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- Data Report -

by

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### Summary

The active field phase of the "Warmwassersphäre des Atlantiks" research project at the University of Kiel began in 1981 after some preparatory work in 1980. Three cruises with FRV "Walther Herwig" (WH45), RV "Meteor" (M57/2) and RV "Poseidon" (P76/3,4) were used to obtain CTD and XBT measurements on long hydrographic sections along the Mid-Atlantic Ridge from north of the Azores to the subpolar front and in a "hydrographic box" located between 42° N and 46° N. Satellite-tracked drifters were launched. Long-term and short-term current meter arrays were moored. A GEK was towed in the "hydrographic box". All the obtained data are presented in this report.

### Zusammenfassung

Nach vorbereitenden Arbeiten im Jahre 1980 begann im Sommer 1981 die aktive Feldphase für den Sonderforschungsbereich "Warmwassersphäre des Atlantiks" der Universität Kiel. Es wurden drei Reisen mit F.F.S. "Walther Herwig" (WH45), F.S. "Meteor" (M57/2) und F.S. "Poseidon" (P76/3,4) durchgeführt und die Hydrographie durch CTD- und XBT-Messungen auf langen Schnitten entlang des Mittelatlantischen Rückens von den Azoren bis zur Subpolarfront und in einer "Box" zwischen 42° N und 46° N aufgenommen. Es kamen satelliten-geortete Drifter, Kurzzeit- und Langzeitverankerungen sowie ein GEK in der "Box" für die Strömungsmessung zum Einsatz. Alle im Rahmen des Teilprojekts A3 während der Vorbereitungsphase und während des Jahres 1981 gewonnenen Daten werden in diesem Datenband präsentiert.

## 1. Introduction

In summer 1981 the active field phase of the research project "Warmwassersphäre des Atlantiks" began. This is a combined effort of physical oceanography groups at the University of Kiel to investigate the processes of heat transfer in the upper oceanic layers with temperatures exceeding 8 - 10 °C covering the depth range of 800 m and extending between the equator and the subarctic fronts of the ocean. The North Atlantic warm-watersphere is especially important for the European climate since the North Atlantic current system displaces it anomalously far poleward.

The main field-work in 1981 was carried out jointly by RV "Meteor" and RV "Poseidon". The measurement programme was aimed at obtaining data pertinent to the following topics:

- (a) The North Atlantic Current crossing the Mid-Atlantic Ridge north of the Azores. Hydrographic sections were combined with long-term moored arrays of current meters, that were deployed in 1980 and were continued after the cruise. In addition the trajectories of satellite-tracked drifters crossing the Mid-Atlantic Ridge were available for larger-scale mapping.
- (b) The role of mesoscale transport processes. Mesoscale variations of currents and stratification are dominating oceanic observations. To cover this scale a "hydrographic box" of about 200 x 200 nm size was worked above the Mid-Atlantic Ridge using CTD and XBT equipment. Short-term current meter moorings and towing of a GEK and satellite-tracked drifters provided information of the current distribution within the box.

In addition to the major field-work carried out by RV "Meteor" and RV "Poseidon", FRV "Walther Herwig" was available in May 1980 to lay long-term moorings and for an XBT survey. In June 1981 FRV "Walther Herwig" carried out a combined CTD and XBT section along the Mid-Atlantic Ridge. 10 satellite-tracked drifters were launched in May 1981 by the Canadian RV "Baffin". The cruises leading to the data reported here are summarized in Table 1.

Ship	Cruise No.	Observation Period	Area	Activity
FRV "Walther Herwig"	42	13-16 May 80	Mid-Atlantic Ridge	XBT, deploying of moorings 265 and 266
RV "Baffin"	03	5-16 May 81	SE Grand Banks	Launching of 10 satellite-tracked drifters
FRV "Walther Herwig"	45	23-28 May 81	Mid-Atlantic Ridge	XBT, CTD
RV "Meteor"	57/2	6-27 Aug. 81	Mid-Atlantic Ridge	XBT, CTD, recovering and laying of moorings 266, 265 and 280. Launching of 8 satellite-tracked drifters
RV "Poseidon"	76/3,4	11 Aug.- 6 Sept. 81	Mid-Atlantic Ridge	XBT, CTD, GEK, laying and recovering of moorings 281, 282, 283, D. Launching of 8 satellite-tracked drifters

Table 1: Field-work within the framework of the research project "Warmwassersphäre" on which is reported in this data report.

## 2. CTD measurements

The applied CTD system used in this project consisted of a "Multisonde" which is manufactured by "Meereselektronik", Trappenkamp, West Germany. It is a commercialized version of a system which was developed in the Institute of Applied Physics at the University of Kiel (KROEBEL et al, 1976). Because the obtained raw data showed a high noise level, intensive despiking with objective methods and by hand was necessary. The applied data processing is documented in flow diagrammes (Fig. 1a,b). Further details, especially the use of the median filter is reported in SY (1983). Technical data of the "Multisonde" according to manufacturer's declaration and the quality of the final CTD data is shown in Table 2.

To check the laboratory calibrations reference measurements were carried out for possible instrumental drift during the use at sea. Due to the lack of a rosette water sampler, the water samples were collected by separate hydrographic casts. The water samples have been analysed with a "Guildline Autosal Laboratory Salinometer" and the corrections were applied after the recalibration of the in situ conductivity, except for small offset corrections. The calculation of salinity was done using the practical salinity formula (UNESCO, 1981). The in situ pressure comparison was restricted to a zero pressure level check. Temperature comparisons gave no significant deviations from the laboratory calibrations.

The data are presented in vertical sections of temperature, salinity and density in chapter 7.1 together with the maps and listings of the station locations. During the cruises sea surface temperature was continuously recorded by an analogue temperature recorder and salinity samples were taken at every station. Horizontal maps for the 10-m-level were drawn from CTD data.

CTD Processing Cruise WH45 and M57/2 (Section)

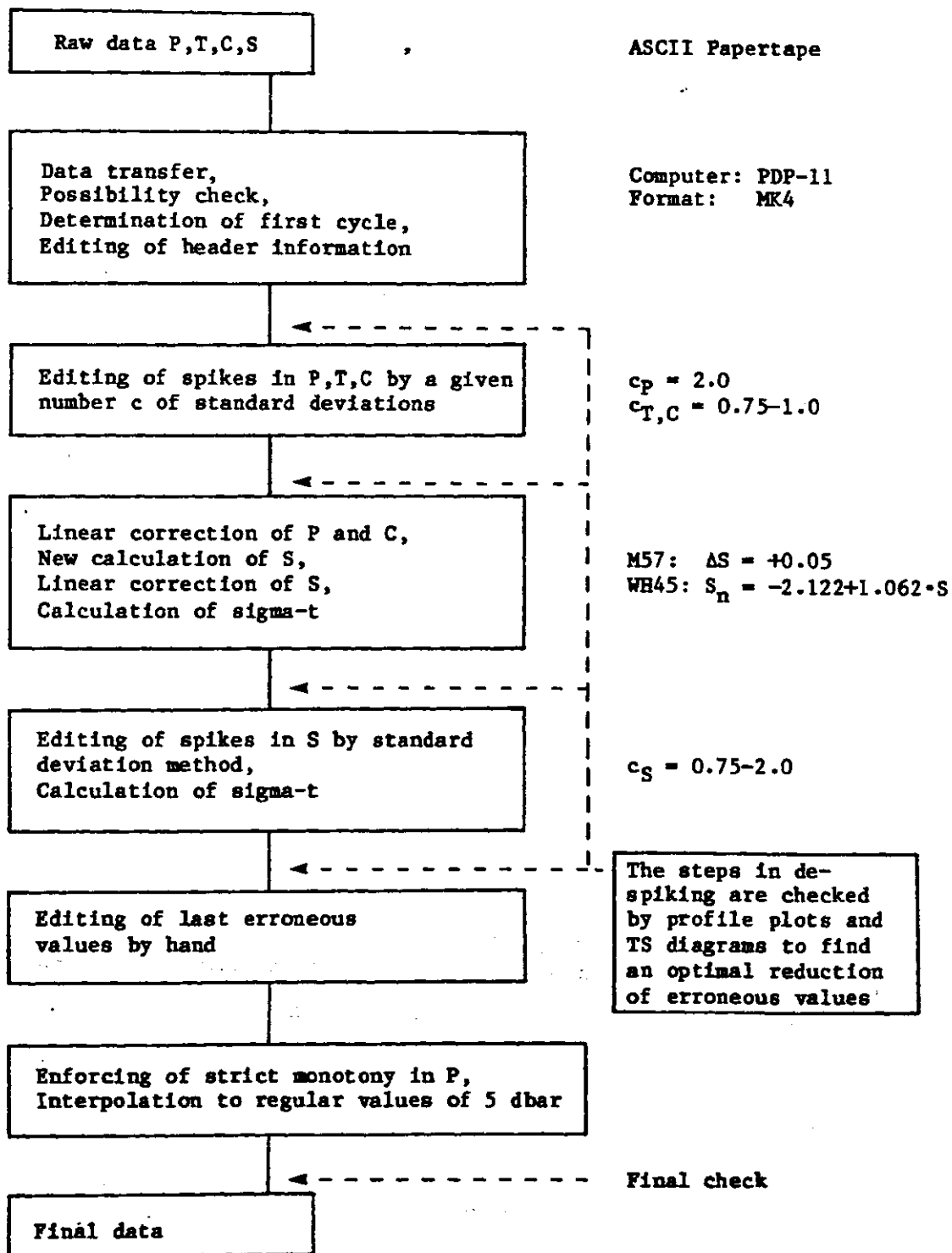


Fig. 1a,b: Flow diagram of the processing of the "Multisonde" data

CTD Processing Cruise M57/2 (Box) and P76/3,4

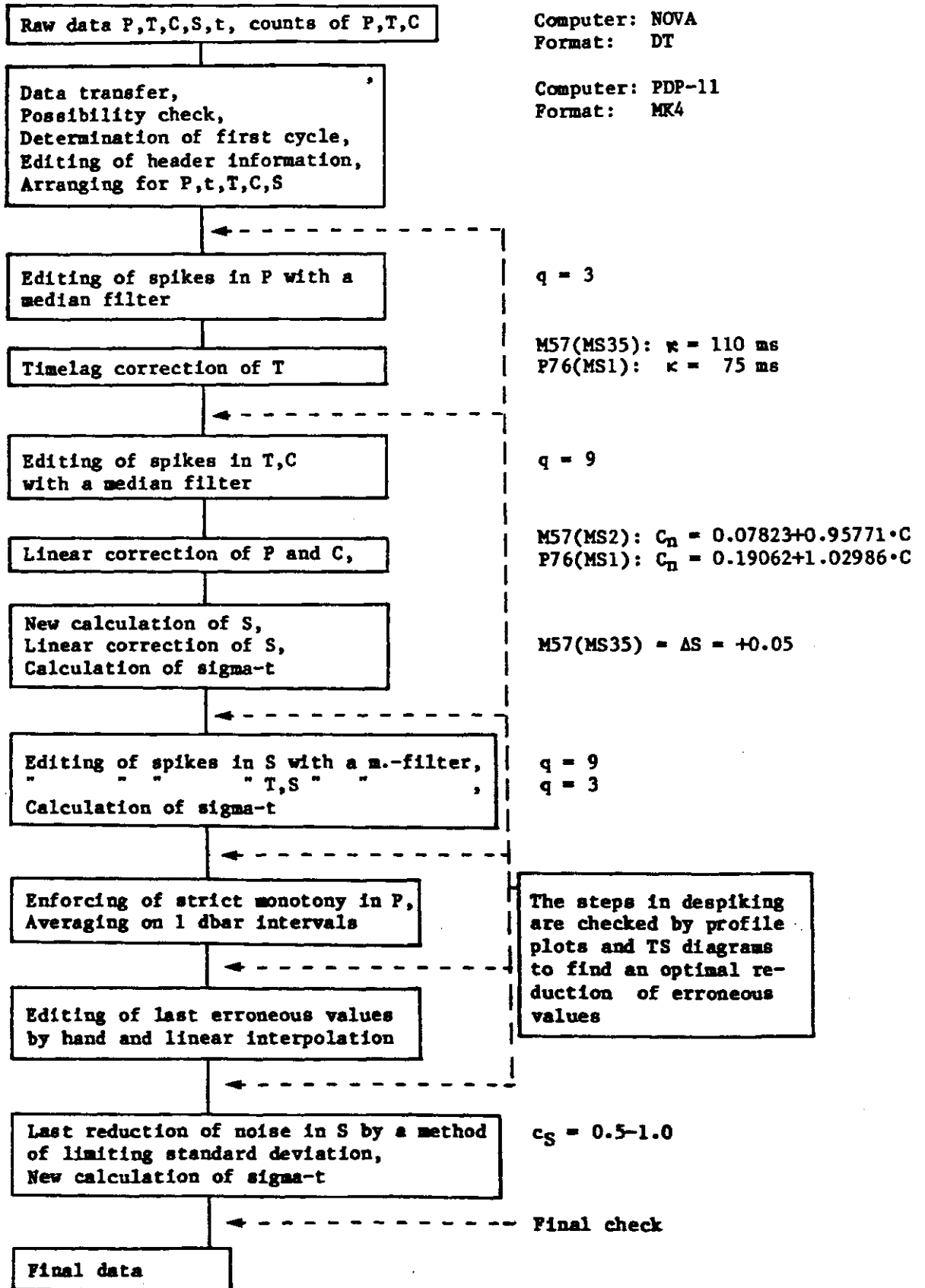


Fig. 1b



	According to manu- facturer's declaration	Final data of cruise		
		MH45	M57	P76
<b>Pressure:</b>				
Principle	Strain-Gauge Pressure Cell			
Range	0 - 6000 dbar			
Resolution	16 bit $\approx$ 0.2 dbar	5.0	1.0-5.0	1.0 dbar
Accuracy	0.35 % of range	3.5	3.5	3.5 %
<b>Temperature:</b>				
Principle	Platinum Resistance			
Range	-2 °C - +35 °C			
Time lag	60 ms (without protecting sheath)			
Resolution	16 bit $\approx$ 1 mK			
Long Term Stability (Accuracy)	$\pm$ 5 mK/0.5 y $\pm$ 5 mK)	$\pm$ 15	$\pm$ 15	$\pm$ 20 mK
<b>Conductivity:</b>				
Principle	Symmetric Electrode Cell			
Range	5 - 55 mS/cm			
Resolution	16 bit $\approx$ 1 $\mu$ S/cm			
Long Term Stability (Accuracy)	$\pm$ 10 $\mu$ S/cm/0.5 y $\pm$ 5 $\mu$ S/cm)			
<b>Salinity:</b>				
Accuracy		$\pm$ 0.02	$\pm$ 0.025	$\pm$ 0.04 $\cdot$ 10 <sup>-3</sup>

**Table 2:** Technical data of the "Multisonde" and quality of the final CTD data

### 3. XBT measurements

During the "Walther Herwig" cruise 42 there was no time available to carry out CTD stations. Therefore only XBT's could be launched. During the other cruises XBTs were used to increase the horizontal resolution to 10 to 15 nm. A Sippican-Plessey analogue recorder was used. The probes reached down to about 800 m (T7). The accuracy of the data is given by the manufacturer with  $\pm$  0.1 K. This is correlated with the sea surface temperature measurements. The measurement depth is calculated from the vertical speed of the probe. The doubts on the accuracy of this method

published by HEINMILLER et al. (1983) were confirmed by our data. The comparison of the depths of the isotherms according to XBT measurements ( $d_{\text{XBT}}$ ) and CTD measurements ( $d_{\text{CTD}}$ ) gives a systematic difference. Average deviations over 47 profiles are calculated for the 14°C and the 10°C isotherms. The resulting means  $d_{\text{CTD}}$  are 19 m respective 33 m and the standard deviations are 18 m respective 27 m.

Because this error does not affect the present investigations no correction is applied. The location of the drops are shown in maps and station lists, the data are presented as vertical sections.

#### 4. Drifting buoy measurements

The investigation of the large-scale surface current field requires appropriate current measurements. Satellite-tracked drifting buoys can yield this information. Therefore 26 drifting buoys were launched in 1981 and the data of 6 further buoys were launched by the Bedford Institute of Oceanography (Canada) in 1980. Because of technical problems only data of 29 bouys are available (Table 3). In order to show the area covered by these drifters during 1980 and 1981 the tracks of these buoys from launching til 31 December 1981, their recovery or their loss are presented in chapter 7.2.1. Some buoys were launched and recovered several times or the data transmission was interrupted. The buoys were manufactured by Hermes Electronics Ltd., Canada. For data transmission and buoy location the ARGOS system, Toulouse, France, was used. The present figures are drawn from about 3 to 4 hourly data which are delivered by ARGOS on magnetic tape and interpolated to 3 h intervals.

The drogues were located in 10 m, 30 m or 100 m. It should be noted that all buoys which were recovered after more than one month had lost their drogues. The rust of the iron yards weakened the sail cloth. Consequently the drogues teared off below their upper yards. As there is no evident change in the characteristics of the tracks it must be assumed that the remaining yard and the rope provided enough drag to determine the drift of the buoys. On some of the buoys sea surface temperature and air pressure sensors were installed.

## 5. Moored current meter measurements

The moored current meter measurements were planned with two major objectives:

- Long-term moorings at selected locations to obtain local statistics,
- Short-term moorings within the "hydrographic box" to provide information on the vertical structure of currents below the depth monitored by means of the satellite-tracked drifting buoys.

The first aim was achieved with mooring 265 which could be recovered after one year, with all current meters having worked successfully. The second aim could not be reached satisfactorily because of technical problems. Three current meter moorings were laid within the "hydrographic box" at the beginning of the hydrographic survey. They were surface taut-wire systems. All three moorings had to be recovered prematurely after 2 to 6 days because they were found drifting. The wire broke immediately after the mooring was laid. An important loss of instruments and the falsification of the measurements due to the drift of the moorings resulted. After the recovery of the three moorings the remaining material was combined to a new one. This mooring was also affected by wire breaking after 7 days. In this case the connection between the near surface float and the surface buoy broke. Because the drifting surface-buoy could be recovered, no material loss has to be claimed.

The resulting intervals with observations (Table 4), simple statistics of the time series (Table 5) and the time series of the data itself are presented in chapter 7.2.2.

The long-term measurements are filtered with a Lanczos square taper with 120 weights at a time interval of 1 h and a half power point of 40 h. By this filter tides and inertial movements should be suppressed. High frequency noise by mooring motions is not to be expected because subsurface mooring techniques were applied at the long-term moorings. The influence of low frequency current fluctuations must be indirectly deduced by a method described by SCHRÖDER (1982). This was done by ROHARDT (1983), who found, that during the most dramatic current event, which occurred in May 1981, the uppermost current meter was depressed less than 50 m.

In the long-term moorings Aanderaa current meters RCM 4 and RCM 5 were used. In the short term moorings Aanderaa current meters and thermistor cables were installed with the exception of mooring 281 and D where a vector averaging current meter (VACM) manufactured by AMF, Sea Link Division, was located in 101 m respective 48 m depth. AANDERAA (1978) gives an accuracy in speed of  $\pm 1 \text{ cm s}^{-1}$  or 2 % at a speed from 6 to  $100 \text{ cm s}^{-1}$ . The records show, that the threshold of  $2.5 \text{ cm s}^{-1}$  (AANDERAA, 1978) did not affect the data even as deep as 2515 m. The accuracy of the thermistors mounted on the current meters is given with  $\pm 0.05 \text{ K}$ . At the deepest current meter the resolution was increased by introducing a smaller range from  $2.6 \text{ }^\circ\text{C}$  to  $5.9 \text{ }^\circ\text{C}$ .

In order to obtain direct wind measurements on the short-term moorings Aanderaa meteorological stations were installed on every surface buoy. They consisted of sensors for wind speed and direction, air and water temperature and air pressure. The sensors were mounted on the tripod of a toroid buoy 2 m above the sea level. The water temperature sensors were installed 2 m below the surface. The air pressure measurements were adjusted to fit the measurements on board when the moorings were laid and recovered. The results of the measurements are summarized in Table 6.

The current measurements of the moorings 281, 282 and 283 had to be corrected for the drift of the moorings. The corrections are given in Table 7.

In the records of mooring D the effect of mooring motion due to the surface buoy is clearly visible. The current meter records become much clearer at 31 August when the surface buoy was lost. A decrease of the temperatures shows, that the depth of the instruments increased due to the loss of buoyancy.

## 6. Surface current measurements with a GEK<sup>1)</sup>

During the "Poseidon" cruise 76 a GEK could be used to measure near surface currents. The instrument was made available by T.B. Sanford from the University of Washington. Unlike the classical GEK, it was not necessary to reverse the ship's heading in order to determine the electrode offset. With this instrument the offset was determined every 30 seconds by using solenoid actuated valves to expose the electrodes first to each other and then to the external potentials at the salt-bridge ends (SANFORD, 1982). On board the ship the voltages sensed by the electrodes were recorded on a strip chart. From the strip chart the data were digitized by hand as averages over 10 minutes towing time.

To confirm the reliability of the instrument a star-like track was carried out during the cruise. The result is shown in chapter 7.2.3. The correlation of the measurements at different headings is convincing.

Nevertheless one has to take into account that the data are subject to an error which depends on the conductivity weighted vertical mean current (SANFORD, 1982). The error can amount to 5 to 10  $\text{cm s}^{-1}$  under the observed conditions, known from the CTD measurements by means of geostrophic calculations. Technical problems resulted from leaks in the conducting cable which imposed various interruptions of the observation. As the towed instrument needed about 5 minutes to become stable after a change of the ship's heading of about  $90^\circ$  it was not possible to determine local current vectors.

In total the instrument could be towed successfully for 4.73 d. With a mean speed of 9 kn an observation track of 1022 nm resulted. This track with the observed average currents over 10 minutes is shown in chapter 7.2.3.

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<sup>1)</sup> GEK = Geomagnetic Electrokinetograph

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## **7. Data Presentation**

### **7.1 Hydrography**

#### **7.1.1 Cruise WH 42**

S T A T I O N L I S T

Date 1980	Time (GMT)	XBT-Nr.	Latitude	Longitude	Depth (m)	Remarks
F.S. "Walther Herwig" Cruise WH 42						
13.05.	1700	1	38°24.3'N	25°11.5'W	3170	
"	1800	2	38°38.3'N	25°11.5'W	2910	
"	1900	3	38°51.0'N	25°13.9'W	3070	
"	2000	4	39°04.9'N	25°17.8'W	3180	
"	2100	5	39°18.9'N	25°17.8'W	3360	
"	2300	7	39°43.1'N	25°21.8'W	3280	
14.05.	0000	8	39°56.8'N	25°21.9'W	3360	
"	0100	9	40°11.1'N	25°23.8'W	3150	
"	0200	10	40°24.0'N	25°28.1'W	2700	
"	0300	11	40°37.3'N	25°30.8'W	3400	
"	0400	12	40°50.9'N	25°33.9'W	3440	
"	0500	13	41°04.8'N	25°34.8'W	3500	
"	0600	14	41°19.0'N	25°36.5'W	3400	
"	0915	15	41°30.2'N	25°40.0'W	3580	
"	1343	16	41°45.0'N	25°45.5'W	3440	
"	1458	17	42°00.0'N	25°46.8'W	3250	
"	2100	20	42°36.3'N	25°46.8'W	3280	
"	2300	22	43°03.4'N	25°51.6'W	3280	
15.05.	0000	23	43°17.9'N	25°52.4'W	3240	
"	0100	24	43°31.5'N	25°56.1'W	3100	
"	0200	25	43°45.7'N	25°56.9'W	3420	
"	0400	27	44°13.0'N	26°00.6'W	3200	
"	0505	28	44°27.2'N	26°02.2'W	3120	
"	0530-0830		44°32.9'N	26°03.1'W	3120	V266/1 launched
"	1035	29	44°43.3'N	26°03.2'W	3120	
"	1355	30	44°59.0'N	25°37.4'W	3050	
"	1750	31	45°16.0'N	25°51.2'W	3120	
"	2000	32	45°32.0'N	25°48.4'W	2460	
"	2105	33	45°46.4'N	25°48.5'W	2960	
"	2200	34	46°00.5'N	25°52.5'W	3120	
"	2300	35	46°14.3'N	25°54.2'W	2880	
16.05.	0000	36	46°28.5'N	25°55.8'W	2800	
"	0100	37	46°42.9'N	25°56.7'W	3360	
"	0200	38	46°57.8'N	25°57.6'W	3110	
"	0300	39	47°12.0'N	25°57.9'W	2750	
"	0400	40	47°26.2'N	25°58.2'W	3380	
"	0500	41	47°40.0'N	25°59.1'W	2950	
"	0600	42	47°53.9'N	25°59.3'W	3430	
"	1100-1440		48°32.8'N	26°04.9'W	3725	V265/1 launched

