PRELIMINARY CRUISE REPORT, W9911A
R/V WECOMA, 3-5 November 1999
GLOBEC/ENSO Long-Term Observations off Oregon

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PURPOSE: To determine physical, plankton and nutrient/chemical conditions over the continental margin for climate change studies in NE Pacific. In particular, to make CTD and CTD/rosette and net tow stations along one lines off Newport, OR, and to make continuous observations of currents using ADCP and of surface-layer temperature, salinity and fluorescence by means of ship's thru-flo system. Table 1 shows the intended CTD station positions, and Table 2 shows the intended biochemical sampling depths.

SAMPLING PLAN:
1. Use ship's intake continuously for Temperature, Salinity, Fluorescence
2. Continuous ADCP Profiling (150 kHz transducer) for water velocity and backscattering for bioacoustics.
3. Standard CTD Stations using SBE 9/11 plus CTD system for Temperature, Salinity, Fluorescence, Light Transmission, Oxygen.
4. Rosette sampling: 5 liter bottles for nutrients, and chlorophyll.
5. Vertical net tows: WP-2 nets 200 m to surface; Oblique tows: Bongo nets (70 cm dia) 200 m to surface at 2-3 kts.

CRUISE NARRATIVE

A brief overview of the cruise is presented here. An event log is provided in Table 3, and the participating personnel are listed in Table 4. Wecoma departed Newport at 1235. PDT, 3 November 1999, after a delay due to malfunction of one of the ship's main generators. Because of this delay and generally rough weather we omitted sampling at NH-1, and began sampling at NH-3 instead. Because of high winds, we deferred all zooplankton net tows at NH-5 and NH-10, and the bongo net tow at NH-15. Improving weather permitted the complete suite of nets at NH-25. Nevertheless, we broke off sampling and steamed to NH-85, at the offshore end of the NH-line. Early the next morning we resumed sampling at NH-85, and began working inshore, making stations as planned. After completing CTD Station 11 (NH-35), we returned to NH-15, -10 and -5 for the net tows we had missed the previous day. When these were completed, we returned to Newport with all due haste, as the weather forecast called for gale winds the following day. We arrived alongside the pier at Newport at about 0730 UT, 5 November 1999.

PRELIMINARY RESULTS

Vertical sections of parameters measured by the SBE CTD system (temperature, salinity, density, fluorescence voltage, transmissometer voltage, and dissolved oxygen) are presented at the end of this report. The salinity and density sections show the remnants of the coastal upwelling signature: both surface salinity and density increase toward shore across the outer continental shelf, and fluorescence was relatively high there. The effect of recent winter storms is apparent in the low light transmission of near-bottom waters over the shelf. The resuspension of sediments may also cause low oxygen concentrations in these near-bottom waters, but there is not a direct correspondence between oxygen concentration and light transmission.

Vertical sections of ADCP velocity observered during the outboard and inboard legs show large differences. Given the high variability of winds at this time of year, it is likely that these differences are due to near-inertial currents.

The attached zooplankton report was provided by Julie Keister.

Table 1. Intended CTD station positions, and intended sampling at each station (showing Station name, distance (km) to shore, longitude, depth (m), and additional sampling (C: Bio/Chem bottle sampling, N: net tows)

Newport Hydro Line along 44-39.1'N

NH-1	2 km	124 - 06'W	30 m	N
NH-3	5	124 - 07.8'	48	
NH-5	9	124 - 10.6'	60	C,N
NH-10	18	124 - 17.7'	80	N
NH-15	28	124 - 24.7'	90	C,N
NH-20	37	124 - 31.7	140	
NH-25	46	124 - 39'	296	C,N
NH-35	65	124 - 53'	435	C,
NH-45	84	125 - 07'	700	C,N
NH-55	102	125 - 22	2885	
NH-65	120	125 - 36'	2880	C,N
NH-85	157	126 - 03'	2900	C

Table 4. Names, affiliations, and responsibilities of scientific personnel participating on W9911A.

Robert L. Smith	Chief Scientist	OSU	CTD
Adriana Huyer	Co-Chief Scientist	OSU	CTD
Jane Fleischbein	Technician	OSU	CTD
Andy Ross	Technician	OSU	CTD, oxygen
Sheila O'Keef	Graduate Student	OSU	CTD
Holly Corwith	Graduate Student	OSU	nuts, chl
Sheryl Horstman	Student Worker	OSU	nuts, chl
Julie Arrington	Technician	OSU	nuts, chl
Karin Didriksen	Graduate Student	OSU	nuts, chl
Woody Moses	Graduate Student	OSU	nuts, chl
Julie Keister	Technician	HMSC	zooplankton
Leah Feinberg	Technician	HMSC	zooplankton
Cheryl Morgan	Technician	OSU	zooplankton
Marc Willis	Technician	OSU	martec

Table 2. Intended sample depths and types of subsamples for biochemical sampling.

