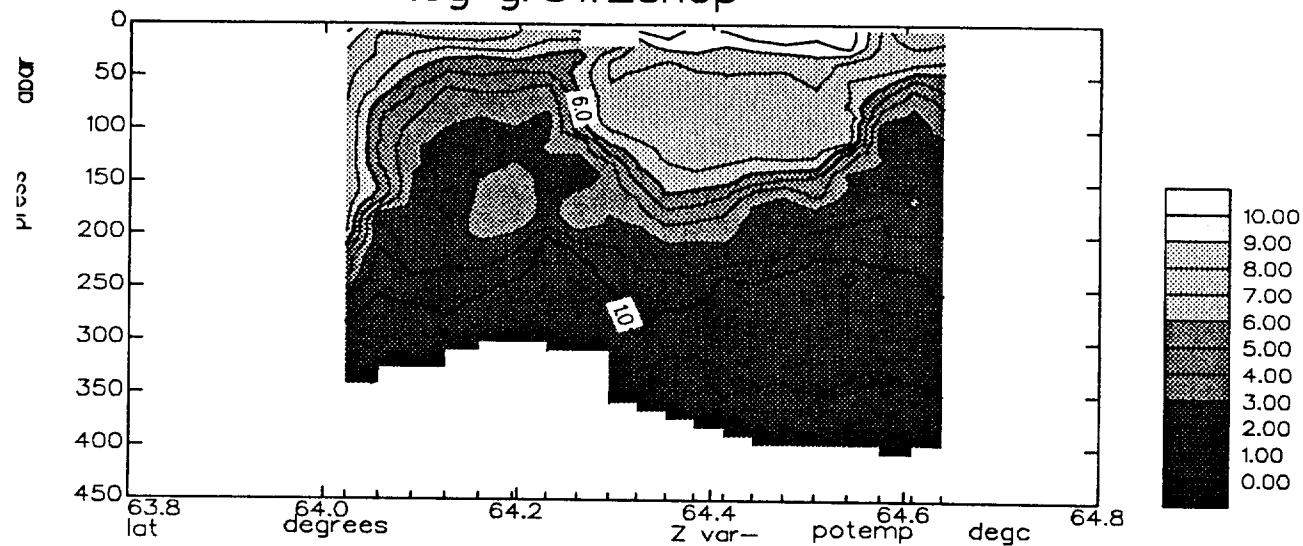
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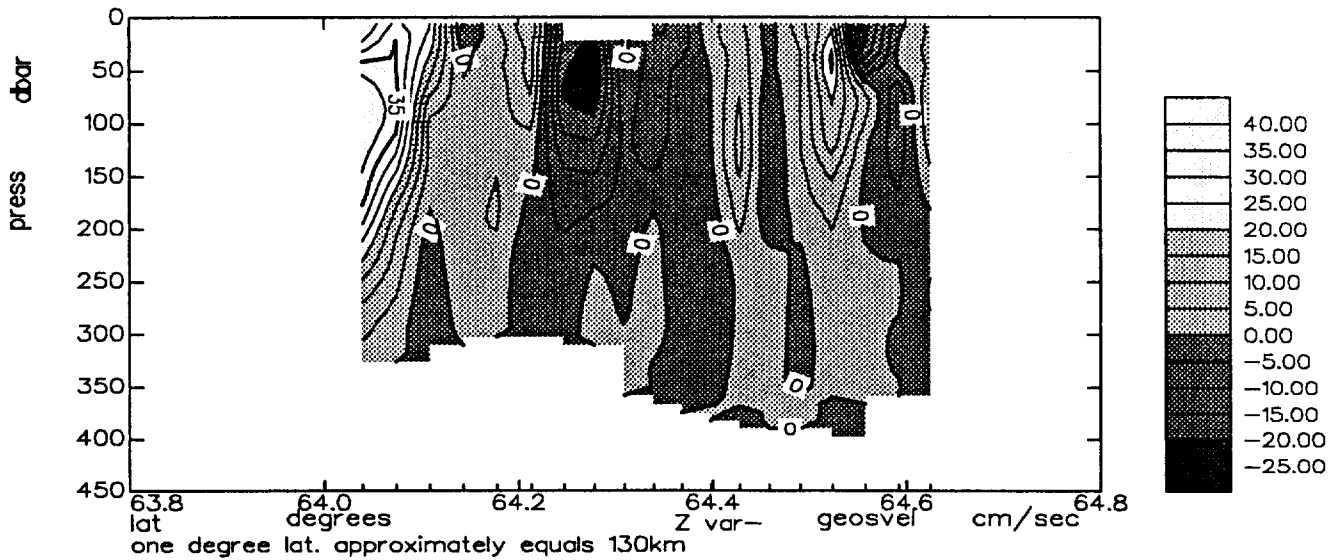
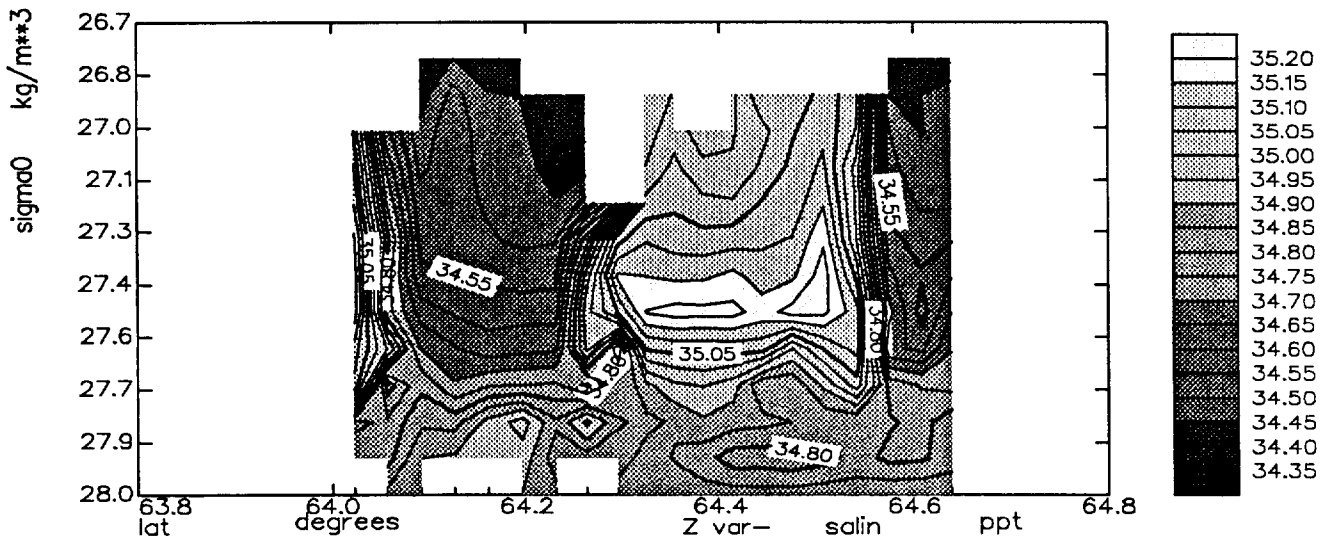
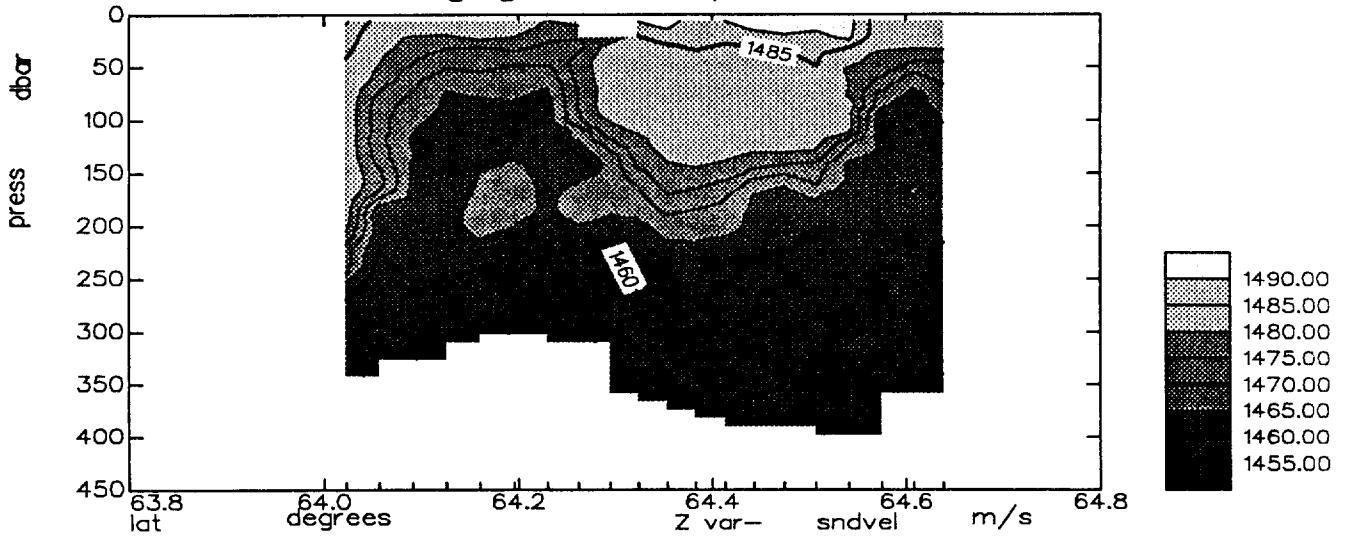
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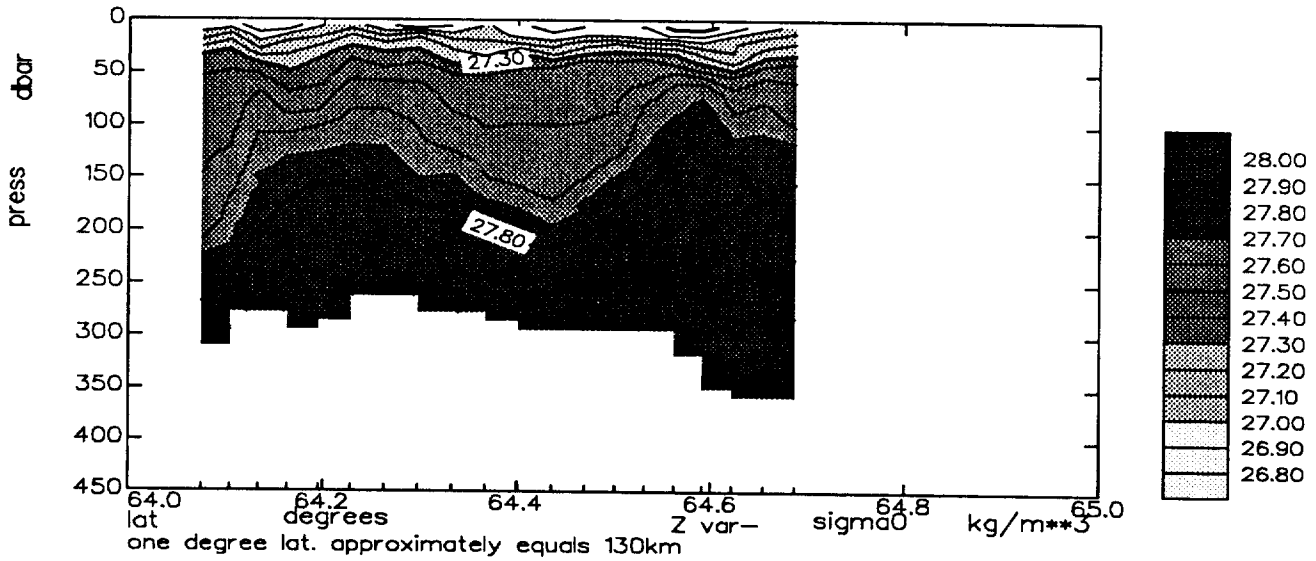
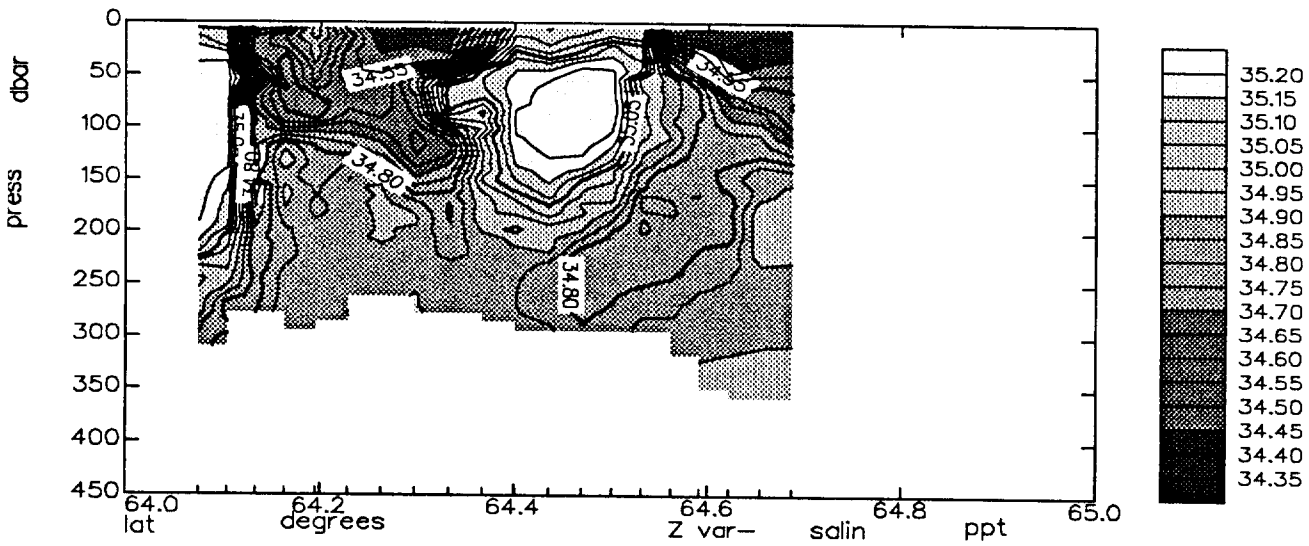
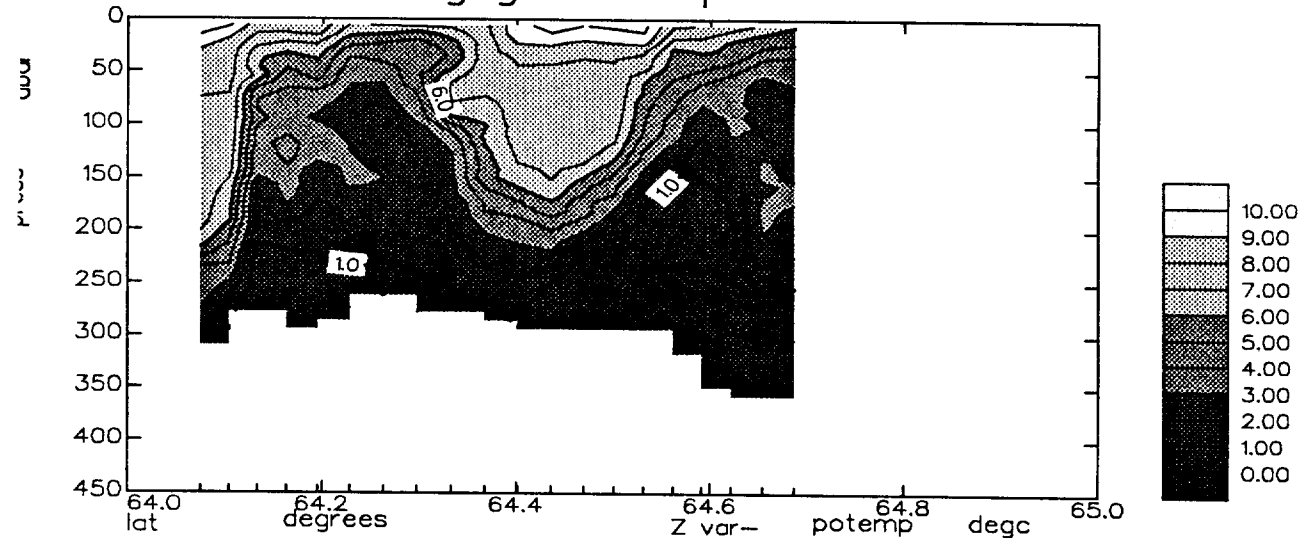
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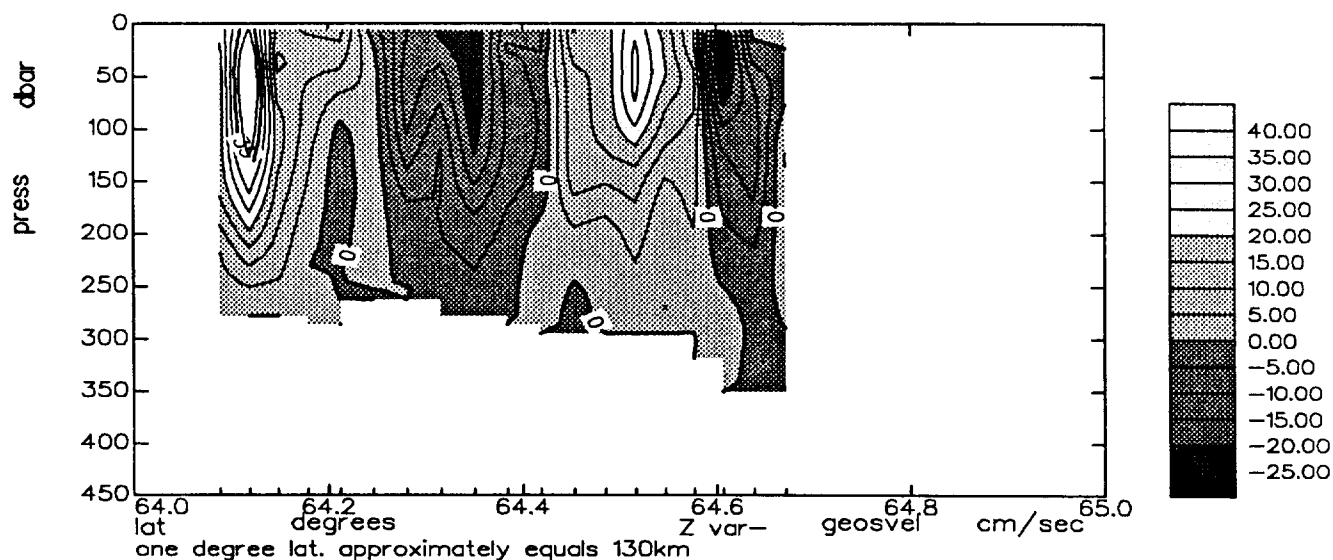