Cruise WH42

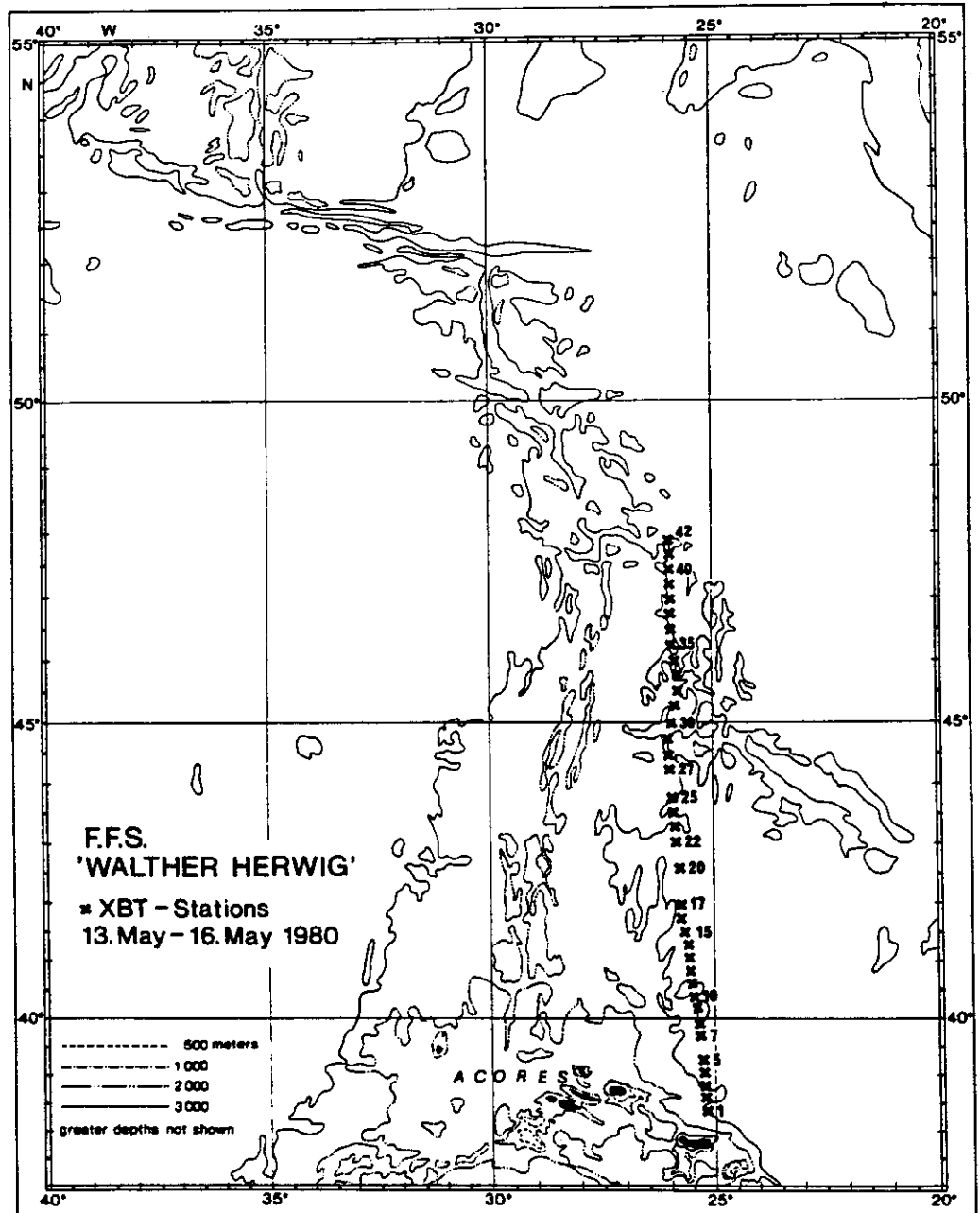


Fig. 2: Location of XBT stations during the cruise WH42



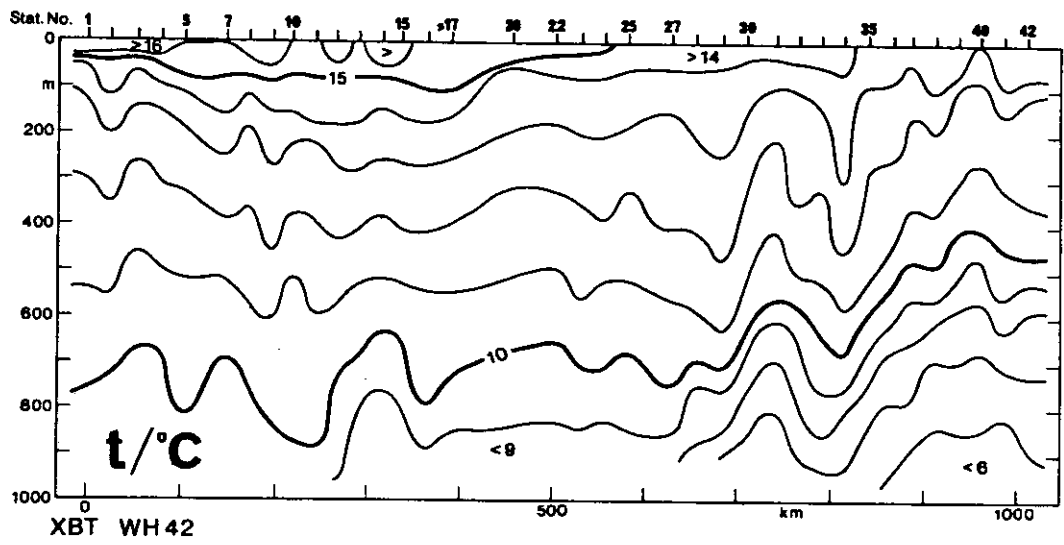


Fig. 3: Vertical section of temperature (XBT) from the cruise WH42

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7.1.2 Cruise WH45

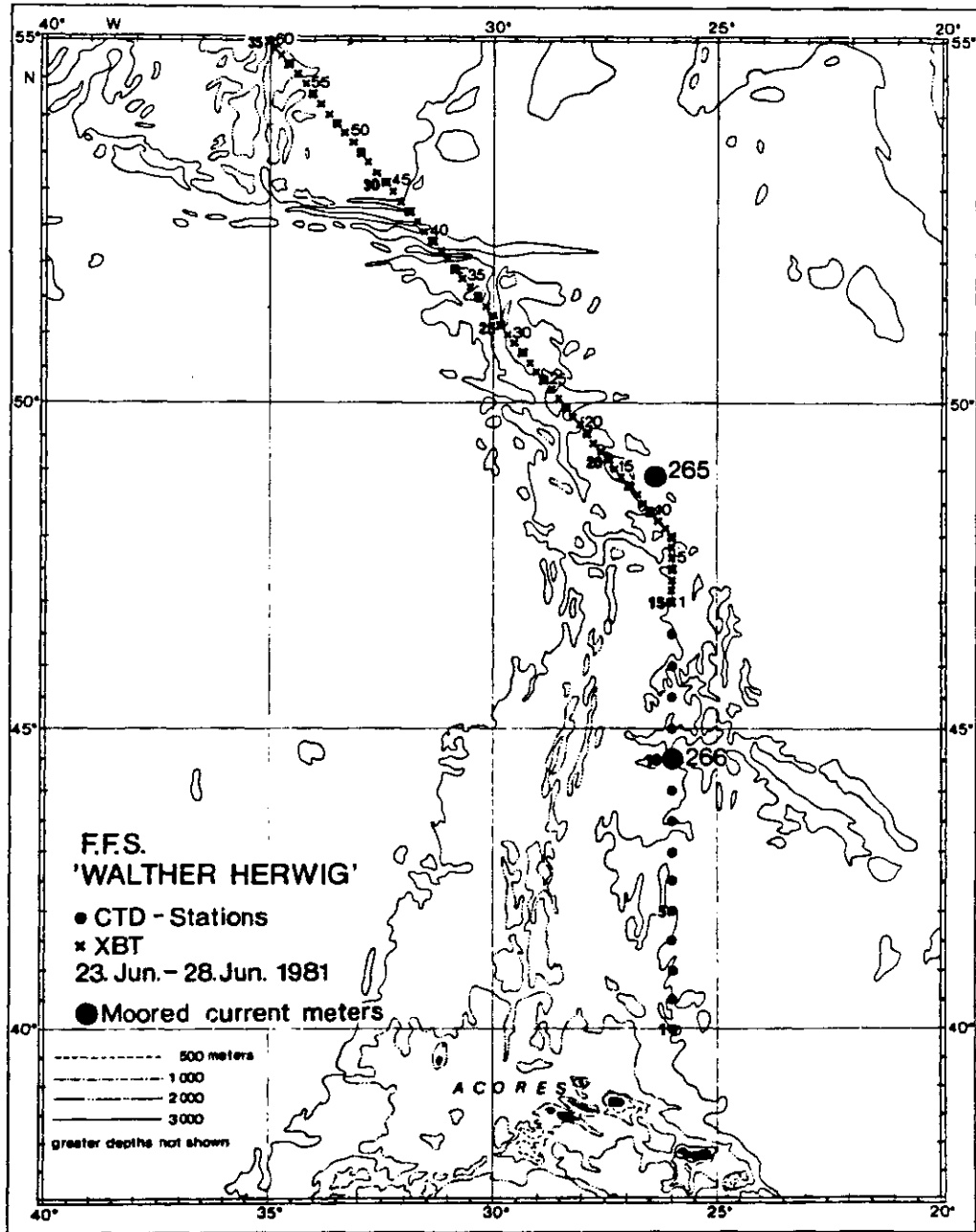
STATION LIST

Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
F.S. "Walther Herwig" Cruise WH 45						
23.06.	2142	1	40°00.0'N	25°59.9'W	3020	MS
24.06.	0114	2	40°30.0'N	25°59.9'W	3040	MS
"	0453	3	41°00.0'N	25°59.0'W	3200	MS
"	0800	4	41°28.0'N	26°00.0'W	3280	MS
"	1117	5	42°00.0'N	25°59.0'W	2100	MS
"	1451	6	42°30.0'N	25°59.0'W	3480	MS
"	1809	7	43°00.0'N	25°59.0'W	3360	MS
"	2115	8	43°30.0'N	25°59.0'W	2600	MS
25.06.	0018	9	44°00.0'N	25°59.0'W	2800	MS
"	0341	10	44°30.0'N	26°00.0'W	3040	MS
"	0633	11	44°59.0'N	26°00.0'W	2360	MS
"	0950	12	45°30.0'N	26°00.0'W	2500	MS
"	1357	13	45°59.0'N	26°01.0'W	3190	MS
"	2004	14	46°29.0'N	26°00.0'W	2780	MS
"	2340	15	47°00.0'N	26°00.0'W	3150	MS
"	2345		47°00.2'N	26°00.1'W		XBT1
26.06.	0144		47°12.0'N	26°00.0'W		XBT2
"	0225		47°20.0'N	26°00.0'W		XBT3
"	0311	16	47°30.0'N	26°00.0'W	3380	MS
"	0330		47°30.0'N	26°00.0'W		XBT4
"	0515		47°41.0'N	26°00.0'W		XBT5
"	0548		47°50.0'N	26°00.0'W		XBT6
"	0640		47°59.0'N	25°59.0'W		XBT7
"	0644	17	47°59.0'N	25°59.0'W	3300	MS
"	0830		48°07.0'N	26°09.0'W		XBT8
"	0915		48°16.0'N	26°18.0'W		XBT9
"	0953		48°24.0'N	26°27.0'W		XBT10
"	1010	18	48°24.1'N	26°27.0'W	3350	MS
"	1208		48°31.0'N	26°39.0'W		XBT11
"	1252		48°40.0'N	26°47.0'W		XBT12
"	1339		48°47.0'N	26°54.0'W		XBT13
"	1346	19	48°47.0'N	26°54.0'W	2320	MS
"	1555		48°56.0'N	27°05.0'W		XBT14
"	1640		49°02.0'N	27°15.0'W		XBT15
"	1718		49°09.0'N	27°24.0'W		XBT16
"	1730	20	49°10.0'N	27°24.0'W	3100	MS
"	1915		49°18.0'N	27°32.0'W		XBT17
"	2000		49°25.0'N	27°42.0'W		XBT18
"	2050		49°33.0'N	27°52.0'W		XBT19
"	2053	21	49°34.0'N	27°53.0'W	3050	MS
"	2233		49°43.0'N	28°05.0'W		XBT20
"	2313		49°49.0'N	28°12.0'W		XBT21
"	2350		49°57.0'N	28°21.0'W		XBT22
"	2355	22	49°57.0'N	28°21.0'W	2750	MS
27.06.	0207		50°06.0'N	28°32.0'W		XBT23
"	0249		50°12.0'N	28°42.0'W		XBT24
"	0333		50°20.0'N	28°50.0'W		XBT25

S T A T I O N L I S T

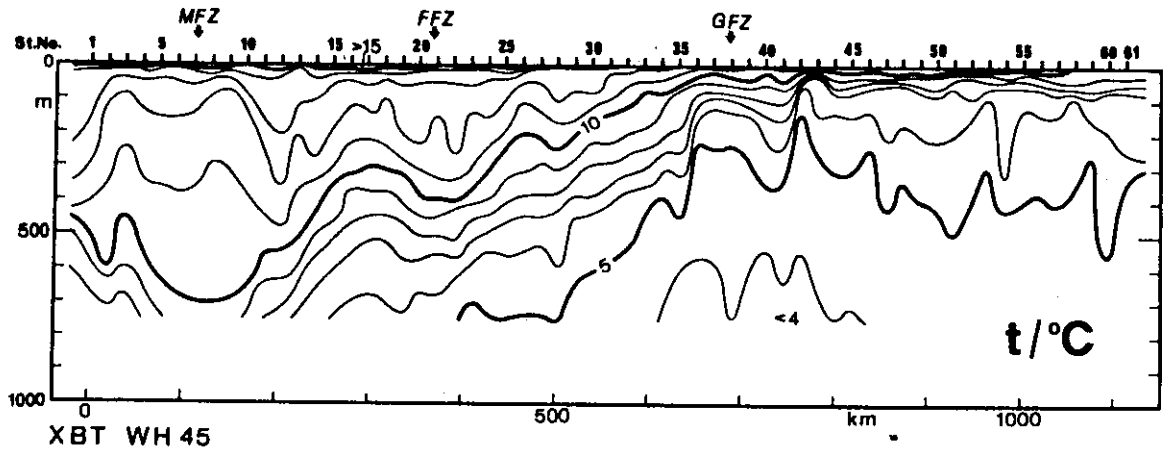
Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
<b>F.S. "Walther Herwig" Cruise WH 45</b>						
27.06.	0335	23	50°20.0'N	28°50.0'W	3370	MS
"	0536		50°29.0'N	29°02.0'W		XBT26
"	0617		50°37.0'N	29°11.0'W		XBT27
"	0659		50°43.0'N	29°20.0'W		XBT28
"	0705	24	50°44.0'N	29°20.0'W	2860	MS
"	0847		50°52.0'N	29°30.0'W		XBT29
"	0939		51°00.0'N	29°40.0'W		XBT30
"	1016		51°07.0'N	29°50.0'W		XBT31
"	1021	25	51°07.0'N	29°50.0'W	2650	MS
"	1217		51°16.0'N	30°00.0'W		XBT32
"	1300		51°22.0'N	30°11.0'W		XBT33
"	1340	26	51°30.0'N	30°21.0'W	1000	MS
"	1505		51°31.0'N	30°21.0'W		XBT34
"	1550		51°39.0'N	30°31.0'W		XBT35
"	1639		51°48.0'N	30°42.0'W		XBT36
"	1715		51°54.0'N	30°50.0'W		XBT37
"	1720	27	51°55.0'N	30°51.0'W	2050	MS
"	1900		52°03.0'N	31°01.0'W		XBT38
"	1945		52°11.0'N	31°12.0'W		XBT39
"	2023	28	52°18.0'N	31°20.0'W	2800	MS
"	2024		52°18.0'N	31°20.0'W		XBT40
"	2201		52°27.0'N	31°31.0'W		XBT41
"	2242		52°35.0'N	31°42.0'W		XBT42
"	2338		52°44.0'N	31°55.0'W		XBT43
"	2342	29	52°44.0'N	31°55.0'W	2600	MS
28.06.	0117		52°51.0'N	32°04.0'W		XBT44
"	0156		53°00.0'N	32°12.0'W		XBT45
"	0252		53°06.0'N	32°26.0'W		XBT46
"	0257	30	53°07.0'N	32°27.0'W	2850	MS
"	0429		53°15.0'N	32°37.0'W		XBT47
"	0518		53°24.0'N	32°49.0'W		XBT48
"	0555	31	53°31.0'N	32°58.0'W	2960	MS, XBT49
"	0737		53°39.0'N	33°10.0'W		XBT50
"	0820		53°47.0'N	33°19.0'W		XBT51
"	0900		53°55.0'N	33°30.0'W		XBT52
"	0906	32	53°55.0'N	33°30.0'W	2500	MS
"	1036		54°03.0'N	33°42.0'W		XBT53
"	1111		54°10.0'N	33°52.0'W		XBT54
"	1155	33	54°17.0'N	34°01.0'W	2410	MS, XBT55
"	1339		54°25.0'N	34°14.0'W		XBT56
"	1425		54°34.0'N	34°24.0'W		XBT57
"	1500		54°40.0'N	34°34.0'W		XBT58
"	1507	34	54°41.0'N	34°35.0'W	2000	MS
"	1625		54°46.0'N	34°41.0'W		XBT59
"	1710		54°54.0'N	34°51.0'W		XBT60
"	1740		54°59.0'N	34°59.0'W		XBT61
"	1745	35	54°59.0'N	34°59.0'W	1880	MS

Cruise WH45



**Fig. 4:** Location of CTD and XBT stations and moorings during the cruise WH45

**Fig. 5a-d:** Vertical sections of temperature (XBT and CTD), salinity and density from the cruise WH45



**Fig. 5b**

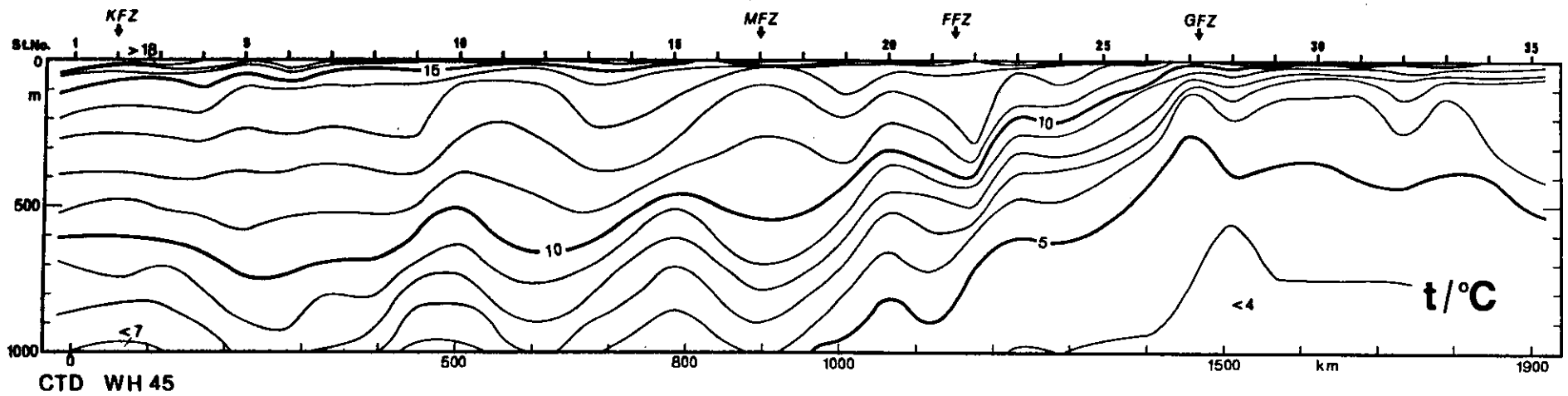


Fig. 5c

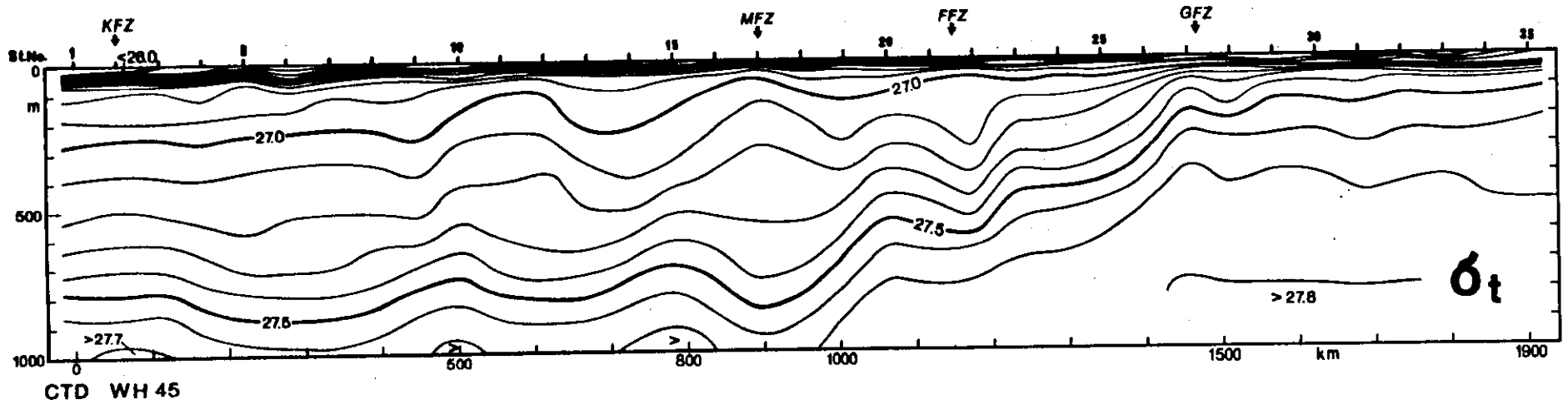
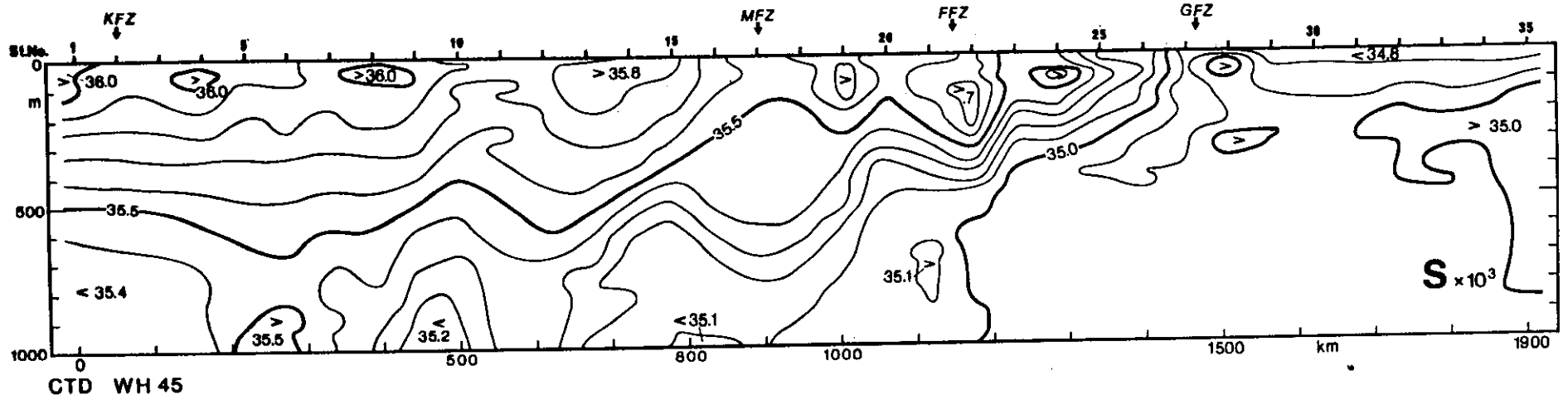


Fig. 5d

7.1.3 Cruise M57/2 and P76/3,4



STATION LIST

Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
F.S. "Meteor" Cruise M 57/2						
05.08.	2000	557	38°02.0'N	26°01.0'W	2910	GEK (start)
06.08.	0400		39°16.3'N	26°42.7'W		XBT1
"	0600		39°34.9'N	26°53.2'W		XBT2
"	0700		39°45.3'N	26°58.5'W		XBT3
"	0812		39°57.0'N	27°04.5'W	1412	GEK (end)
"	0830		39°56.4'N	27°05.6'W		XBT4
"	1000		40°15.4'N	27°13.4'W		XBT5
"	1130		40°29.5'N	27°20.2'W		XBT6
"	1300		40°44.4'N	27°27.6'W		XBT7
"	1430		40°59.6'N	27°38.3'W		XBT8
"	1554-1600	558	41°13.6'N	27°48.3'W	2405	Dr3511
"	1600	559	41°36.6'N	27°48.3'W	2405	GEK (start)
"	1615		41°14.8'N	27°49.0'W		XBT9
"	1735		41°28.0'N	27°57.4'W		XBT10
"	1900		41°42.6'N	28°05.0'W		XBT11
"	2024		41°56.6'N	28°12.7'W	2517	GEK (end)
"	2024-2036	560	41°56.6'N	28°12.7'W	2527	Dr3510
"	2036	561	41°57.2'N	28°13.0'W	2533	GEK (start)
"	2040		41°57.1'N	28°13.0'W		XBT12
"	2200		42°10.0'N	28°20.0'W		XBT13
"	2330		42°24.6'N	28°28.4'W		XBT14
07.08.	0100		42°40.7'N	28°36.4'W		XBT15
"	0112		42°42.3'N	28°37.1'W	2300	GEK (end)
"	0112-0118	562	42°42.5'N	28°37.5'W	2275	Dr3513
"	0118	563	42°42.9'N	28°37.3'W	2265	GEK (start)
"	0145		42°43.0'N	28°44.0'W		BS (start)
08.08.	0855		42°53.7'N	29°04.6'W		BS (end)
"	0915		42°57.0'N	29°06.5'W		XBT17
"	1030		43°09.4'N	29°13.5'W		XBT18
"	1200		43°24.6'N	29°21.8'W		XBT19
"	1236		43°30.0'N	29°20.0'W	1905	GEK (end)
"	1236-1242	564	43°30.0'N	29°20.0'W	1900	Dr3515
"	1242	565	43°30.0'N	29°20.0'W	1925	GEK (start)
"	1330		43°38.0'N	29°18.0'W		XBT20
"	1500		43°54.5'N	29°14.5'W		XBT21
"	1630		44°11.0'N	29°10.0'W		XBT22
"	1800		44°26.0'N	29°06.0'W		XBT23
"	1930		44°22.0'N	29°02.0'W		XBT24
"	2030		44°54.0'N	29°00.0'W	2455	GEK (end)
"	2030-2106	566	44°54.0'N	29°00.0'W	2455	Dr3516
"	2106	567	44°54.0'N	29°00.0'W	2361	GEK (start)
"	2115		44°54.0'N	29°00.0'W		XBT25
"	2230		44°58.0'N	28°55.0'W		XBT26
09.08.	0000		45°14.0'N	28°56.0'W		XBT27
"	0130		45°35.0'N	28°58.0'W		XBT28
"	0300		45°45.0'N	28°38.5'W		XBT29
"	0430		46°00.0'N	28°59.5'W		XBT30
"	0548		46°12.0'N	29°00.0'W	2760	GEK (end)
"	0548-0612	568	46°12.0'N	29°00.0'W	2730	Dr3557

STATION LIST

Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
F.S. "Meteor" Cruise M 57/2						
09.08.	0612	569	46°12.0'N	29°00.0'W	2710	GEK (start)
"	0625		46°12.0'N	29°00.0'W		XBT31
"	0730		46°24.0'N	29°00.0'W		XBT32
"	0900		46°41.0'N	29°00.0'W		XBT33
"	1030		46°54.3'N	29°00.0'W		XBT34
"	1200		47°12.0'N	29°00.0'W		XBT35
"	1330		47°28.0'N	29°00.0'W		XBT36
"	1500		47°44.0'N	29°00.0'W		XBT37
"	1630		48°19.0'N	29°00.0'W		XBT38
"	1736		48°24.0'N	29°00.0'W	2710	GEK (end)
"	1736-1748	570	48°24.0'N	29°00.0'W	2710	Dr3556
"	1748	571	48°24.0'N	29°00.0'W	2710	GEK (start)
"	1830		48°29.0'N	29°02.0'W		XBT39
"	2000		48°46.0'N	29°09.0'W		XBT40
"	2130		49°03.0'N	29°18.0'W		XBT41
"	2300		49°19.0'N	29°28.5'W		XBT42
10.08.	0030		49°36.0'N	29°34.0'W		XBT43
"	0200		49°52.0'N	29°42.0'W		XBT44
"	0330		50°09.0'N	29°51.0'W		XBT45
"	0436		50°18.0'N	29°55.0'W	2050	GEK (end)
"	0436-0500	572	50°18.0'N	29°55.0'W	2050	Dr3553
"	0530		50°24.0'N	29°58.0'W		XBT46
"	0700		50°36.0'N	30°06.0'W		XBT47
"	0812	573	50°54.0'N	30°15.0'W	2760	GEK (start)
"	0830		50°56.0'N	30°16.0'W		XBT48
"	1000		51°07.9'N	30°19.3'W		XBT49
"	1100		51°19.4'N	30°24.7'W		XBT50
"	1230		51°34.0'N	30°33.0'W		XBT51
"	1400		51°47.2'N	30°41.8'W		XBT52
"	1530		52°00.0'N	30°53.0'W		XBT53
"	1636		50°12.0'N	31°00.0'W	3170	GEK (end)
"	1642-1700	574	52°12.0'N	31°00.0'W	3170	Dr3551, XBT54
"	1830		52°25.4'N	31°09.3'W		XBT55
"	2000		52°39.3'N	31°16.5'W		XBT56
"	2012-2342	575	52°40.6'N	31°16.7'W	3660	MS35,MS2, NS
11.08.	0000		52°40.2'N	31°15.5'W		XBT57
"	0130		52°40.0'N	31°45.0'W		XBT58
"	0300		52°27.0'N	30°55.6'W		XBT59
"	0430		52°32.3'N	31°08.0'W		XBT60
"	0600		52°41.8'N	31°09.7'W		XBT61
"	0630-0924	576	52°42.7'N	31°03.9'W	3520	V280/1 launched
"	0942-1130	577	52°39.9'N	30°59.8'W	3556	MS2
"	1300-1430	578	52°25.9'N	30°52.5'W	3855	MS2
"	1515		52°18.0'N	30°43.0'W		XBT62
"	1618-1742	579	52°10.0'N	30°35.0'W	3460	MS2
"	1905		51°57.6'N	30°19.9'W		XBT63
"	1930-2048	580	51°54.0'N	30°15.0'W	2000	MS2
"	2140		51°47.8'N	30°05.2'W		XBT64
"	2242-2348	581	51°38.9'N	29°53.2'W	3250	MS2

STATION LIST

Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
F.S., "Meteor" Cruise M 57/2						
12.08.	0045		51°31.0'N	29°42.0'W		XBT65
"	0136-0300	582	51°23.7'N	29°33.3'W	2250	MS35
"	0348		51°16.0'N	29°24.0'W		XBT66
"	0448-0554	583	51°13.0'N	29°13.0'W	2960	MS35
"	0645		50°58.2'N	29°03.2'W		XBT67
"	0730-0854	584	50°51.2'N	28°54.6'W	2910	MS35
"	0940		50°44.5'N	28°45.0'W		XBT68
"	1036-1142	585	50°37.0'N	28°35.6'W	2995	MS35
"	1255		50°28.0'N	28°23.0'W		XBT69
"	1336-1500	586	50°21.3'N	28°15.1'W	3325	MS35
"	1600		50°13.0'N	28°05.0'W		XBT70
"	1700-1800	587	50°05.5'N	27°56.2'W	2400	MS35
"	1900		49°58.8'N	27°45.4'W		XBT71
"	2000-2224	588	49°49.7'N	27°36.9'W	2330	MS35
"	2325		49°42.0'N	27°27.0'W		XBT72
13.08.	0030-0130	589	49°34.1'N	27°10.3'W	3050	MS35
"	0245		49°26.0'N	27°13.0'W		XBT73
"	0342-0424	590	49°18.2'N	26°59.3'W	3385	MS35
"	0530		49°10.0'N	26°48.8'W		XBT74
"	0636-0748	591	49°00.9'N	26°40.0'W	3460	MS35
"	0840		49°55.0'N	26°30.0'W		XBT75
"	0920		48°46.7'N	26°21.5'W		XBT76
"	1040		48°36.0'N	26°10.5'W		XBT77
"	1148-1354	593	48°37.1'N	26°11.7'W	3715	MS35
"	1500		48°24.0'N	26°04.0'W		XBT78
"	1600-1718	594	48°13.0'N	26°05.3'W	3420	MS35
"	1810		48°03.0'N	26°04.7'W		XBT79
"	1906-2018	595	47°52.0'N	26°04.0'W	3300	MS35
"	2110		47°42.8'N	26°04.2'W		XBT80
"	2212-2324	596	47°32.0'N	26°04.0'W	2735	MS35
14.08.	0040		47°22.0'N	26°03.0'W		XBT81
"	0136-0248	597	47°12.0'N	26°03.0'W	2950	MS35
"	0335		47°04.0'N	26°04.0'W		XBT81a
"	0448-0612	598	46°52.0'N	26°03.0'W	2900	MS35
"	0700		46°39.0'N	26°05.0'W		XBT82
"	0800-0918	599	46°32.1'N	26°06.3'W	3180	MS35
"	1020		46°22.0'N	26°06.0'W		XBT83
"	1130-1254	600	46°12.0'N	26°04.0'W	2886	MS35
"	1400		46°02.0'N	26°03.0'W		XBT84
"	1500-1612	601	45°51.0'N	26°04.0'W	2545	MS35
"	1715		45°43.0'N	26°05.0'W		XBT85
"	1824-1930	602	45°31.0'N	26°04.0'W	2450	MS35
"	2045		45°16.5'N	26°05.0'W		XBT86
"	2142-2300	603	45°11.0'N	26°05.0'W	3142	MS35
15.08.	0000		45°00.0'N	26°04.0'W		XBT87
"	0100-0212	604	44°51.0'N	26°03.0'W	2890	MS35
"	0306		44°42.0'N	26°03.0'W		XBT88
"	0354-0500	605	44°34.0'N	26°03.0'W	2805	MS35
"	1548-1854	608	44°32.0'N	26°04.0'W	3050	V266/2 launched
"	1924-	609	44°26.3'N	26°08.6'W	3180	MS35, NS
16.08.	0254					

S T A T I O N L I S T

Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
<b>F.S. "Meteor" Cruise M 57/2</b>						
16.08.	2250		44°18.0'N	26°01.5'W		XBT89
"	2342-		44°09.3'N	26°00.4'W	3111	MS35
17.08.	0106					
18.08.	0306-0400	614	44°58.2'N	24°58.3'W	2600	MS35
"	0400		44°58.5'N	24°58.4'W		XBT90
"	0520		44°44.0'N	25°04.7'W		XBT91
"	0642-0742	615	44°29.1'N	25°10.1'W	2030	MS35
"	0745		44°29.3'N	25°11.7'W		XBT92
"	0915		44°14.5'N	25°17.4'W		XBT93
"	1042-1130	616	44°00.1'N	25°21.6'W	2955	MS35
"	1135		44°00.3'N	25°22.1'W		XBT94
"	1300		43°46.0'N	25°25.2'W		XBT95
"	1430-1530	617	43°31.5'N	25°33.4'W	2855	MS35
"	1535		43°31.8'N	25°33.7'W		XBT96
"	1700		43°16.4'N	25°37.8'W		XBT97
"	1818-1918	618	43°03.2'N	25°43.1'W	3300	MS35
"	1920		43°03.4'N	25°43.0'W		XBT98
"	2230-2320	619	42°56.8'N	26°29.2'W	3353	MS35
"	2320		42°57.1'N	26°29.0'W		XBT99
19.08.	0050		43°11.9'N	26°22.5'W		XBT100
"	0212-0254	620	43°25.3'N	26°19.0'W	3050	MS35
"	0300		43°25.8'N	26°18.7'W		XBT101
"	0420		43°39.7'N	26°13.6'W		XBT102
"	0548-0640	621	43°54.5'N	26°06.7'W	2810	MS35
"	0640		43°54.5'N	26°06.8'W		XBT103
"	0810		44°08.0'N	26°01.0'W		XBT104
"	0936-1048	622	44°21.8'N	25°55.9'W	2825	MS35
"	1050		44°22.2'N	25°55.5'W		XBT105
"	1230		44°38.6'N	25°50.8'W		XBT106
"	1400-1445	623	44°52.5'N	25°45.0'W	3065	MS35
"	1445		44°52.0'N	25°44.5'W		XBT107
"	1754-1842	624	45°13.0'N	26°17.4'W	2770	MS35
"	1850		45°14.2'N	26°17.5'W		XBT108
"	2010		44°59.1'N	26°23.5'W		XBT109
"	2130-2224	625	44°44.7'N	26°29.6'W	3145	MS35
"	2235		44°44.9'N	26°29.6'W		XBT110
"	2345		44°32.5'N	26°33.6'W		XBT111
20.08.	0112-0154	626	44°16.3'N	26°40.9'W	2830	MS35
"	0200		44°17.0'N	26°41.0'W		XBT112
"	0418-0924	627	44°21.5'N	26°32.6'W	3065	PC
"	1110		44°02.0'N	26°44.1'W		XBT113
"	1230-1324	628	43°47.7'N	26°52.9'W	2795	MS35
"	1330		43°47.3'N	26°52.5'W		XBT114
"	1440		43°34.9'N	26°57.2'W		XBT115
"	1606-1650	629	43°20.0'N	27°02.6'W	2500	MS35
"	1650		43°19.8'N	27°02.4'W		XBT116
"	1820		43°04.9'N	27°08.8'W		XBT117
"	1942-2400	630	42°50.3'N	27°15.0'W	3100	MS2

STATION LIST

Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
F.S. "Meteor" Cruise M 57/2						
21.08.	0000		42°50.8'N	27°16.4'W		XBT118
"	0300-0350	631	42°44.7'N	28°00.5'W	2600	MS2
"	0350		42°45.6'N	28°01.2'W		XBT119
"	0505		42°59.0'N	27°55.2'W		XBT120
"	0624-0715	632	43°13.4'N	27°48.8'W	3070	MS2
"	0715		43°13.3'N	27°48.8'W		XBT121
"	0840		43°27.2'N	27°42.6'W		XBT122
"	1006-1054	633	42°42.2'N	27°37.6'W	2959	MS2
"	1100		43°42.5'N	27°37.9'W		XBT123
"	1220		43°55.7'N	27°32.0'W		XBT124
"	1348-1436	634	44°10.9'N	27°26.4'W	2375	MS2
"	1450		44°12.0'N	27°26.1'W		XBT125
"	1630		44°23.8'N	27°21.5'W		XBT126
"	1730-1824	635	44°39.4'N	27°14.6'W	2400	MS2
"	1825		44°39.5'N	27°14.4'W		XBT127
"	1950		44°54.4'N	27°07.9'W		XBT128
"	2124-2212	636	45°07.9'N	27°02.5'W	2865	MS2
"	2215		45°06.3'N	27°03.0'W		XBT129
22.08.	0130-0218	637	45°32.1'N	27°36.4'W	1805	MS35
"	0240		45°31.8'N	27°36.2'W		XBT130
"	0400		45°15.9'N	27°41.9'W		XBT131
"	0530-0620	638	45°02.2'N	27°47.1'W	1860	MS2
"	0620		45°02.6'N	27°45.8'W		XBT132
"	0800		44°48.6'N	27°52.7'W		XBT133
"	0942-1036	639	44°33.3'N	27°59.5'W	1996	MS2
"	1040		44°33.4'N	27°58.5'W		XBT134
"	1210		44°19.7'N	28°04.1'W		XBT135
"	1400-1500	640	44°04.5'N	28°12.4'W	2175	MS35
"	1500		44°04.5'N	28°12.2'W		XBT136
"	1650		43°49.8'N	28°17.5'W		XBT137
"	1842-1936	641	43°36.7'N	28°21.6'W	2515	MS35
"	1936		43°36.6'N	28°21.7'W		XBT138
"	2130		43°22.0'N	28°27.4'W		XBT139
"	2330-	642	43°07.0'N	28°35.0'W	1915	MS35
23.08.	0018					
"	0020		43°06.7'N	28°34.7'W		XBT140
"	0230		42°52.5'N	28°39.4'W		XBT141
"	0424-0520	643	42°38.6'N	28°45.9'W	2000	MS35
"	0520		42°38.4'N	28°45.7'W		XBT142
"	1000-1048	644	42°32.0'N	29°32.0'W	1990	MS35
"	1050		42°31.6'N	29°31.8'W		XBT143
"	1210		42°46.7'N	29°25.3'W		XBT144
"	1336-1436	645	43°00.5'N	29°19.6'W	2550	MS35
"	1440		43°00.6'N	29°19.3'W		XBT145
"	1700		43°15.8'N	29°12.3'W		XBT146
"	1818-1915	646	43°30.0'N	29°08.5'W	2230	MS35
"	1915		43°29.5'N	29°09.4'W		XBT147
"	2040		43°30.4'N	29°04.3'W		XBT148
"	2206-2254	647	43°57.6'N	28°58.8'W	2577	MS35
"	2300		43°57.6'N	28°58.4'W		XBT149
24.08.	0035		44°13.5'N	28°53.3'W		XBT150