Station, Depth, Dist. from shore	Sample Collection Depths
NH-05, 58m, 9k	1, 5, 10, 15, 20, 25, 30, 40, 50, 55m, + Chl max., + salinity
NH-15, 89m, 28k	1, 5, 10, 20, 30, 40, 50, 60, 70, 85m, + Chl max., + salinity
NH-25, 234m, 46k	1, 10, 20, 30, 40, 50, 70, 100, 150, 200m, + Chl max., + salinity
NH-35, 673m, 65k	1, 10, 20, 30, 40, 50, 70, 100, 150, 500m, + Chl max., + salinity
NH-45, 670m, 84k	1, 10, 20, 30, 40, 50, 70, 100, 150, 500m, + Chl max., + salinity
NH-65, 2851m, 120k	1, 10, 20, 30, 40, 50, 70, 100, 150, 1000m, + Chl max., + salinity
NH-85, 2839m, 157k	1, 10, 20, 30, 40, 50, 70, 100, 150, 1000m, + Chl max., + salinity

The depth of the chlorophyll max sampling should correspond with the depth of maximum fluorescence as determined during the downcast by the in situ fluorometer. If one of the predetermined depths already is at the fluorescence max, fire the bottle 5 meters below the fluorescence max (or 3 meters below if a another bottle was already fired there.) The depth reserved for salinity measurements will be determined by the physical oceanography team on duty.

Subsample	**Replicates**
TOC (surface samples only except at NH-05,15,25 and 85, and HH-1,3,4,5)	3
Nutrients	1
TN (surface samples only except at NH-05,15,25 and 85, and HH-1,3,4,5)	3
Chl	2
Chl <10 μm, only 3 samples per station (1m, 10m, chl max)	2
POC/PON (samples from depths less than 150 meters)	1

-We will also be collecting water occasionally from the flow-through fluorometer that continuously monitors fluorescence while the ship is underway. The samples will be processed for chlorophyll measurements only.
-The Chl<10μm subsamples are only taken at the 1m, 10m, and Chl max depths at each station.
-TOC and TN will not be done for all depths, except at NH-5, NH-15, NH-25, NH-85, HH-1, HH-3, HH-4, and HH-5. At other stations TOC and TN samples will only be collected from the surface bottle.

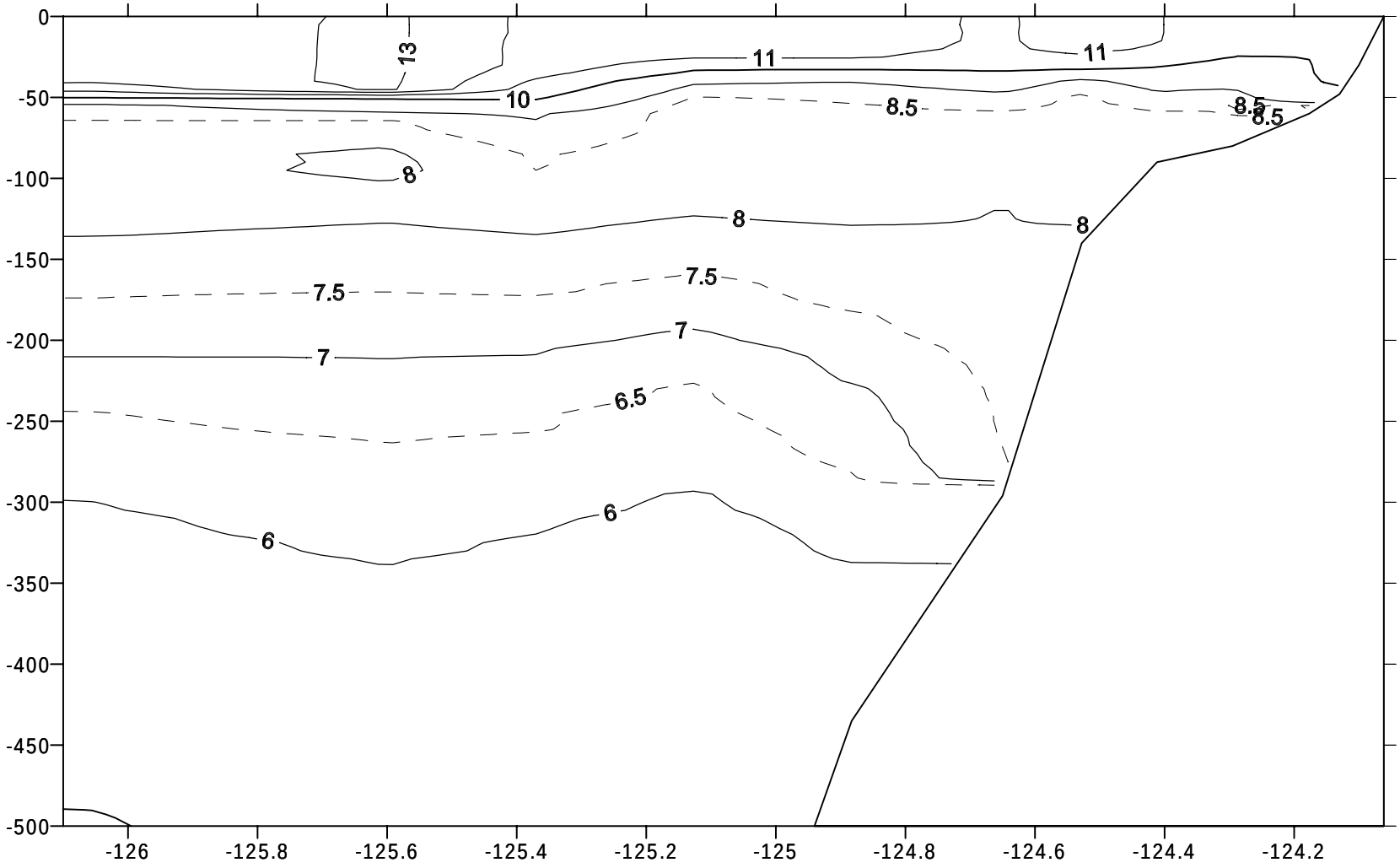
Table 3. R/V WECOMA Cruise W9911A - Event Log