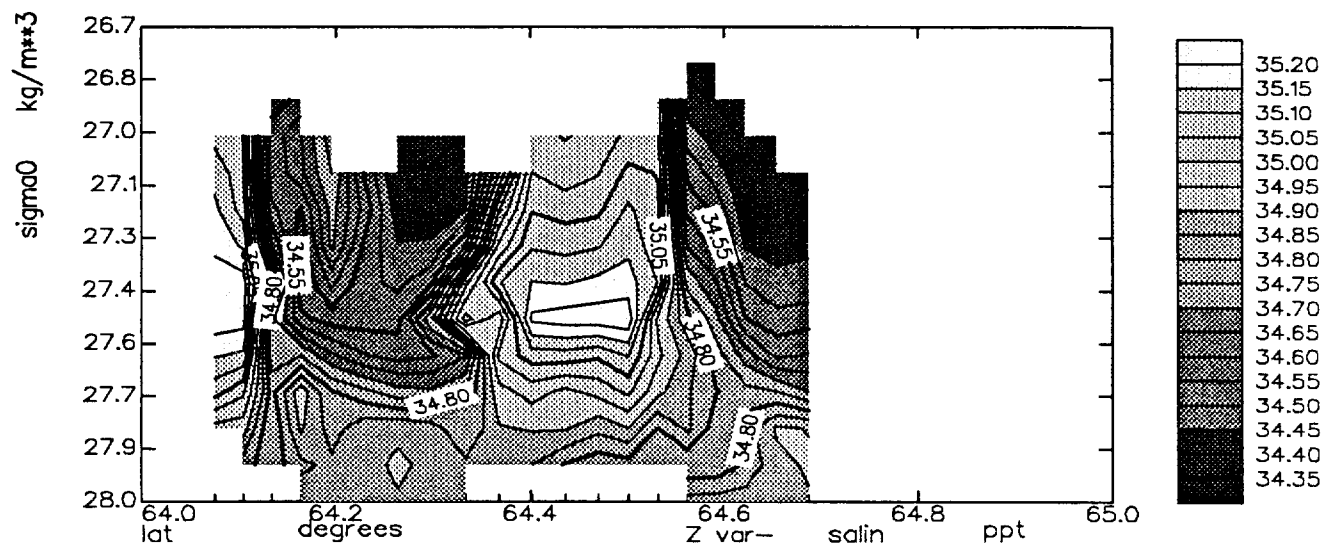
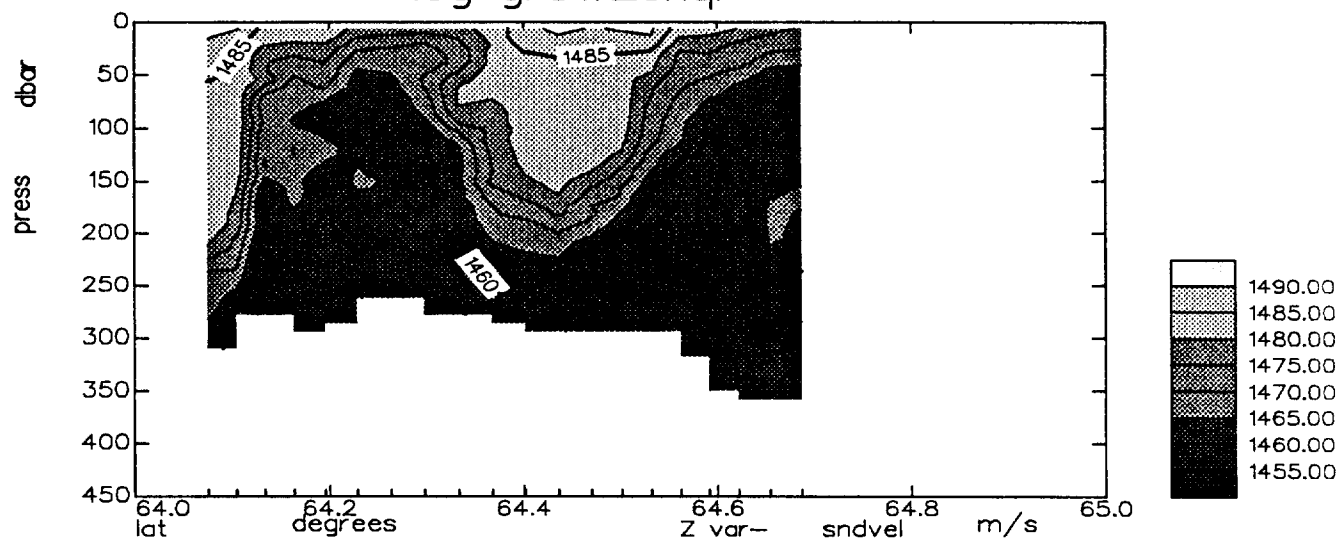
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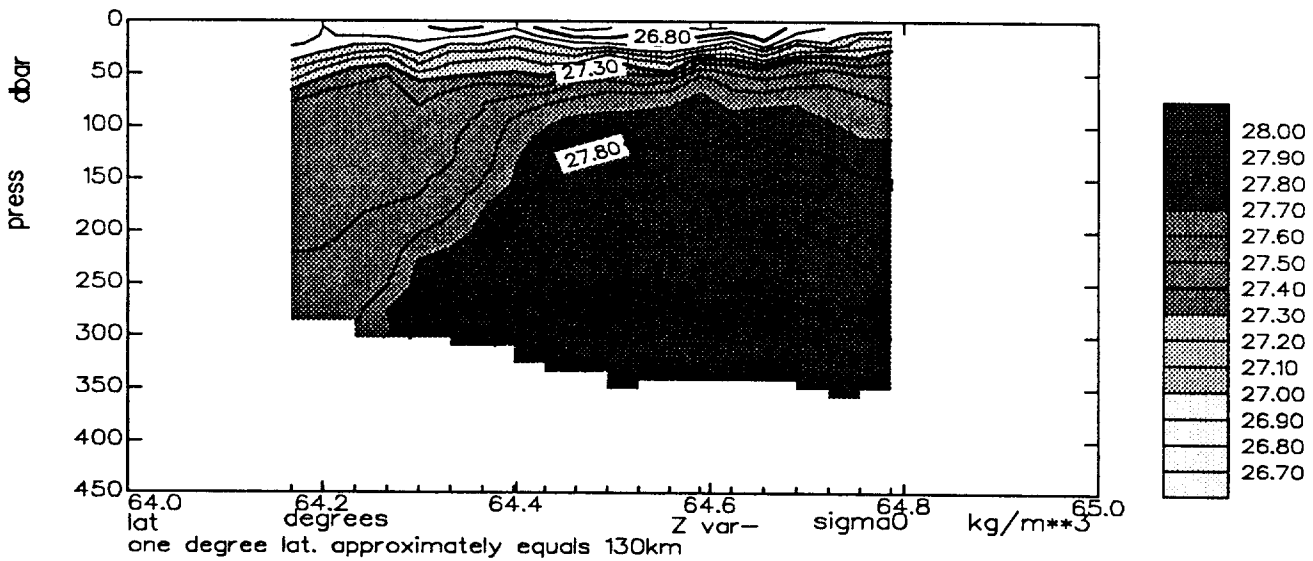
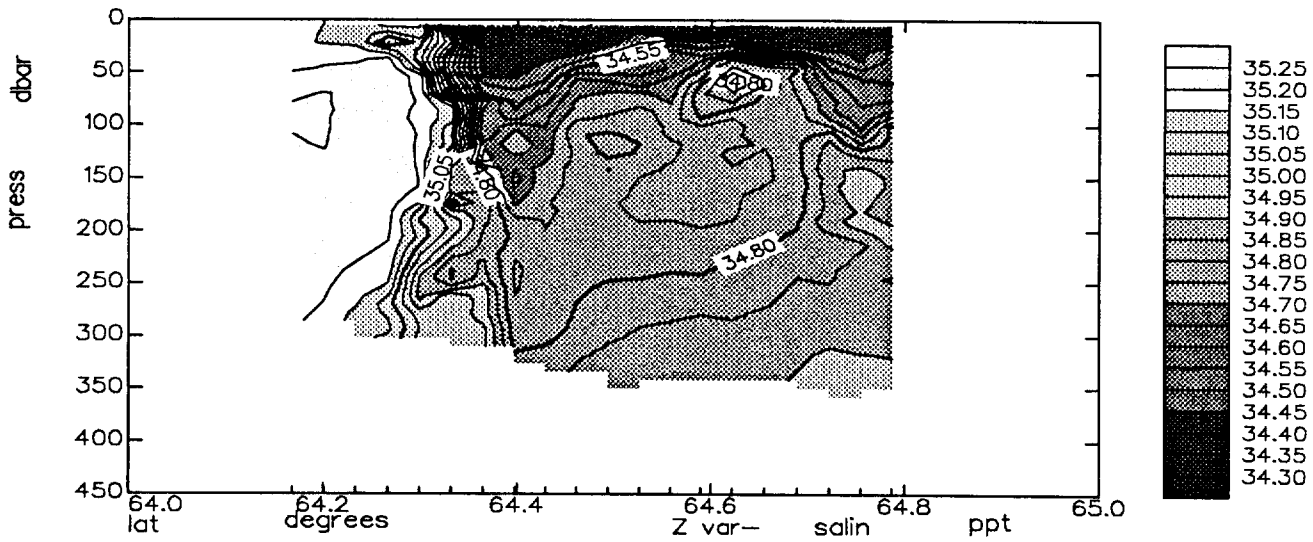
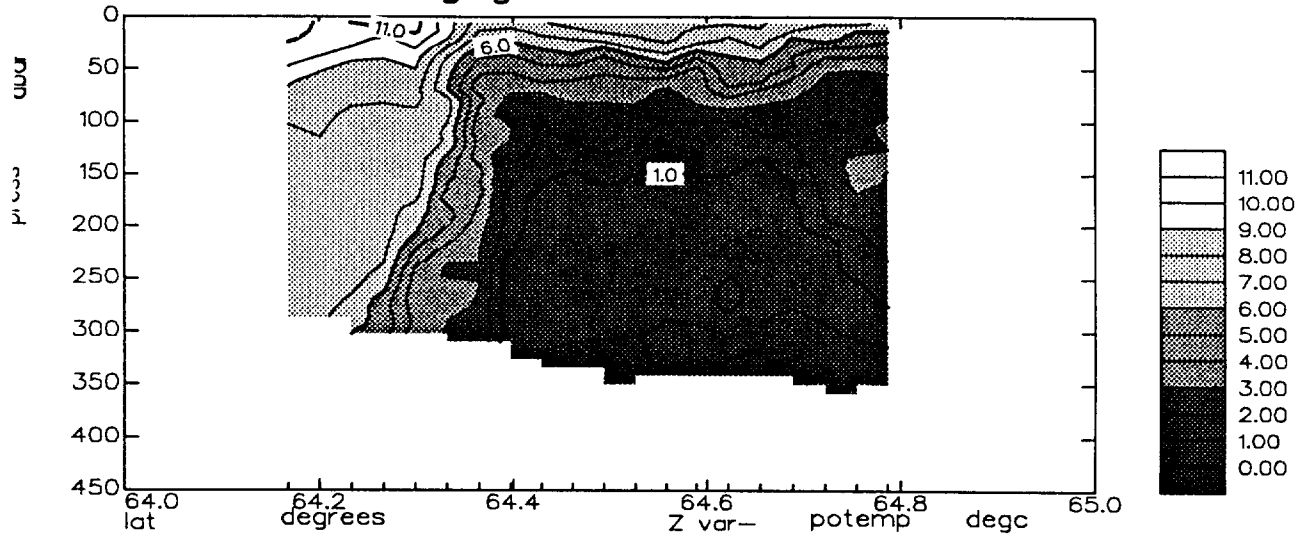
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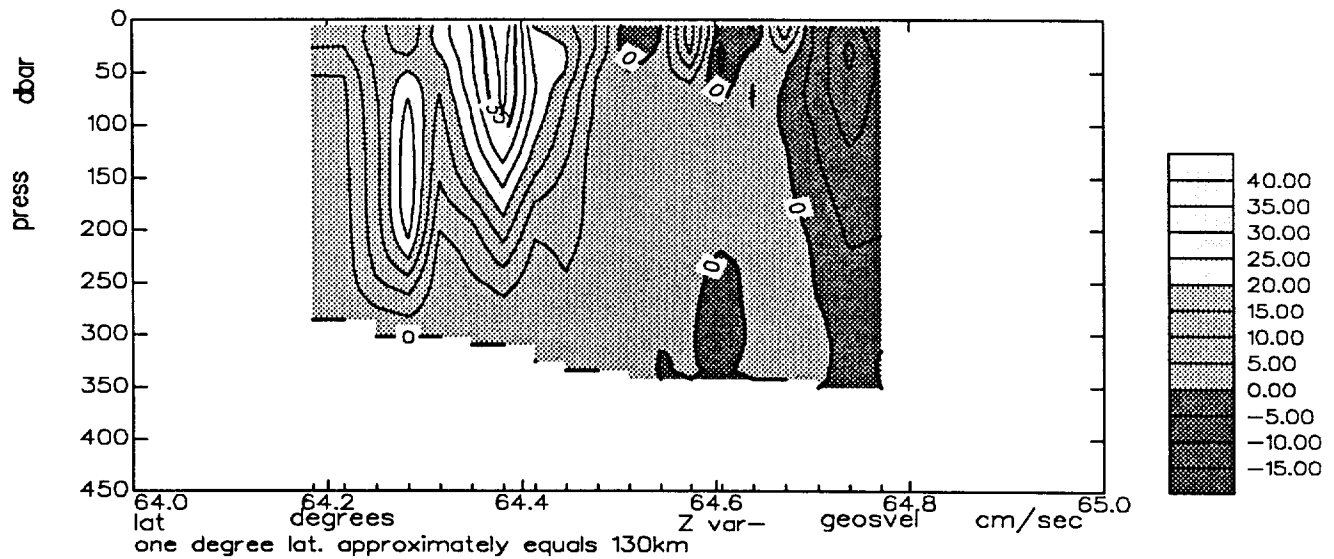
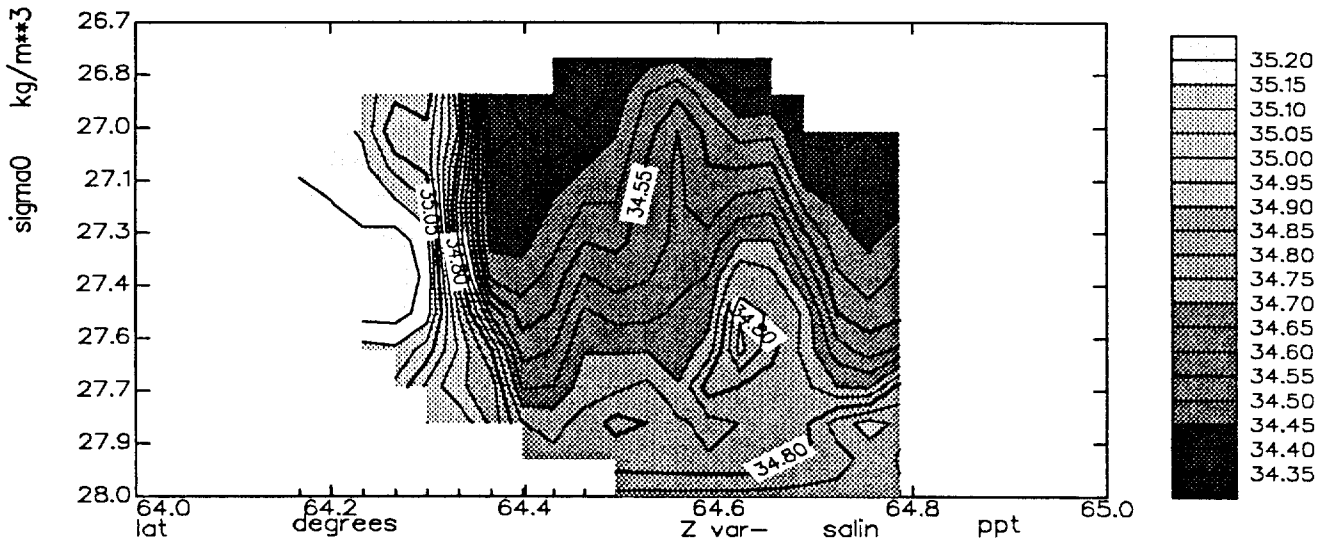
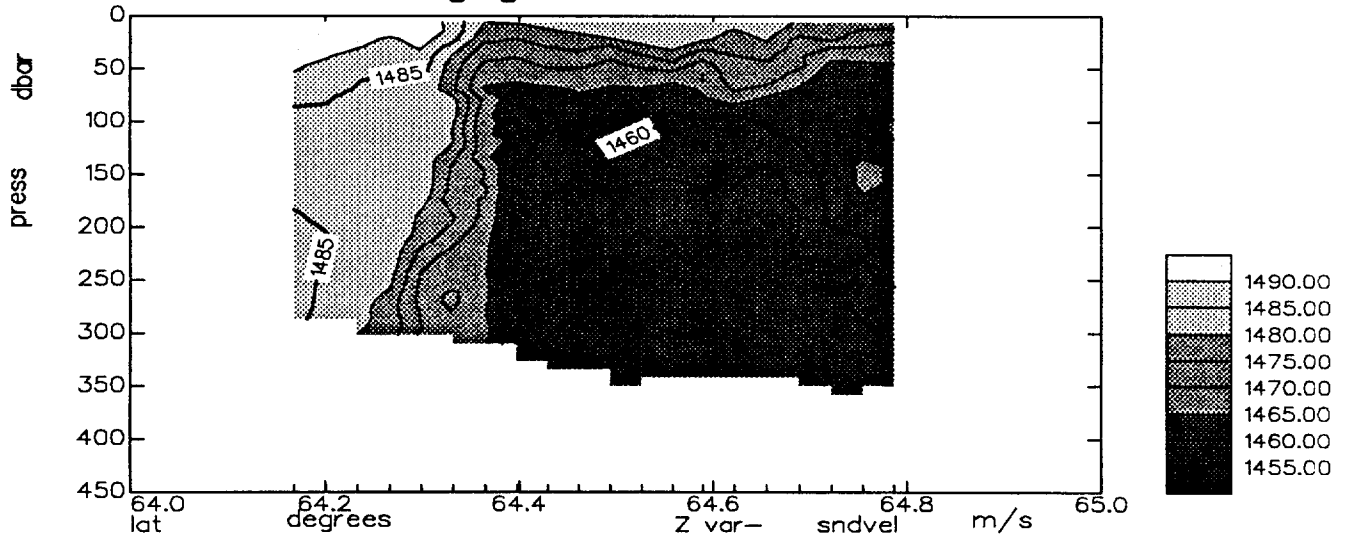