S T A T I O N L I S T

Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
F.S.' "Meteor" Cruise M 57/2						
24.08.	0148-0242	648	44°27.1'N	28°46.2'W	2645	MS35
"	0300		44°29.0'N	28°45.5'W		XBT151
"	0420		44°42.0'N	28°41.3'W		XBT152
"	0542-0630	649	44°55.8'N	28°35.5'W	2520	MS35
"	0630		44°55.7'N	28°35.4'W		XBT153
"	0800		45°11.1'N	28°28.7'W		XBT154
"	0924-1010	650	45°25.1'N	28°22.3'W	2653	MS35
"	1010		45°24.8'N	28°21.6'W		XBT155
"	1642-2200	651	45°31.0'N	29°29.0'W	2969	MS35, PC
"	2324-	652	45°41.0'N	29°41.0'W	3320	MS35
25.08.	0018					
"	0020		45°40.7'N	29°40.3'W		XBT156
"	0220		45°26.2'N	29°48.4'W		XBT157
"	0412-0500	653	45°12.5'N	29°56.6'W	2700	MS35
"	0500		45°13.4'N	29°56.5'W		XBT158
"	0710		44°59.1'N	30°01.5'W		XBT159
"	0412-1030	654	44°44.0'N	30°05.5'W	3038	MS35
"	1035		44°44.6'N	30°04.9'W		XBT160
"	1240		44°31.0'N	30°11.5'W		XBT161
"	1512-1600	655	44°14.9'N	30°16.4'W	2765	MS35
"	1600		44°16.1'N	30°16.3'W		XBT162
"	1815		44°01.1'N	30°23.3'W		XBT163
"	2036-2124	656	43°46.4'N	30°28.7'W	2985	MS35
"	2130		43°46.1'N	30°28.8'W		XBT164
26.08.	0000		47°32.8'N	30°33.7'W		XBT165
"	0242-0336	657	43°17.0'N	30°41.2'W	2605	MS35
"	0340		43°17.5'N	30°39.3'W		XBT166
"	0712-0806	658	42°54.5'N	30°06.3'W	2290	MS35
"	0806		42°54.3'N	30°06.3'W		XBT167
"	0940		43°10.2'N	30°00.5'W		XBT168
"	1106-1154	659	43°23.8'N	29°45.1'W	2513	MS35
"	1200		43°23.2'N	29°54.4'W		XBT169
"	1330		43°38.5'N	29°49.2'W		XBT170
"	1454-1548	660	43°52.1'N	29°45.1'W	2750	MS35
"	1550		43°52.2'N	29°44.7'W		XBT171
"	1730		44°09.7'N	29°38.2'W		XBT172
"	1842-1930	661	44°20.8'N	29°32.7'W	2330	MS35
"	1930		44°20.6'N	29°32.8'W		XBT173
"	2110		44°36.4'N	29°25.3'W		XBT174
"	2230-2318	662	44°49.9'N	29°19.9'W	2427	MS35
"	2320		44°49.5'N	29°20.2'W		XBT175
27.08.	0218-0312	663	45°17.9'N	29°04.2'W	2655	MS35
"	0612-0706	664	45°45.0'N	28°52.6'W	2910	MS35
"	0710		45°45.3'N	28°53.0'W		XBT178
28.08.	0400-0612	665	48°31.0'N	26°07.5'W	3500	MS35, MS2, NS
"	0630-0900	666	48°32.5'N	26°04.7'W	3720	V265/1 recovered
"	0930-1248	667	48°34.3'N	26°06.2'W	3715	V265/2 launched
"	1248-1254	668	48°33.6'N	26°05.0'W	3715	Dr3517

S T A T I O N L I S T

Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
F.S. "Poseidon" Cruise P 76/3						
12.08.	1931		38°00.0'N	26°00.0'W		XBT1
"	2029		38°10.0'N	26°00.0'W		XBT2
"	2126		38°20.0'N	26°00.0'W		XBT3
"	2224		38°31.3'N	25°59.1'W		XBT4
"	2322		38°41.1'N	26°00.0'W		XBT5
13.08.	0018		38°51.2'N	26°00.1'W		XBT6
"	0119		39°01.3'N	26°00.3'W		XBT7
"	0216		39°11.5'N	25°59.6'W		XBT8
"	0311		39°21.3'N	25°59.9'W		XBT9
"	0411		39°31.1'N	26°00.3'W		XBT10
"	0508		39°41.3'N	25°59.9'W		XBT11
"	0608		39°51.3'N	26°00.0'W		XBT12
"	0707		40°01.2'N	26°00.0'W		XBT13
"	0804		40°11.2'N	25°59.7'W		XBT14
"	0907		40°21.4'N	26°00.0'W		XBT15
"	1010		40°31.9'N	26°00.3'W		XBT16
"	1110		40°43.1'N	25°59.3'W		XBT17
"	1206		40°52.4'N	26°00.0'W		XBT18
"	1258-1427	268	41°00.4'N	26°00.8'W	3216	MS
"	1525		41°10.0'N	26°00.4'W		XBT19
"	1635-2134	269	41°20.0'N	26°00.1'W	3285	MS
"	2240		41°31.0'N	26°00.6'W		XBT20
"	2347		41°41.0'N	26°00.0'W		XBT21
14.08.	0105-0235	270	41°51.2'N	25°59.0'W	3195	MS
"	0353-0525	271	42°00.9'N	25°59.8'W	2580	MS
"	0653		42°10.0'N	26°00.2'W		XBT22
"	0820-0949	272	42°20.1'N	26°00.1'W	3400	MS
"	1124		42°30.1'N	26°00.0'W		XBT23
"	1250-1423	273	42°40.0'N	26°00.1'W	3500	MS
"	1603		42°50.0'N	26°00.4'W		XBT24
"	1653		42°57.5'N	25°59.4'W		XBT25
"	1720-1800	274	43°00.2'N	25°59.8'W	3370	MS
"	1950-2238	275	42°56.3'N	25°53.9'W	3370	V282 launched
15.08.	0100		43°03.5'N	25°51.9'W		XBT26
"	0200		43°03.4'N	25°50.7'W		XBT27
"	0300		43°03.0'N	25°49.4'W		XBT28
"	0400		43°03.2'N	25°48.3'W		XBT29
"	0500		43°08.1'N	25°56.9'W		XBT30
"	0608		43°08.6'N	25°57.2'W		XBT32
"	0700		43°04.9'N	25°58.9'W		XBT33
"	0800		42°58.6'N	25°55.8'W		XBT34
"	0900		42°59.4'N	25°55.2'W		XBT35
"	1000		43°01.8'N	25°54.3'W		XBT36
"	1104		43°02.9'N	25°55.0'W		XBT37
"	1115-1214	276	43°02.3'N	25°54.3'W		NS
"	1216	"	43°02.3'N	25°54.2'W		XBT38
"	1227-1346	"	43°02.0'N	25°53.8'W	3280	MS

S T A T I O N L I S T

Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
F.S. "Poseidon" Cruise P 76/3						
15.08.	1347-1411	276	43°03.4'N	25°54.4'W		W
"	1412		43°03.3'N	25°54.7'W		XBT39
"	1600		43°10.0'N	26°00.0'W		XBT40
"	1755-1912	277	43°20.2'N	25°59.6'W	3106	MS
"	2023		43°30.3'N	26°00.0'W		XBT41
"	2118		43°40.0'N	26°00.1'W		XBT42
"	2222-2338	278	43°40.0'N	26°00.0'W	3256	MS
"	2342		43°50.6'N	25°59.4'W		XBT43
16.08.	0049		44°00.0'N	26°00.8'W		XBT44
"	0155		44°10.1'N	26°00.4'W		XBT45
"	0248		44°20.0'N	26°00.3'W		XBT46
"	0631		44°30.7'N	26°07.3'W		XBT47
"	0737		44°40.0'N	26°00.0'W		XBT48
"	0830		44°50.0'N	25°59.8'W		XBT49
"	0930		45°00.0'N	26°00.0'W		XBT50
"	0938-1030	279	45°00.3'N	25°59.4'W		MS
"	1156-1356	280	45°00.6'N	26°01.3'W	2821	V283 launched
"	1520-1803	281	44°40.1'N	25°59.9'W	2980	MS, Dr3555 launched
"	2200		44°28.1'N	26°12.7'W		XBT51
"	2302		44°12.8'N	26°20.8'W		XBT52
"	2355		44°11.9'N	26°28.7'W		XBT53
17.08.	0047		44°03.6'N	26°35.8'W		XBT54
"	0146		43°54.6'N	26°44.6'W		XBT55
"	0242		43°46.1'N	26°52.4'W		XBT56
"	0329		43°37.4'N	26°59.6'W		XBT57
"	0433		43°29.3'N	27°07.1'W		XBT58
"	0525		43°21.0'N	27°15.5'W		XBT59
"	0617		43°13.2'N	27°23.5'W		XBT60
"	0710		43°05.1'N	27°31.1'W		XBT61
"	0804		42°57.3'N	27°41.1'W		XBT62
"	0925		42°48.3'N	27°48.6'W		XBT63
"	1029		42°39.2'N	27°53.1'W		XBT64
"	1130		42°29.8'N	27°55.0'W		XBT65
"	1236		42°19.6'N	27°56.5'W		XBT66
"	1325		42°10.0'N	27°57.2'W		XBT67
"	1425		42°00.1'N	28°00.1'W		XBT68
"	1544-1625	282	41°50.3'N	27°59.8'W	2440	MS
"	1630		41°49.7'N	27°59.9'W		GEK (start)
"	1845		42°00.0'N	28°00.0'W		XBT69
"	2004		42°12.1'N	28°00.3'W		XBT70
"	2058		42°20.0'N	28°00.9'W		XBT71
"	2140		42°30.0'N	28°00.7'W		XBT72
"	2212		42°35.6'N	28°00.7'W		XBT73
"	2317		42°30.4'N	27°50.4'W		XBT74
18.08.	0020		42°23.9'N	27°38.8'W		XBT75
"	0105		42°20.0'N	27°29.8'W		XBT76
"	0203		42°12.8'N	27°40.0'W		XBT77
"	0302		42°05.4'N	27°49.4'W		XBT78
"	0403		42°00.0'N	28°00.0'W		XBT79
"	0508		41°52.5'N	28°11.2'W		XBT80



S T A T I O N   L I S T

Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
F.S. "Poseidon" Cruise P 76/3						
18.08.	0602		41°43.2'N	28°20.3'W		XBT81
"	0643		41°40.0'N	28°25.5'W		XBT82
"	0737		41°39.5'N	28°15.0'W		XBT83
"	0836		41°39.1'N	28°13.9'W		GEK (end)
"	0902-0926	283	41°39.1'N	28°13.9'W	2517	V281 launched
"	0955-1157	284	41°37.5'N	28°16.0'W	2517	MS
"	1700-1747	285	41°30.1'N	28°14.9'W	2870	MS
"	2026-2050	286	41°48.6'N	28°29.3'W	2677	MS
"	2200		41°48.8'N	28°20.9'W		GEK (start)
"	2223		41°40.0'N	28°16.0'W		XBT84
"	2325		41°49.1'N	28°02.8'W		XBT85
19.08.	0027		41°47.7'N	27°49.6'W		XBT86
"	0125		41°47.2'N	27°36.3'W		XBT87
"	0230		41°52.8'N	27°30.0'W		XBT88
"	0329		41°57.9'N	27°36.5'W		XBT89
"	0426		41°57.7'N	27°49.7'W		XBT90
"	0516		41°58.6'N	28°03.2'W		XBT91
"	0612		41°58.5'N	28°16.0'W		XBT92
"	0708		41°58.6'N	28°30.2'W		XBT93
"	0756		42°05.8'N	28°31.9'W		XBT94
"	0846		42°13.6'N	28°30.5'W		XBT95
"	1006		42°12.0'N	28°16.0'W		XBT96
"	1130		42°11.3'N	28°03.1'W		XBT97
"	1235		42°11.3'N	27°49.8'W		XBT98
"	1340		42°11.5'N	27°35.5'W		XBT99
"	1441		42°04.2'N	27°43.4'W		XBT100
"	1600		41°57.0'N	27°53.4'W		XBT101
"	1624		41°54.1'N	27°57.4'W		XBT102
"	1645		41°52.3'N	28°03.1'W		XBT103
"	1748		41°43.1'N	28°12.1'W		XBT104
"	1910		41°43.3'N	28°29.9'W		XBT105
"	2007		41°53.2'N	28°28.1'W		XBT106
20.08.	0147		41°31.2'N	28°30.1'W		XBT107
"	0305		41°20.5'N	28°32.2'W		XBT108
"	0423		41°11.1'N	28°34.7'W		XBT109
"	0523		41°10.5'N	28°23.9'W		XBT110
"	0641		41°10.4'N	28°08.5'W		XBT111
"	0741		41°20.0'N	28°08.3'W		XBT112
"	0857		41°32.0'N	28°17.1'W		GEK (end)
"	0927-1330	287	41°34.2'N	28°20.0'W	2398	MS, V281 recovered
"	1415		41°37.7'N	28°13.0'W		GEK (start)
"	1437		41°39.3'N	28°10.1'W		XBT113
"	1537		41°45.1'N	28°00.0'W		XBT114
"	1652		41°51.3'N	27°48.1'W		XBT115
"	1802		41°57.4'N	27°37.5'W		XBT116
"	1912		42°03.0'N	27°27.4'W		XBT117
"	2022		42°09.3'N	27°16.3'W		XBT118
"	2132		42°15.9'N	27°04.0'W		XBT119
"	2242		42°22.1'N	26°52.2'W		XBT120
"	2309		42°22.6'N	26°47.4'W		GEK (end)

S T A T I O N L I S T

Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
F.S. "Poseidon" Cruise P 76/3						
21.08.	0020		42°29.2'N	26°35.8'W		XBT121
"	0111		42°35.3'N	26°25.8'W		XBT122
"	0209		42°41.9'N	26°15.6'W		XBT123
"	0308		42°48.5'N	26°05.8'W		XBT124
"	0410		42°55.4'N	25°55.7'W		XBT125
"	0516		42°56.2'N	25°42.7'W		XBT126
"	0610		42°53.1'N	25°30.8'W		XBT127
"	0630-0725		42°51.5'N	25°28.7'W		V282 recovered
"	0804		42°56.9'N	25°29.1'W		XBT128
"	0906		43°07.3'N	25°31.5'W		XBT129
"	0957		43°17.0'N	25°35.1'W		XBT130
"	1022		43°20.8'N	25°36.1'W		GEK (start)
"	1054		43°26.2'N	25°37.6'W		XBT131
"	1200		43°36.5'N	25°40.0'W		XBT132
"	1256		43°46.3'N	25°42.2'W		XBT133
"	1350		43°56.2'N	25°44.7'W		XBT134
"	1446		44°06.1'N	25°46.9'W		XBT135
"	1546		44°16.1'N	25°50.1'W		XBT136
"	1643		44°25.5'N	25°52.2'W		XBT137
"	1736		44°36.1'N	25°55.5'W		XBT138
"	1826		44°44.5'N	25°58.5'W		XBT139
"	1922		44°54.4'N	26°00.7'W		XBT140
"	1955		44°59.5'N	26°01.6'W		XBT141
"	2055		45°04.5'N	26°13.6'W		XBT142
"	2142		45°01.5'N	26°23.5'W		GEK (end)
"	2206		45°00.9'N	26°26.6'W		XBT143
"	2303		45°03.1'N	26°39.6'W		GEK (start)
"	2306		45°03.7'N	26°39.6'W		XBT144
"	2333		45°05.3'N	26°46.0'W		XBT145
22.08.	0020		44°56.6'N	26°46.1'W		GEK (end)
"	0153		44°55.2'N	26°46.3'W		GEK (start)
"	0207		44°54.5'N	26°46.5'W		XBT146
"	0400		45°04.4'N	27°00.1'W		XBT147
"	0502		44°55.0'N	27°00.2'W		XBT148
"	0701		45°05.4'N	27°15.0'W		XBT149
"	0715-0925		44°59.4'N	26°58.5'W		GEK (end), V283 recovered
"	1139		45°03.6'N	27°13.9'W		XBT150
"	1250		44°58.4'N	27°26.1'W		XBT151
"	1405		44°53.1'N	27°38.1'W		XBT152
"	1525		44°48.8'N	27°50.1'W		XBT153
"	1630-1658		44°45.4'N	27°57.4'W		W
"	1750		44°45.3'N	28°00.0'W		GEK (start)
"	1758		44°44.9'N	28°01.1'W		XBT154
"	1952		44°41.8'N	28°16.5'W		XBT155
"	2117		44°44.4'N	28°31.3'W		XBT156
"	2238		44°45.2'N	28°44.8'W		XBT157

S T A T I O N L I S T

Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
F.S. "Poseidon" Cruise P 76/3						
23.08.	0051		44°34.9'N	28°46.7'W		XBT158
"	0241		44°24.7'N	28°46.1'W		XBT159
"	0418		44°14.9'N	28°47.1'W		XBT160
"	0544		44°05.0'N	28°46.9'W		XBT161
"	0700		43°55.0'N	28°47.5'W		XBT162
"	0816		43°45.0'N	28°47.8'W		XBT163
"	0931		43°35.0'N	28°47.8'W		XBT164
"	1032					GEK (end)
"	1108		43°25.7'N	28°54.8'W		XBT165
"	1243		43°17.0'N	29°00.8'W		XBT166
"	1252-1340	288	43°16.2'N	29°02.0'W	3110	MS
"	1513		43°07.5'N	29°13.3'W		XBT167
"	1715		43°04.5'N	29°01.7'W		XBT168
"	1820		43°02.7'N	28°47.0'W		XBT169
"	1920		43°01.3'N	28°33.4'W		XBT170
"	2025		42°59.8'N	28°20.8'W		XBT171
"	2124		42°58.5'N	28°09.7'W		GEK (start)
"	2138		42°59.2'N	28°06.2'W		XBT172
"	2238		42°57.9'N	27°52.9'W		XBT173
"	2338		42°55.9'N	27°39.4'W		XBT174
24.08.	0032		42°49.5'N	27°34.6'W		XBT175
"	0137		42°40.3'N	27°30.3'W		XBT176
"	0252		42°46.0'N	27°41.6'W		XBT177
"	0352		42°57.8'N	27°53.1'W		XBT178
"	0426		42°55.0'N	27°59.9'W		XBT179
"	0554		42°45.0'N	27°59.2'W		XBT180
"	0705		42°35.6'N	28°00.0'W		XBT181
"	0821		42°42.0'N	27°49.1'W		XBT182
"	0924		42°49.2'N	27°38.8'W		XBT183
"	1015		42°55.4'N	27°30.6'W		XBT184
"	1136		42°55.0'N	27°16.2'W		XBT185
"	1239		42°51.0'N	27°28.3'W		XBT186, GEK (end)
"	1338-	289	42°48.4'N	27°34.8'W	2699	MS
"	1550		42°46.3'N	27°31.3'W	2880	V-D launched (start)
"	2036		42°47.9'N	27°33.3'W		" " (end)
"	2105		42°48.2'N	27°33.9'W		Dr3552
"	2110		42°48.2'N	27°33.9'W		Dr3514
"	2226		42°48.0'N	27°36.7'W		GEK (start)
"	2330		42°42.1'N	27°40.3'W		XBT187
25.08.	0007		42°47.4'N	27°45.3'W		XBT188
"	0101		42°42.1'N	27°49.9'W		XBT189
"	0148		42°48.1'N	27°55.3'W		XBT190
"	0206		42°46.3'N	27°55.3'W		XBT191
"	0300		42°43.0'N	28°00.3'W		XBT192
"	0335		42°50.0'N	28°00.1'W		XBT193
"	0435		43°00.0'N	28°00.0'W		XBT194
"	0723		43°10.2'N	27°39.7'W		XBT195
"	0814		43°10.7'N	27°30.2'W		XBT196
"	0842		43°10.1'N	27°26.2'W		GEK (end)
"	0858		43°10.1'N	27°26.3'W		Dr3554

S T A T I O N L I S T

Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
F.S. "Poseidon" Cruise P 76/3						
25.08.	0936		43°09.4'N	27°26.4'W		GEK (start)
"	1147		42°55.8'N	27°25.8'W		XBT197
"	1235		43°02.2'N	27°24.4'W		XBT198
"	1432		42°50.1'N	27°24.7'W		XBT199
"	1711		42°50.5'N	27°39.9'W		XBT200
"	2000		42°46.6'N	27°28.0'W		XBT201
"	2100		42°51.6'N	27°16.0'W		XBT202
"	2200		42°57.0'N	27°06.2'W		XBT203
"	2300		43°04.8'N	27°00.0'W		XBT204
26.08.	0000		43°14.4'N	26°59.4'W		XBT205
"	0100		43°23.6'N	26°59.9'W		XBT206
"	0200		43°30.1'N	27°02.7'W		XBT207
"	0300		43°29.4'N	27°17.1'W		XBT208
"	0500		43°30.1'N	27°41.0'W		XBT209
"	0700		43°28.3'N	27°57.6'W		XBT210
"	0800		43°24.3'N	27°47.6'W		XBT211
"	0900		43°17.9'N	27°36.8'W		XBT212
"	1000		43°12.9'N	27°25.5'W		XBT213
"	1036		43°14.6'N	27°20.1'W		GEK (end)
"	1043-1147	294	43°14.2'N	27°19.1'W	2982	MS
"	1353-1506	295	43°29.7'N	27°05.0'W	2702	MS
"	1727-1830	296	43°46.2'N	26°48.5'W	2790	MS
"	2135-2321	297	44°03.8'N	26°31.2'W	2839	MS, NS
27.08.	0800-0906	298	43°12.4'N	27°24.3'W		NS
"	1340		42°52.5'N	27°24.4'W		Dr3514 recovered
"	1430		42°51.4'N	27°22.0'W		Dr3552 recovered
"	1600		42°45.4'N	27°33.7'W		XBT214
"	1700		42°35.8'N	27°35.3'W		XBT215
"	1800		42°27.0'N	27°37.3'W		XBT216
"	1900		42°14.9'N	27°40.4'W		XBT217
"	2000		42°04.6'N	27°42.4'W		XBT218
"	2100		41°54.7'N	27°45.0'W		XBT219
"	2204-2300	300	41°44.9'N	27°48.1'W	2200	MS
28.08.	0000		41°38.4'N	27°47.8'W		XBT220
"	0100		41°28.6'N	27°49.4'W		XBT221
"	0200		41°18.8'N	27°51.0'W		XBT222
"	0300		41°09.6'N	27°54.1'W		XBT223
"	0400		40°58.8'N	27°56.0'W		XBT224
"	0500		40°48.9'N	27°56.2'W		XBT225
"	0600		40°39.8'N	27°59.4'W		XBT226
"	0700		40°31.0'N	28°00.2'W		XBT227
"	1000		40°17.4'N	27°52.0'W		XBT228
"	1100		40°07.6'N	27°56.4'W		XBT229
"	1200		39°57.8'N	28°00.0'W		XBT230
"	1300		39°47.3'N	28°04.4'W		XBT231
"	1400		39°36.9'N	28°08.7'W		XBT232
"	1500		39°26.9'N	28°11.9'W		XBT233
"	1600		39°16.8'N	28°14.8'W		XBT234
"	1700		39°06.6'N	28°17.6'W		XBT235
"	1800		38°53.8'N	28°22.4'W		XBT236

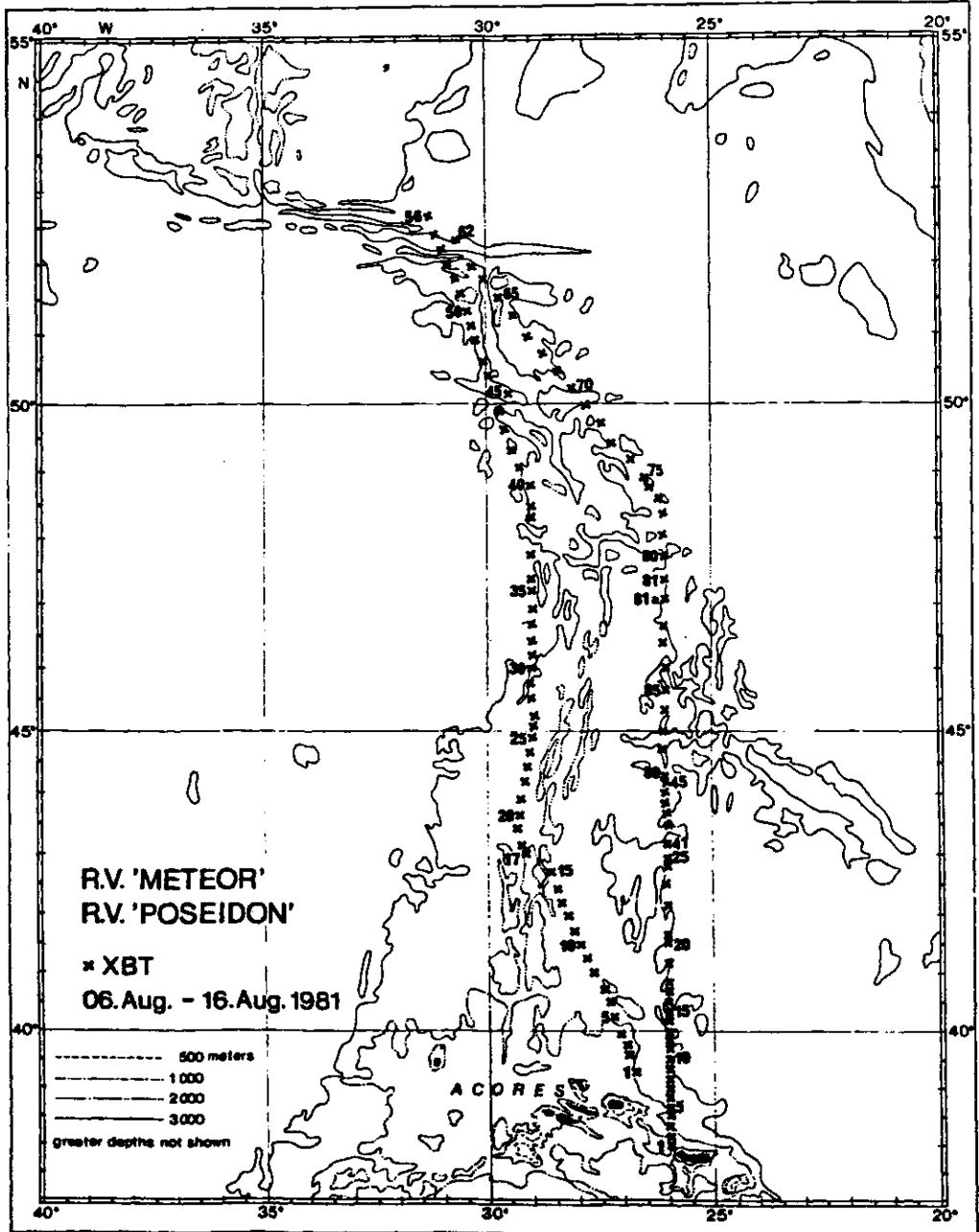
STATION LIST

Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
F.S. "Poseidon" Cruise P 76/4						
01.09.	1104		37°57.4'N	25°58.9'W		XBT237
"	1250		38°17.6'N	26°10.4'W		XBT238
"	1443		38°36.3'N	26°19.0'W		XBT239
"	1626		38°53.5'N	26°28.8'W		XBT240
"	1822		39°10.8'N	26°39.1'W		XBT241
"	2019		39°28.8'N	26°49.8'W		XBT242
"	2122		39°38.2'N	26°57.1'W		XBT243
"	2218		39°47.0'N	27°02.9'W		XBT244
02.09.	0003		40°06.1'N	27°11.2'W		XBT245
"	0155		40°24.0'N	27°19.7'W		XBT246
"	0345		40°42.2'N	27°27.8'W		XBT247
"	0537		41°00.4'N	27°40.7'W		XBT248
"	0729		41°18.3'N	27°54.0'W		XBT249
"	0951		41°36.5'N	28°03.8'W		XBT250
"	1047		41°45.3'N	28°10.6'W		XBT251
"	1253		41°57.1'N	27°47.6'W		XBT252
"	1448		42°09.3'N	27°27.0'W		XBT253
"	1703		42°21.2'N	27°02.1'W		XBT254
"	1848		42°31.3'N	26°38.9'W		XBT255
"	2056		42°38.5'N	26°15.7'W		Dr3513 recovered
"	2109		42°38.7'N	26°15.7'W		XBT256
"	2200		42°34.8'N	26°15.8'W		XBT257
"	2302		42°23.4'N	26°15.8'W		XBT258
03.09.	0015					XBT259
"	0115		42°14.9'N	26°28.2'W		XBT260
"	0215		42°19.1'N	26°40.8'W		XBT261
"	0315		42°21.3'N	26°53.7'W		XBT262
"	0415		42°22.2'N	27°06.1'W		XBT263
"	0527		42°26.0'N	27°20.0'W		XBT264
"	0627		42°35.8'N	27°26.4'W		XBT265
"	0727		42°44.8'N	27°31.5'W		XBT266
"	0828-1010		42°47.9'N	27°33.6'W		V-D recovered
"	1019		42°48.3'N	27°33.2'W		XBT267
"	1140		42°51.2'N	27°14.4'W		XBT268
"	1218		42°52.7'N	27°06.2'W		XBT269
"	1318		42°53.0'N	27°00.0'W		XBT270
"	1358-1448	301	42°48.4'N	26°52.2'W	3138	MS
"	1554		42°58.2'N	26°48.4'W		XBT271
"	1700-1750	302	43°07.5'N	26°42.4'W	3211	MS
"	1846		43°17.0'N	26°38.0'W		XBT272
"	1950-2012	303	43°25.9'N	26°35.0'W	3138	MS
"	2132		43°35.9'N	26°30.3'W		XBT273
"	2238-2255	304	43°45.2'N	26°25.8'W	2412	MS
04.09.	0014		43°54.4'N	26°19.6'W		XBT274
"	0125-0212	305	44°04.3'N	26°15.8'W	2810	MS
"	0318		44°13.9'N	26°10.6'W		XBT275
"	0423		44°23.7'N	26°06.0'W		XBT276
"	0524		44°32.1'N	26°04.4'W		XBT277