Date (UT)	Start Time (UT)	End Time (UT)	Sta. No.	Sta. Name	Latitude (deg)	(min)	Longitude (deg)	(min)	Bottom Depth (m)	Atmos Press (mbar)	Wind Dir. (deg T	Wind Speed (kts)	Event	Event ID
3 Nov	1715												Start DAS	
	2035												Depart Newport	
	2200												Start flo-thru	
	2058												Start ADCP	
	2145		1	NH-3	44	39.1	-124	7.8	47	1017	190	39	CTD	WE30799.01
	2237		2	NH-5	44	39.1	-124	10.6	57	1017			CTD with biochem	WE30799.02
4 Nov	0007		3	NH-10	44	39.0	-124	17.7	80	1016	190	28	CTD	WE30899.01
	0125		4	NH-15	44	39.1	-124	26.3	95	1018.0	190	15	CTD with biochem	WE30899.02
	0201	0212			44	38.7	-124	24.2					vertical net tow	WE30899.03
	0221	0232			44	38.7	-124	24.1					meter net tow	WE30899.04
	0343		5	NH-20	44	39.0	-124	31.7	143	1020.0	280	12	CTD	WE30899.05
	0411	0422			44	38.8	-124	31.8					vertical net tow, 100 m	WE30899.06
	0508		6	NH-25	44	39.1	-124	39.0	295	1021	325	11	CTD with biochem, oxygen	WE30899.07
	0546	0555			44	39.1	-124	39.0					vertical net tow, 100 m, aborted?	WE30899.08
	0604	0612			44	39.1	-124	39.1					vertical net tow, 100 m	WE30899.08
	0617	0623			44	39.2	-124	39.1					meter net tow, 60 m	WE30899.09
	0634	0654			44	39.1	-124	39.1					bongo net tow	WE30899.10
	0740				44								steaming to NH-85	
	1410		7	NH-85	44	39.1	-126	3.0	2882	1024	015	15	CTD with biochem	WE30899.11
	1515												cleaned flo-thru filters	
	1600												replaced Niskin bottle 11 (cracked)	
	1656		8	NH-65	44	39.1	-125	35.9		1024	var	2	CTD with biochem, oxygen	WE30899.12
	1755	1805			44	39.0	-125	36.0					vertical net tow, 100 m	WE30899.13
	1809	1815			44	39.0	-125	36.0					meter net tow, 60 m	WE30899.14
	1819	1839			44	39.3	-125	36.1					bongo net tow, 250 m	WE30899.15
	1956		9	NH-55	44	39.0	-125	22.4	2868	1023	060	16	CTD	WE30899.16
	2218		10	NH-45	44	39.1	-125	7.6	741	1022.0	050	12	CTD with biochem	WE30899.17
	2303	2312			44	39.0	-125	8.0					vertical net tow, 100 m	WE30899.18
	2318	2326			44	39.0	-125	7.7					meter net tow, 60 m	WE30899.19
	2329	2345			44	39.0	-125	7.6					bongo net tow, 250 m	WE30899.20
5 No v	0105		11	NH-35	44	39.1	-124	53.0	452	1019	040	12	CTD	WE30999.01
	0330	0346		NH-15	44	39.1	-124	25.3		1018.0	030	12	bongo net tow	WE30999.02