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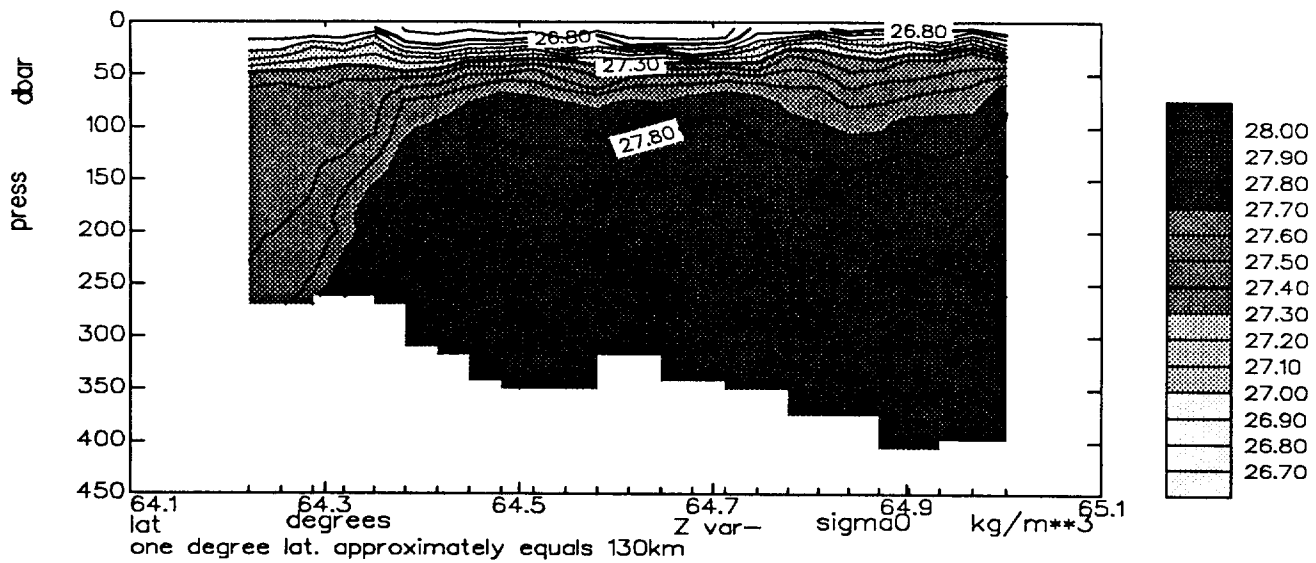
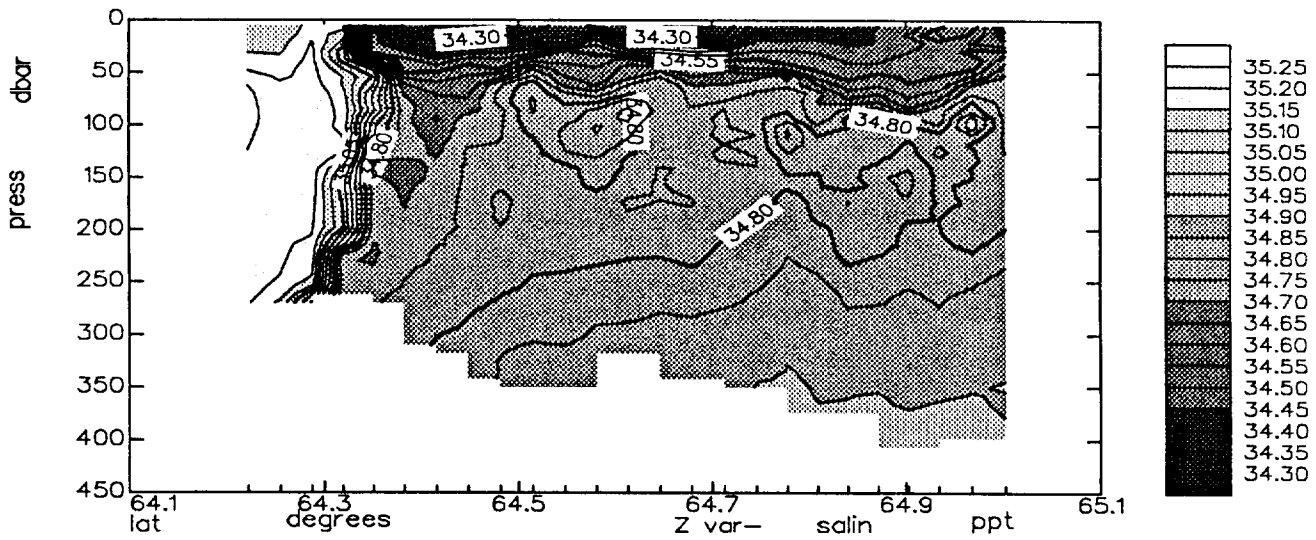
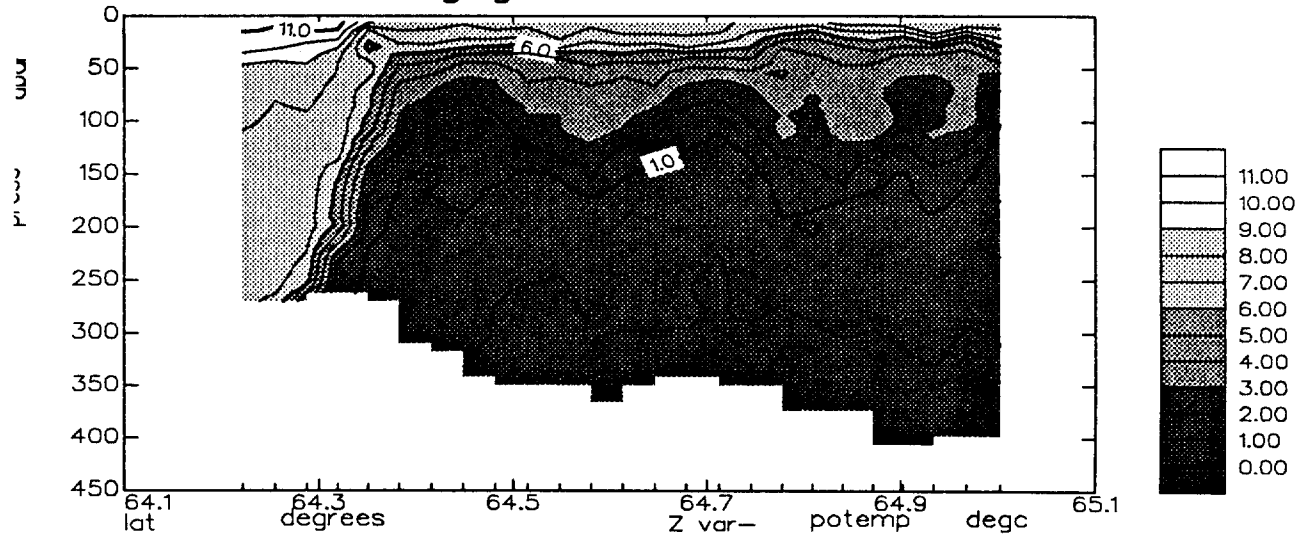
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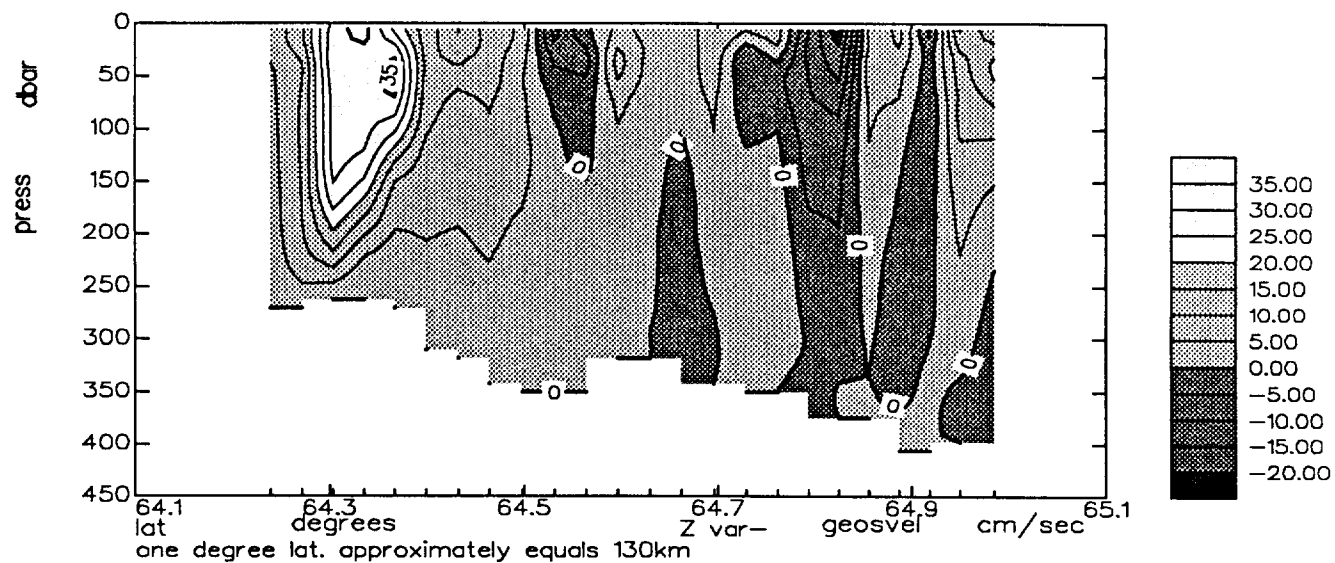
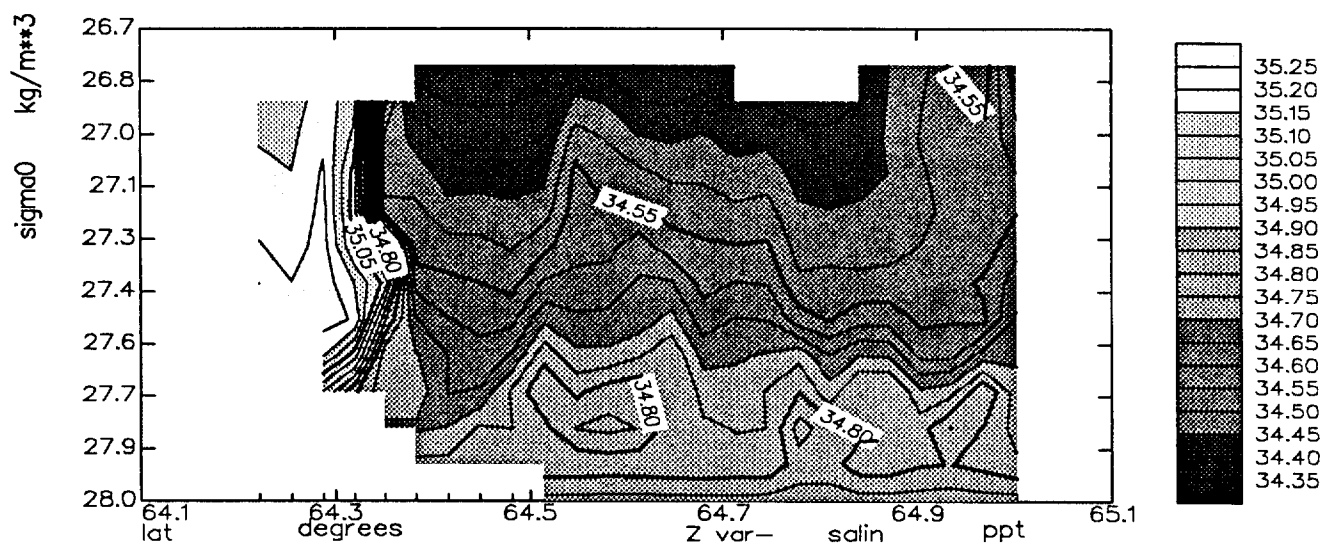
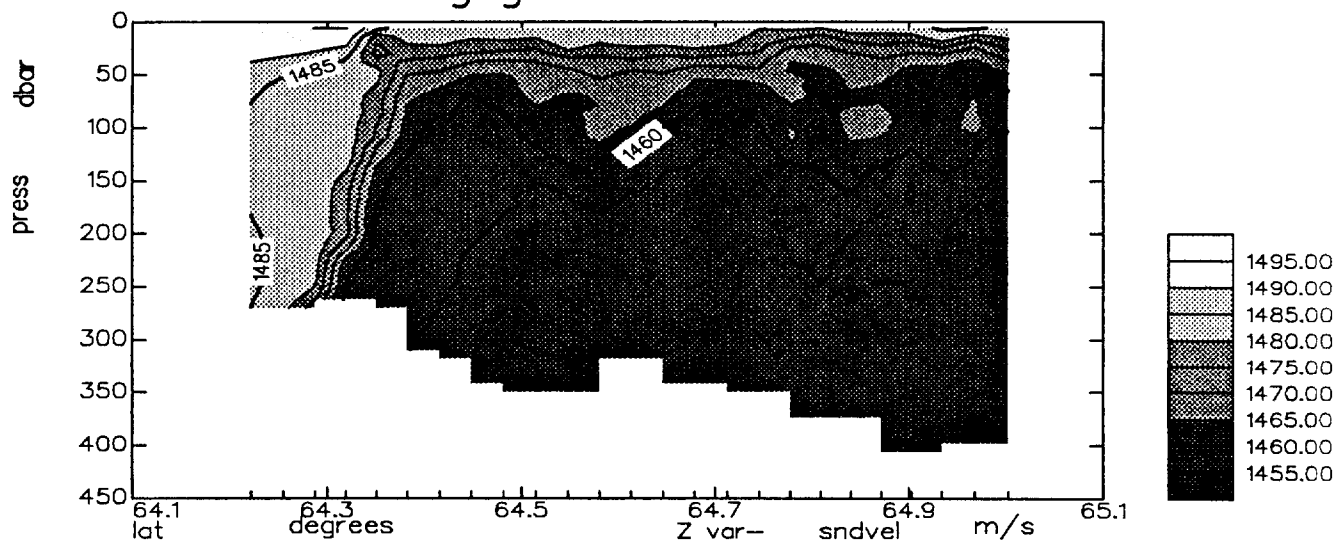
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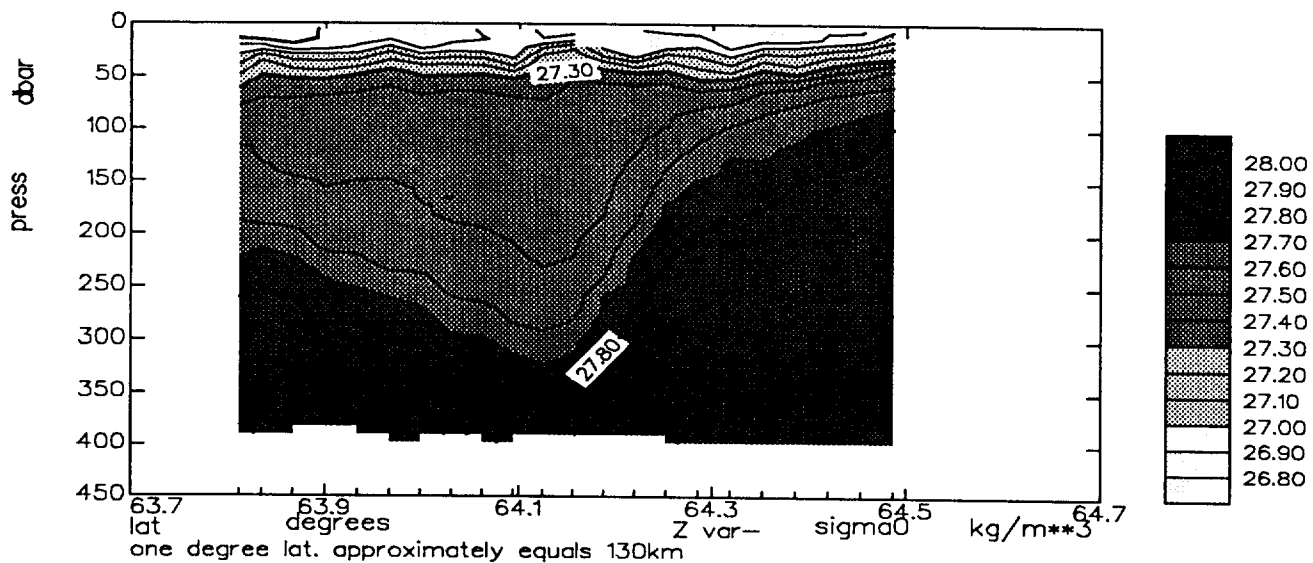