S T A T I O N L I S T

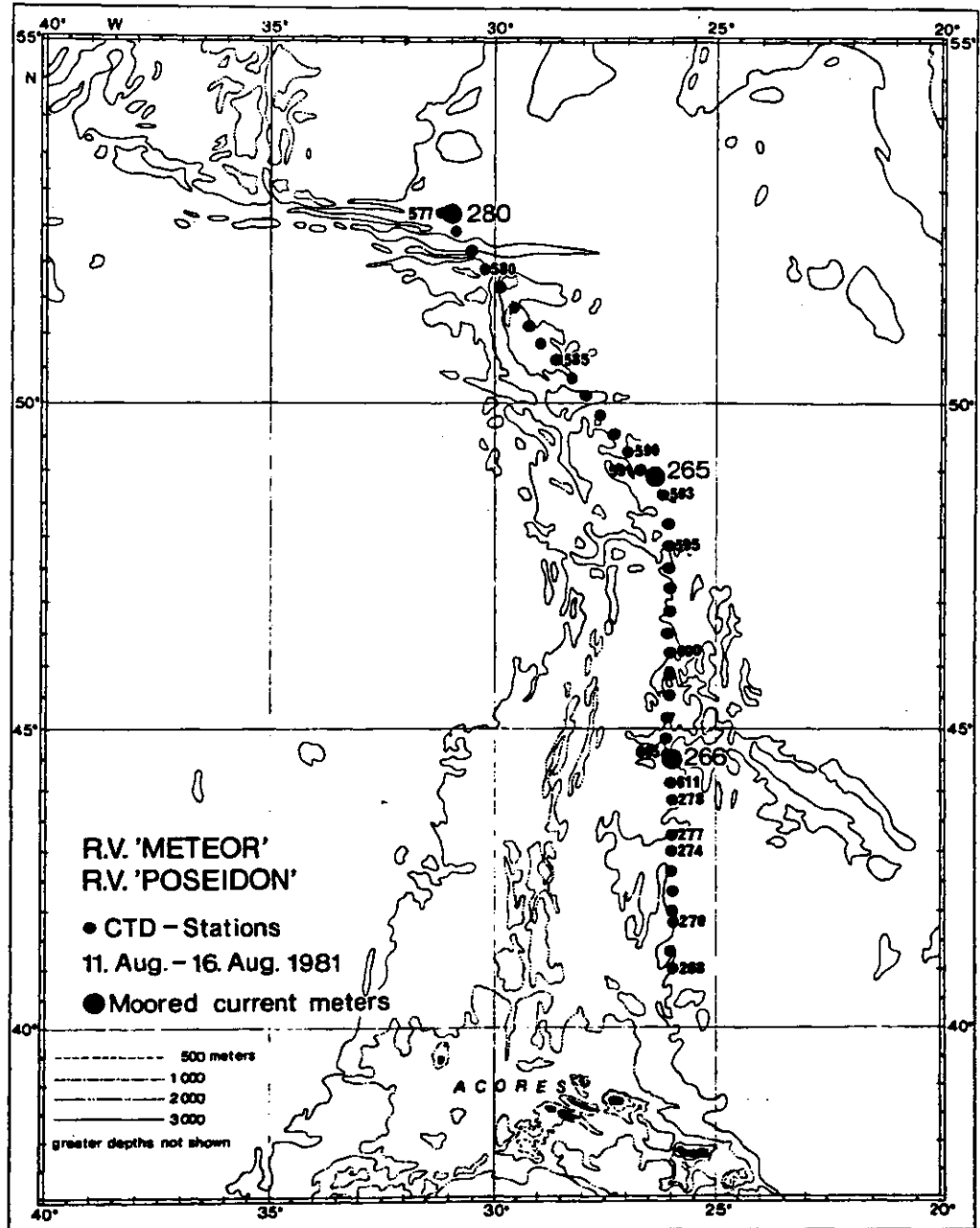
Date 1981	Time (GMT)	Station	Latitude	Longitude	Depth (m)	Remarks
F.S. "Poseidon" Cruise P 76/4						
05.09.	2054		44°27.7'N	25°43.7'W		XBT278
"	2224-2259	306	44°21.9'N	25°22.4'W	3162	MS
06.09.	0045		44°18.2'N	25°03.0'W		XBT279
"	0222-0313	307	44°12.1'N	24°44.2'W	3302	MS
"	0453		44°06.3'N	24°23.7'W		XBT280
"	0631-0658	308	44°01.1'N	24°05.0'W	3164	MS
"	0839		43°50.4'N	24°04.9'W		XBT281
"	1016-1036	309	43°34.7'N	24°12.4'W	3627	MS
"	1215		43°21.0'N	24°20.6'W		XBT282
"	1345-1432	310	43°07.1'N	24°27.5'W	3392	MS
"	1551		42°52.8'N	24°34.8'W		XBT283
"	1709-1830	311	42°40.4'N	24°41.3'W	3242	MS
"	2020		42°25.9'N	24°49.4'W		XBT284
"	2146-2230	312	42°12.2'N	24°55.3'W	3254	MS
07.09.	0000		41°56.4'N	25°01.8'W		XBT285
"	0140-0229	313	41°44.0'N	25°07.5'W		MS
"	0355		41°30.1'N	25°14.1'W		XBT286
"	0523		41°15.1'N	25°21.7'W		XBT287
"	0638		41°03.0'N	25°27.3'W		XBT288
"	0646		41°02.4'N	25°28.1'W		Dr3513 launched
"	0820		40°49.1'N	25°35.8'W		XBT289
"	0950		40°35.0'N	25°41.4'W		XBT290
"	1123		40°20.8'N	25°50.0'W		XBT291
"	1257		40°06.5'N	25°58.2'W		XBT292
"	1347		40°00.0'N	26°00.2'W		Dr3552 launched
"	1437		39°53.4'N	25°54.7'W		XBT293
"	1555		39°42.4'N	25°44.5'W		XBT294
"	1735		39°30.2'N	25°28.3'W		XBT295
"	1850		39°19.6'N	25°16.6'W		XBT296
"	2014		39°06.8'N	25°06.9'W		XBT297
"	2021		39°06.1'N	25°06.6'W		Dr3514 launched

Cruise M57/2, P76/3,4



**Fig. 6:** Location of XBT stations during the cruise M57/2 and P76/3,4 on two sections along the Mid-Atlantic ridge

Cruise M57/2, P76/3,4



**Fig. 7:** Location of CTD stations and moorings during the cruises M57/2 and P76/3,4 on the section along the Mid-Atlantic ridge



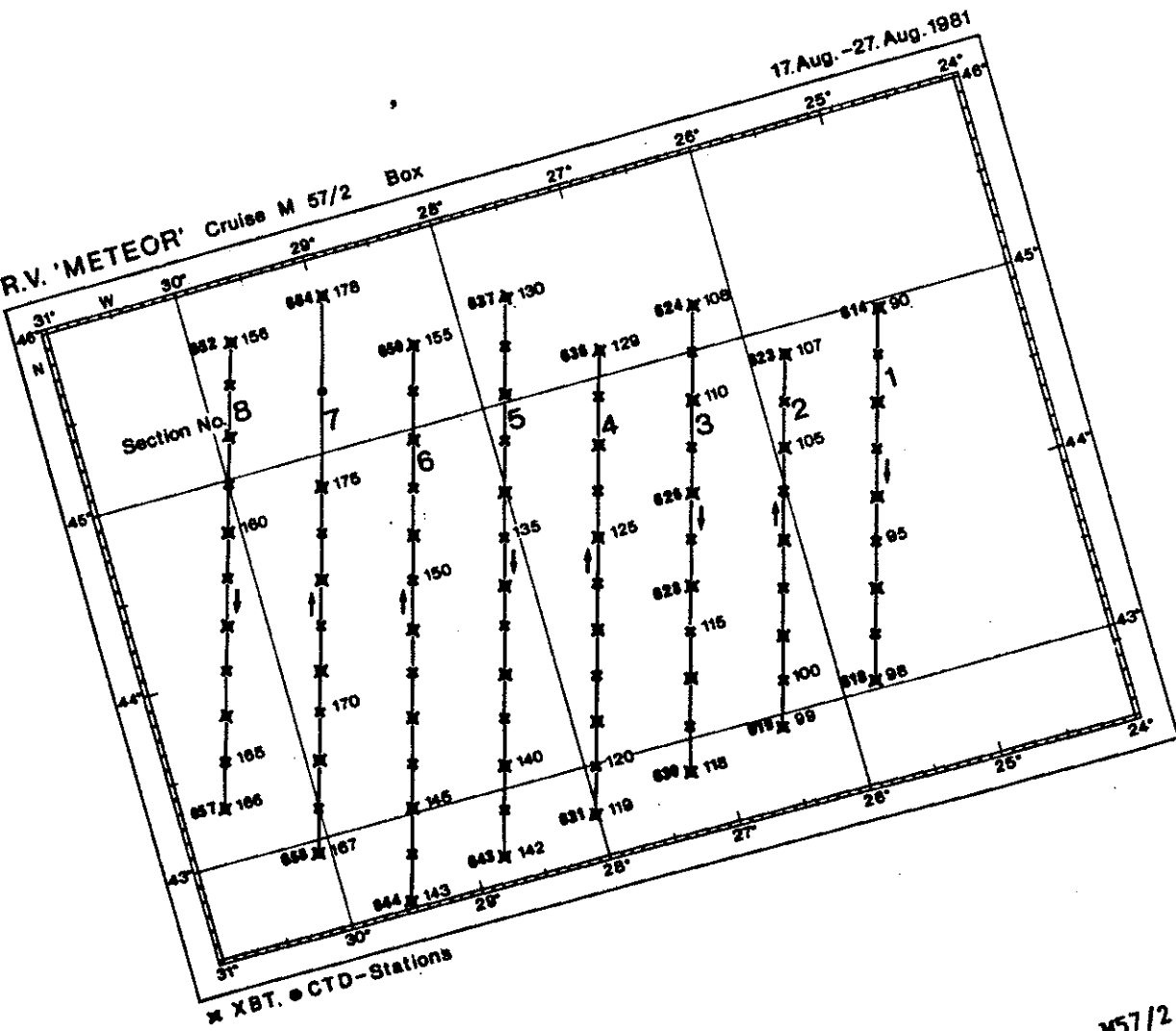
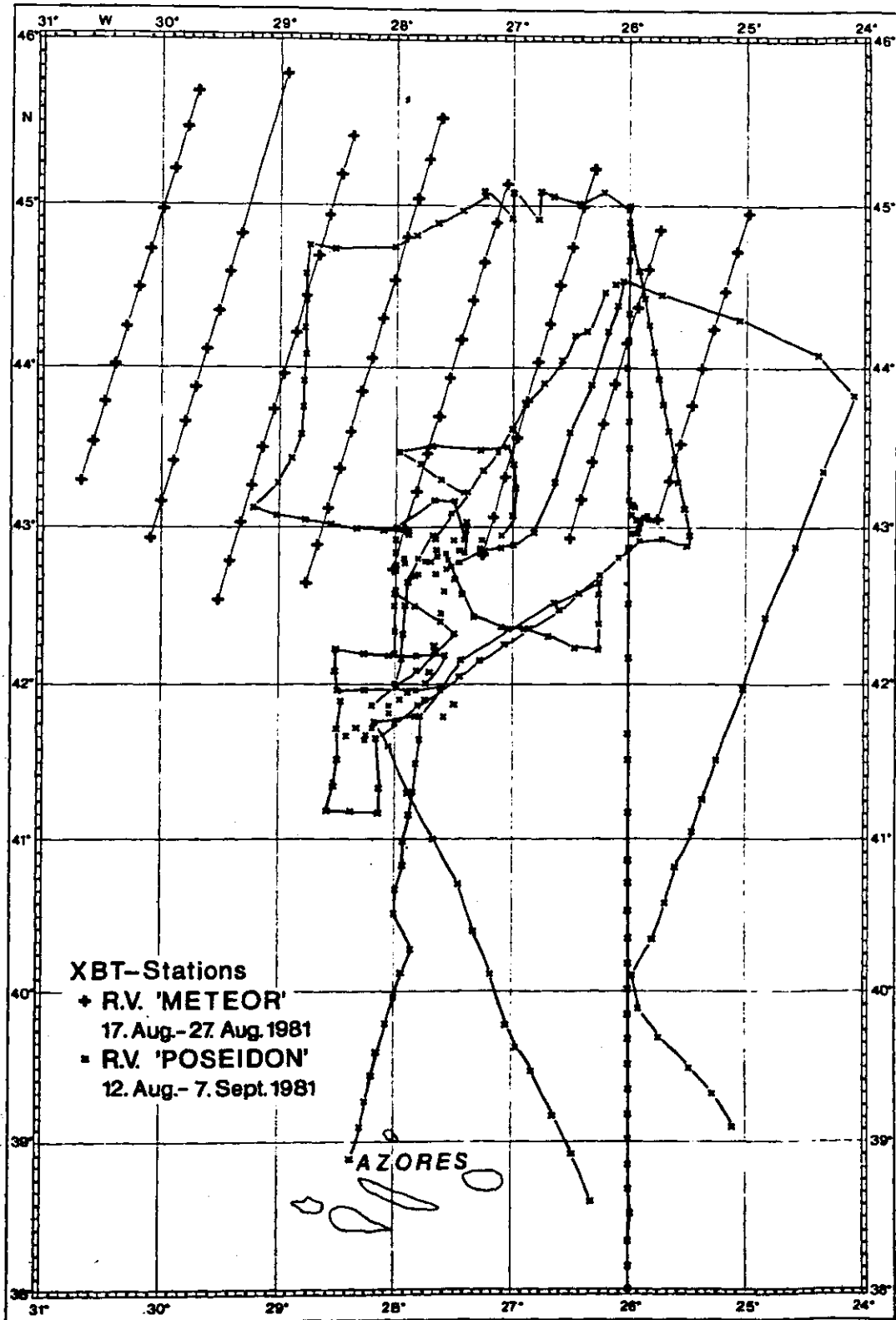


Fig. 8: Location of XBT and CTD stations during the cruise M57/2 in the "hydrographic box"

Cruise M57/2, P76/3,4



**Fig. 9:** All locations of XBT stations during the cruise P76/3,4 and the locations of XBT stations during the cruise M57/2 in the "hydrographic box"

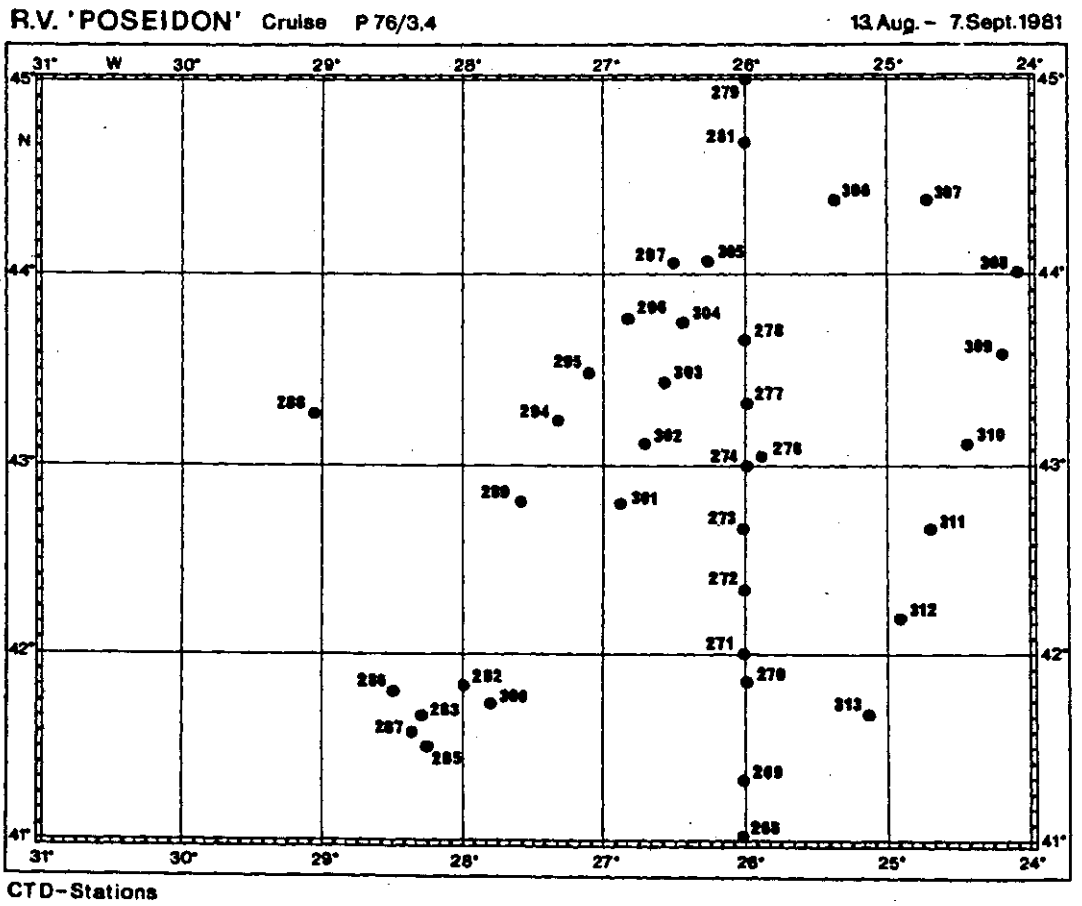


Fig. 10: All locations of CTD stations during the cruise P76/3,4

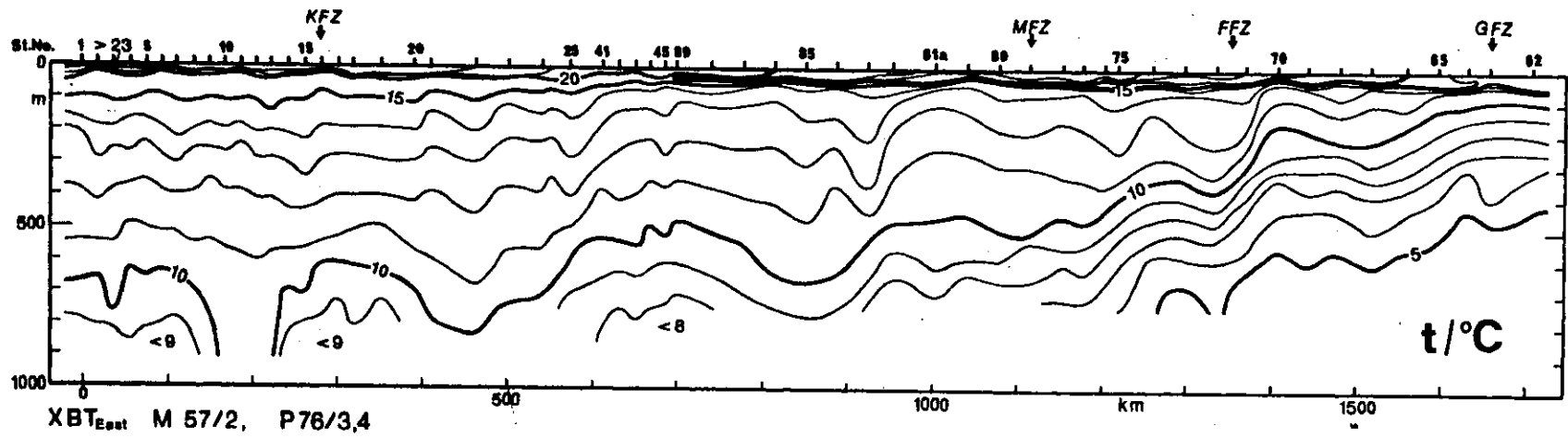


Fig. 11a,b: Temperature along the section shown in Fig. 6

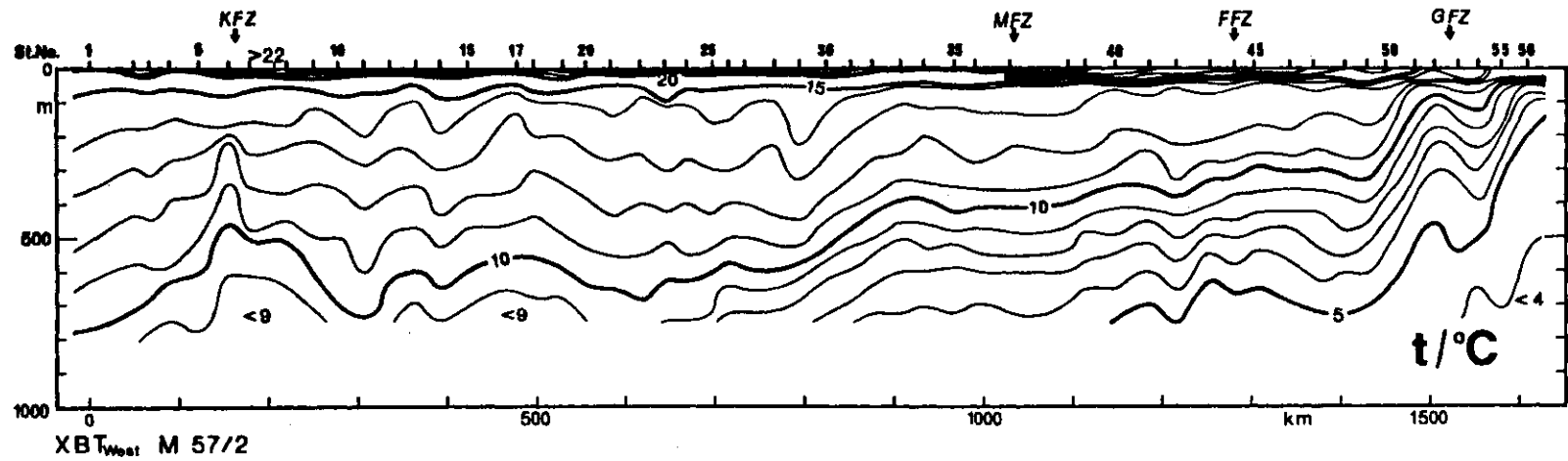


Fig. 11b

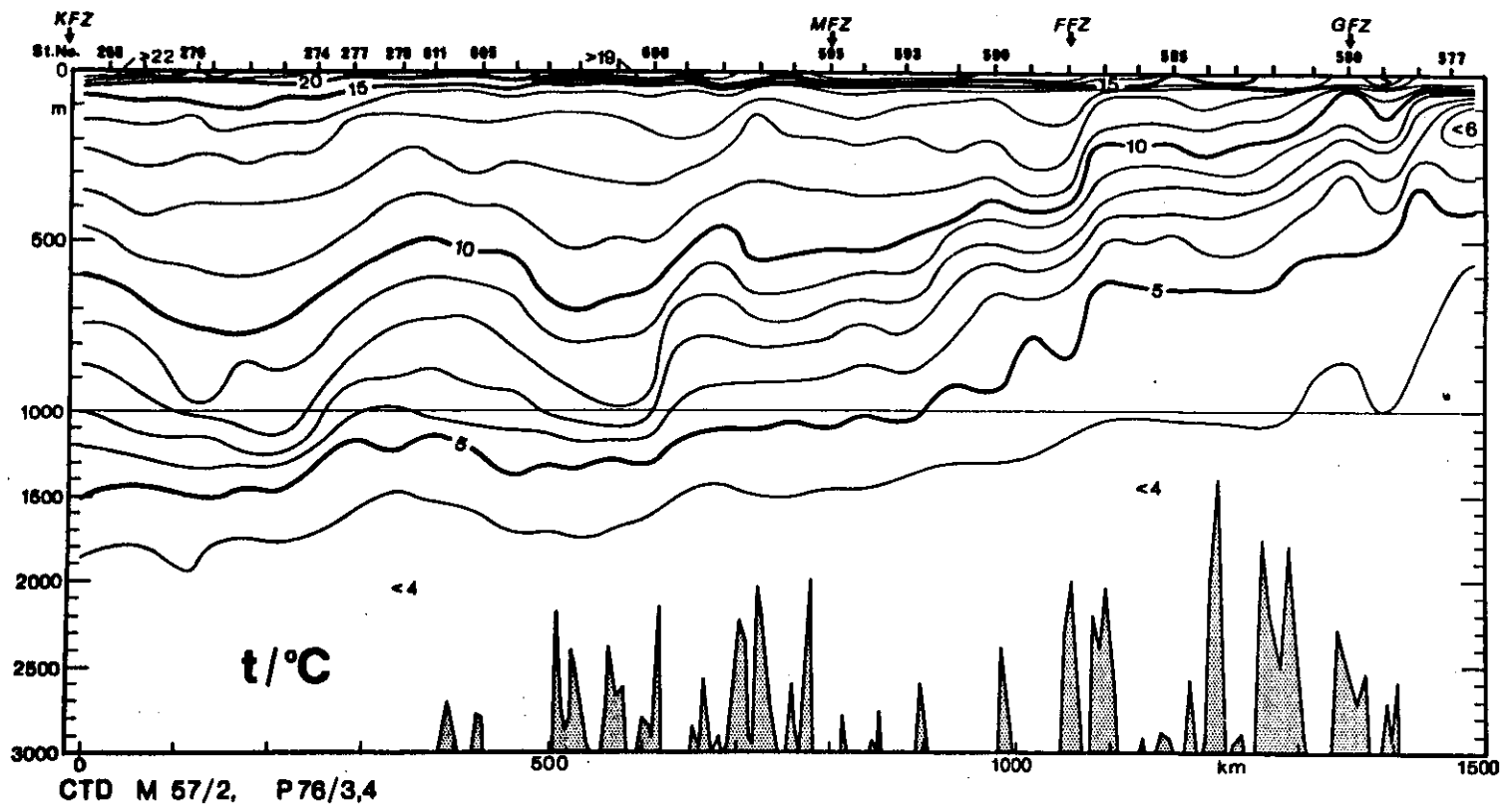


Fig. 12a-c: Temperature, salinity and density along the section shown in Fig. 7

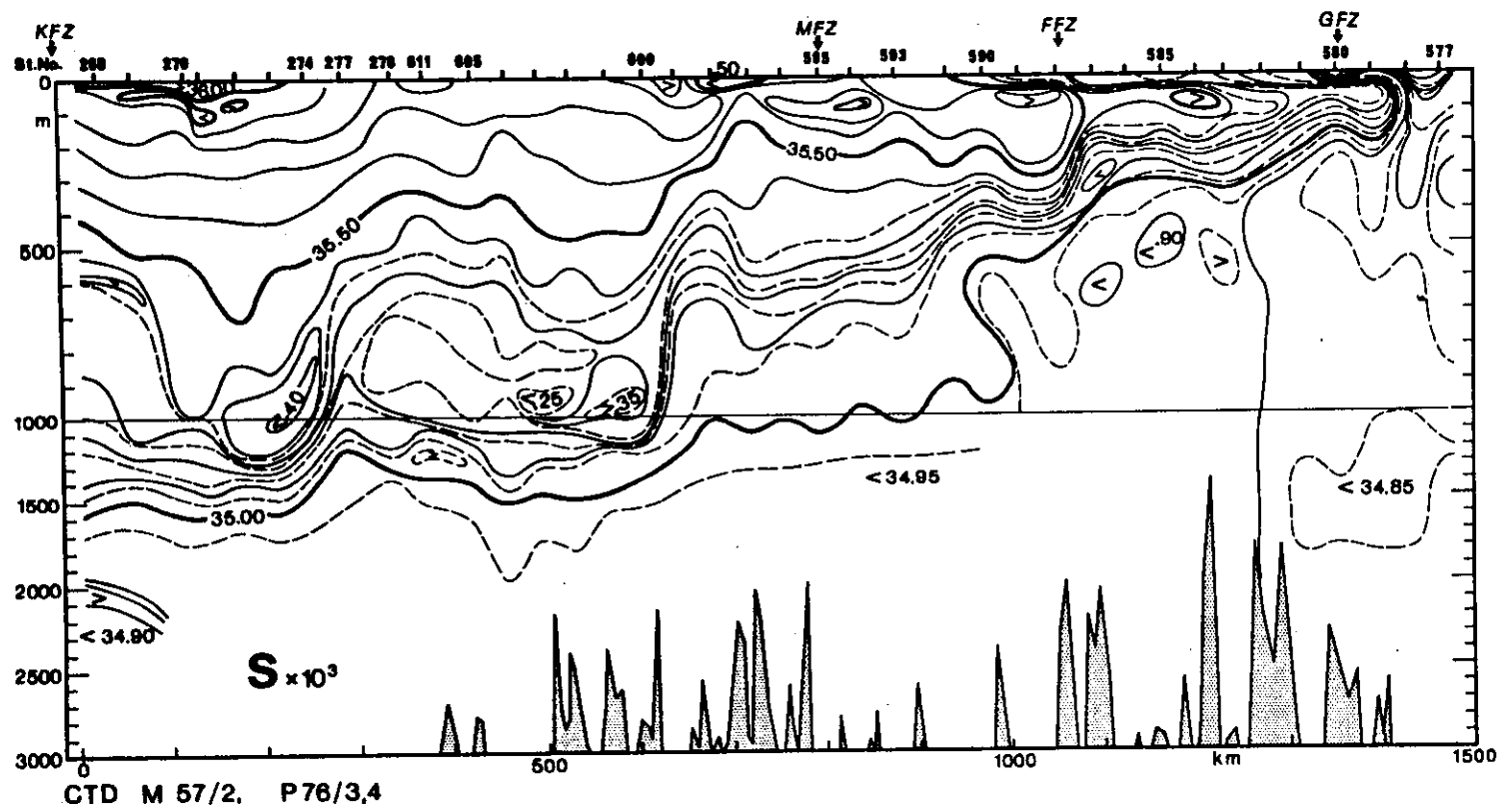


Fig. 12b

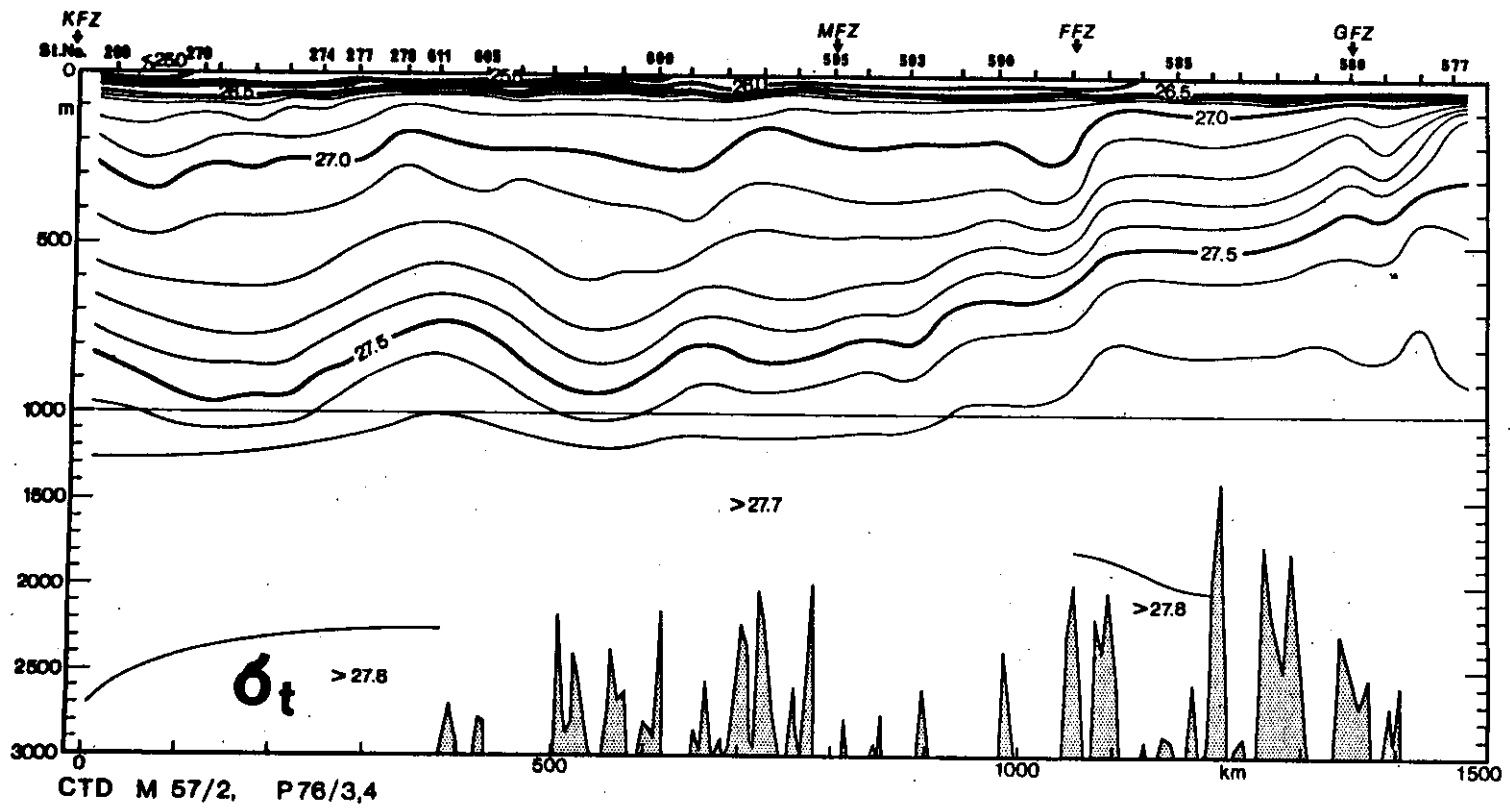


Fig. 12c

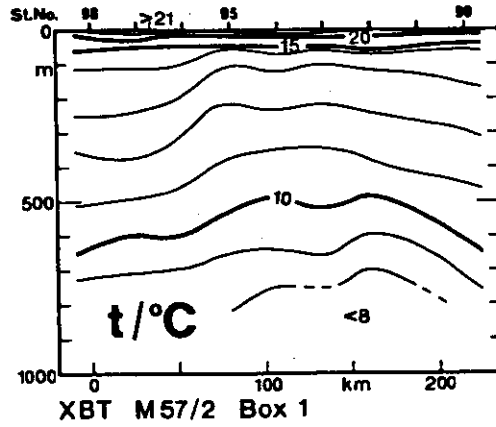


Fig. 13a-d: Temperature (XBT and CTD), salinity and density along section 1 of the "hydrographic box"