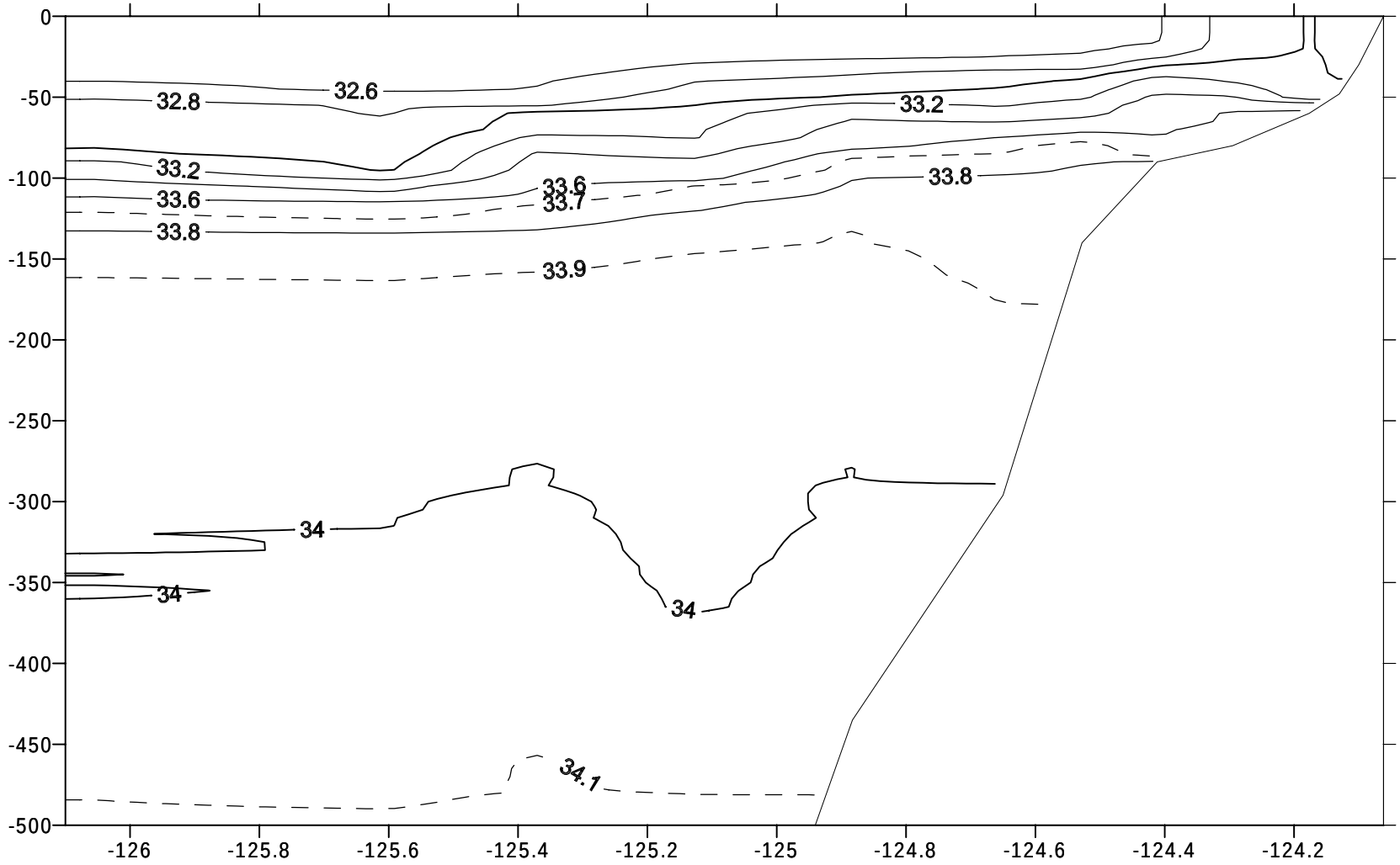
Table 3. R/V WECOMA Cruise W9911A - Event Log continued.

Date (UT)	Start Time (UT)	End Time (UT)	Sta. No.	Sta. Name	Latitude (deg)	(min)	Longitude (deg)	(min)	Bottom Depth (m)	Atmos Press (mbar)	Wind Dir. (deg T	Wind Speed (kts)	Event	Event ID
5 Nov	0434	0441		NH-10	44	39.1	-124	17.8		1017	airs	2	vertical net tow	WE30999.03
	0444	0448			44	39.2	-124	17.8					meter net tow, 60 m, severed net ties	WE30999.04
	0455	0502			44	39.4	-124	17.7					bongo net tow, 90 m	WE30999.05
	0519	0525			44	38.9	-124	17.7					meter net tow, 60 m	WE30999.06
	0603	0608		NH-5	44	39.1	-124	10.6		1017.1	125	6	vertical net tow	WE30999.07
	0611	0616			44	39.2	-124	10.6					meter net tow, 60 m	WE30999.08
	0622	0628			44	39.4	-124	10.6					bongo net tow, 65 m	WE30999.09
	0730												Stop flo-thru, DAS, ADCP, arrive Newport	