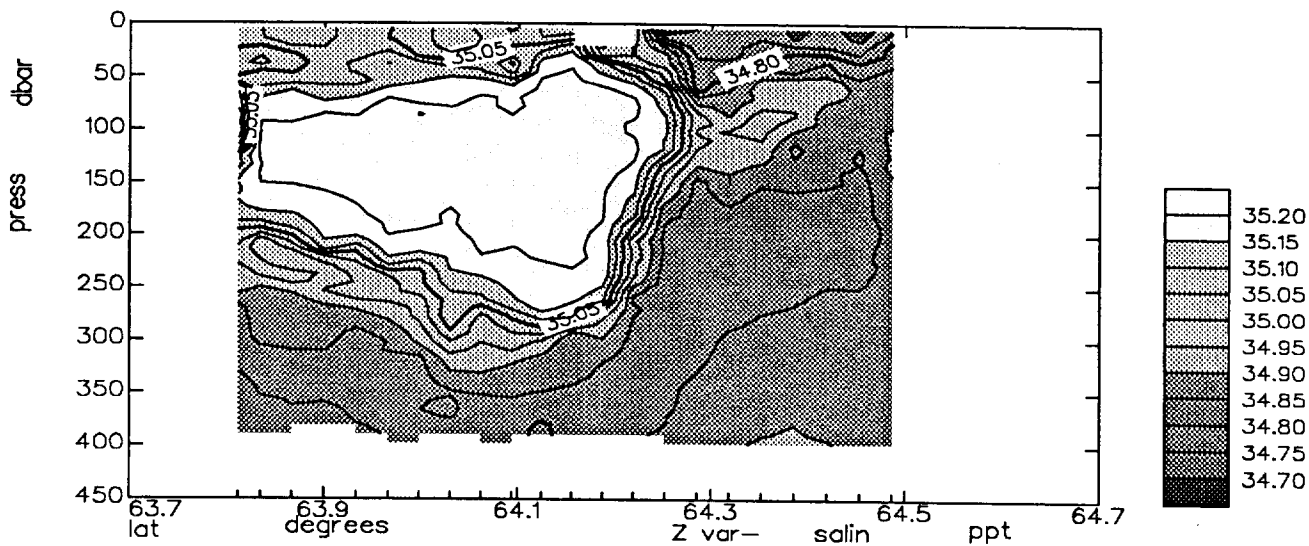
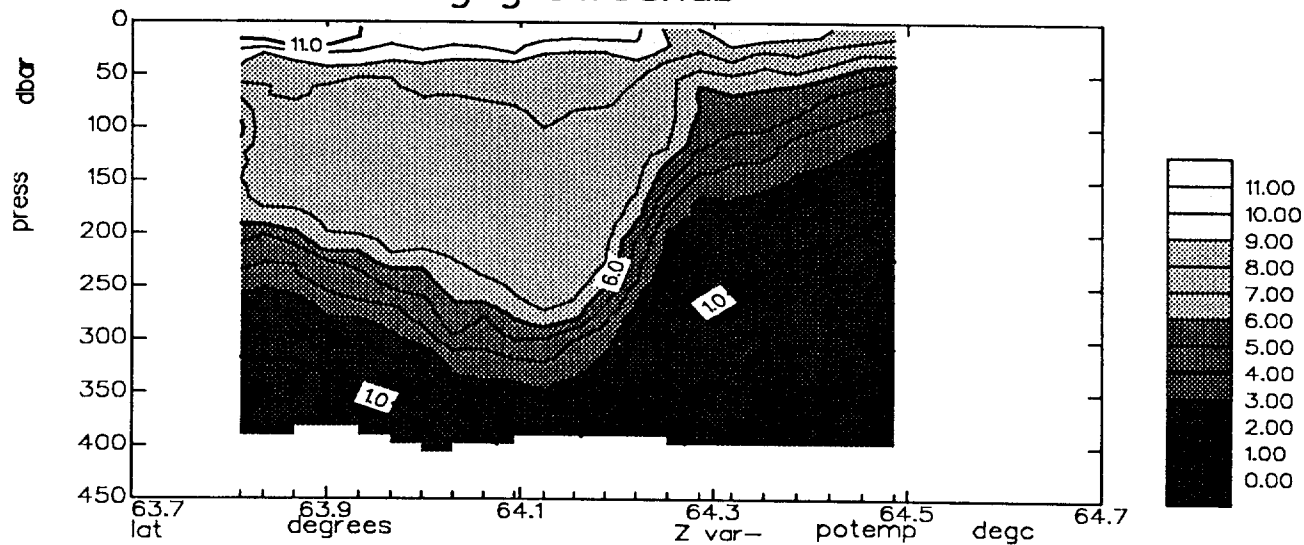
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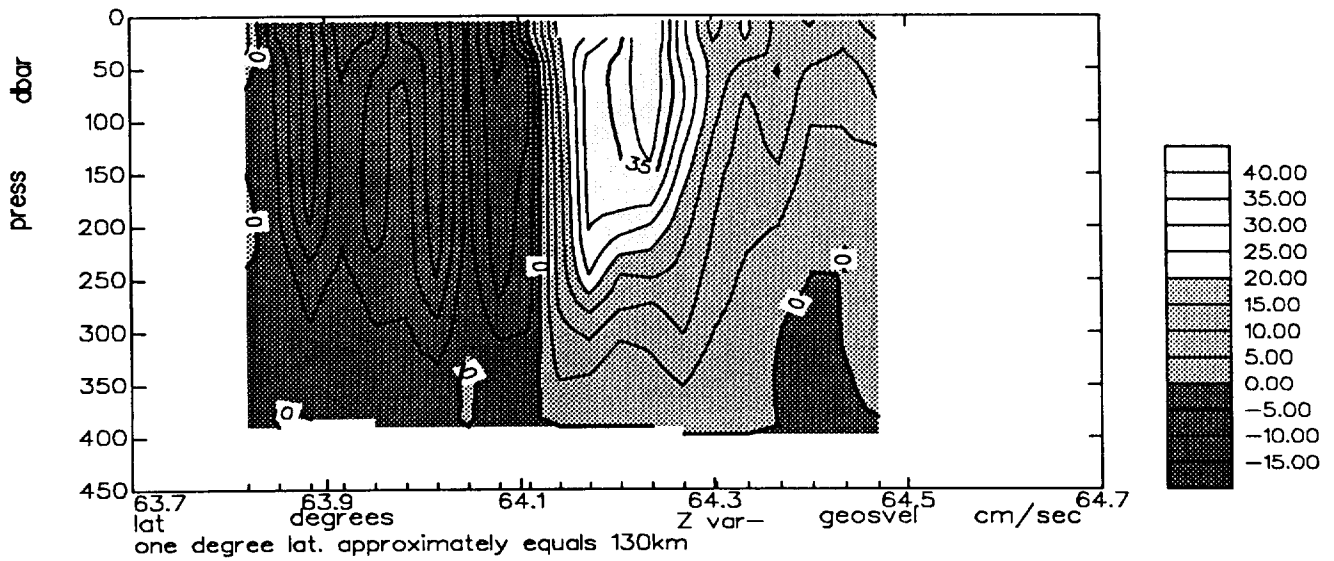
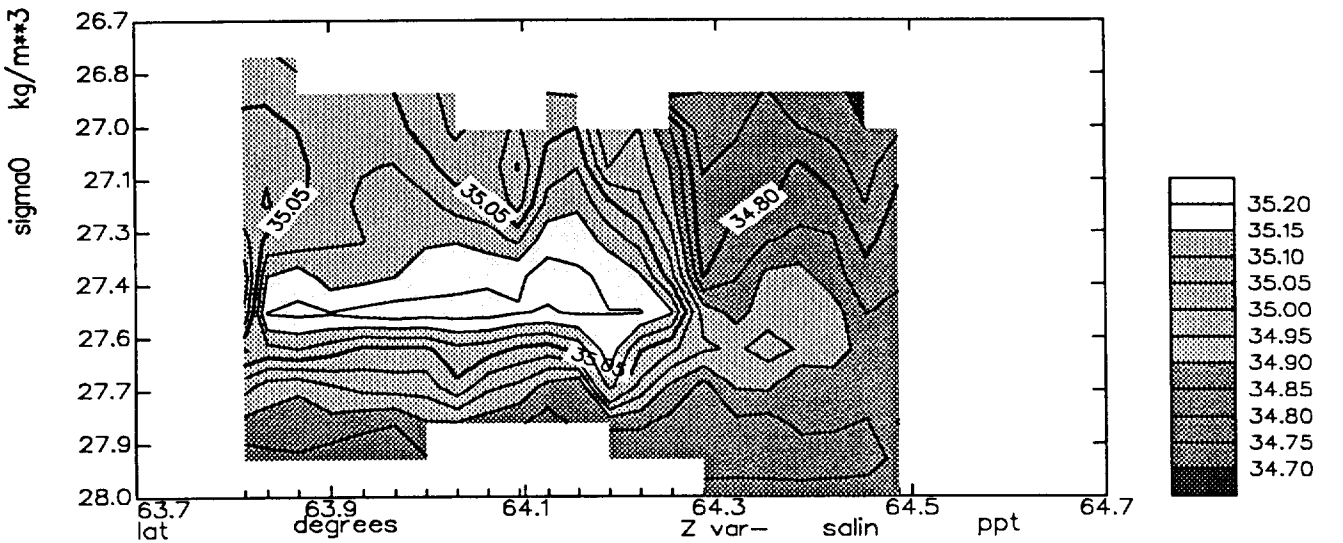
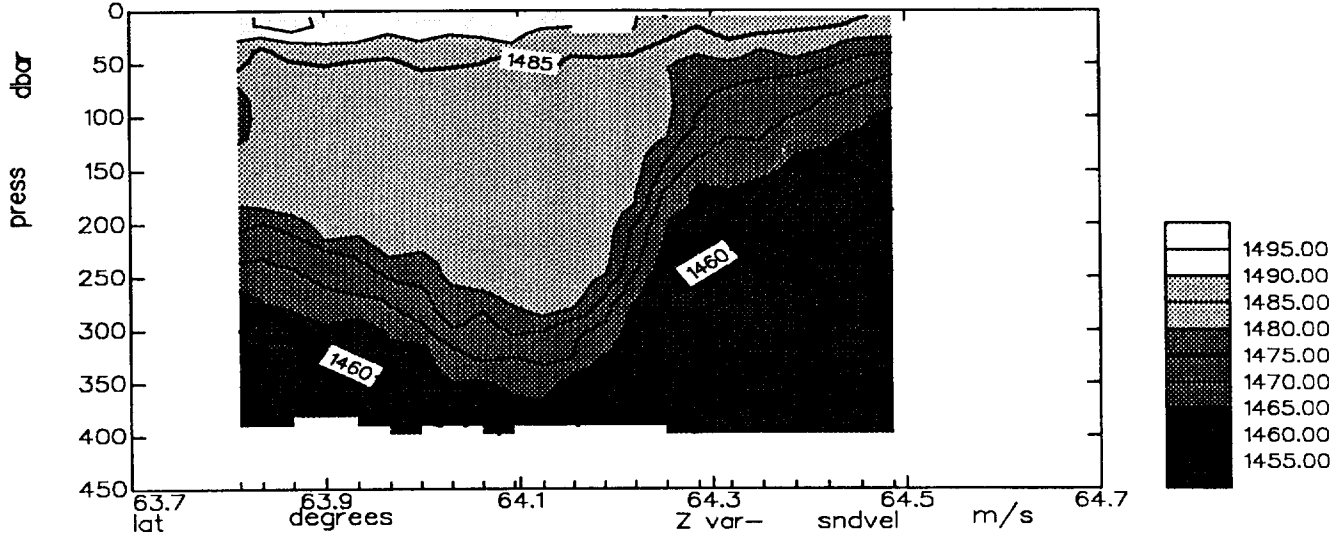
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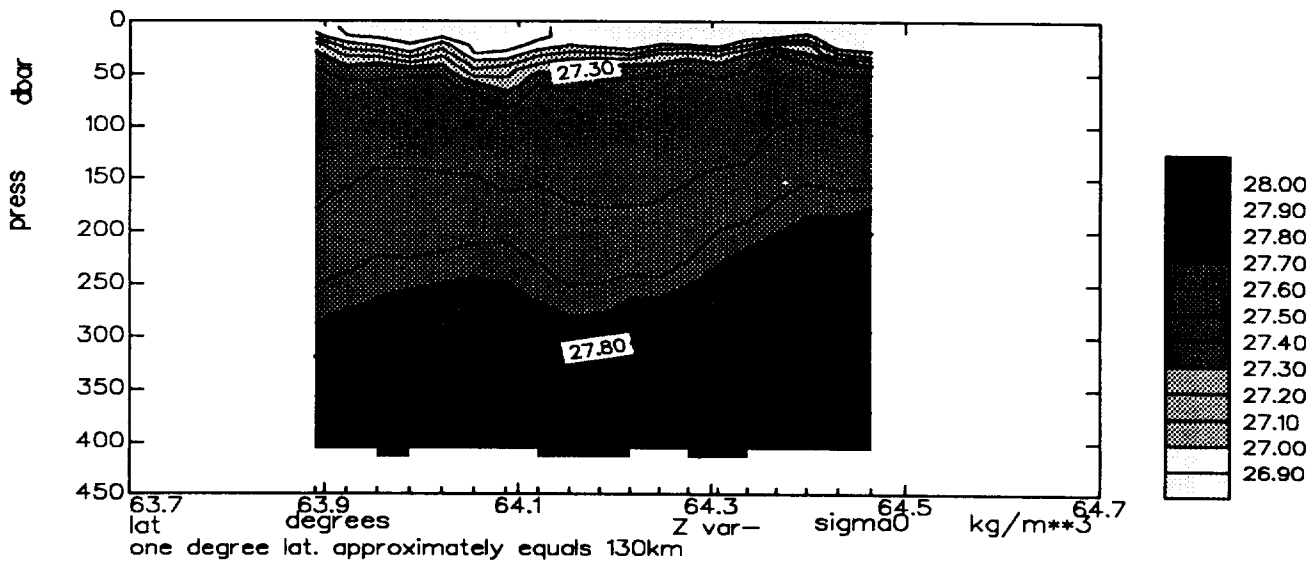
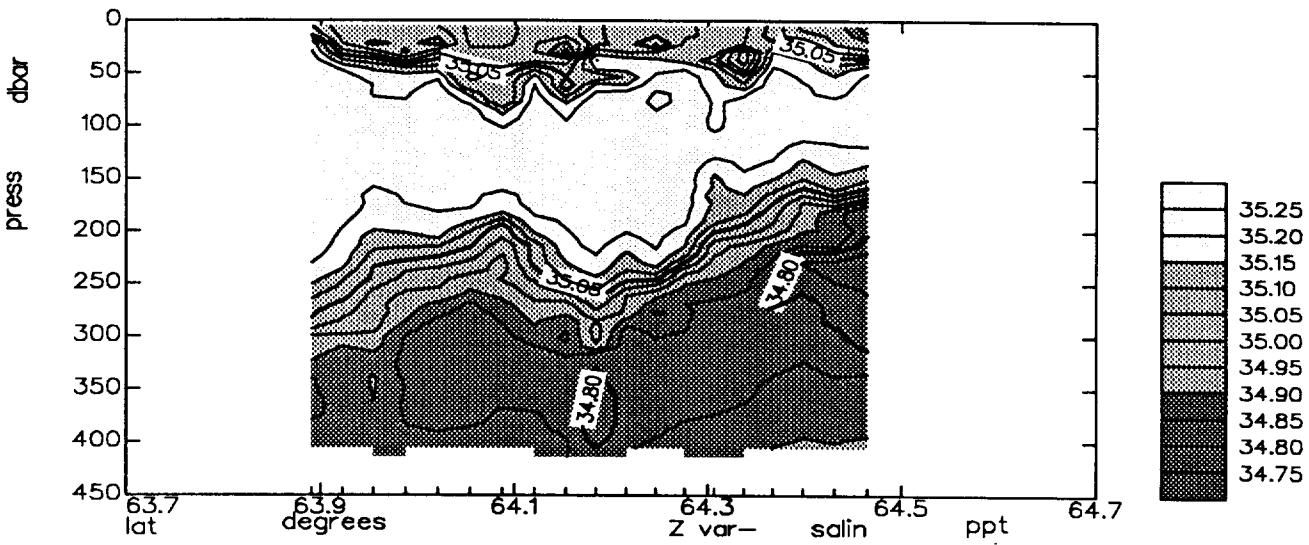
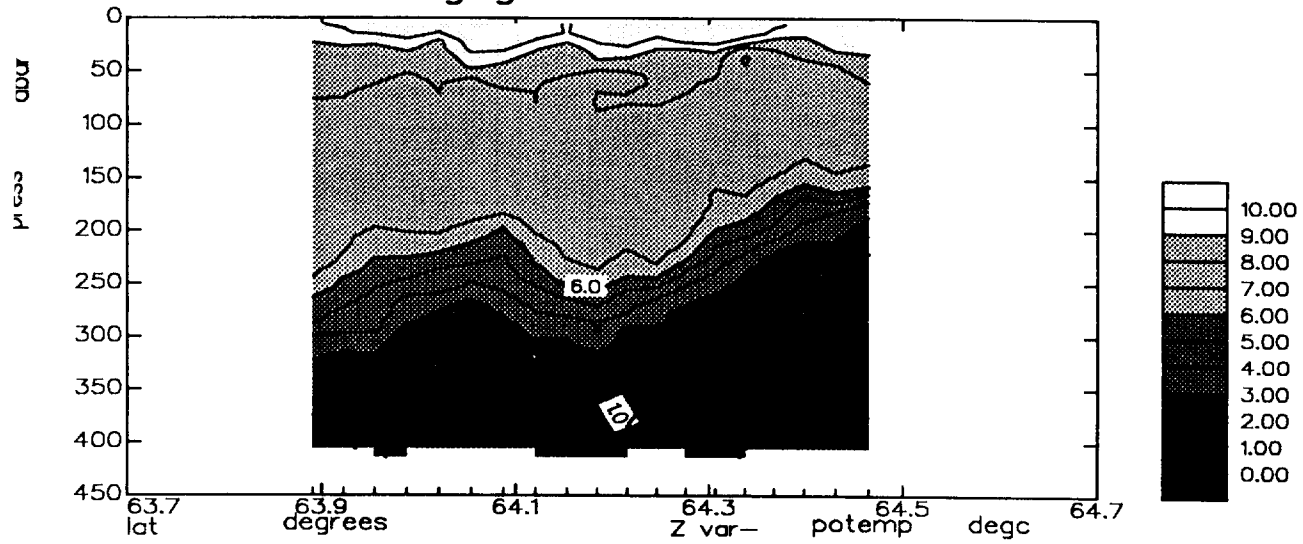