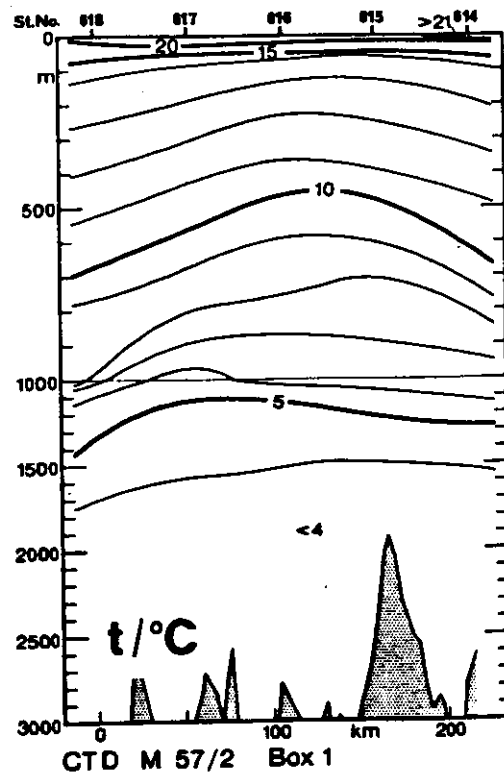


Fig. 13b



Fig. 13c

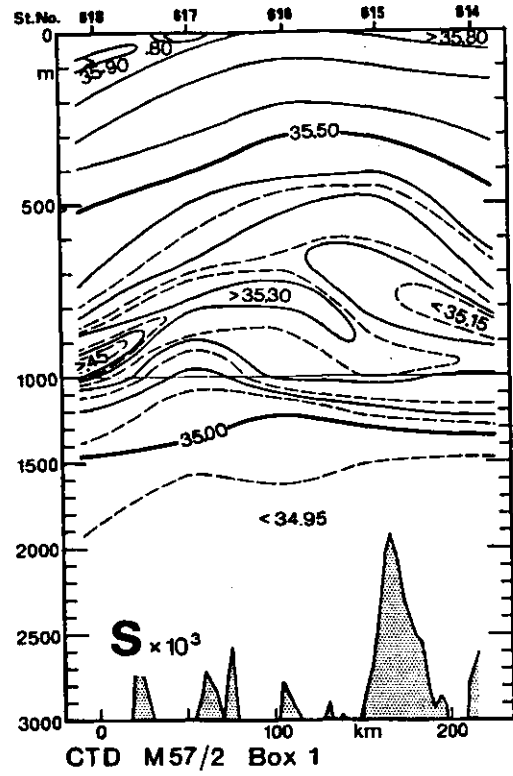
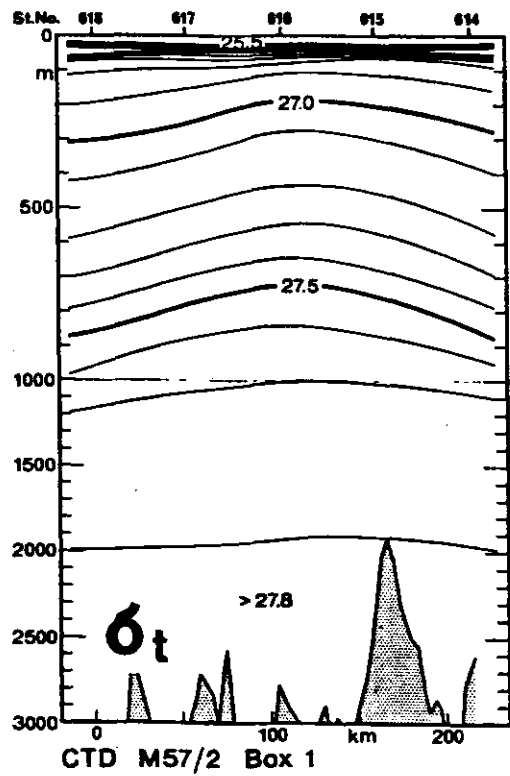


Fig. 13d



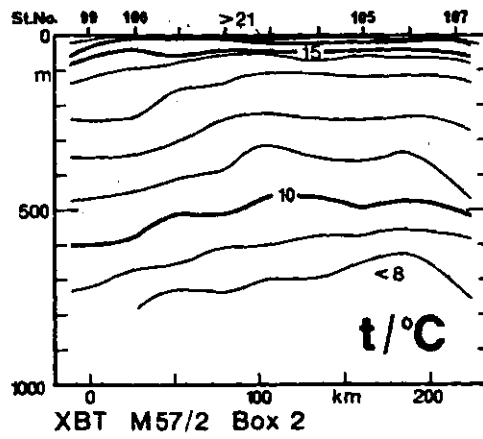


Fig. 14a-d: Temperature (XBT and CTD), salinity and density along section 2 of the "hydrographic box"

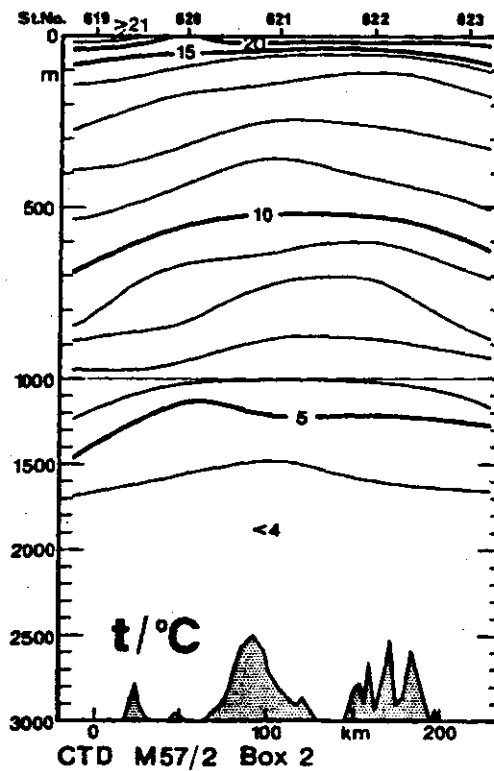


Fig. 14b

Fig. 14c

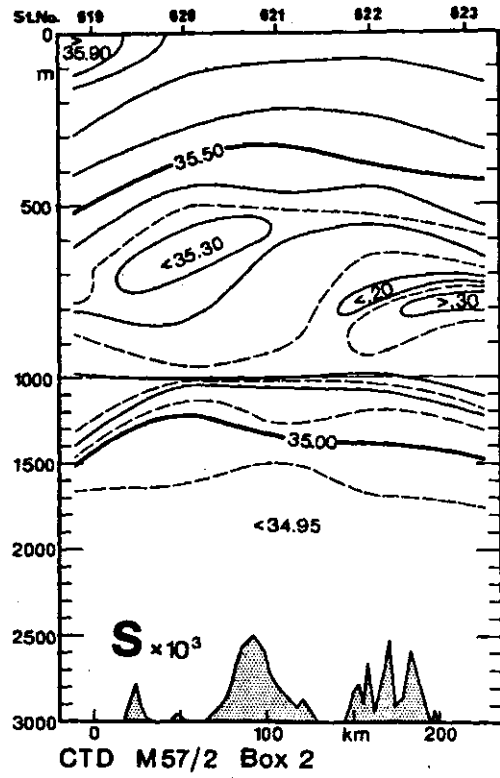
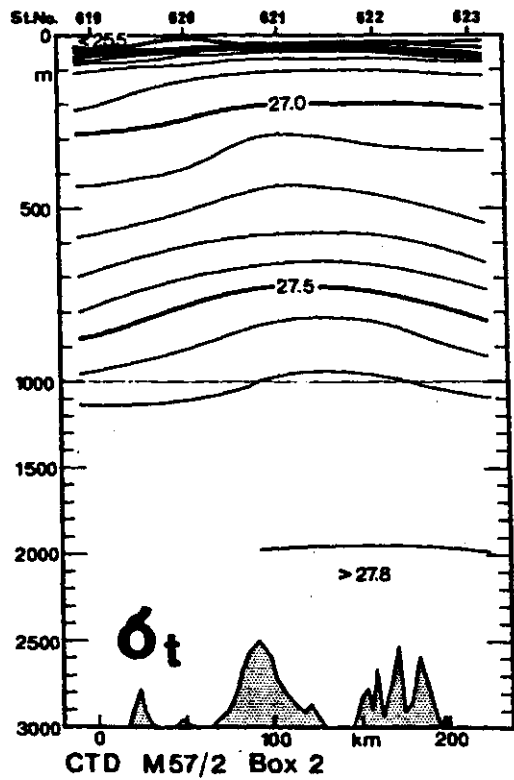


Fig. 14d



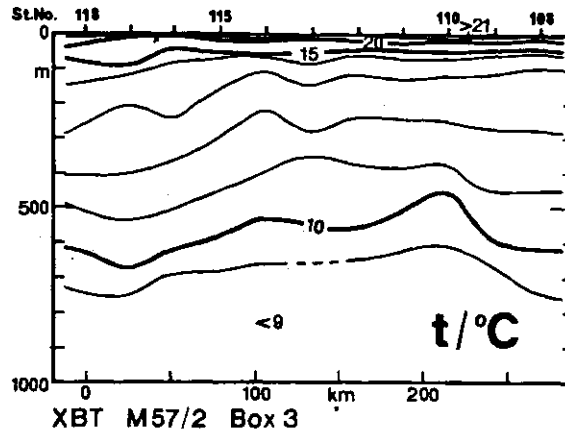


Fig. 15a-d: Temperature (XBT and CTD), salinity and density along section 3 of the "hydrographic box"

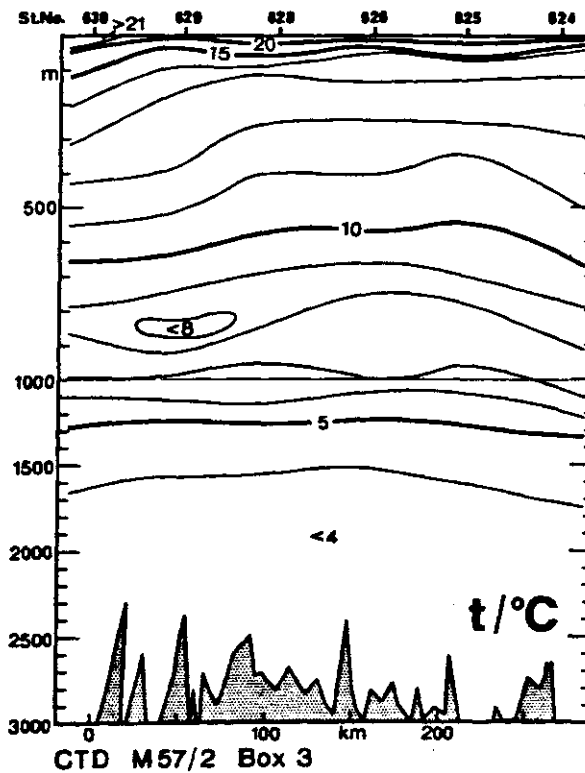


Fig. 15b

Fig. 15c

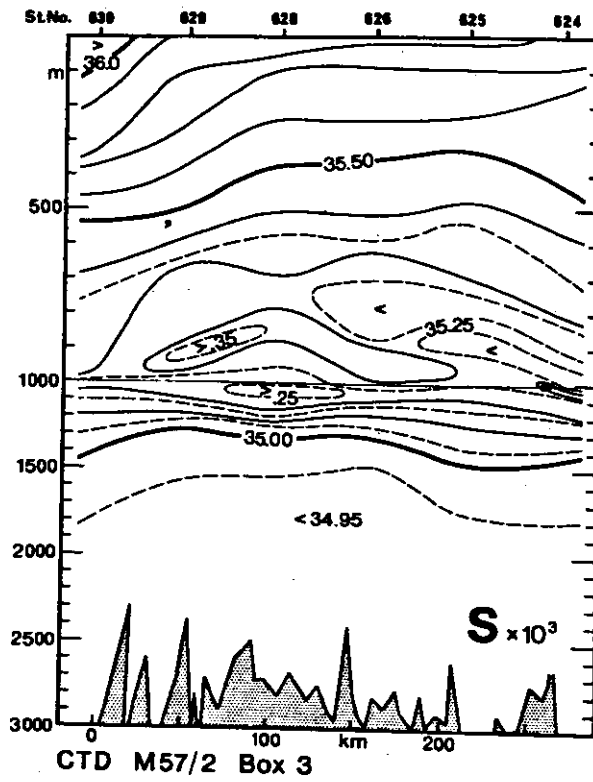
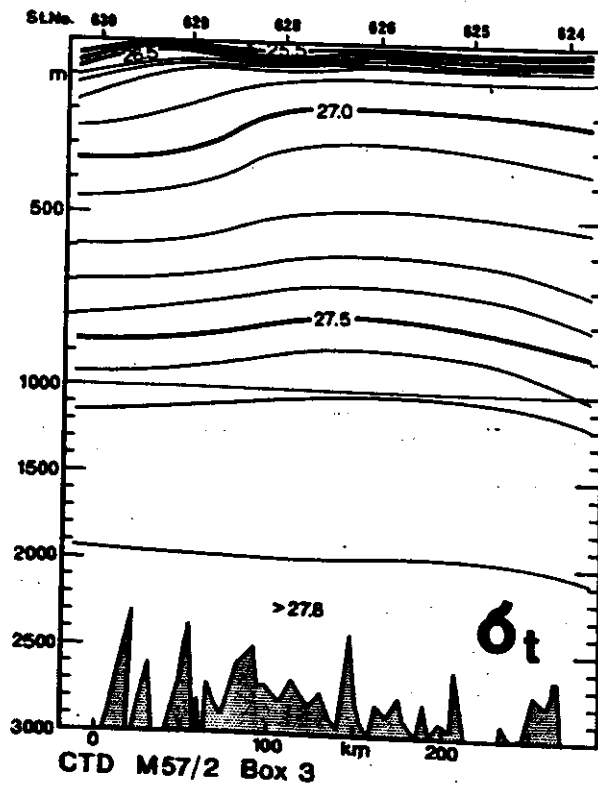


Fig. 15d



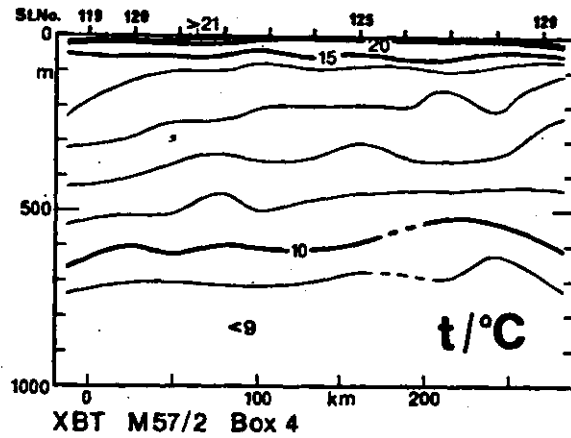


Fig. 16a-d: Temperature (XBT and CTD), salinity and density along section 4 of the "hydrographic box"

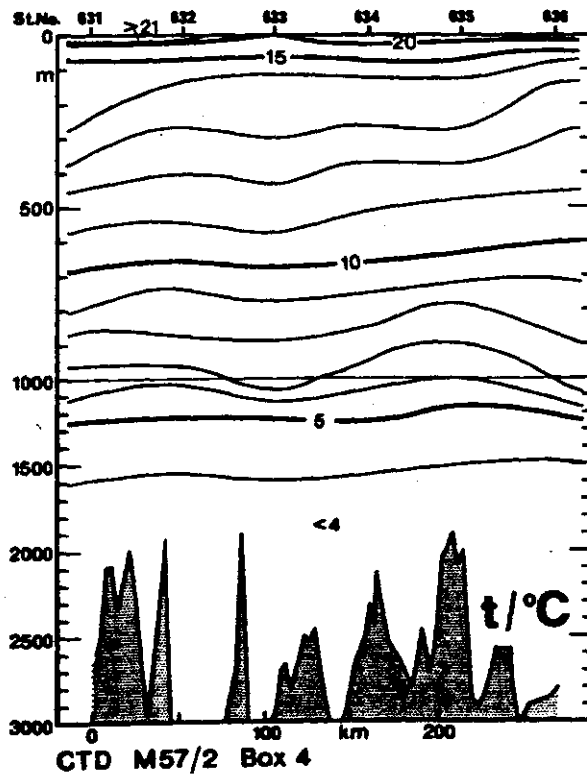


Fig. 16b

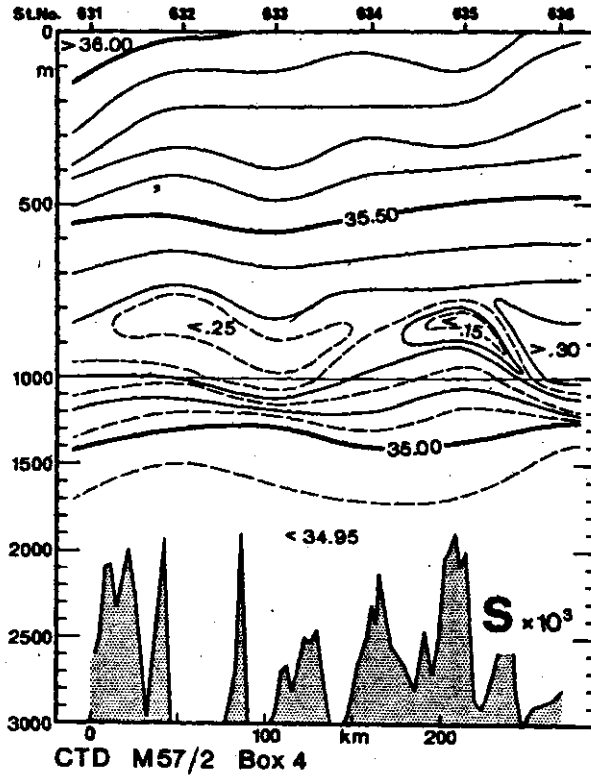


Fig. 16c

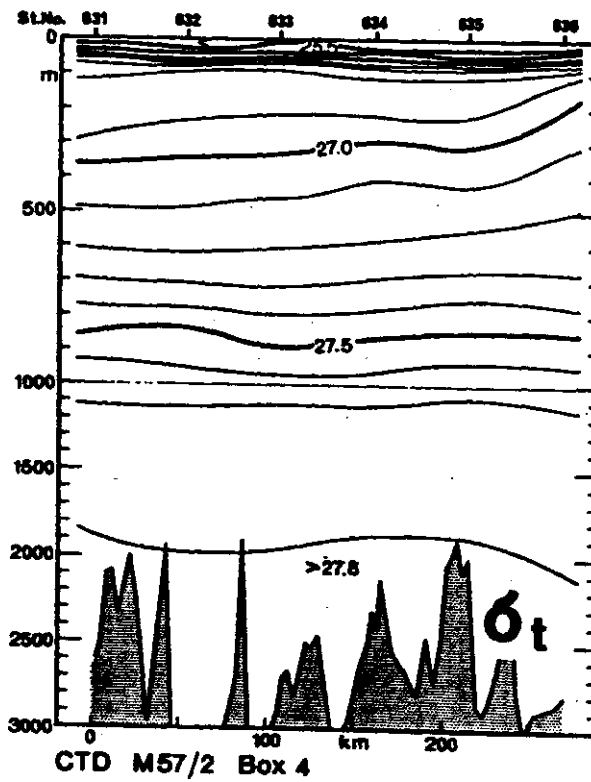


Fig. 16d

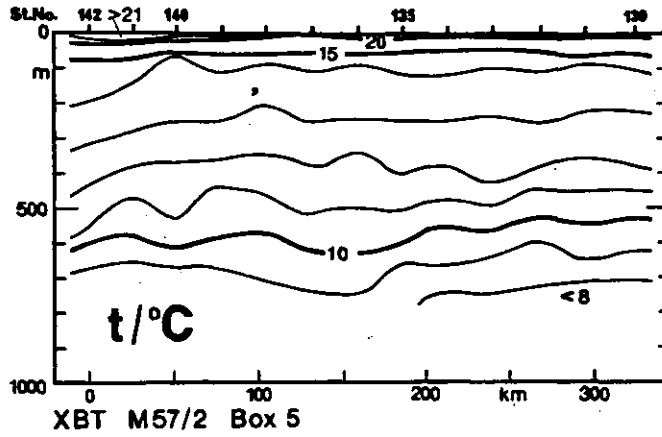


Fig. 17a-d: Temperature (XBT and CTD), salinity and density along section 5 of the "hydrographic box"

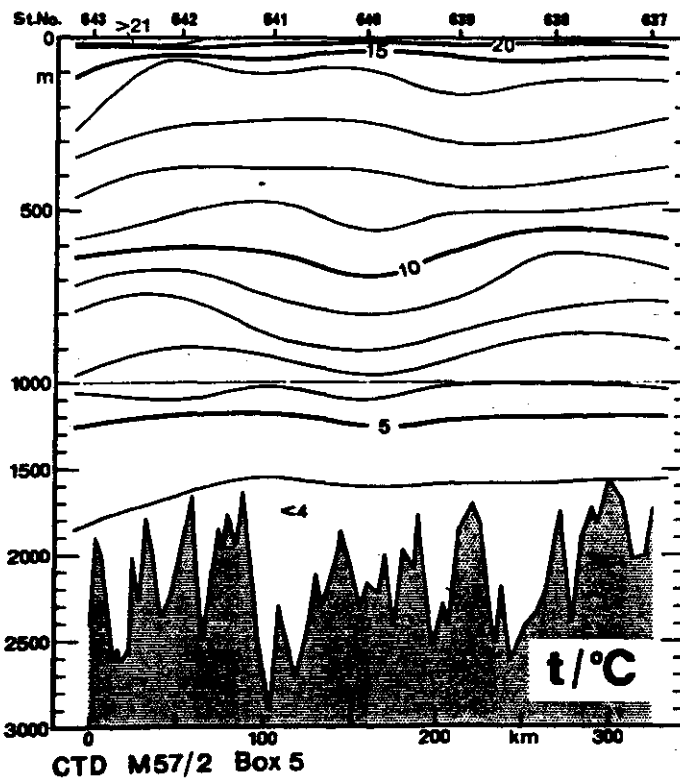


Fig. 17b



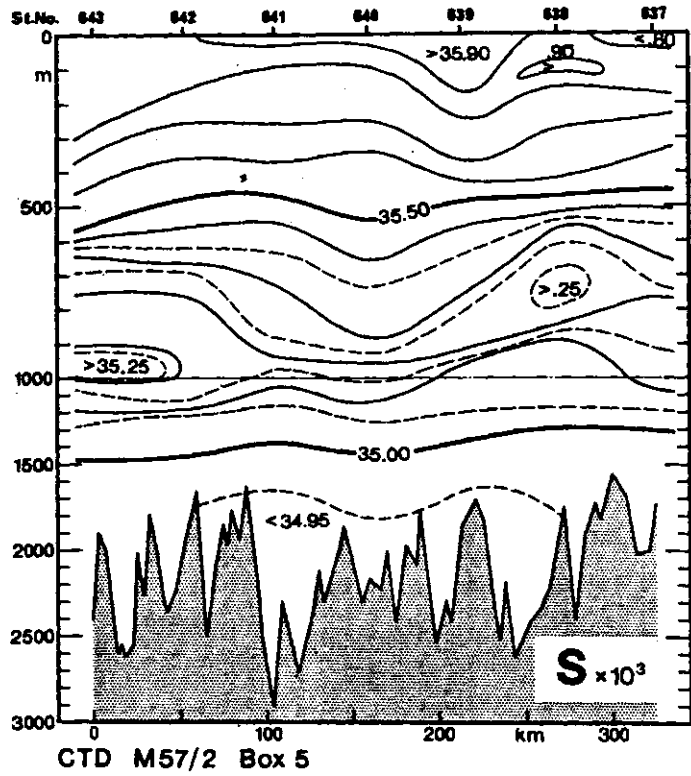


Fig. 17c

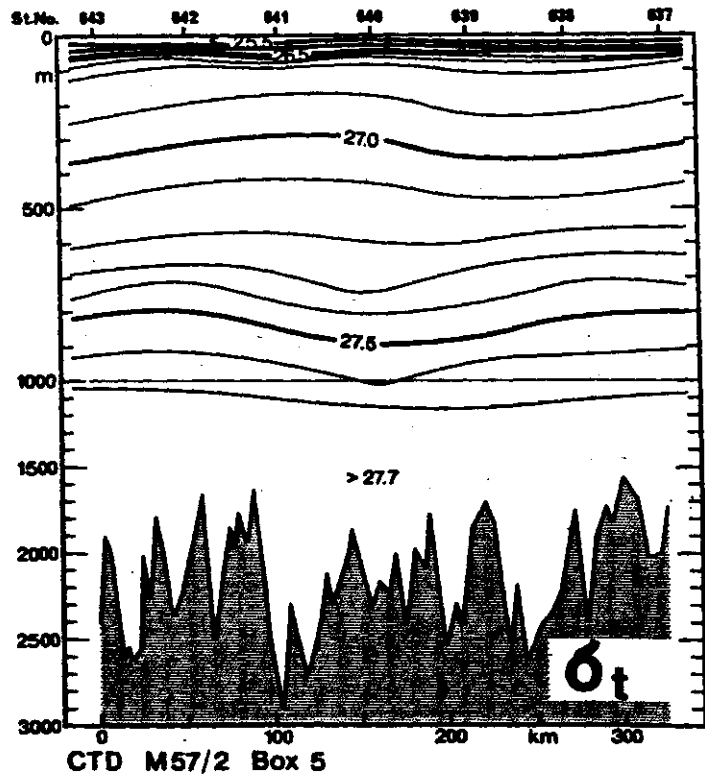


Fig. 17d

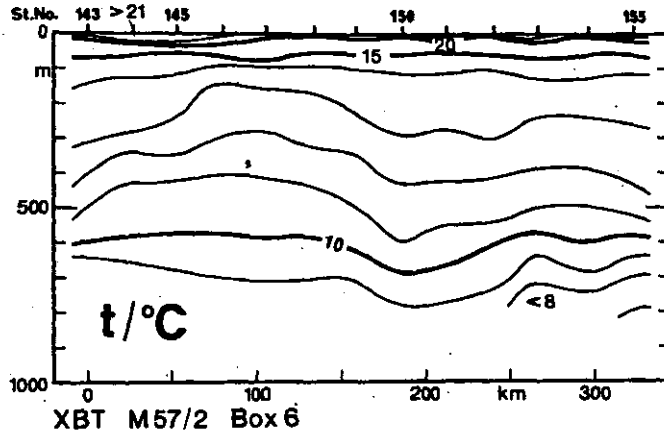


Fig. 18a-d: Temperature (XBT and CTD), salinity and density along section 6 of the "hydrographic box"

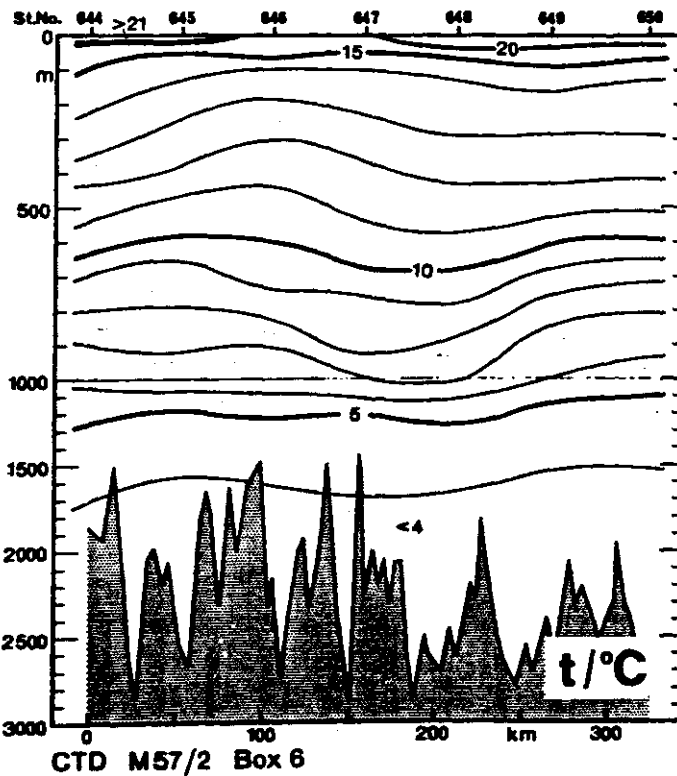


Fig. 18b

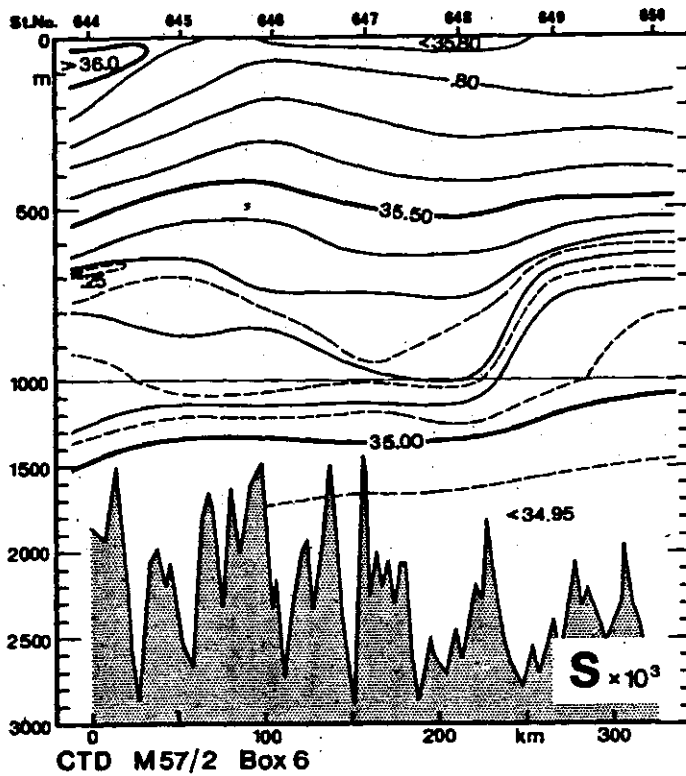


Fig. 18c

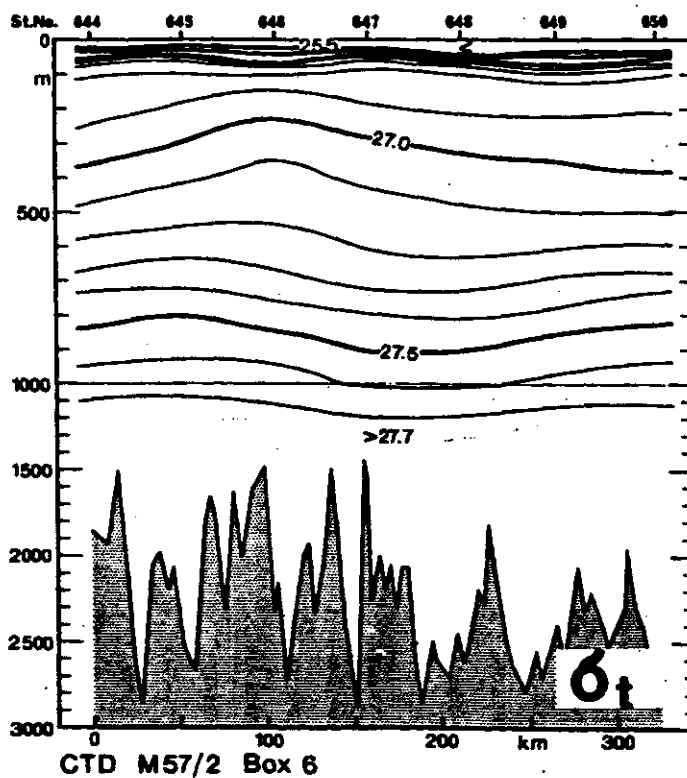


Fig. 18d

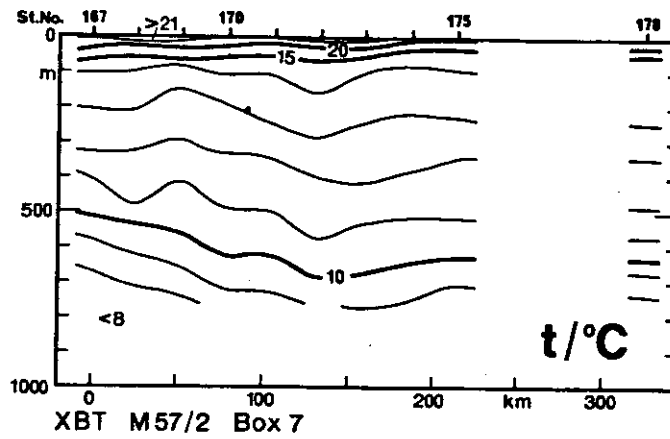


Fig. 19a-d: Temperature (XBT and CTD), salinity and density along section 7 of the "hydrographic box"