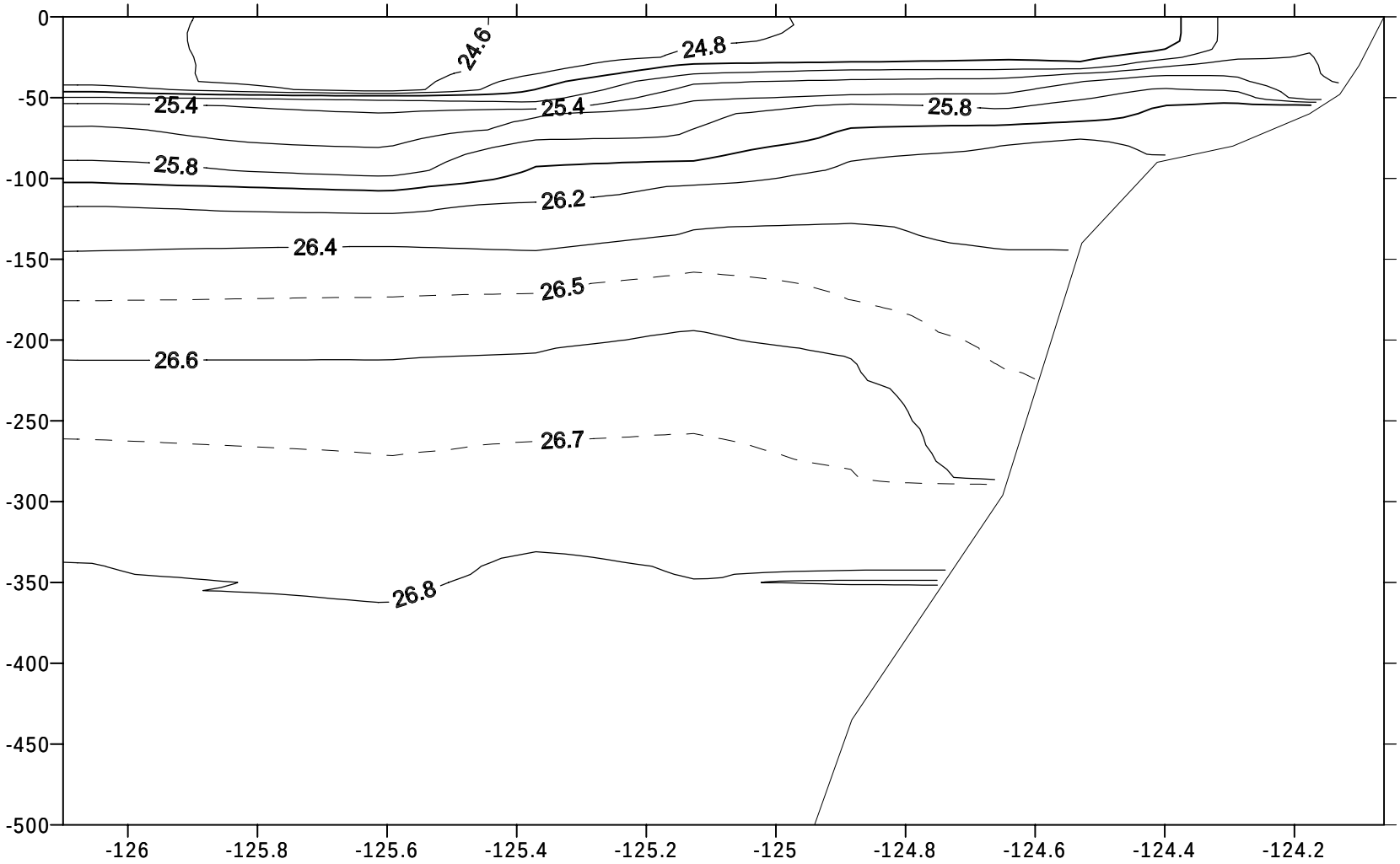
NH-Line Temperature, November 1999



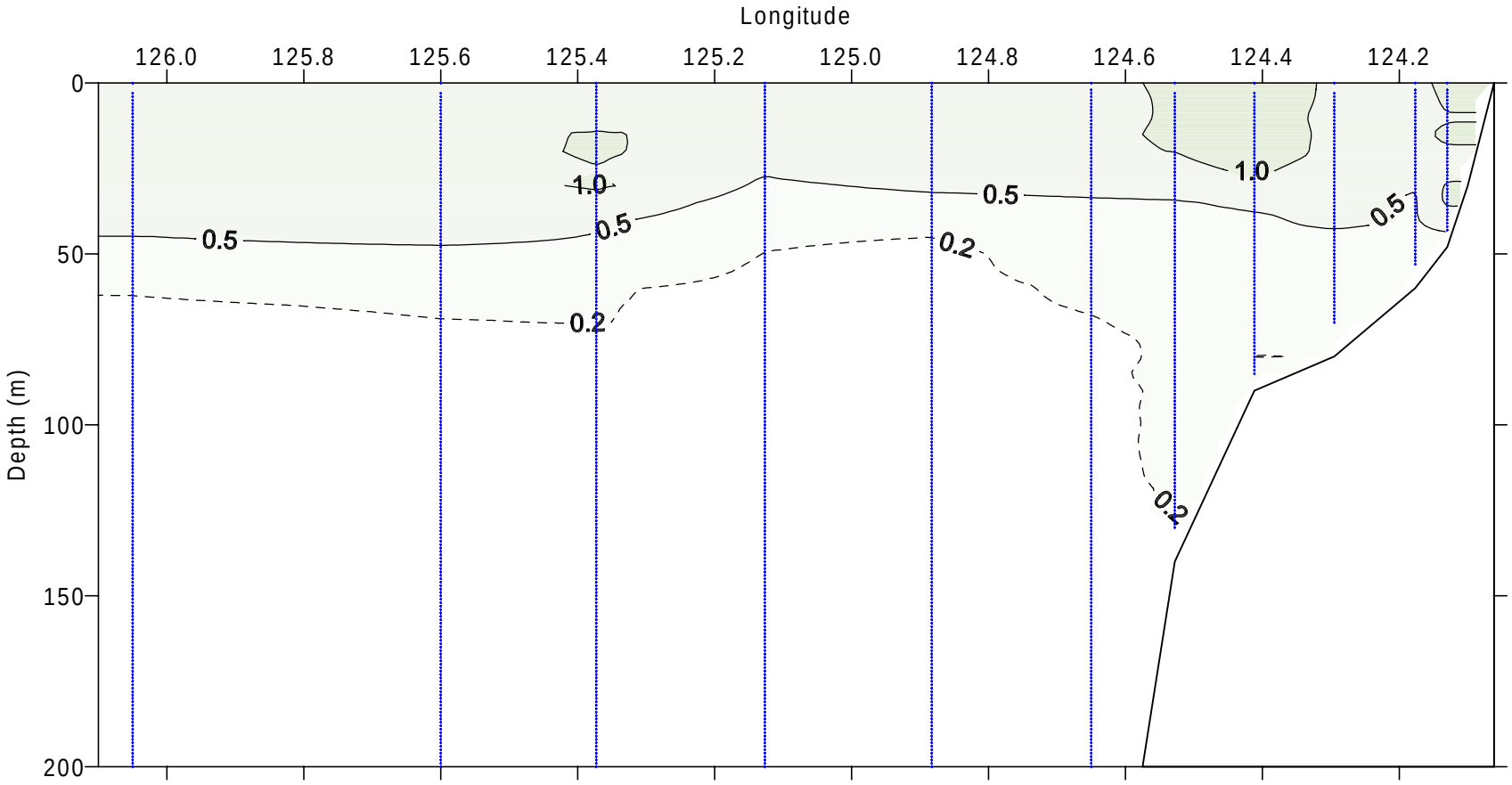
NH-Line, Salinity, November 1999

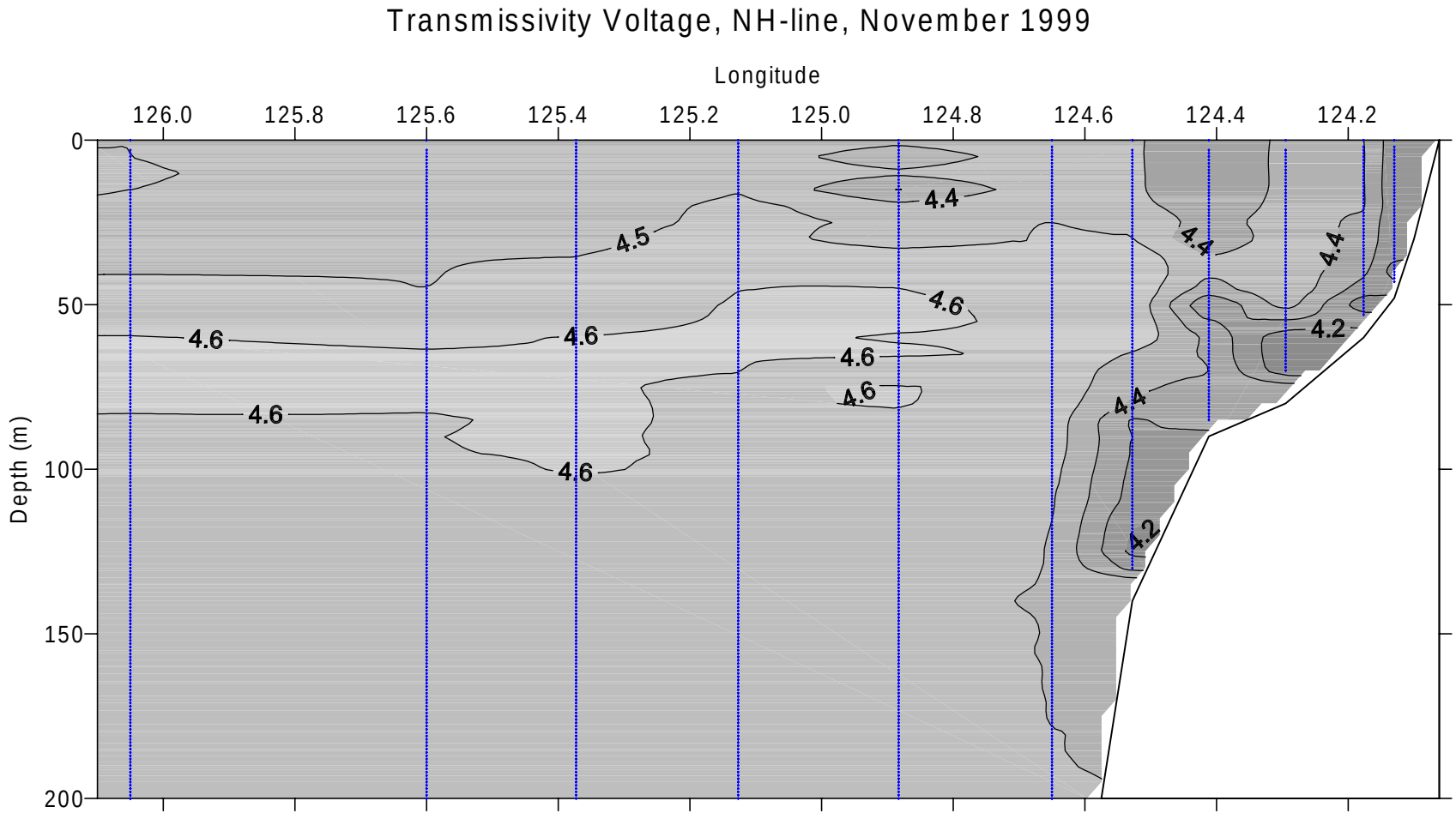