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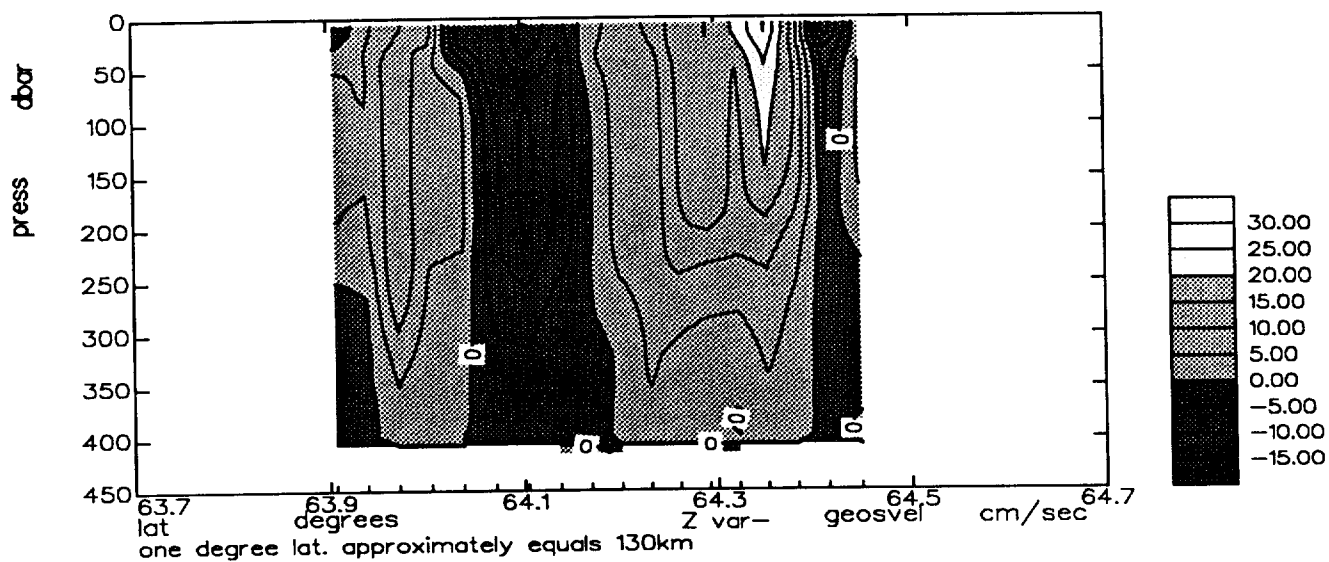
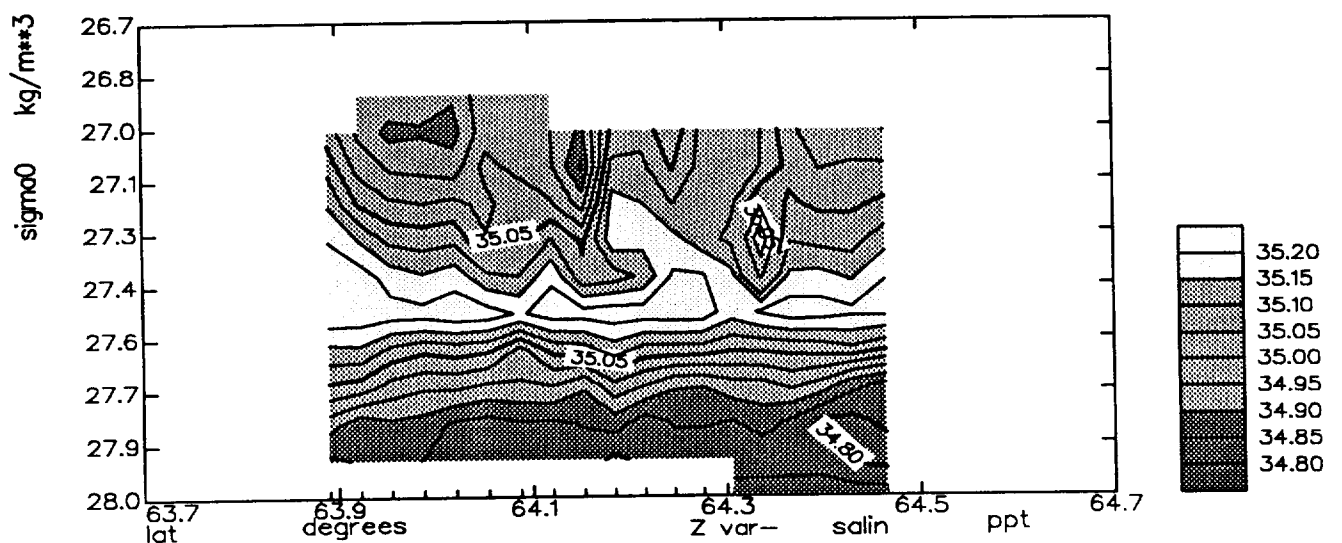
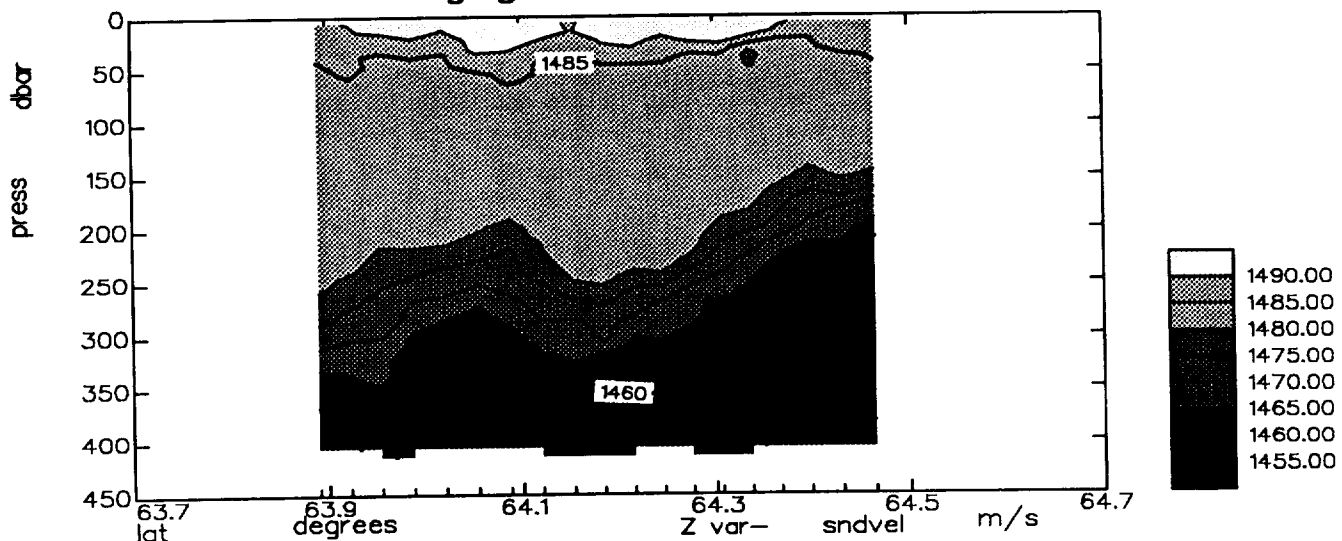
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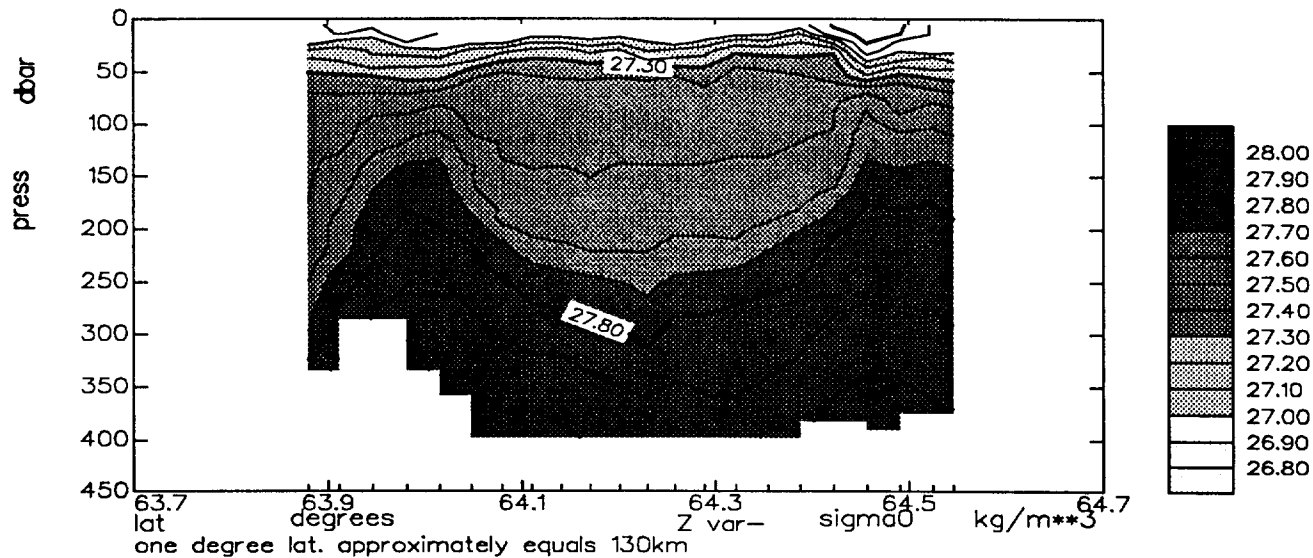
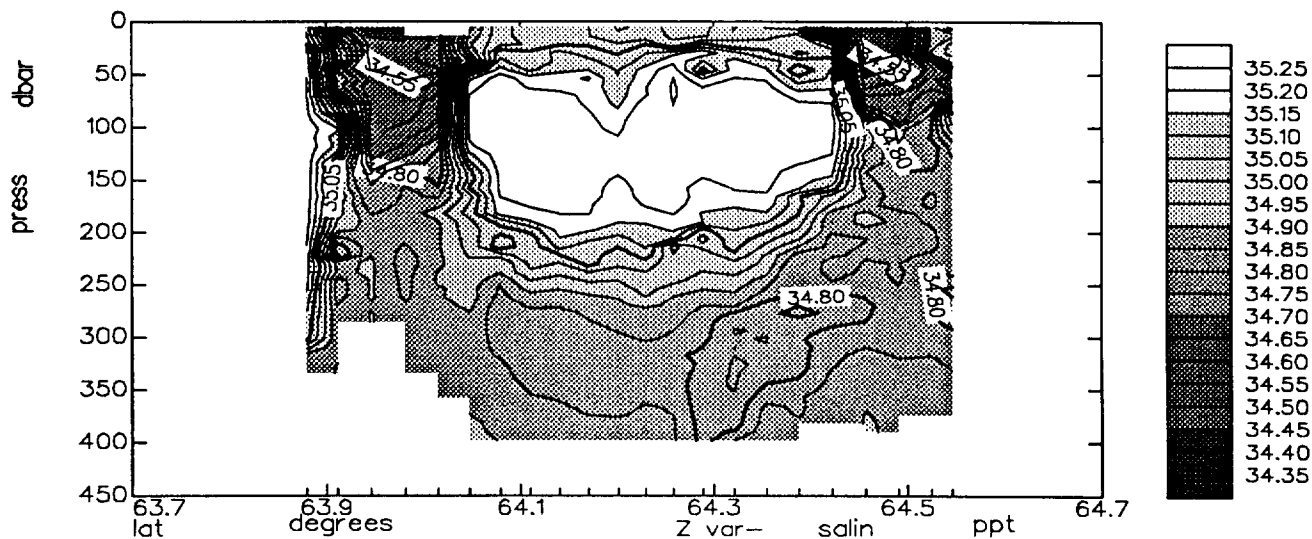
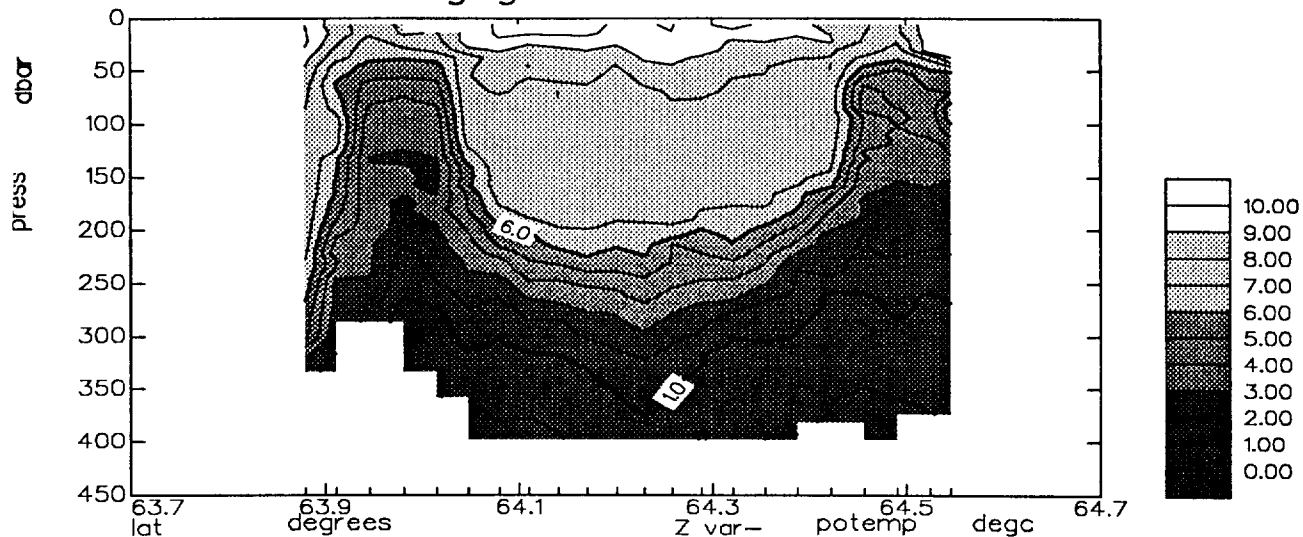
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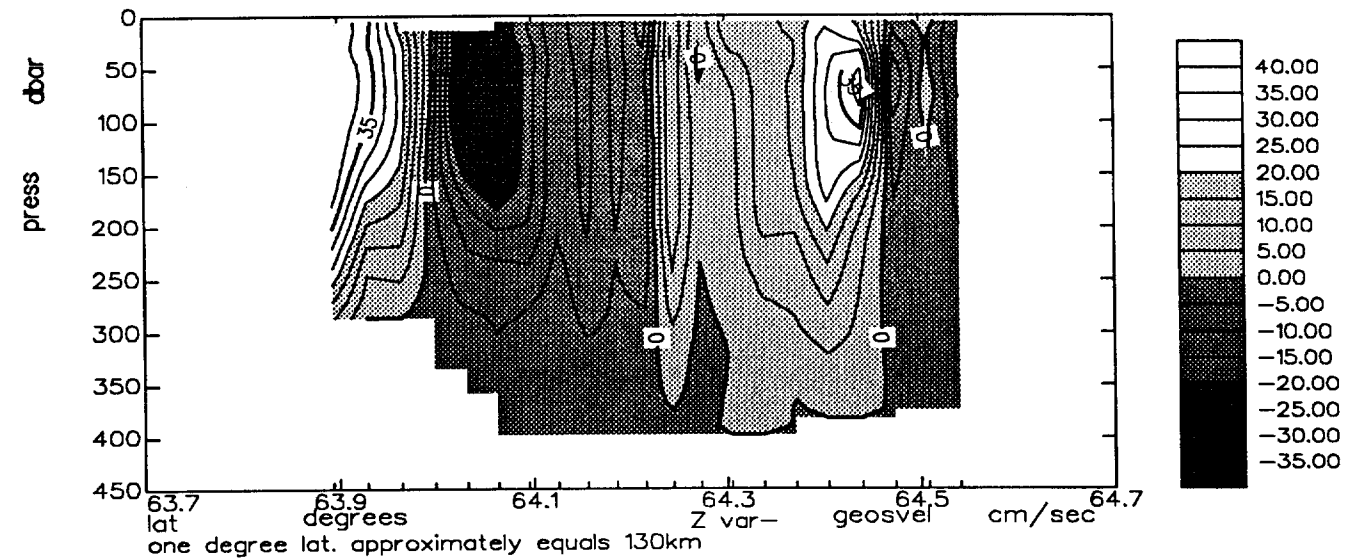
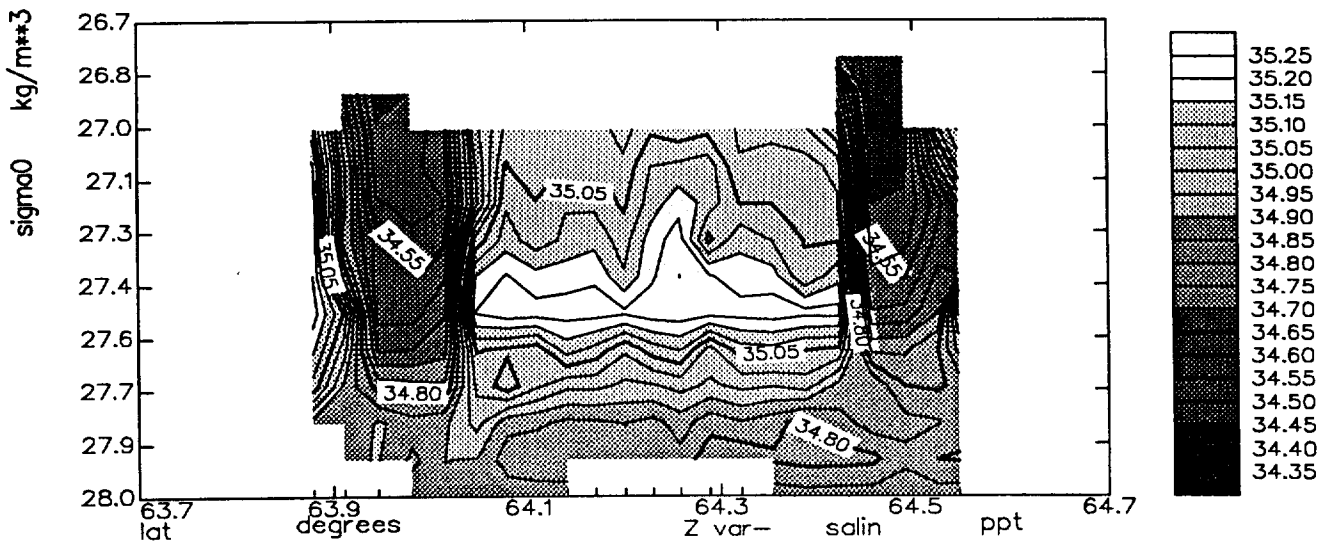