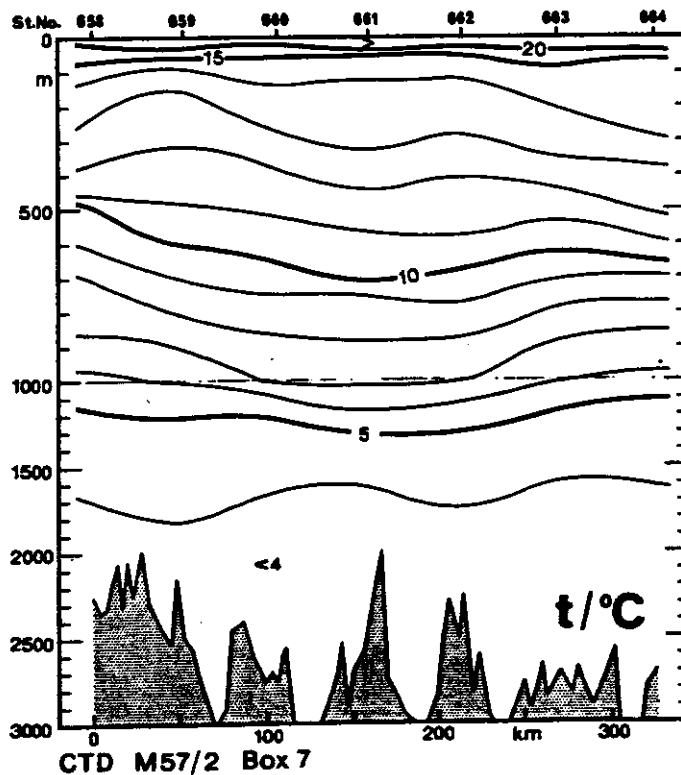


Fig. 19b

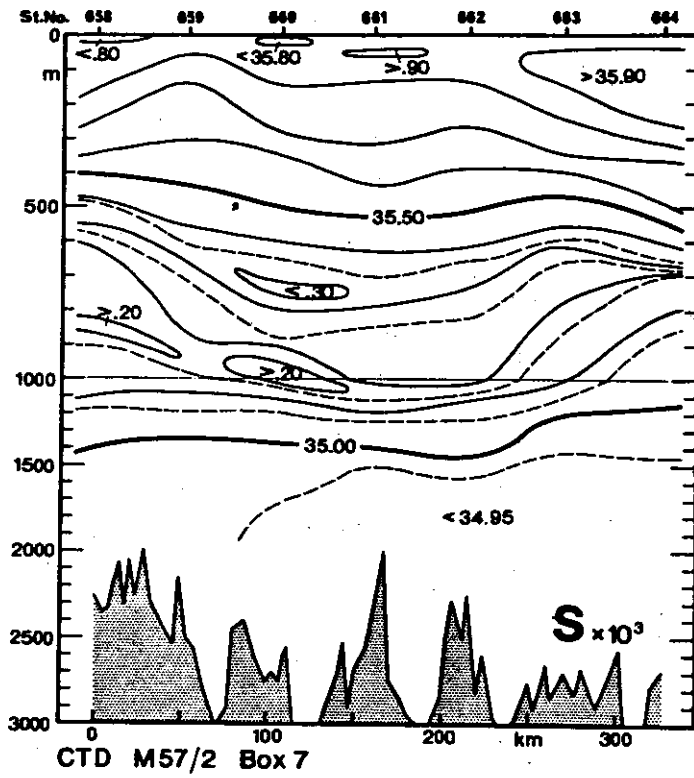


Fig. 19c

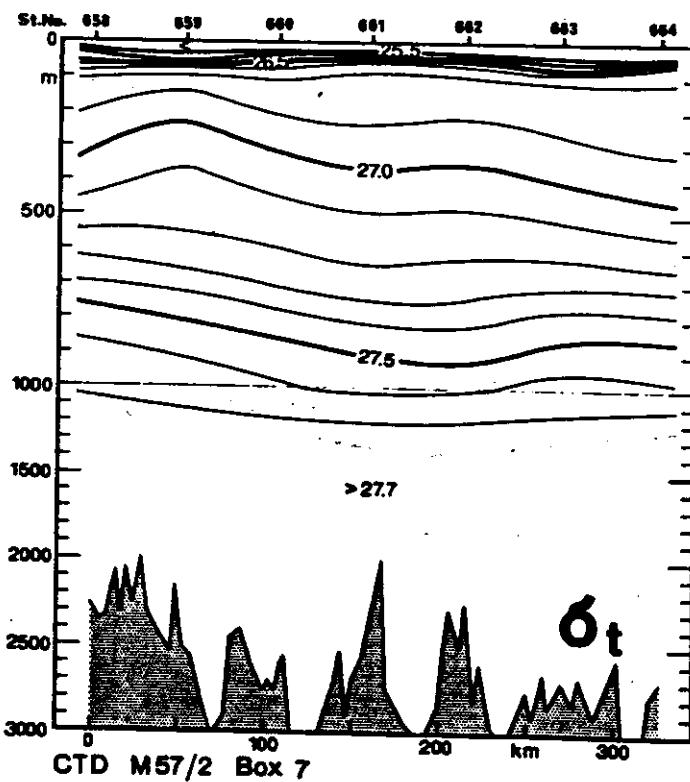


Fig. 19d

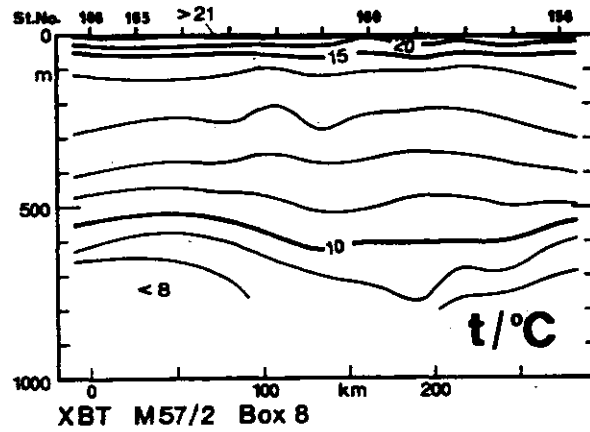


Fig. 20a-d: Temperature (XBT and CTD), salinity and density along section 8 of the "hydrographic box"

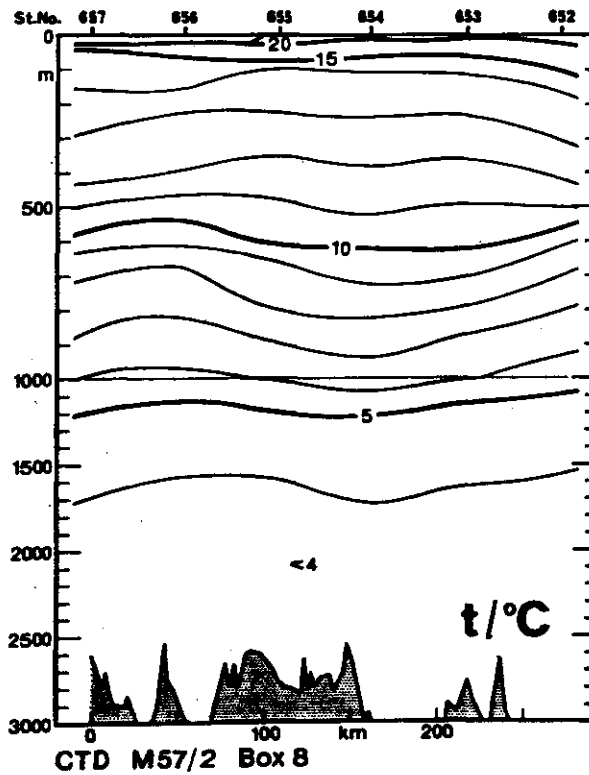


Fig. 20b

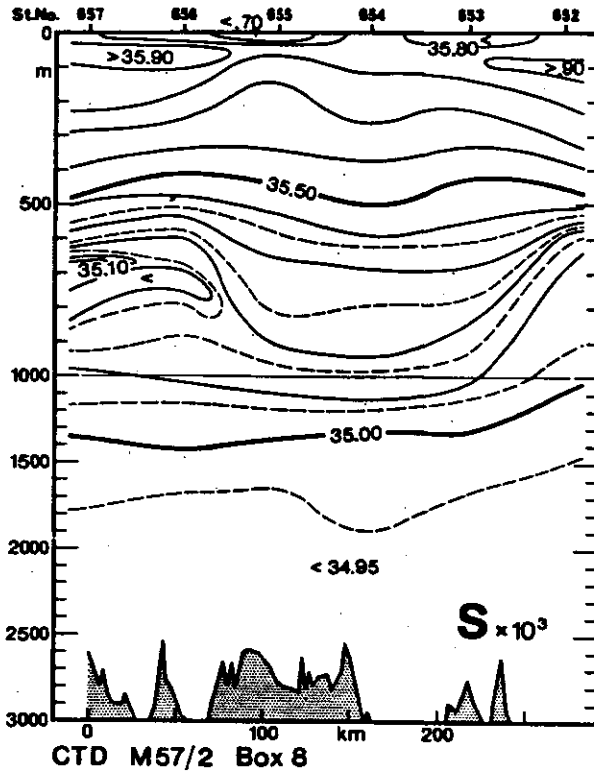


Fig. 20c

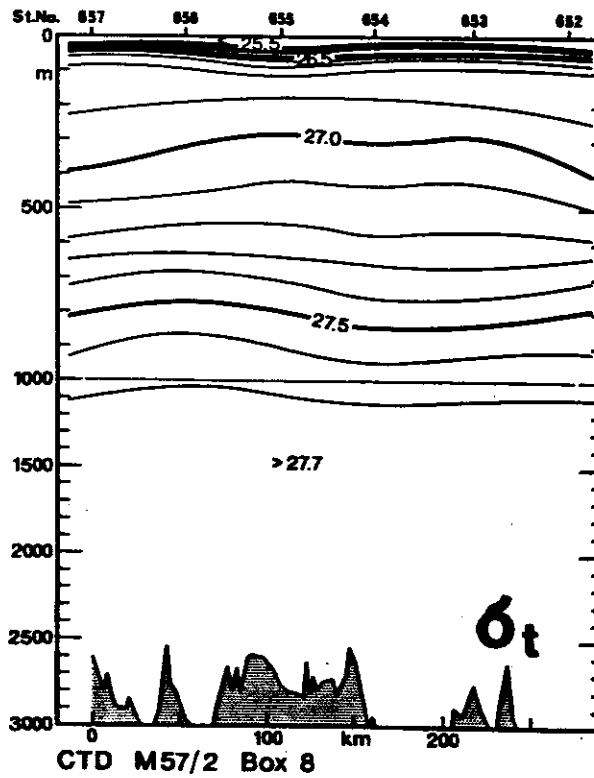
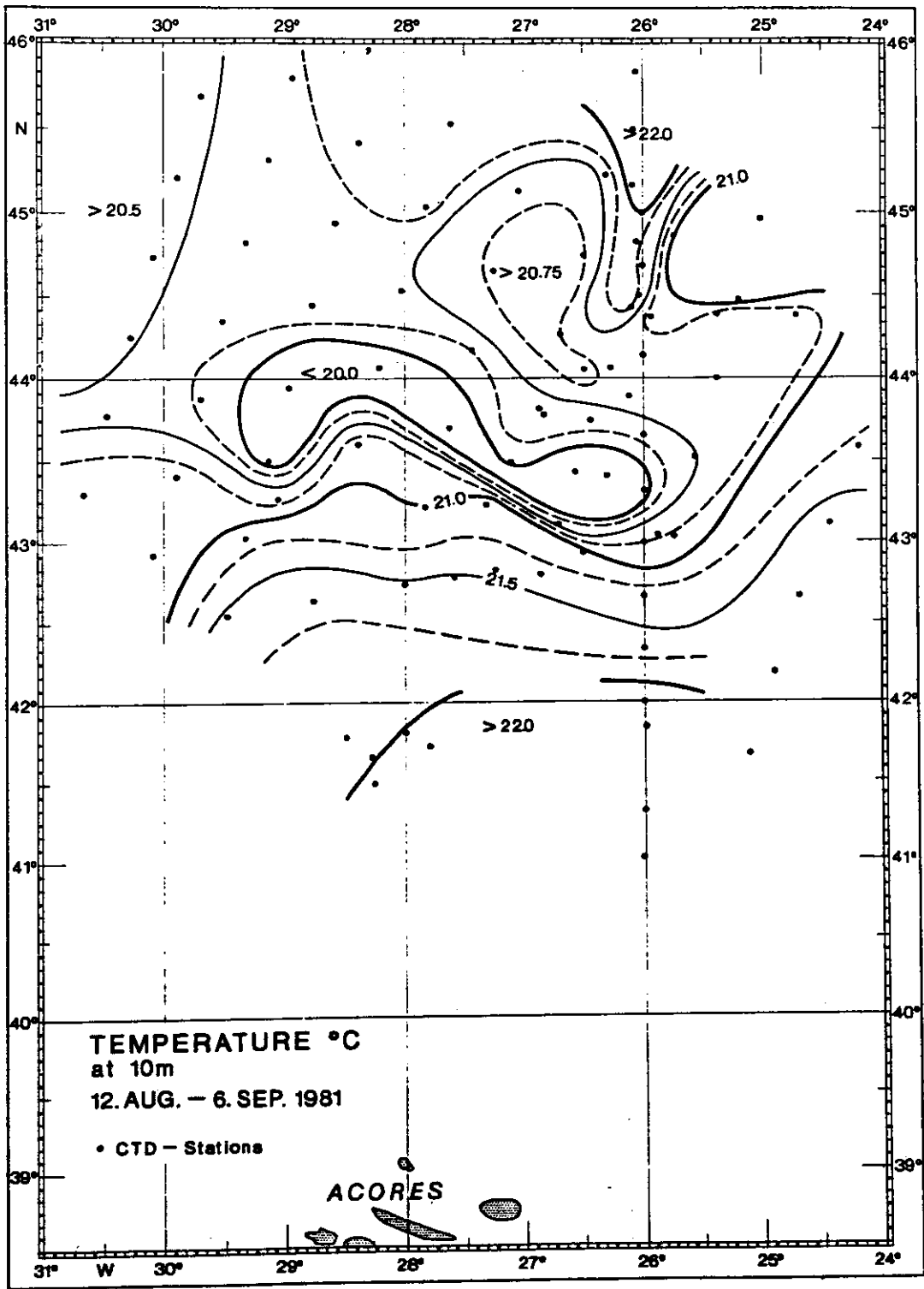


Fig. 20d



**Fig. 21a,b:** Horizontal distribution of temperature and salinity in 10 m from CTD stations during the cruise M57/2 and P76/3,4.



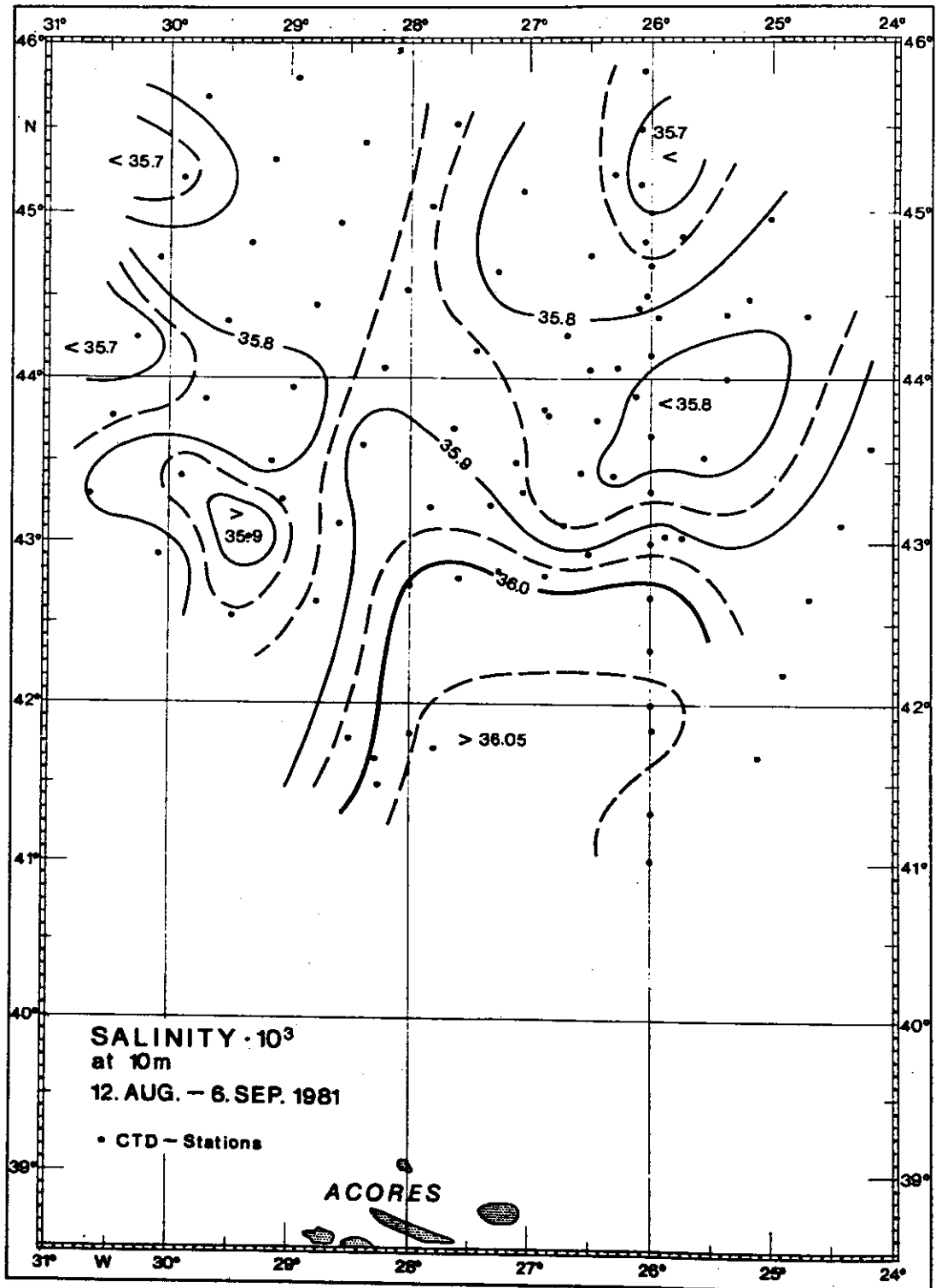


Fig. 21b

**7.2 Currents**

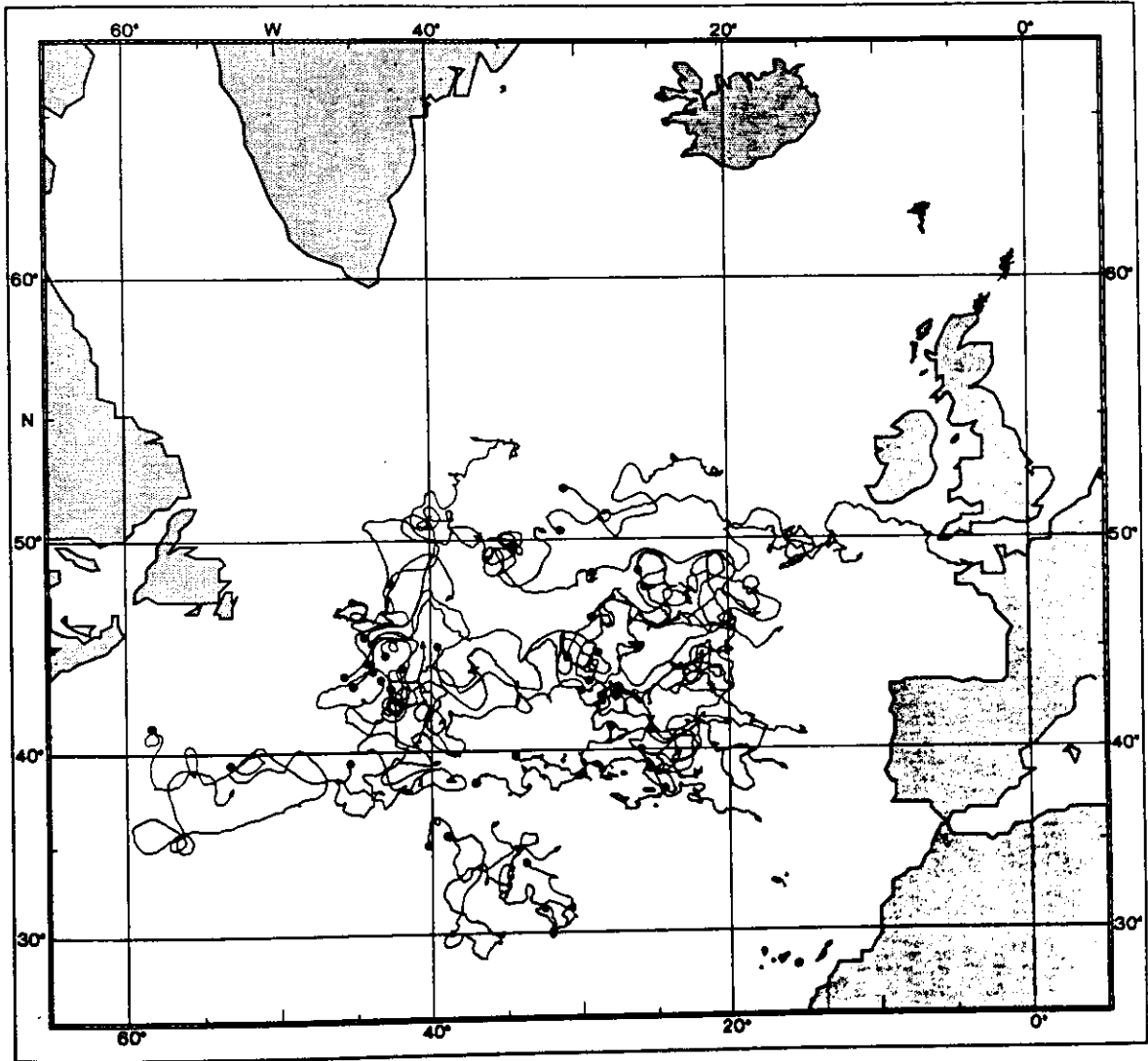
**7.2.1 Drifting buoy tracks**

**7.2.2 Current meter time series**

**7.2.3 GEK tracks and currents**

Drifter No.	Date	Begin		Date	End		Sensor	Drogue depth (m)
		Latitude (N)	Longitude (W)		Latitude (N)	Longitude (W)		
1300	01.04.80	39°24.8	53°05.5	07.07.80	37°59.5	53°10.2		10
	20.08.80	35°32.4	38°44.3	04.03.81	34°38.3	34°04.0	T	10
1301	01.04.80	48°04.6	42°28.7	07.07.80	50°30.1	32°40.2	T	10
	20.08.80	50°22.0	31°15.2	26.02.81	48°43.6	03°59.3	T	10
1302	01.08.80	39°23.8	45°19.4	07.07.80	37°55.7	41°31.1	T	10
	20.08.80	38°25.9	36°51.2	22.05.81	41°21.5	20°14.1	T	10
1303	01.04.80	41°16.7	58°10.6	07.07.80	39°27.5	39°34.4	T	10
	20.08.80	39°45.7	34°10.0	24.03.82	36°25.7	14°38.8	T	10
1304	01.04.80	35°06.7	40°00.7	07.07.80	36°11.9	35°40.5	T	10
	20.08.80	34°03.9	33°31.7	04.03.81	34°43.0	31°38.7	T	10
2433	23.05.80	47°13.0	45°02.9	31.07.80	47°37.4	38°21.7	T	10
	20.08.80	45°10.9	39°19.6	02.11.81	49°06.0	11°17.7	T	10
3500	15.05.81	44°12.7	41°44.6	30.12.81	42°26.0	34°11.1	T	10
3501	08.05.81	43°35.1	43°16.1	13.10.81	39°55.1	38°18.7	T,P	10
3502	07.05.81	44°23.3	44°08.8	31.12.81	47°47.6	25°46.4	T,P	10
3503	09.05.81	43°11.6	42°32.5	09.09.81	38°05.4	41°45.8	T,P	10
3504	16.05.81	45°16.5	43°46.7	14.06.81	45°18.1	40°26.0	T,P	10
3505	08.05.81	44°01.1	43°46.3	21.10.81	42°49.0	28°25.4	T,P	10
3506	16.05.81	44°45.3	42°52.5	21.05.81	45°30.6	42°31.9	T,P	10
3507	16.05.81	45°39.7	44°17.0	24.10.81	48°14.6	29°08.9	T,P	10
3508	05.05.81	43°19.3	45°00.5	12.07.81	44°08.8	37°07.3	T,P	10
3509	06.05.81	43°50.1	45°40.0	12.12.81	54°08.7	36°44.2	T,P	10
3511	07.08.81	41°12.4	27°50.2	20.04.82	32°49.2	17°15.9	T	30
3513	07.08.81	42°42.0	28°34.7	02.09.81	42°40.3	26°19.0	T	30
	07.09.81	41°02.7	25°26.7	10.04.82	35°37.6	21°59.0	T	30
3514	25.08.81	42°49.0	27°33.5	27.09.81	42°52.3	27°23.2	T	30
	08.09.81	39°03.8	25°04.9	30.06.83	28°17.2	64°08.3	T	30
3515	09.08.81	43°31.3	29°25.0	07.03.82	45°12.5	12°08.8	T	30
3516	09.08.81	44°51.4	28°59.2	21.02.82	42°56.9	23°34.1		100
3517	28.08.81	48°33.2	26°04.3	28.02.82	49°37.1	15°14.8	T	100
3550	10.09.81	37°59.3	24°29.4	31.05.83	20°22.7	52°38.0	T,P	30
3551	10.08.81	52°11.2	31°00.7	23.03.82	54°00.1	12°00.8	T,P	100
3552	07.09.81	40°00.1	25°59.7	26.05.83	27°48.5	26°59.0	T,P	100
3554	25.08.81	43°11.1	27°27.1	25.03.82	37°47.2	17°30.7	T,P	30
3555	16.08.81	45°01.3	26°02.6	14.03.83	46°05.9	22°20.6	T,P	100
3556	09.08.81	48°25.5	29°03.7	31.03.82	45°43.9	14°43.4	T,P	100
3557	09.08.81	46°24.2	29°09.1	25.03.82	47°50.2	10°10.6	T,P	100

Table 3: Date and location of the beginning and the end of the available tracks of satellite-tracked drifting buoys. The last column indicates if there was a sea surface temperature (T) or air pressure (P) sensor mounted.



**Fig. 22:** The drifting buoy trajectories during 1980 and 1981.

Position	Water depth m	Moorling No.	Type of Instrument	Instr. depth m	First value date & time	Last value date & time	Duration d	Record Interval $\Delta t$ min	Remarks
48°32.8'N 26°04.9'W	3725	265101	AVT	184	16.05.80 16.00	26.05.81 07.00	374.67	60	
		265102	AVT	389	"	12.07.81 02.00	421.46	60	
		265103	AVT	794	"	"	"	60	
		265104	AVTT	2515	"	"	"	60	
from 41°37.5'N 28°16.0'W to 41°34.2'N 28°20.0'W	2600	281101	DL VTLTMAP	0	18.08.81 10.10	20.08.81 11.20	2.06	10	Moorling
		281102	TK	50-100	12.45	11.25	1.94	10	drifted
		281103	VACM	101	"	"	"	0.94	because wire
		281104	TK	102-152	"	"	"	10	broke when
		281105	AVT	450	"	"	"	5	mooring was
		281106	AVT	800	"	"	"	5	laid
from 42°56.3'N 25°54.0'W to 42°51.5'N 25°28.1'W	3370	282101	DL VTLTMAP	0	14.08.81 19.40	21.08.81 06.40	6.47	10	"
		282102	TK	50-100	22.50	"	6.33	10	
		282105	AVT	450	"	"	"	5	
from 45°00.6'N 26°01.3'W to 44.59.4'N 26°58.5'W	2700	283101	DL VTLTMAP	0	16.08.81 12.00	22.08.81 08.30	5.86	10	"
		283102	TK	50-100	14.00	08.00	5.75	15	
		283104	TK	102-152	"	"	"	10	
		283105	AVT	450	"	"	"	5	
42°47.9'N 27°33.3'W	2880	D	DL VTLTMAP	0	24.08.81 16.00	03.09.81 13.30	9.90	10	Surface buoy
		D 247	VACM	48	20.25	07.55	9.48	0.94	drifted
		TK453	TK	50-100	"	"	"	10	since
		D 201	AVT	151	"	"	"	5	31.08.81
		TK454	TK	153-203	"	"	"	10	20.38
		D 202	AVT	254	"	"	"	5	because
		TK181	TK	256-306	20.20	07.50	"	15	wire
		D 207	AVT	457	20.25	07.55	"	5	broke
		TK441	TK	459-509	"	"	"	10	
		D 204	AVT	662	"	"	"	5	
TK484	TK	664-714	"	"	"	10			

Table 4: Observation periods of current meter moorings (AVT = Aanderaa current meter, DL VTLTMAP = Aanderaa data logger with wind speed and direction, air and water temperature and air pressure, TK = Aanderaa thermistor cable, VACM = vector averaging current meter)

Position		Mooring No.	Instrument depth (m)	U	$\sigma_{ij}$		$\sigma_y$	T °C	$\sigma_T$				
Latitude	Longitude				$U$	$V$							
48°32.8' N	26°04.9' W	265101	184	-0.32	9.88	7.84	10.30	11.60	0.66				
		265102	389	0.48	8.23	7.95	9.51	10.16	0.53				
		265103	794	0.34	6.11	4.16	6.77	5.94	0.78				
		265104	2515	-0.84	3.74	0.73	3.52	3.17	0.05				
41°37.5' N	28°16.0' W	281102	50-100					16.38	0.64				
										15.99	0.55		
										15.72	0.47		
										15.51	0.39		
										15.29	0.31		
										15.12	0.23		
										14.97	0.17		
										14.85	0.12		
										14.79	0.11		
										14.74	0.11		
										14.70	0.11		
						281103	101	1.45	10.03	-4.72	11.13	14.61	0.11
						281104	102-152					14.62	0.11
												14.57	0.11
								14.53	0.11				
								14.45	0.12				
								14.40	0.12				
								14.36	0.11				
								14.29	0.11				
								14.23	0.11				
								14.20	0.11				
								14.17	0.12				
								14.11	0.12				
		281105	450	21.93	10.34	1.52	15.86	11.45	0.12				
		281106	800	11.35	14.77	12.43	13.35	9.21	0.13				
42°56.3' N	25°54.0' W	282102	50-100					15.50	0.34				
										15.24	0.30		
										15.03	0.25		
										14.85	0.20		
										14.70	0.16		
										14.59	0.14		
										14.45	0.10		
										14.38	0.09		
						14.30	0.08						
						14.32	0.08						
		282105	450	5.89	5.57	4.78	7.24	11.78	0.29				
45°00.6' N	26°01.3' W	283102	50-100					14.83	0.45				
										14.57	0.37		
										14.33	0.32		
										14.14	0.29		
										13.99	0.26		
										13.82	0.22		
										13.68	0.20		
										13.62	0.18		
						13.49	0.16						
						13.41	0.16						
						13.34	0.15						
		283104	102-152					13.30	0.15				
								13.25	0.15				
								13.19	0.15				
								13.11	0.14				