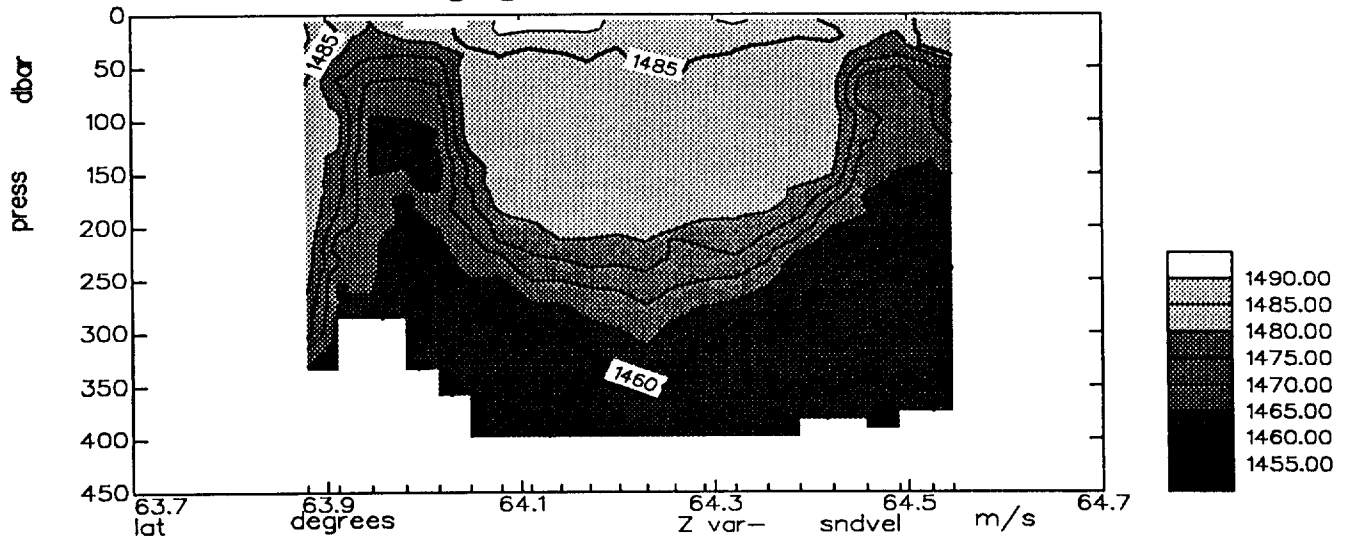
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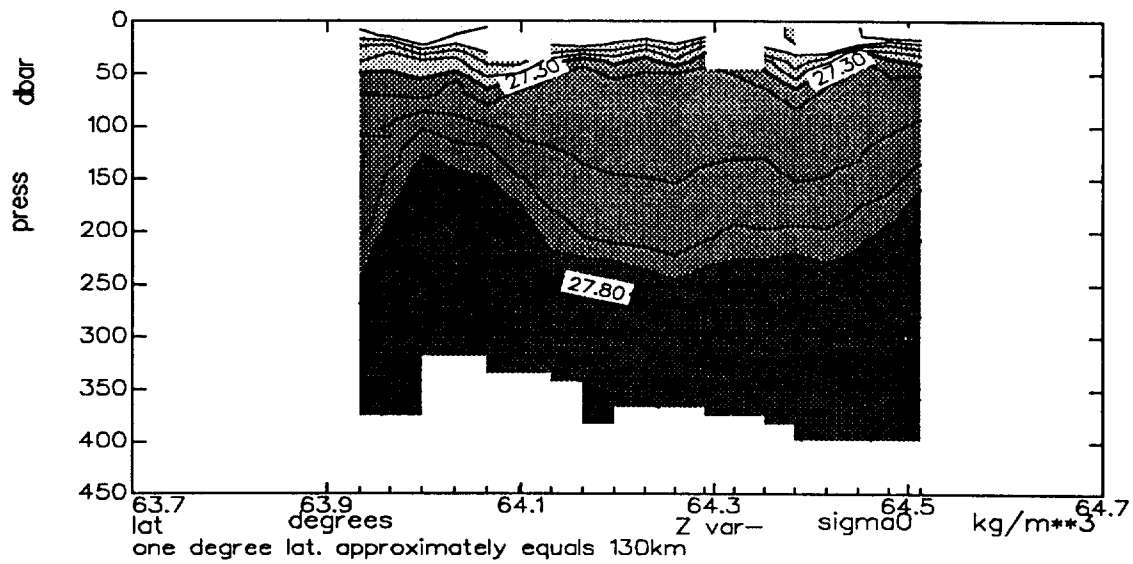
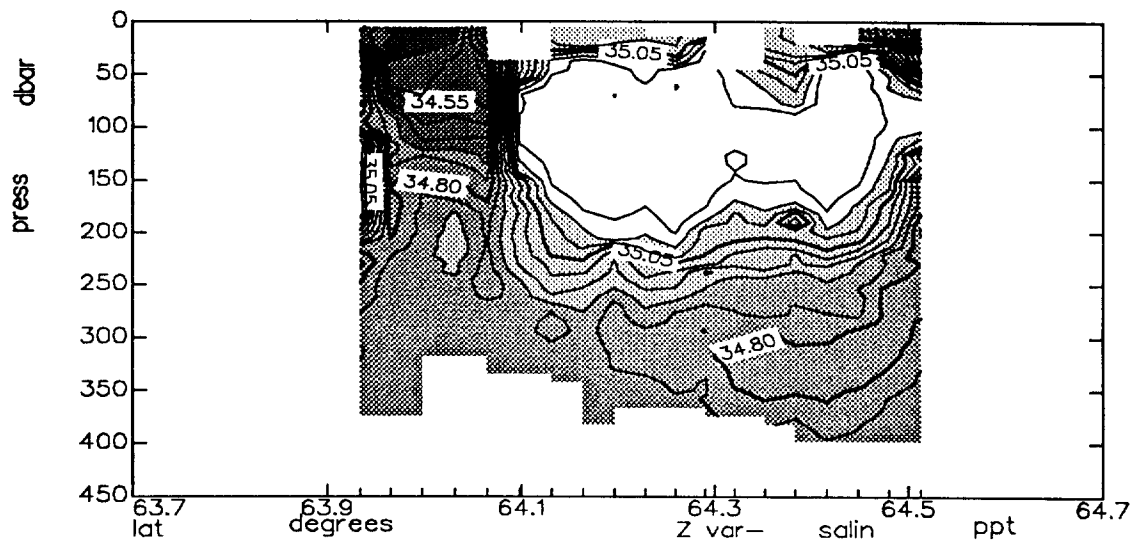
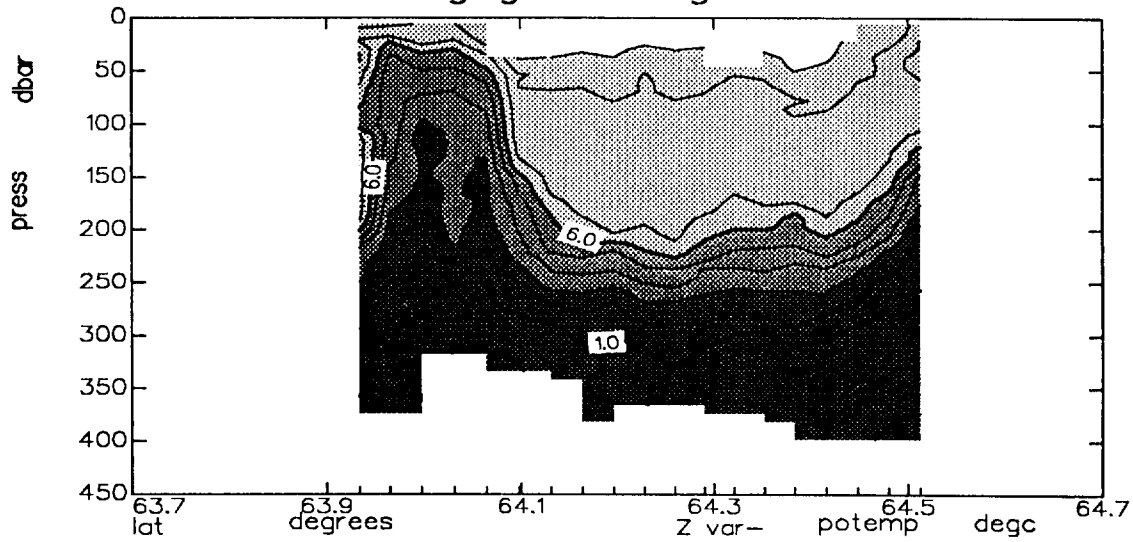
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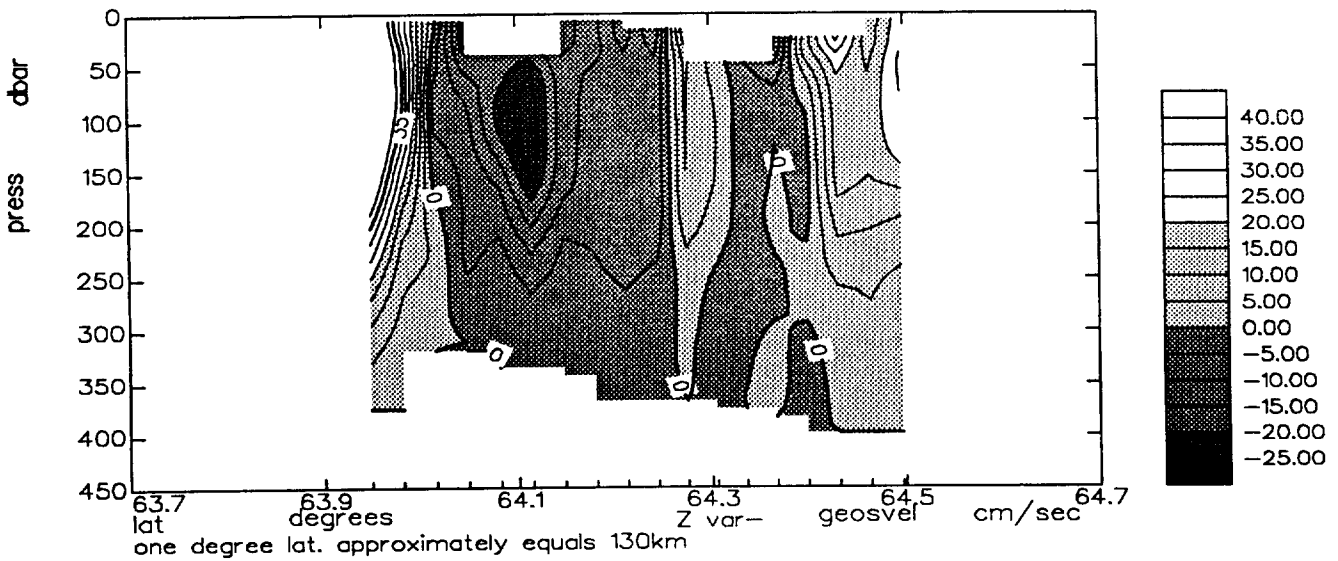
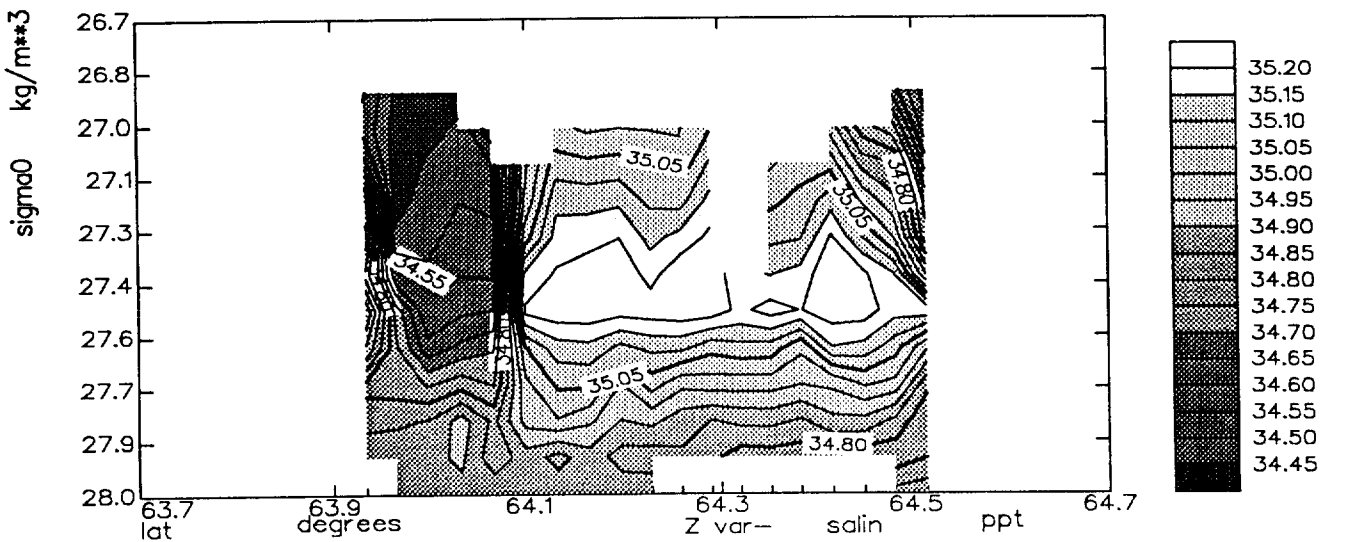
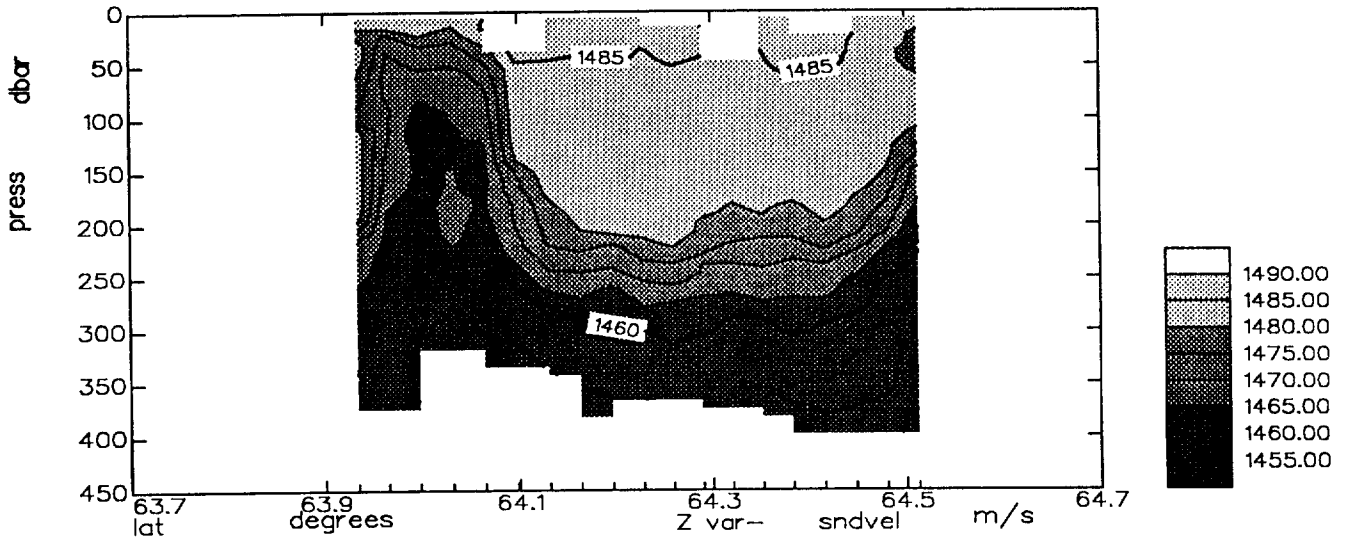