Table 5: Simple statistics of moored instruments time series

Position		Mooring No.	Instrument depth (m)	U	$\sigma_U$	$\sigma_V$	T	$\sigma_T$							
Latitude	Longitude								cm s <sup>-1</sup>	°C					
42°47.9' N	27°33.3' W	283105	450	1.67	14.59	9.96	14.52	13.08	0.13						
								13.06	0.12						
								13.00	0.11						
								13.00	0.10						
								12.98	0.09						
								12.91	0.09						
								12.90	0.09						
								10.90	0.15						
								D 247 TK453	48 50-100	3.72	8.89	1.75	9.43	15.95	1.06
														14.61	0.32
		14.55	0.30												
		14.50	0.28												
		14.46	0.27												
		D 201 TK454	151 153-203	7.03	12.97	5.42	13.22							13.89	0.24
														13.95	0.23
														13.94	0.36
														13.88	0.24
														13.82	0.24
								13.79	0.24						
								13.76	0.25						
								13.70	0.26						
								13.65	0.27						
								13.62	0.28						
		D 202 TK181	254 256-306	4.14	14.45	7.47	14.30	13.60	0.28						
								13.55	0.29						
								13.21	0.32						
								13.22	0.30						
								13.18	0.29						
								13.11	0.29						
								13.06	0.28						
13.02	0.28														
12.95	0.28														
12.88	0.28														
D 207 TK441	457 459-509	14.18	9.67	8.46	11.12	12.87	0.27								
						12.79	0.27								
						12.75	0.27								
						12.70	0.27								
						11.51	0.25								
						11.53	0.24								
						11.50	0.23								
						11.46	0.23								
						11.39	0.22								
						11.37	0.22								
D 204 TK484	662 664-714	13.85	15.69	7.32	14.84	11.34	0.22								
						11.29	0.21								
						11.28	0.21								
						11.25	0.22								
						11.17	0.22								
						11.15	0.22								
						9.76	0.22								
						9.82	.22								
						9.77	.21								
						9.75	.19								
9.70	.19														
9.64	.19														
9.62	.19														
9.54	.19														
9.50	.20														
9.43	.20														
9.41	.20														

**Table 5: Simple statistics of moored instruments time series (continued)**

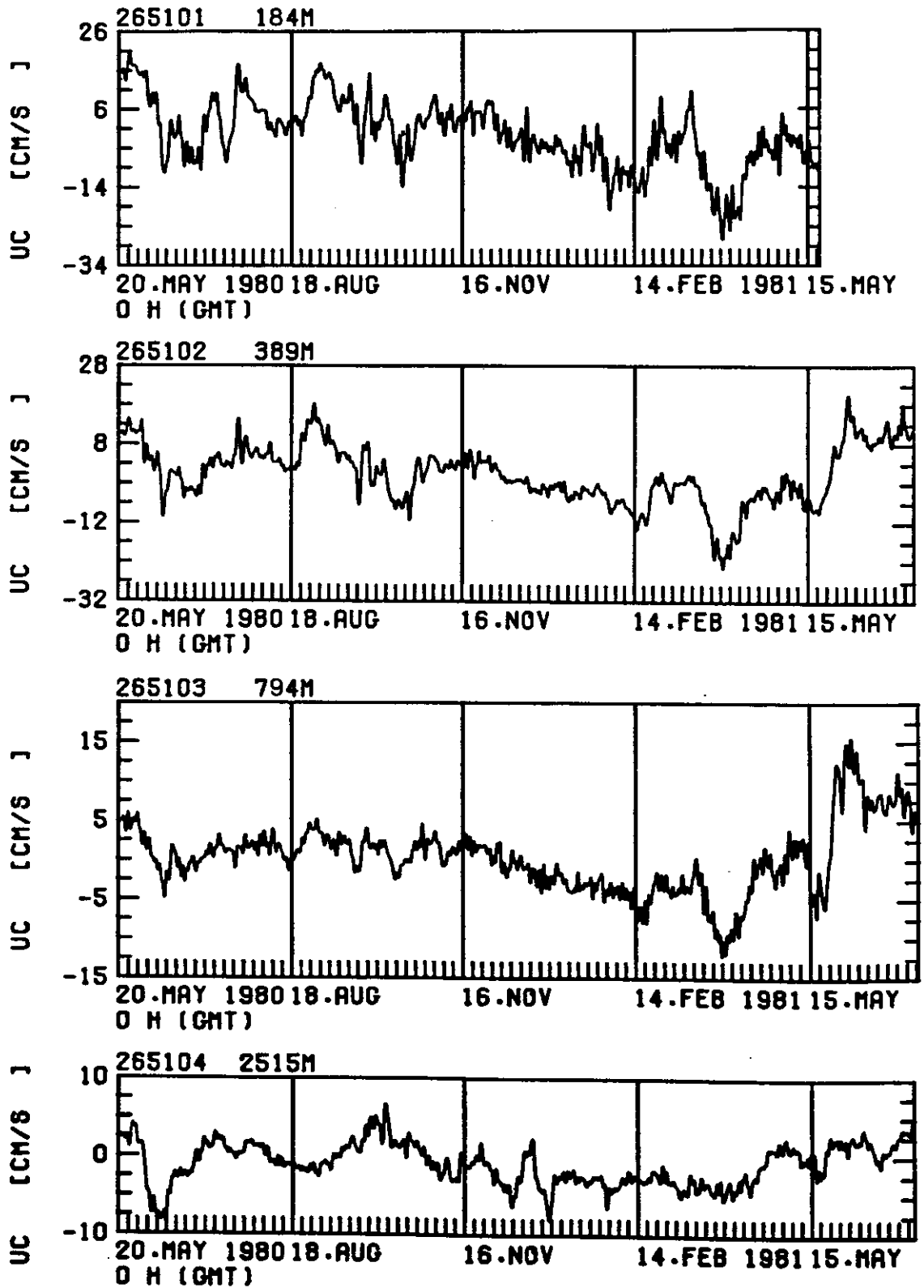
Mooring No.	U	$\sigma_U$	V $m\ s^{-1}$	$\sigma_V$	$T_L$	$\sigma_{T_L}$ $^{\circ}C$	$T_W$	$\sigma_{T_W}$	AP	$\sigma_{AP}$ mb
281101	-2.88	1.05	-3.21	0.96	21.85	1.15	22.01	0.11	1029.6	0.9
282101	-0.37	3.05	-3.34	1.85	20.72	0.66	21.14	0.28	1026.4	0.5
283101	-0.56	1.75	-1.67	2.75	20.35	0.88	20.62	0.22	1031.0	3.1
D	-1.62	3.43	0.56	4.30	20.57	1.07	21.47	0.11	1018.2	5.8

Table 6: Simple statistics of the meteorological buoy stations with wind speed components (U,V), air temperature ( $T_L$ ), water temperature ( $T_W$ ), air pressure (AP).

Mooring	281		282		283	
initial position	41°37.5'N 28°16.0'W		42°56.3'N 25°53.9'W		45°00.6'N 26°01.4'W	
time of laying (GMT)	18.8.81	11.57	14.8.81	22.38	16.8.81	13.56
recovering position	41°34.2'N 28°20.0'W		42°51.5'N 25°28.7'W		44°59.4'N 26°58.5'W	
time of recovery (GMT)	20.8.81	09.27	21.8.81	06.30	22.8.81	09.25
drifting distance (km)	8.25		35.33		74.87	
drifting time (d)	1.90		6.33		5.81	
drifting speed ( $cm\ s^{-1}$ )	5.0		6.5		14.9	
drifting direction	222		104		268	
correction of the u-component ( $cm\ s^{-1}$ )	-3.4		6.2		-14.9	
correction of the v-component ( $cm\ s^{-1}$ )	-3.7		-1.6		-0.4	

Table 7: Current corrections due to drifting moorings





**Fig. 23a-c:** Time series of the U-component (positive to the east), the V-component (positive to the north) and the temperature of the current meter array 265/1.

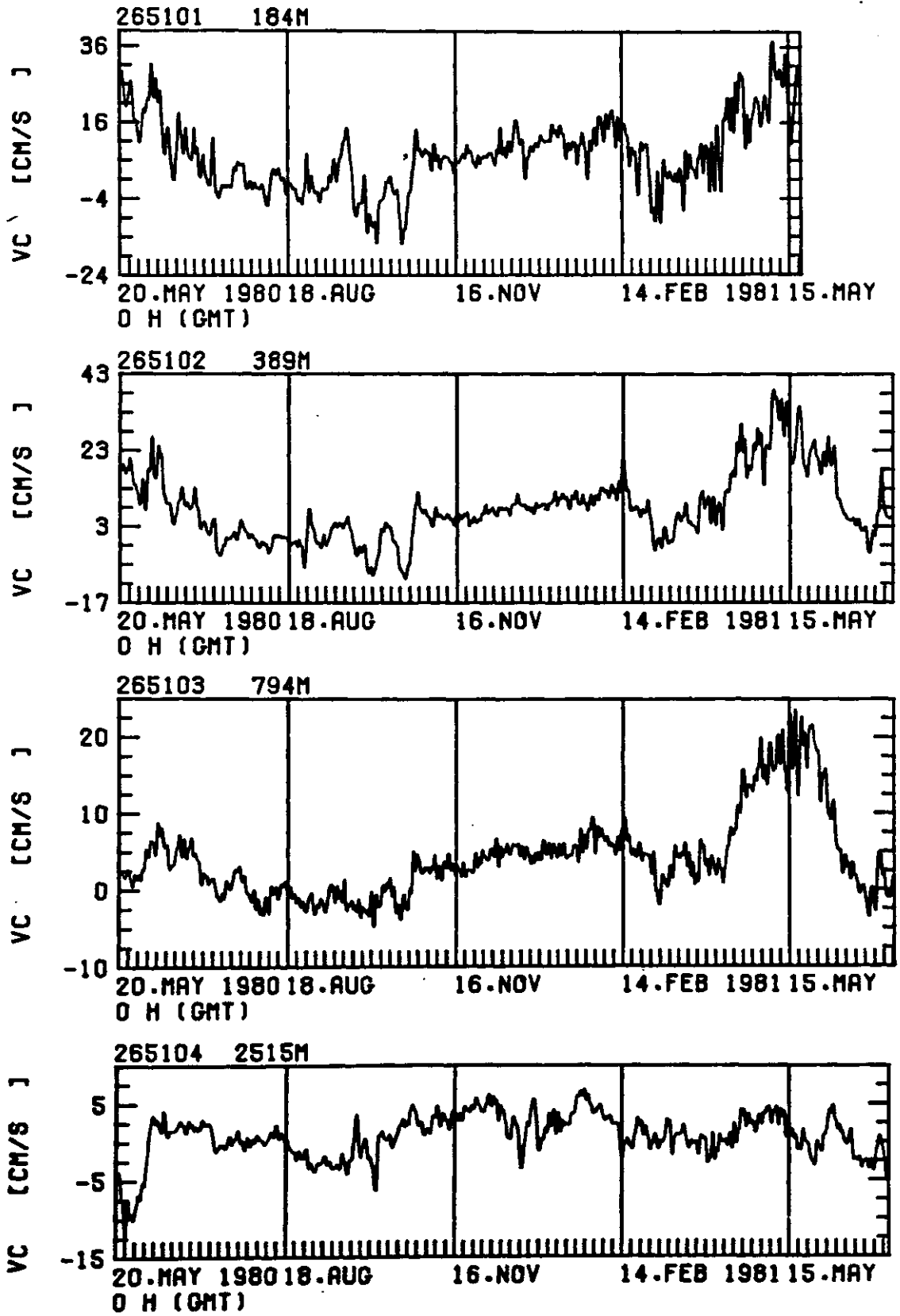


Fig. 23b

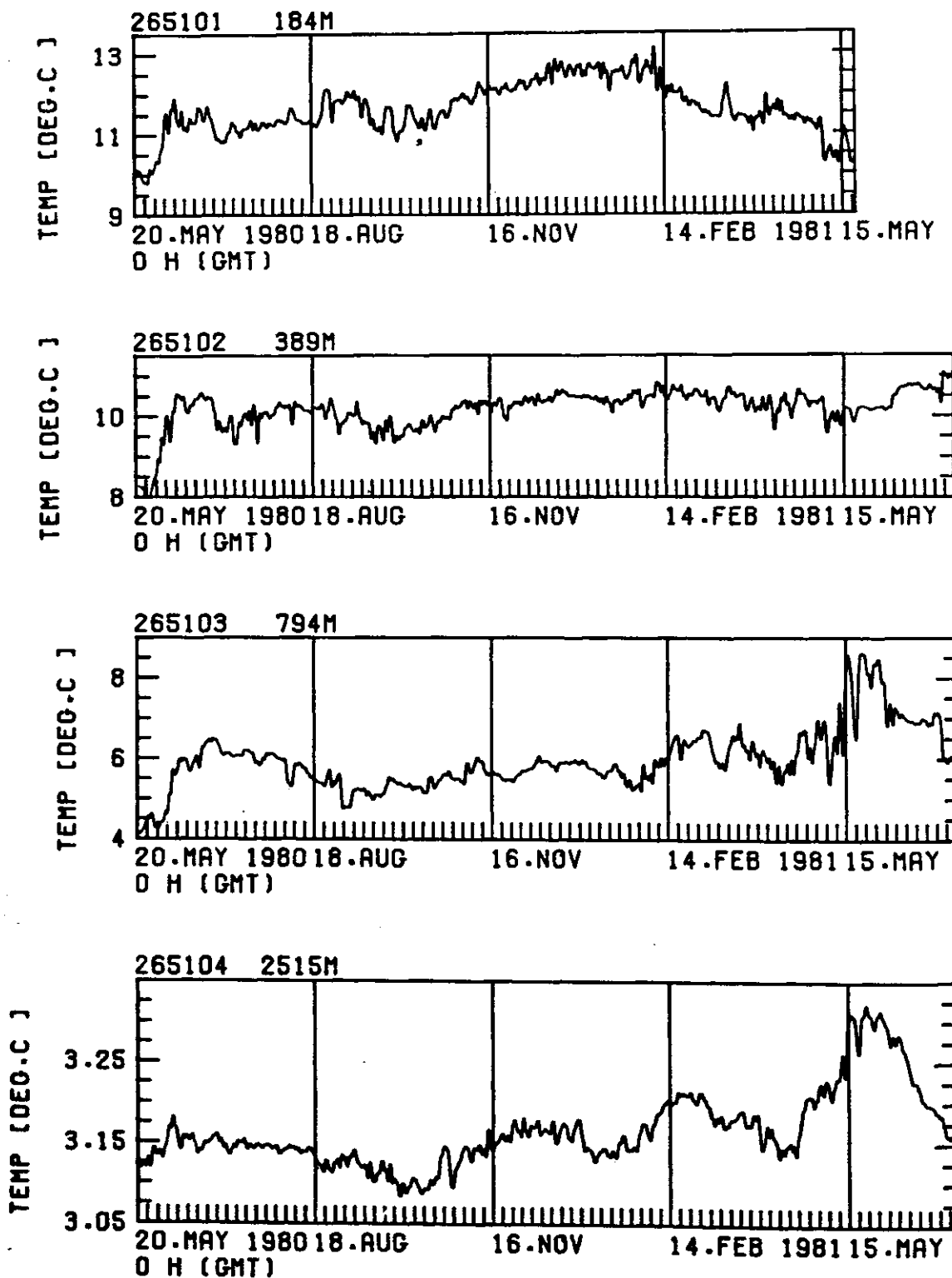
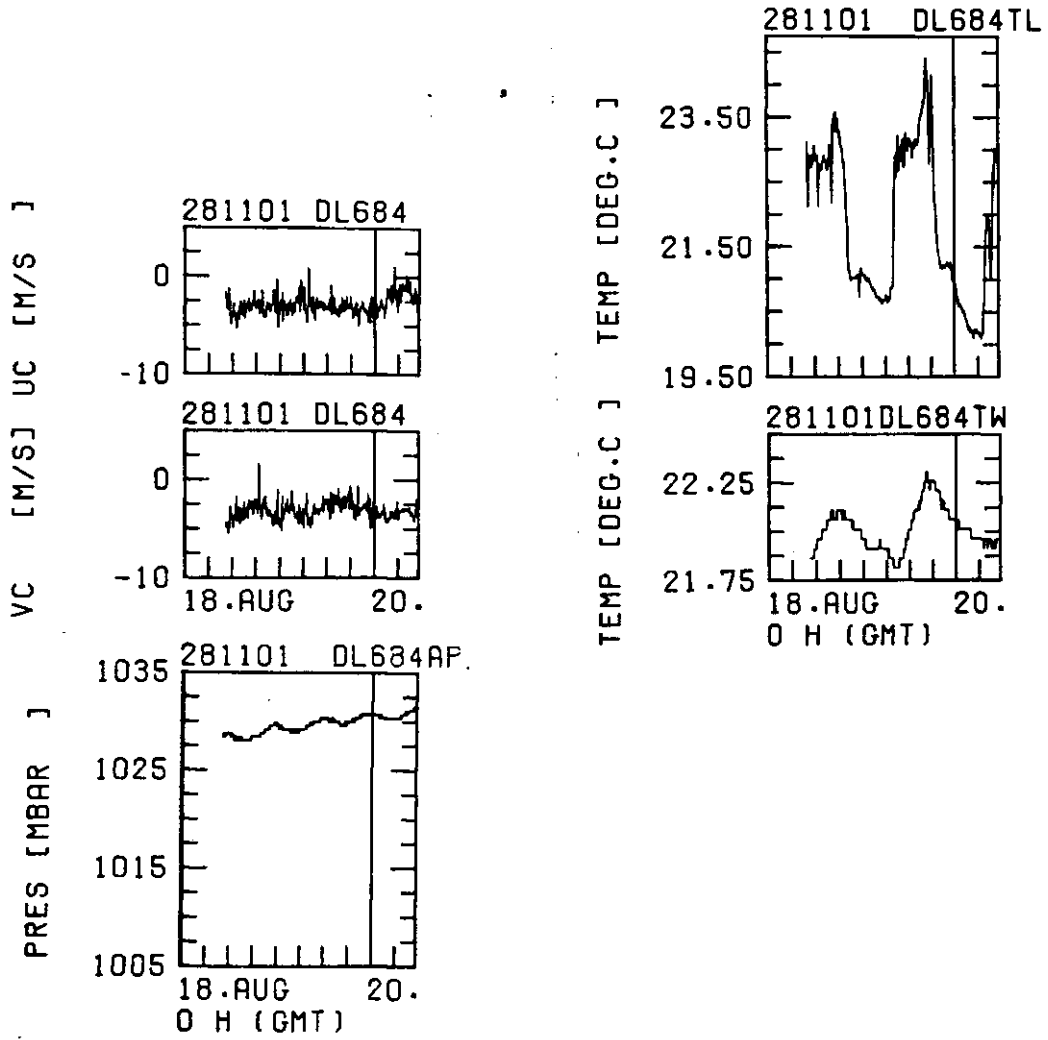
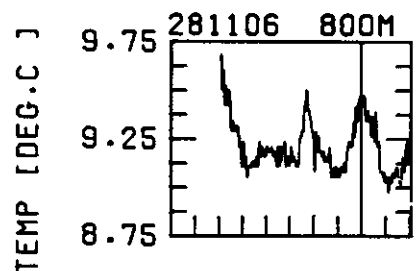
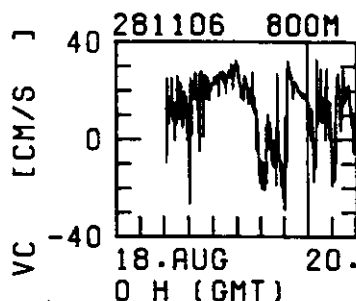
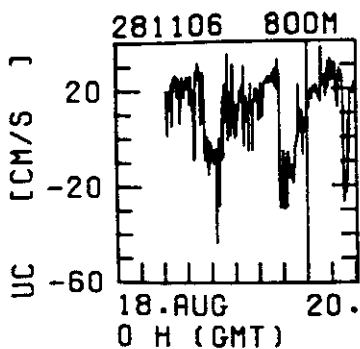
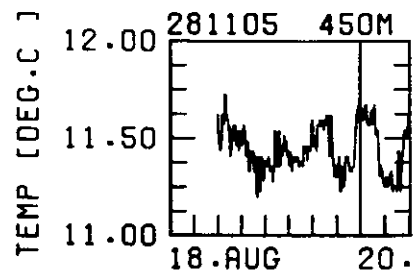
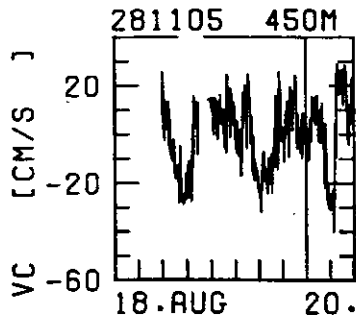
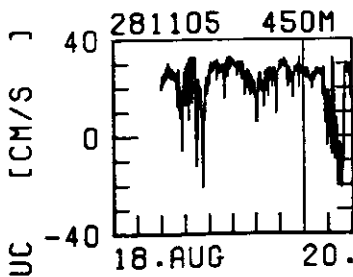
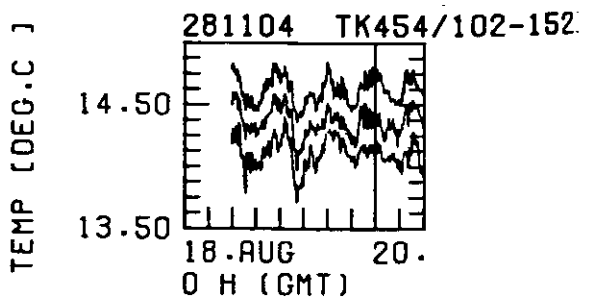
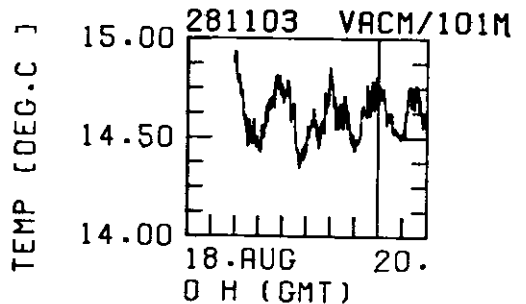
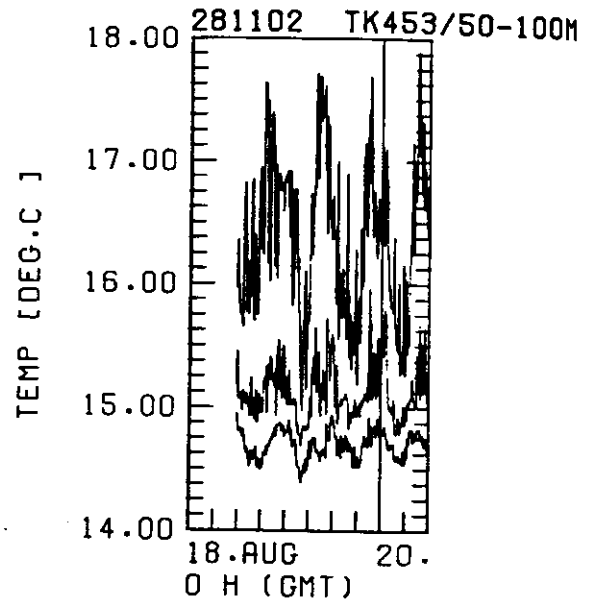
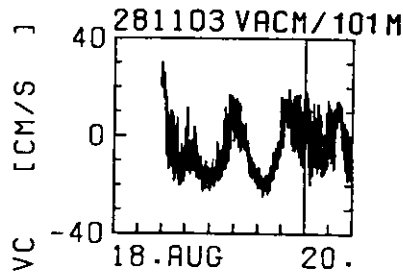
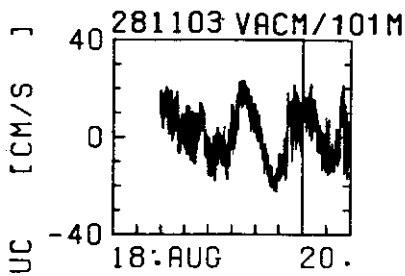


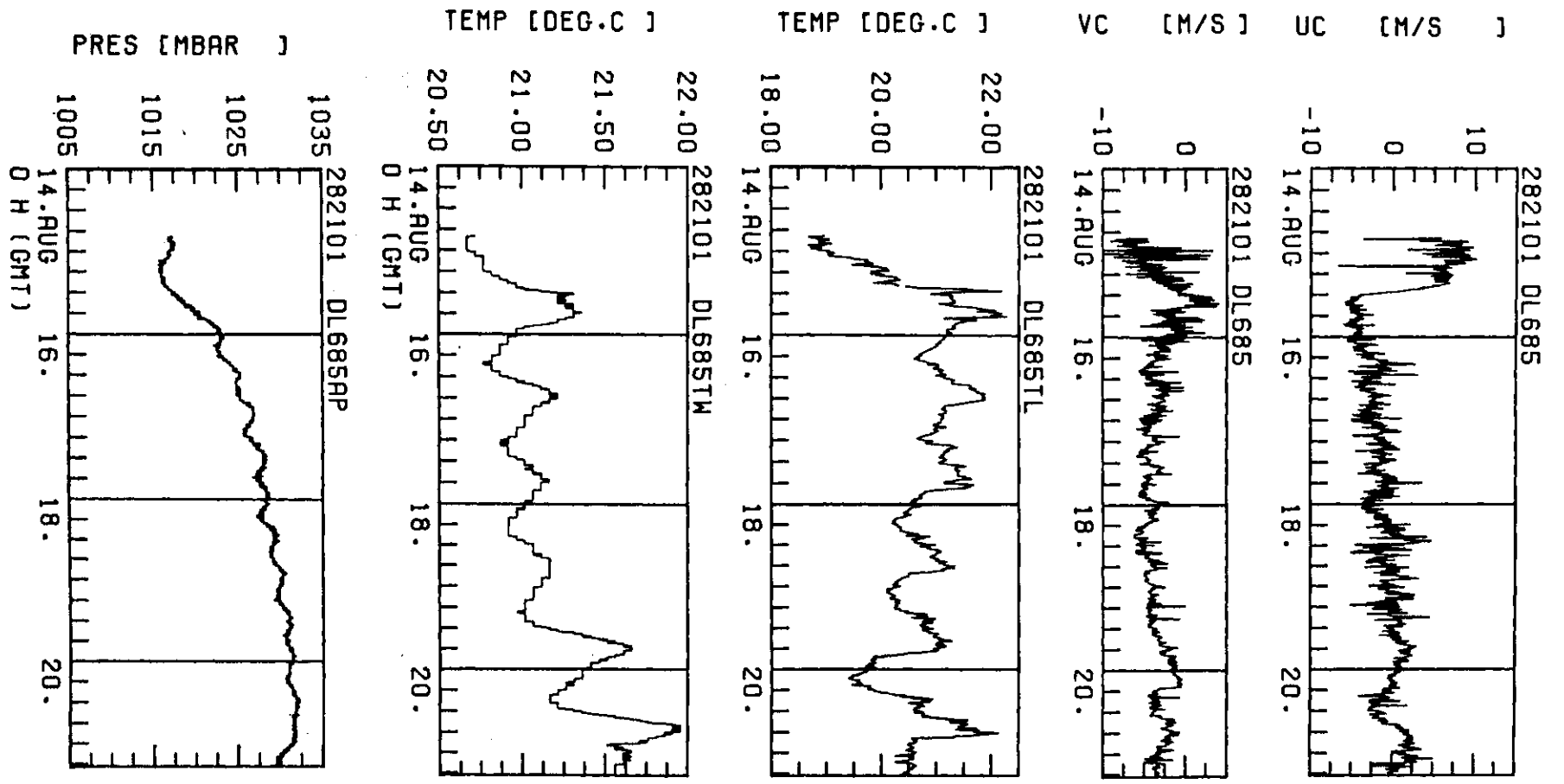
Fig. 23c



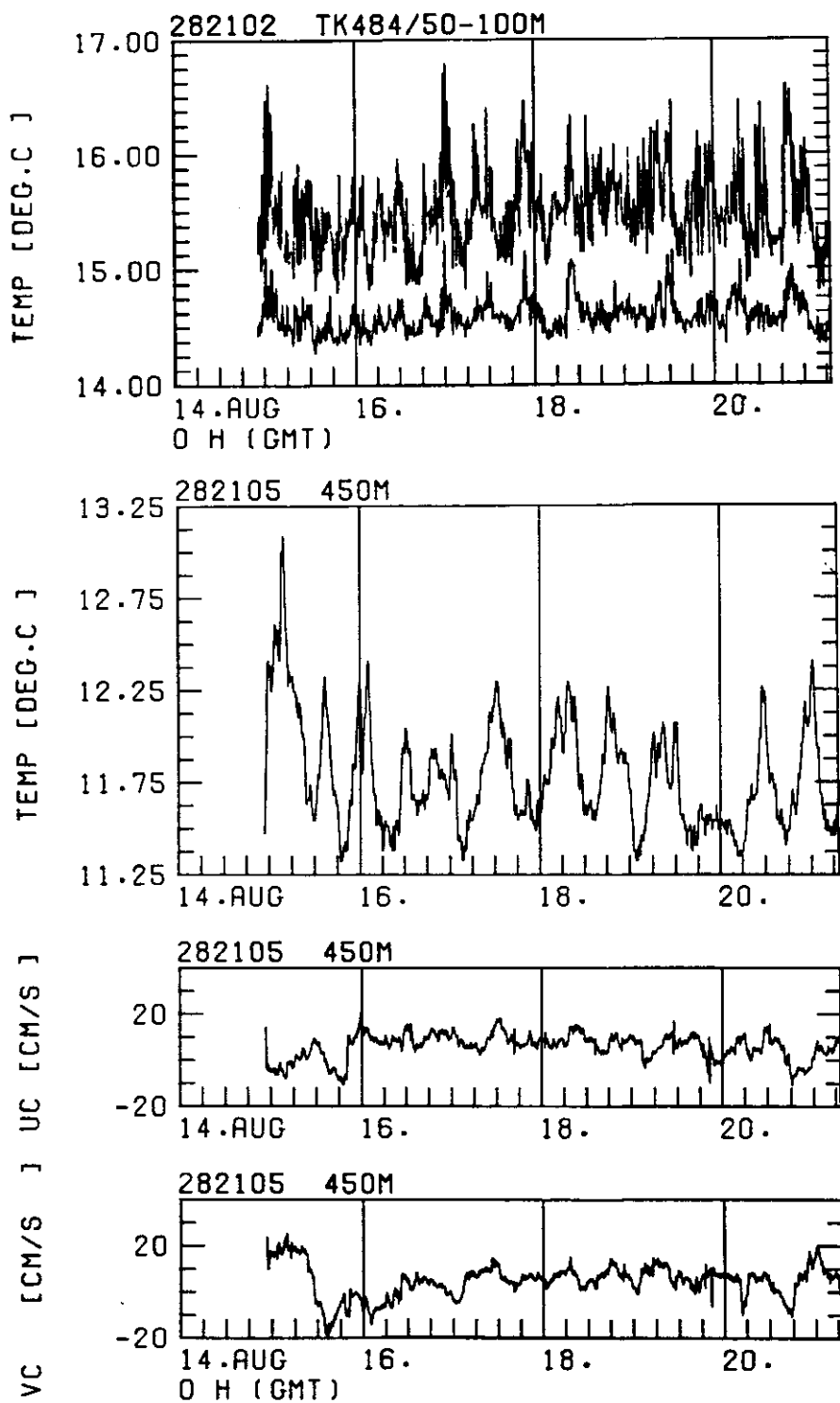
**Fig. 24a:** Time series of wind components (UC and VC), air temperature (TL), water temperature (TW) and air pressure (AP) at mooring 281.

**Fig. 24b:** Time series of the current components (UC and VC), and temperatures at current meter array 281. Thermistor chains are indicated as TK. Only the records of thermistor 1, 6 and 11 are shown.