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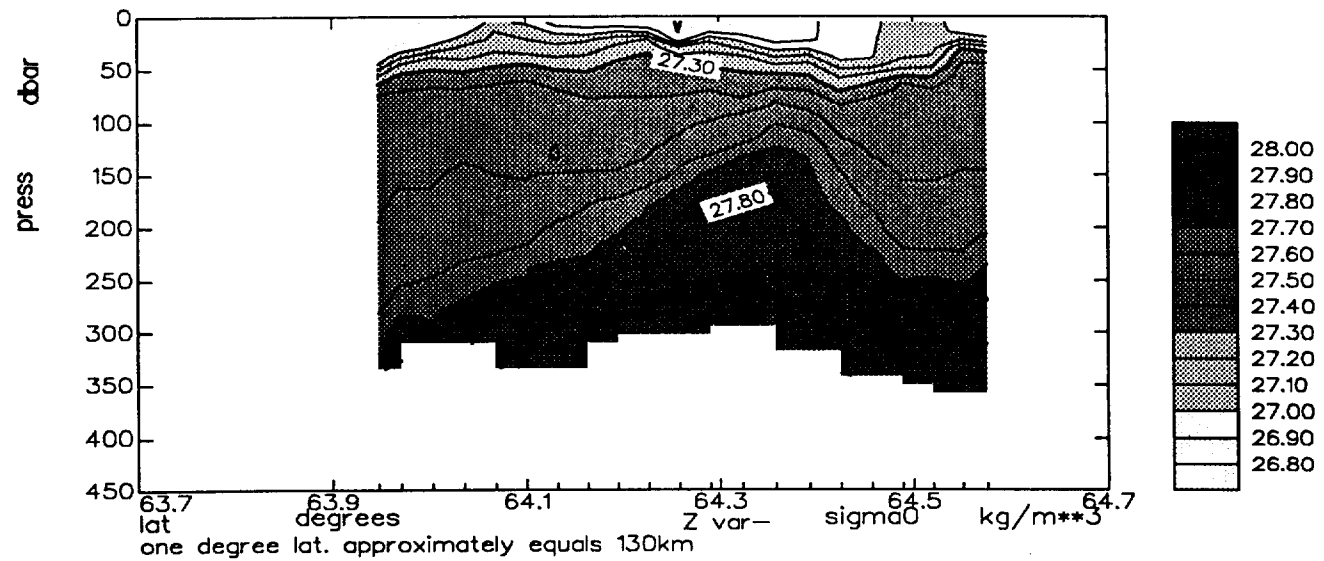
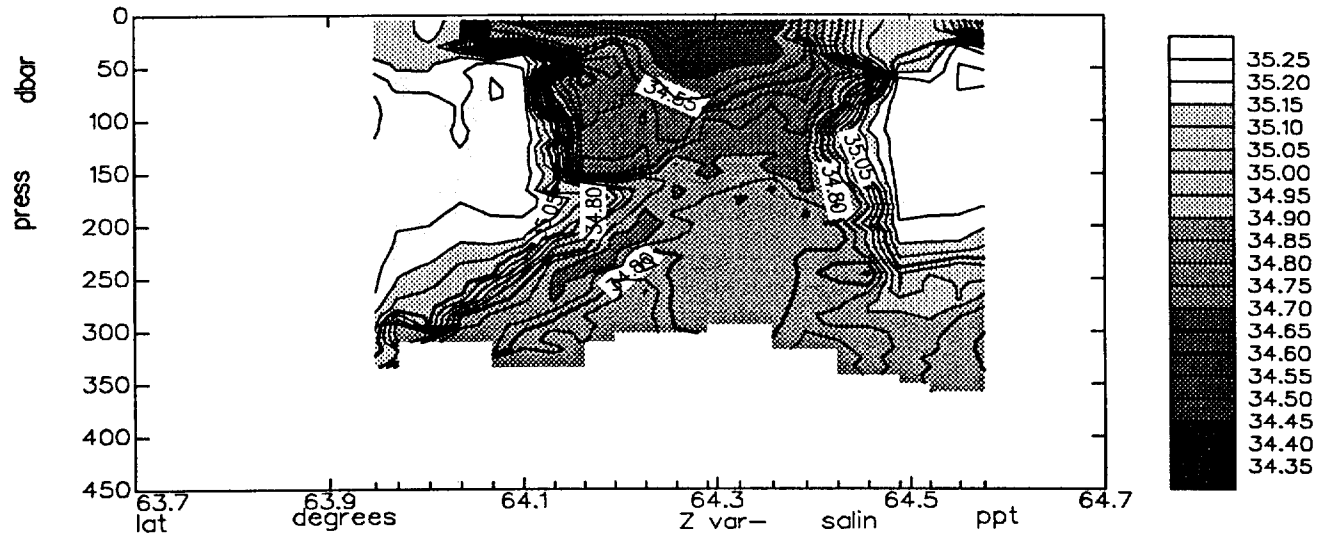
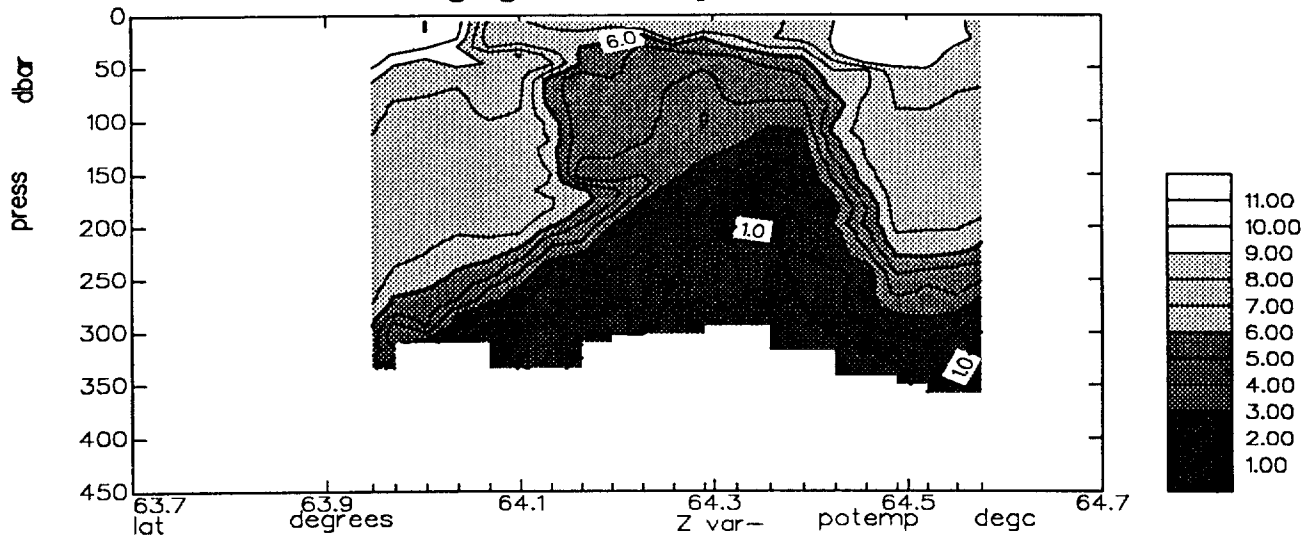
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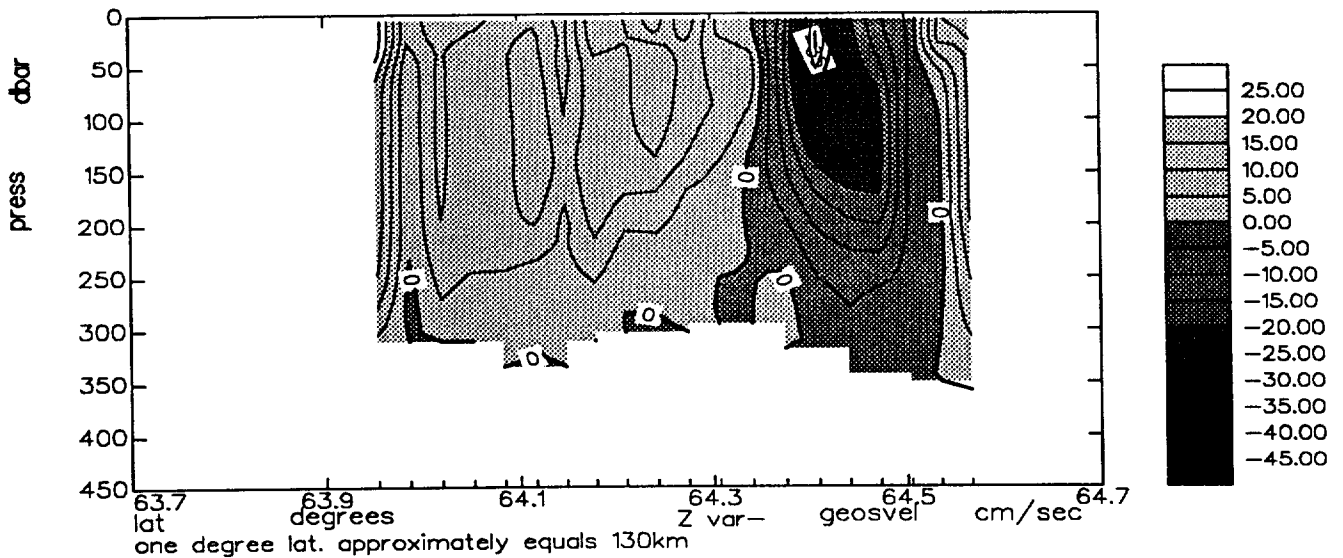
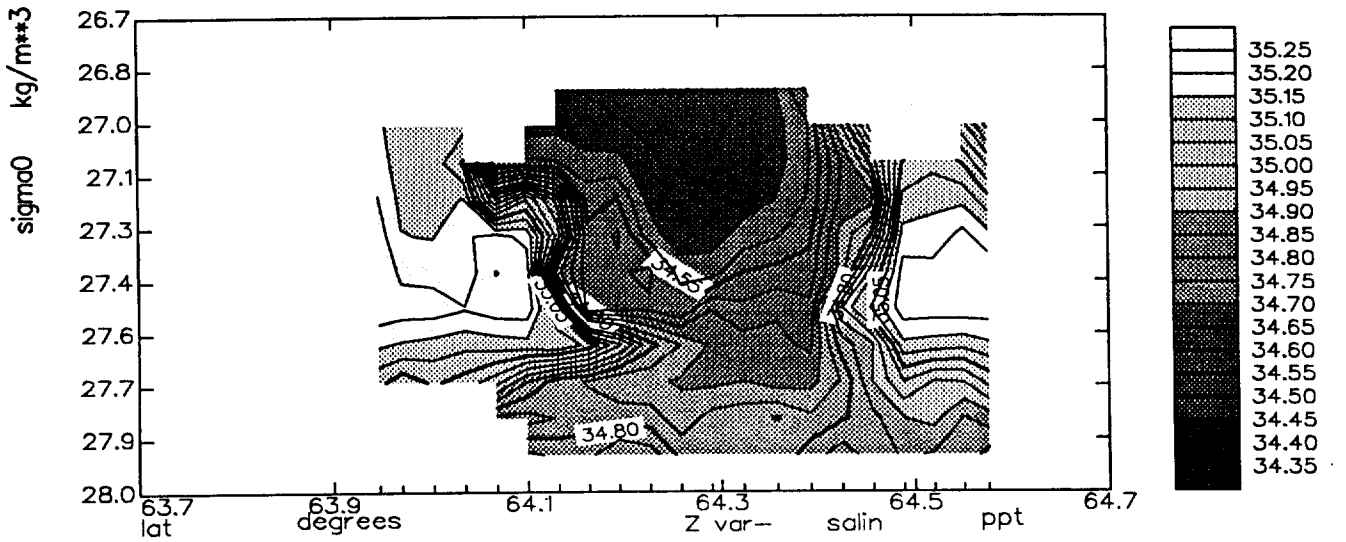
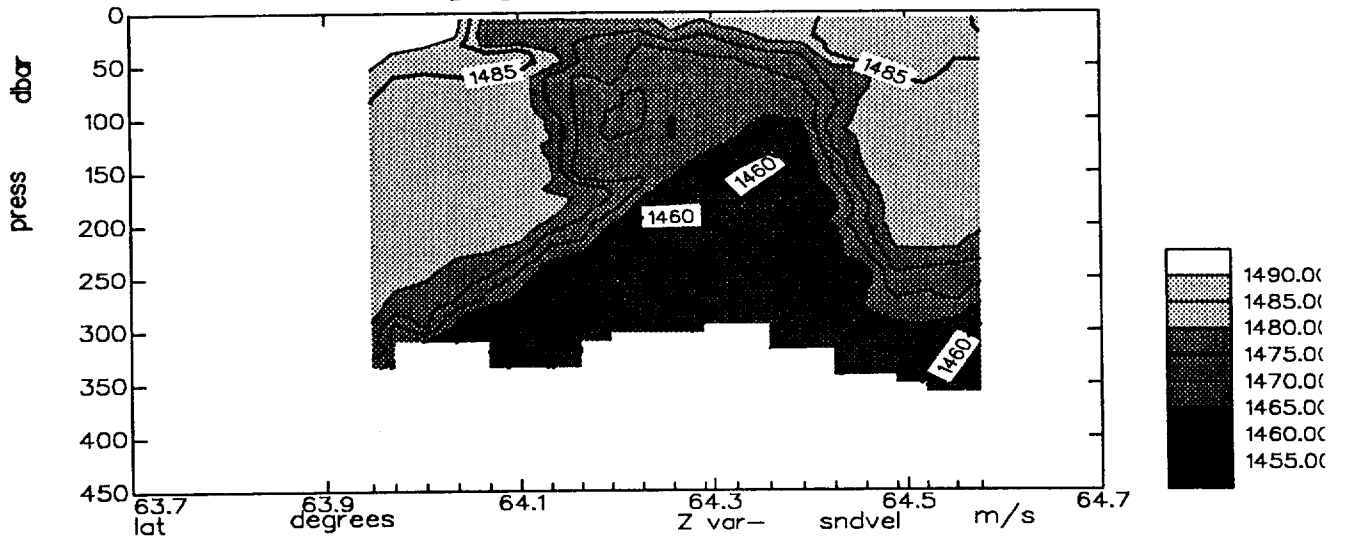
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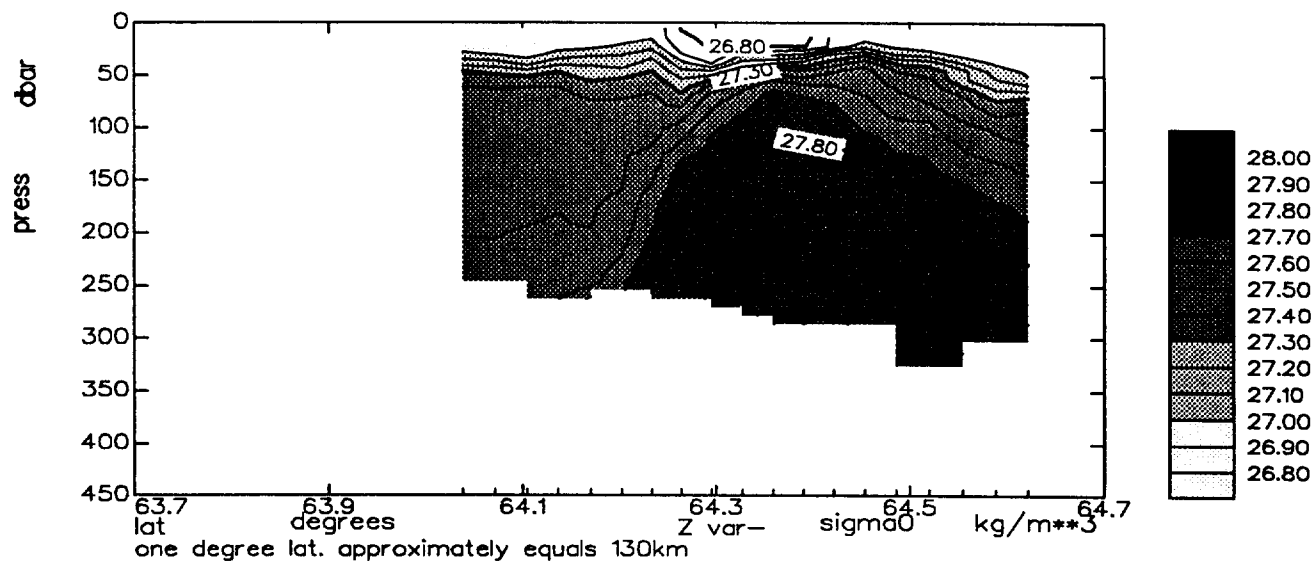
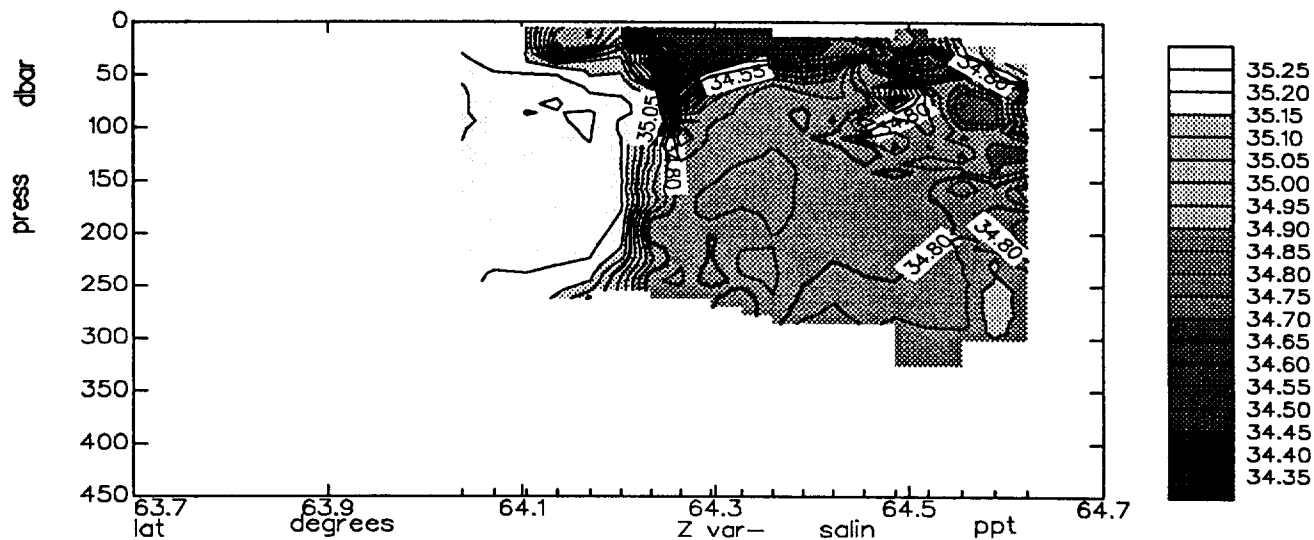