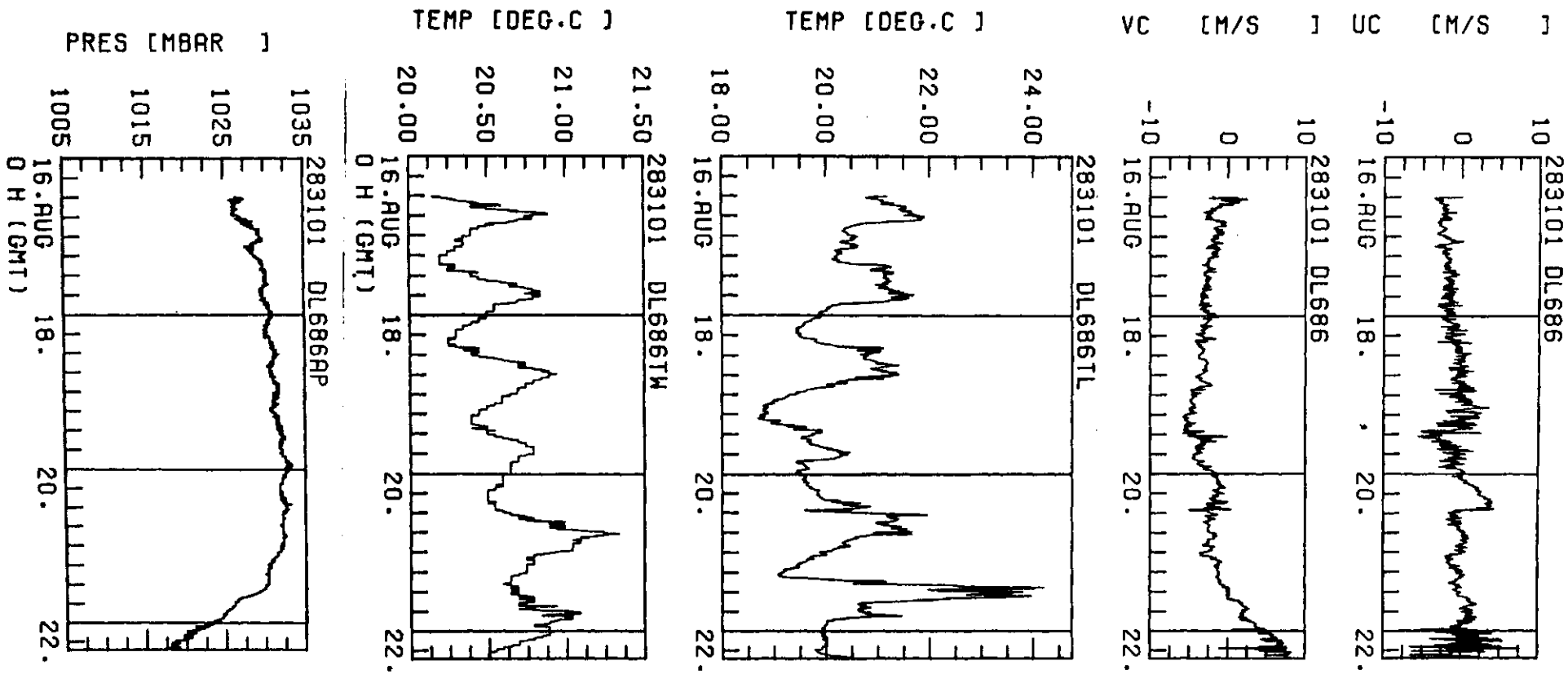




**Fig. 25a:** Time series of wind components (UC and VC), air temperature (TL), water temperature (TW) and air pressure (AP) at mooring 282.

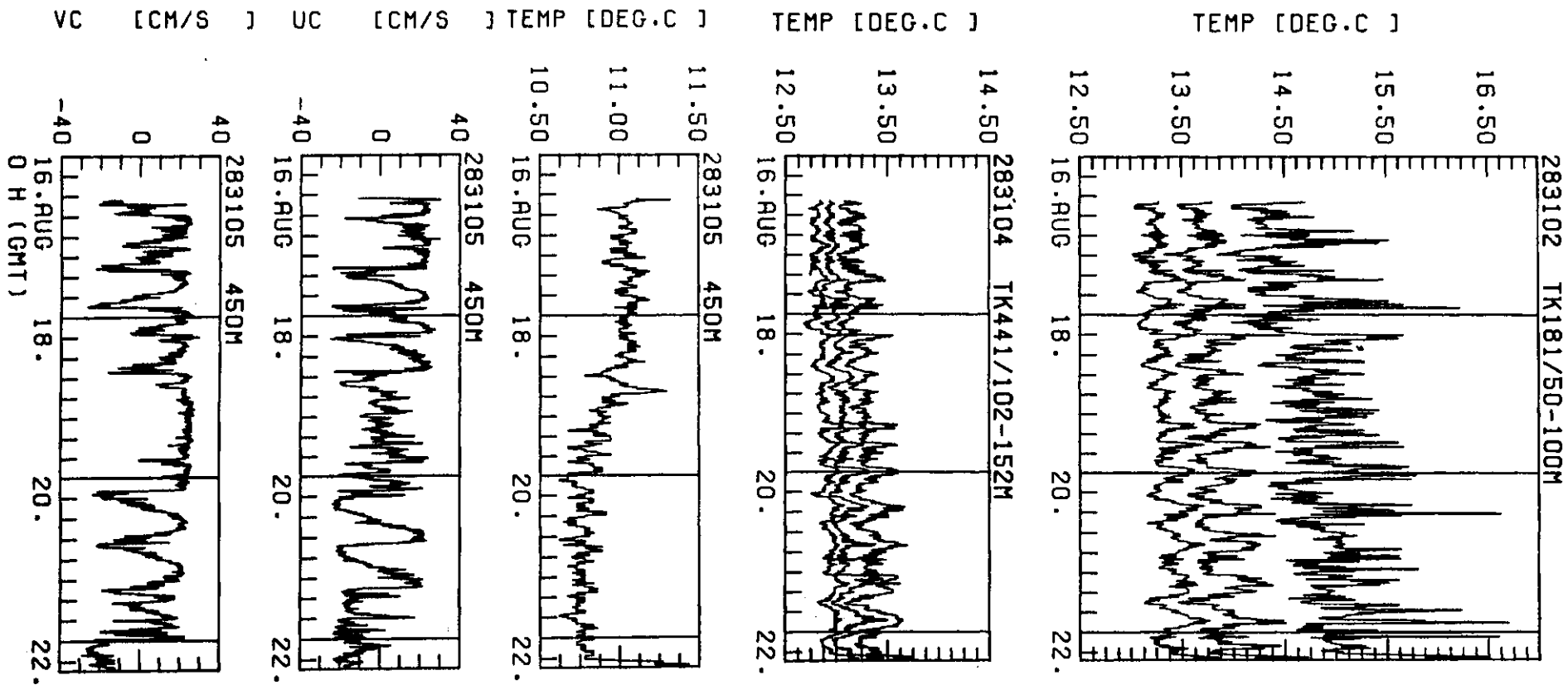


**Fig. 25b:** Time series of the current components and temperature at current meter array 282. The thermistor chain is indicated as TK. Only the records of thermistor 1, 6 and 10 are shown.

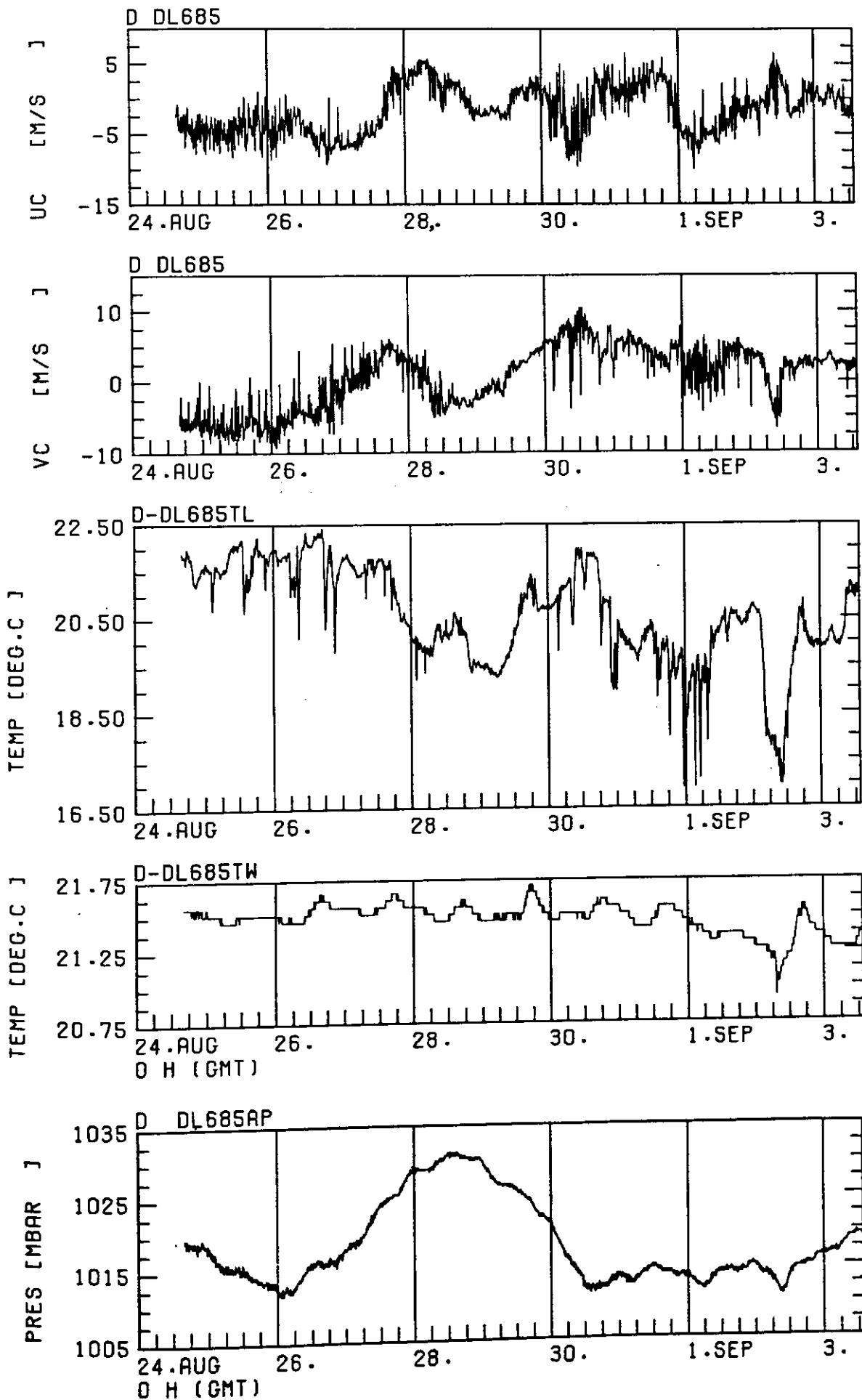


**Fig. 26a:** Time series of wind components (UC and VC), air temperature (TL), water temperature (TW) and air pressure (AP) at mooring 283.



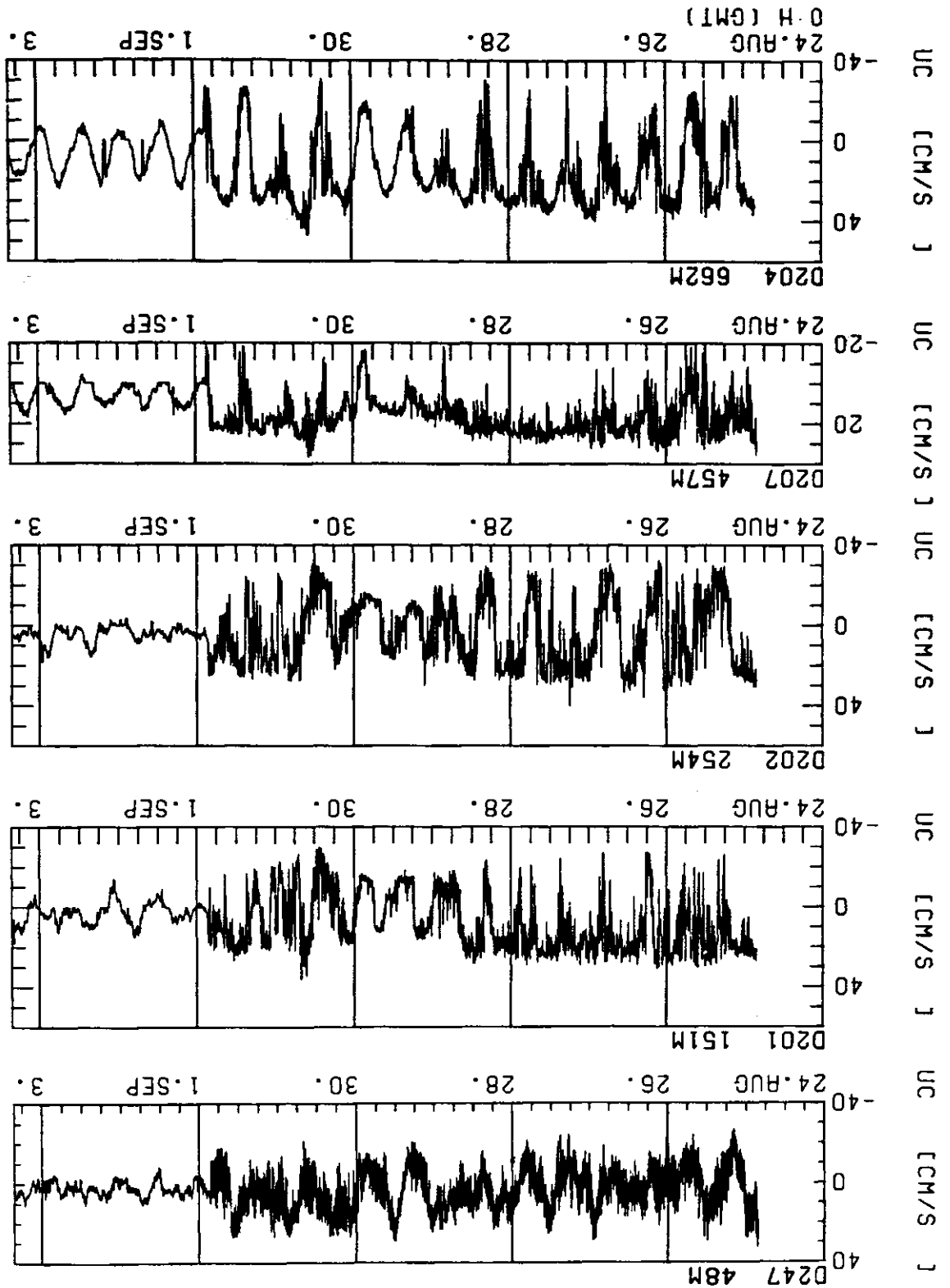


**Fig. 26b:** Time series of the current components and temperature at current meter array 283. Thermistor chains are indicated as TK. Only the records of thermistor 1, 6 and 11 are shown.



**Fig. 27a:** Time series of wind components (UC and VC), air temperature (TL), air temperature (TW) and air pressure (AP) at mooring D.

Fig. 27b: Time series of the U-component of the current meter array D.



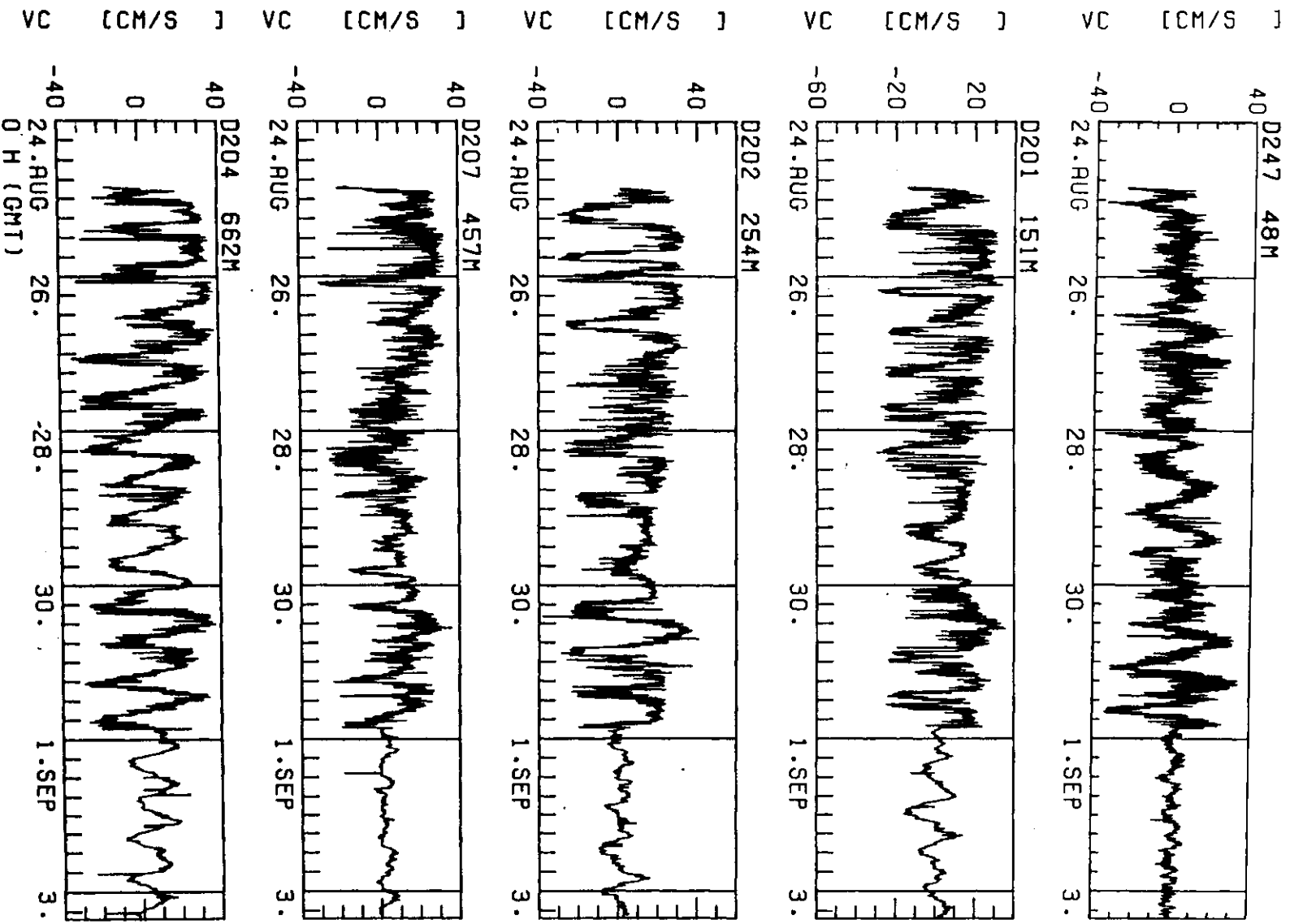
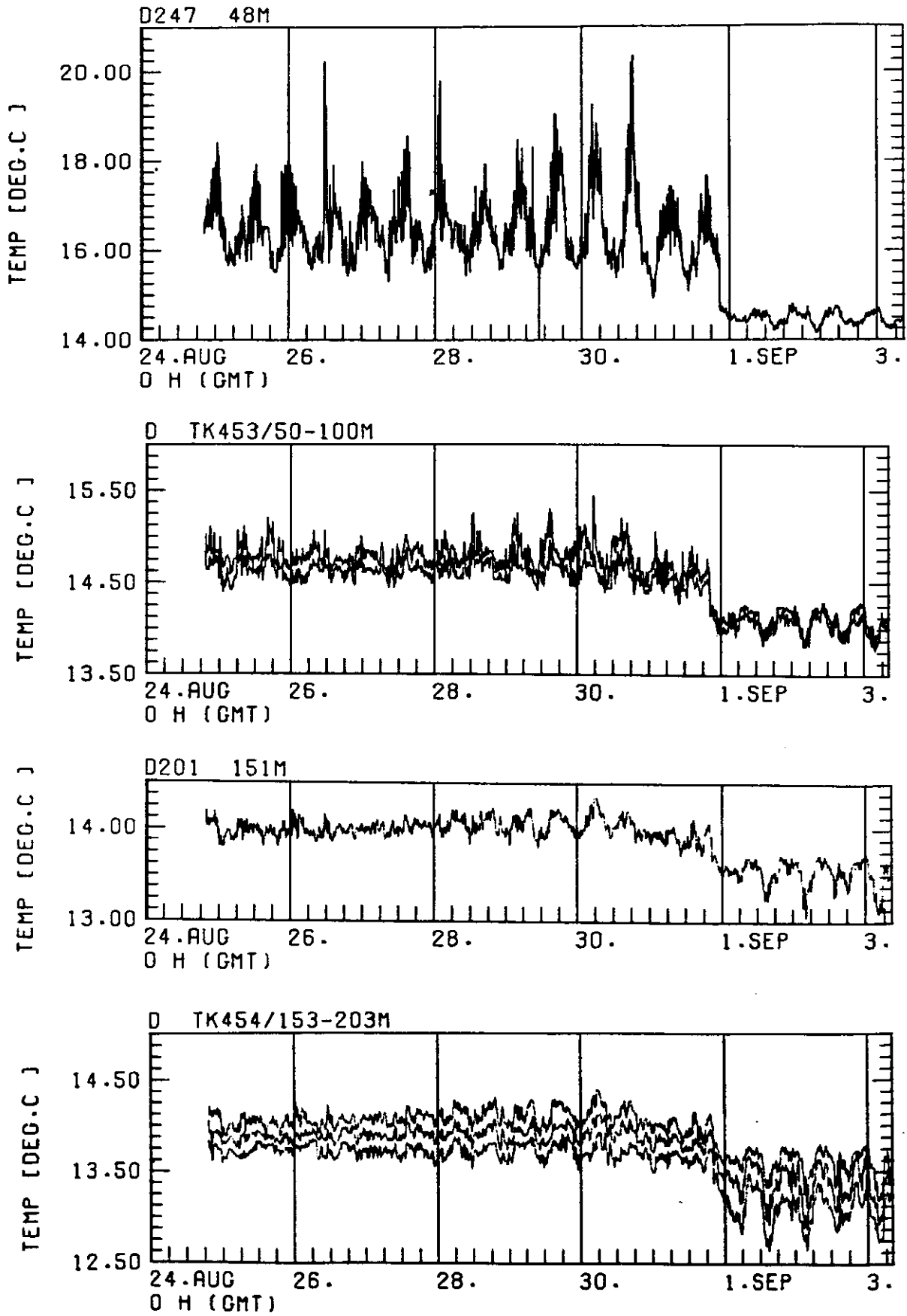


Fig. 27c: Time series of the V-component of the current meter array D.



**Fig. 27d:** Time series of temperature of current meter array D. Thermistor chains are indicated by TK. Only the records of thermistor 1, 6, 11 or 1, 6, 10 are shown.

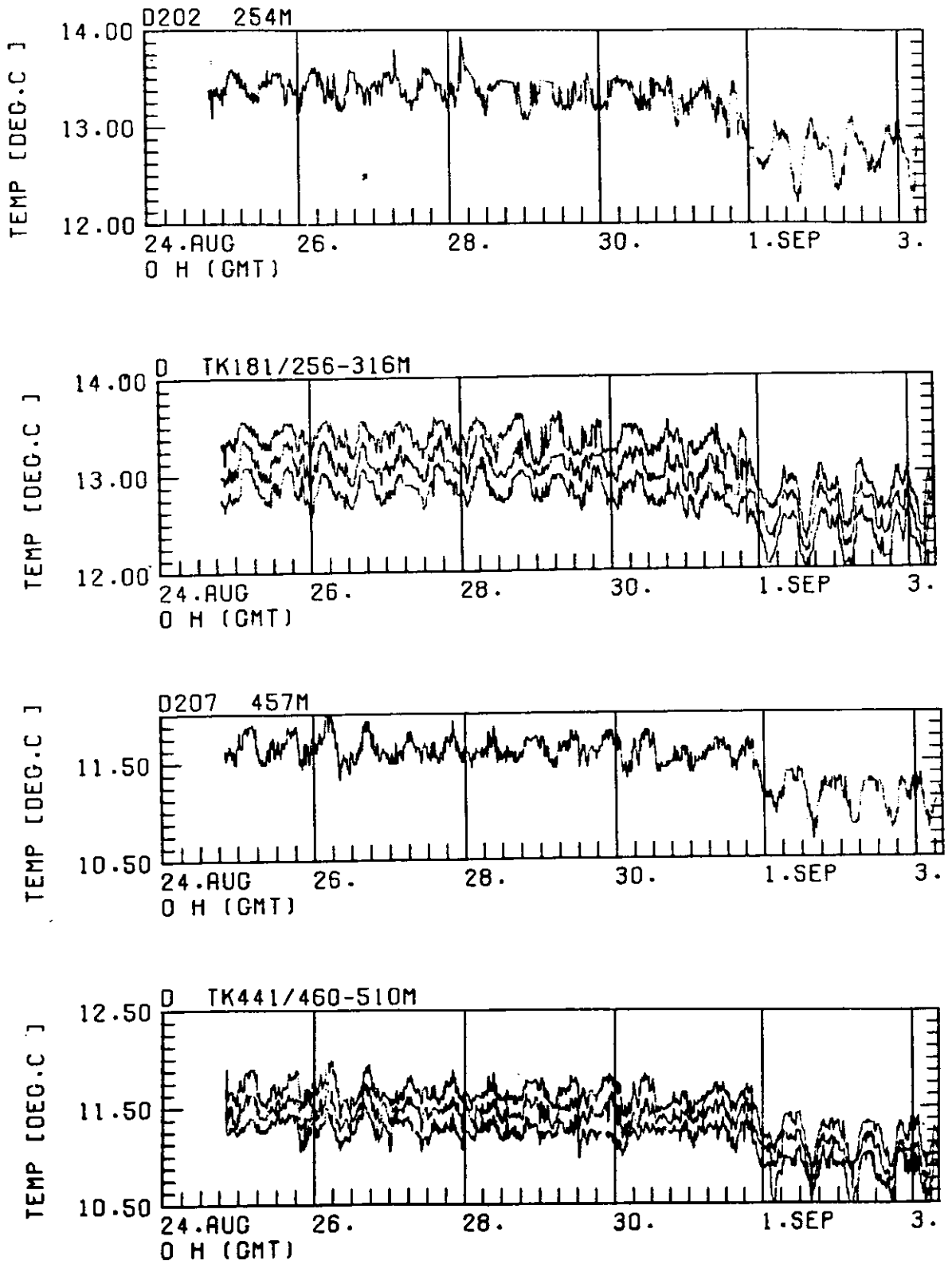


Fig. 27d: (continued)

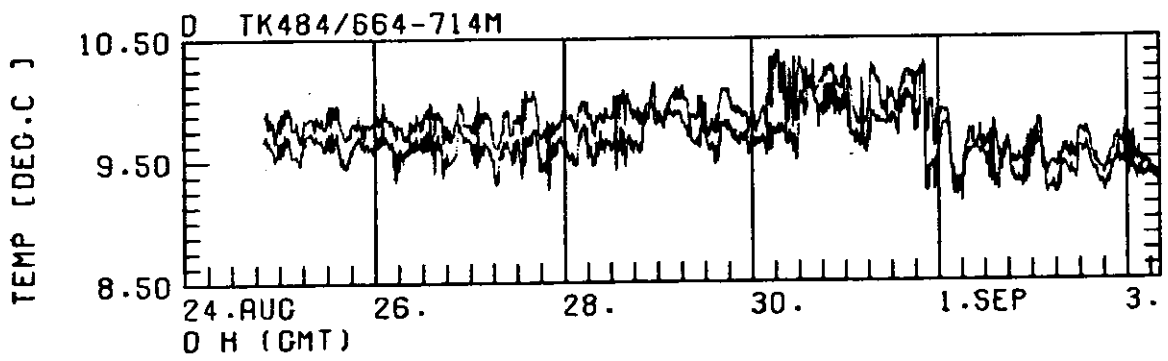
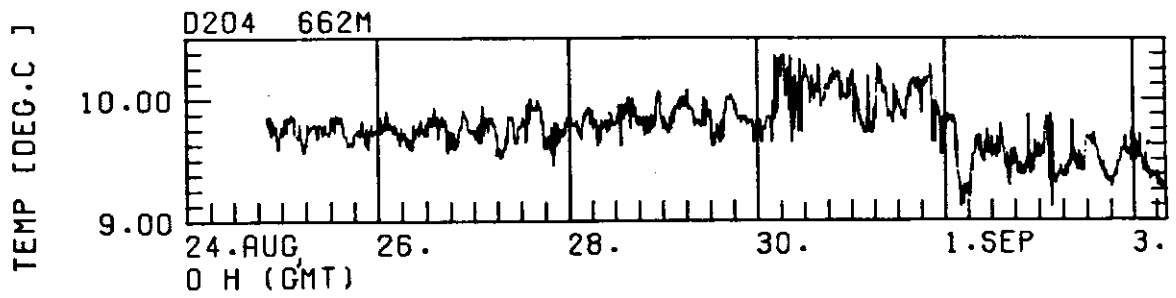
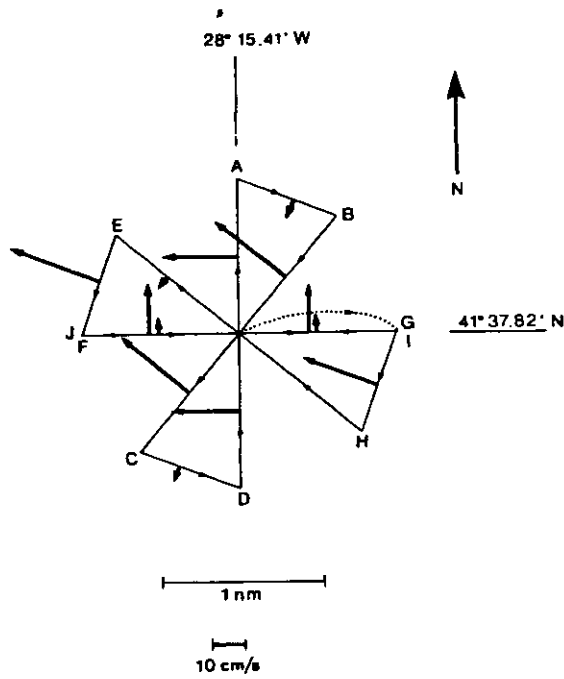


Fig. 27d: (continued)



**Fig. 28:** Ship's tracks carried out on 18 August 1981 with a GEK to control its data quality. The arrows give the measured currents.



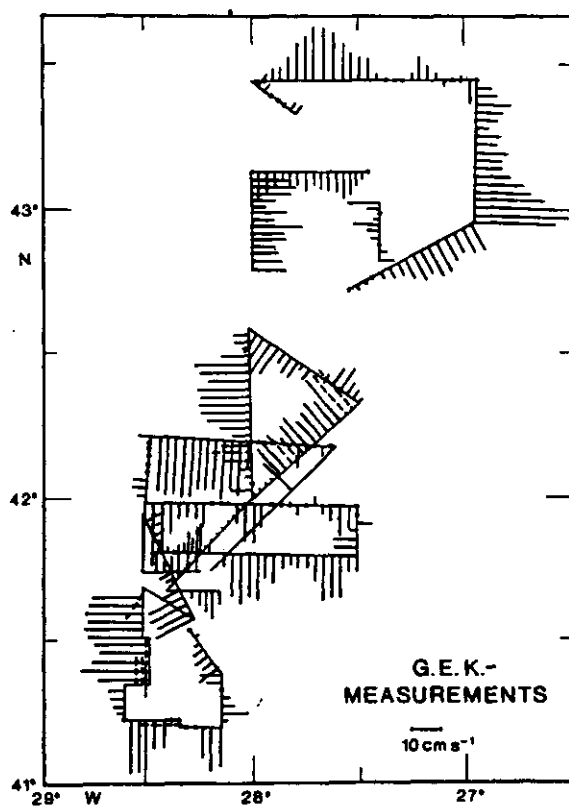


Fig. 29: Observation track with G.E.K. measurements. The lines perpendicular to the track give the observed currents.

## 8. Abbreviations

### Code used in station lists

MS	Multisonde-CTD
V xyz	Current meter mooring "xyz"
PC	Piston corer 12 m
NS	Nansen cast series
GEK	Geomagnetic Electro-Kinetograph
Dr	Satellite-tracked drifting buoy
BS	Bathymetric survey
W	Waverider

### Code used in vertical sections

GFZ	Gibbs fracture zone
FFZ	Faraday fracture zone
MFZ	Maxwell fracture zone
KFZ	Kurchatov fracture zone

### Code used in time series

UC	U-component (positive to the east)
VC	V-component (positive to the north)
TL	air temperature
TW	water temperature
AP	air pressure

## 9. Acknowledgements

Numerous people have contributed to the presented results. We appreciate their help even if it is not possible to mention everyone.

We are very grateful to the masters and their crews of the various ships which contributed to this programme.

We are indebted to Dr. T.B. Sanford for making the GEK available to us.

C. Carlsen, G. Dorn and K. Hueninghaus prepared all the moorings, P. Meier the various Multisonde systems. On board RV "Poseidon" Frau Kuhl ran with inexhaustible eagerness the GEK and J. Holtorff the computer system. K.H. Prien and D. Sperling supported the work at sea. Frau Trier and G. Rohardt helped us with the data processing. Frau Oelrichs, Frau Petersen, and Herr Eisele provided the drawings. Frau Mempel carried out the photographic work. Frau Schuster typed the manuscript.

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