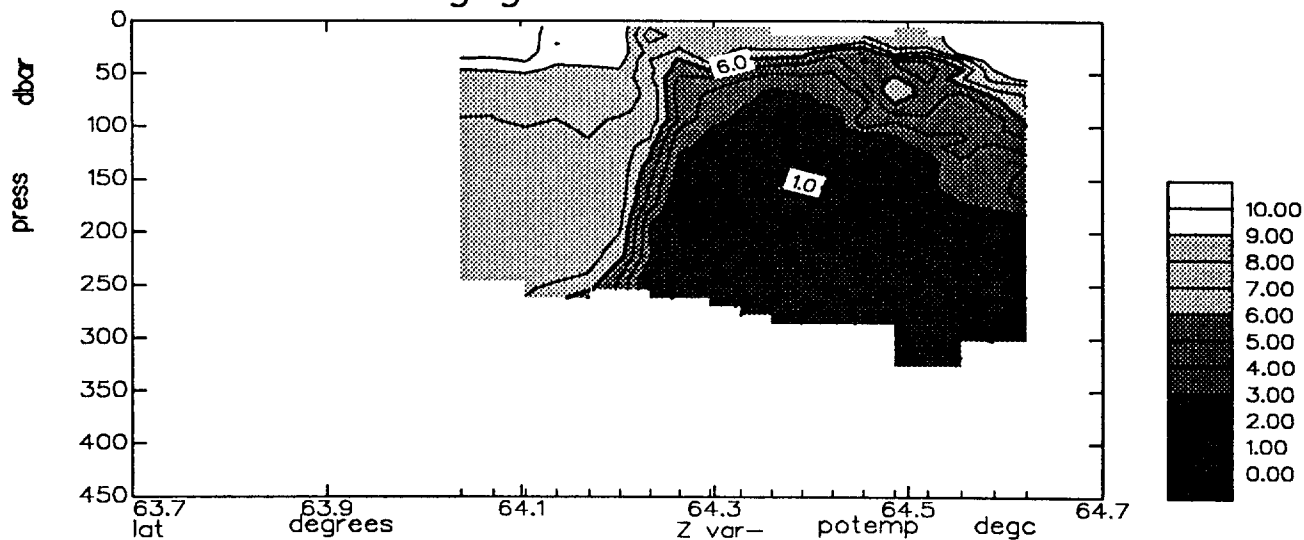
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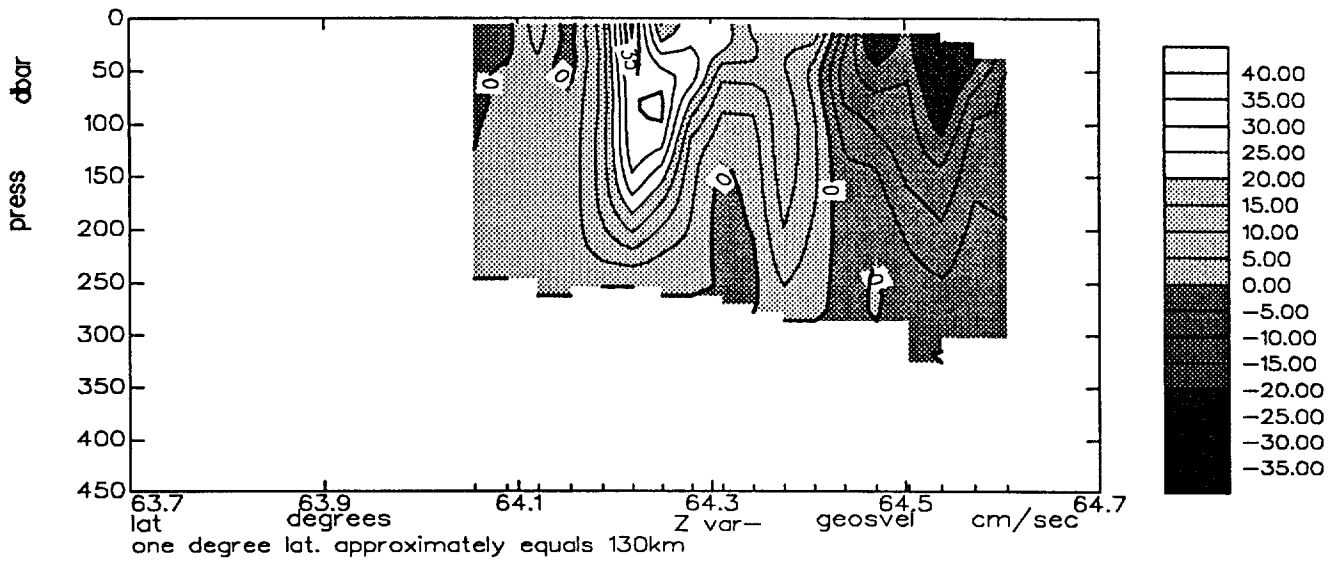
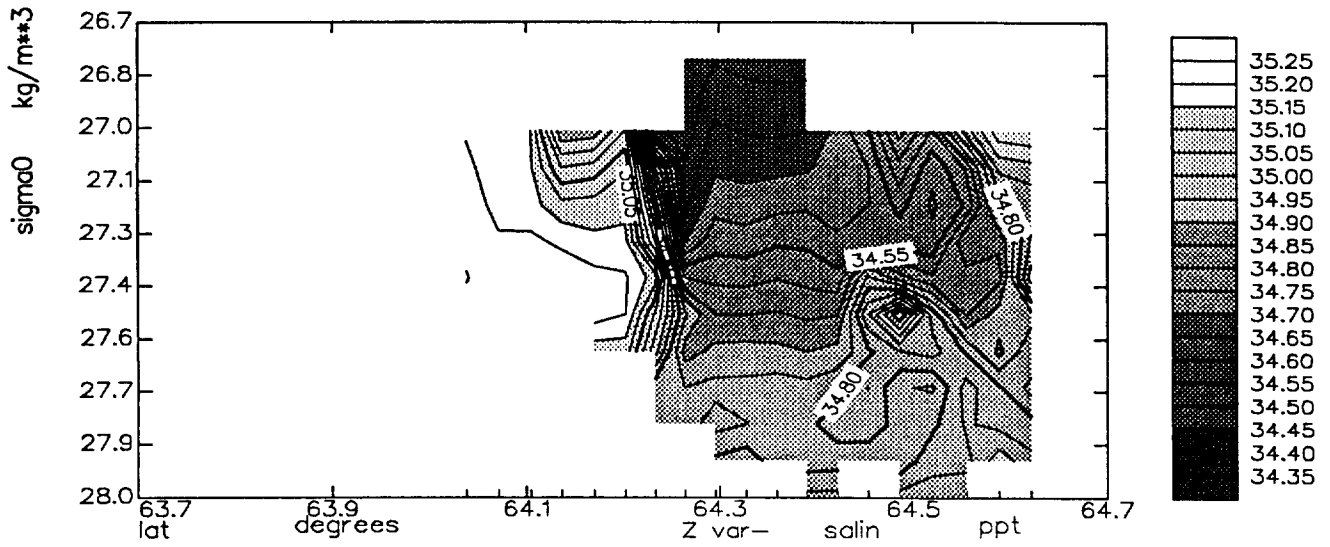
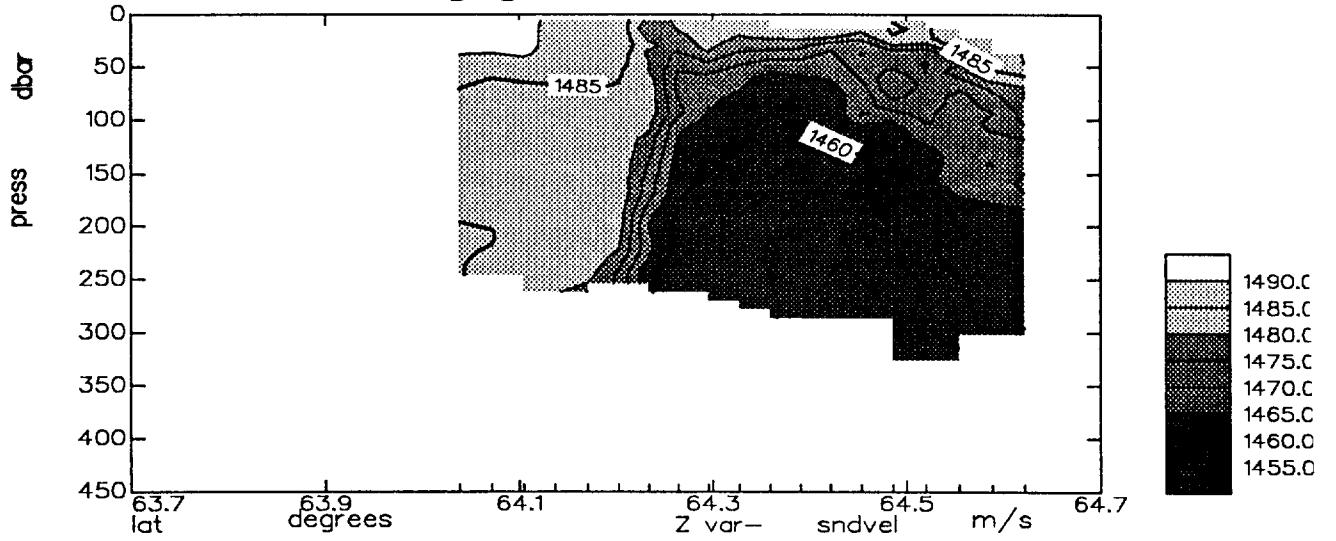
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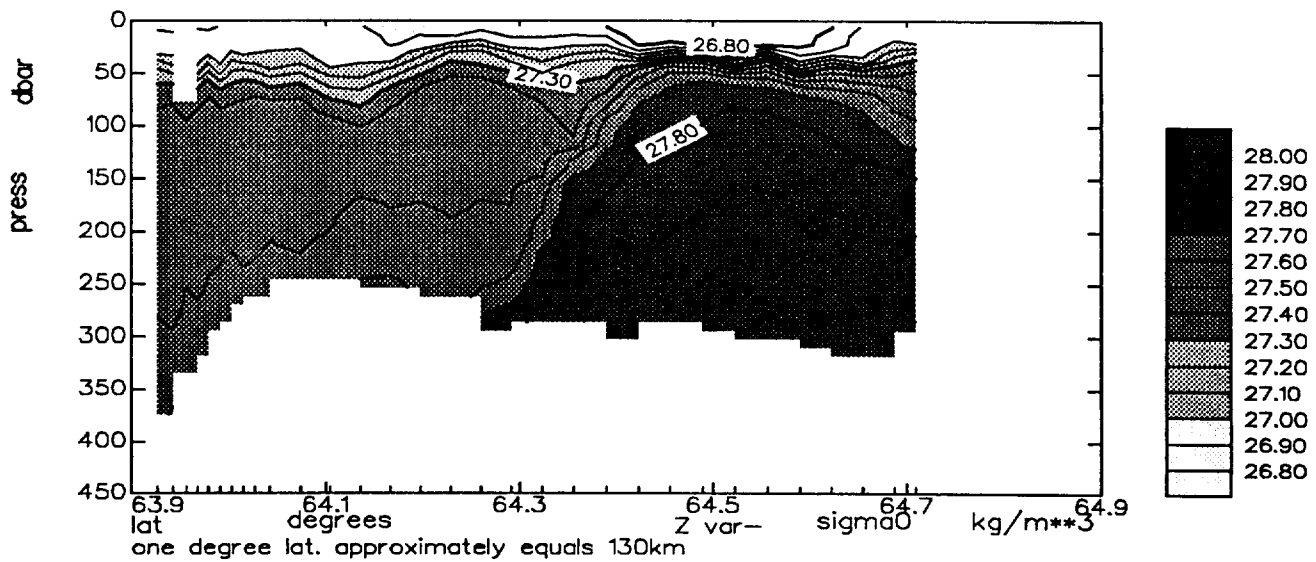
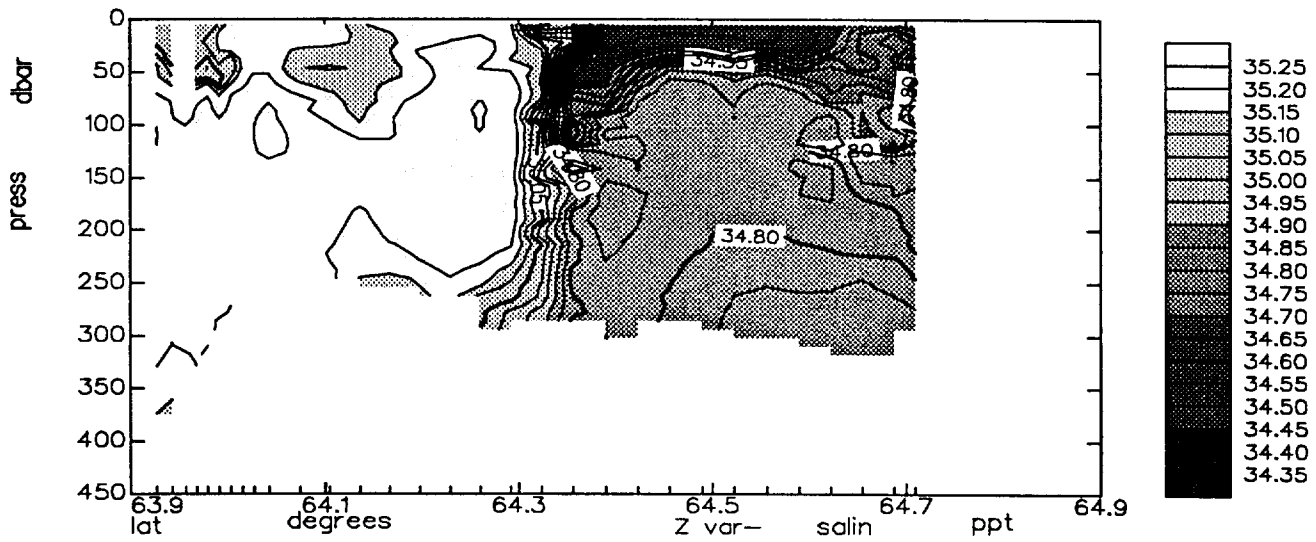
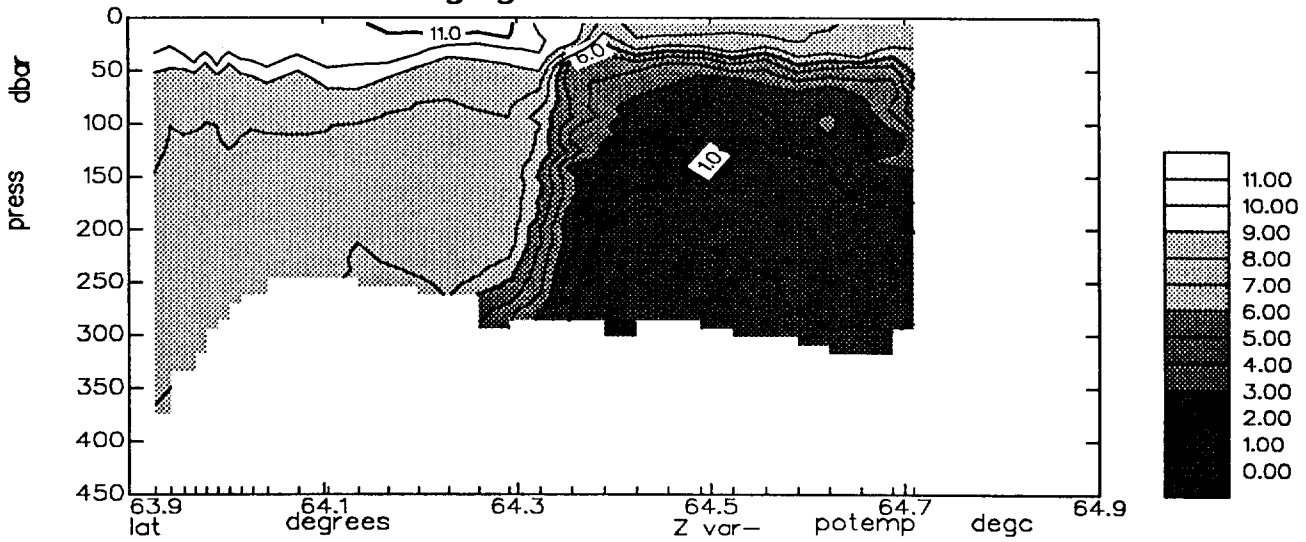
leg gr51f3snkl



leg gr51f3snkl



leg gr51f3snmn



leg gr51f3snmn