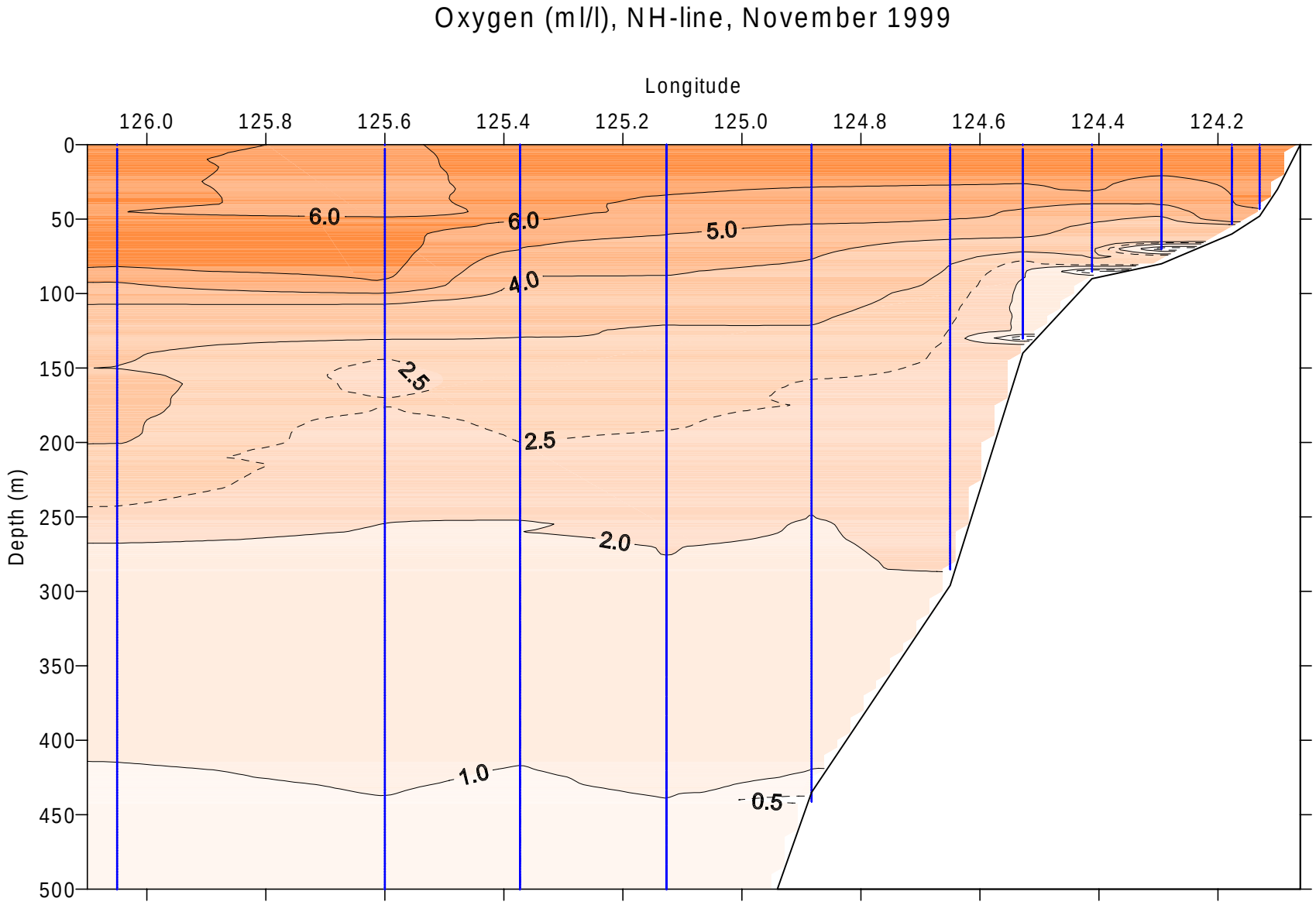
NH-Line, Sigma-theta, November 1999



Fluorescence Voltage, NH-line, November 1999



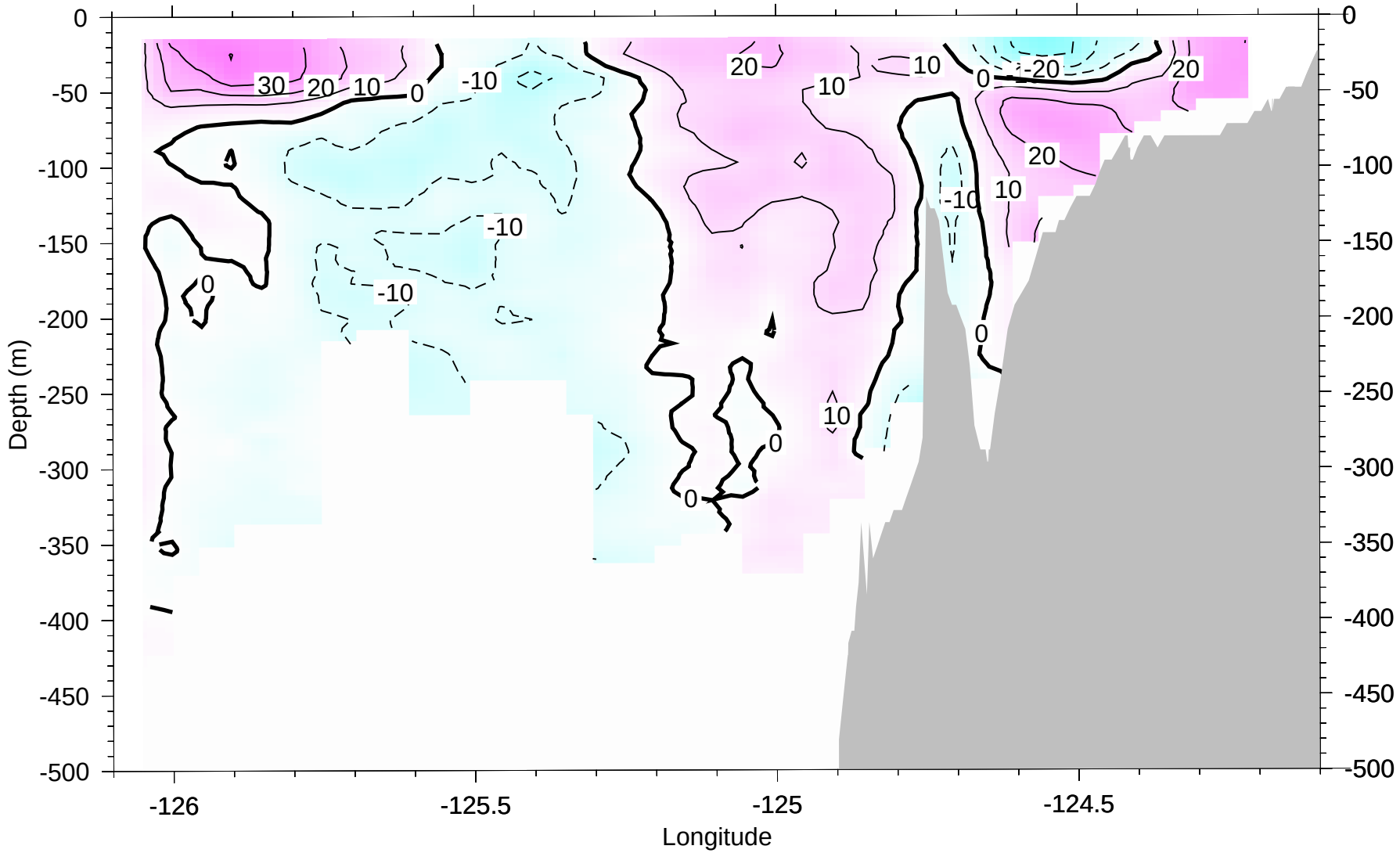

Transmissivity Voltage, NH-line, November 1999
Longitude
126.0
125.8
125.6
125.4
125.2
125.0
124.8
124.6
124.4
124.2
Depth (m)
0
50
100
150
200
4.4
4.5
4.6
4.6
4.6
4.6
4.6
4.4
4.4
4.4
4.2
4.4
4.2


Oxygen (ml/l), NH-line, November 1999
Longitude
126.0
125.8
125.6
125.4
125.2
125.0
124.8
124.6
124.4
124.2
Depth (m)
0
50
100
150
200
250
300
350
400
450
500
6.0
6.0
5.0
4.0
2.5
2.5
2.0
1.0
0.5

Newport Hydrographic Line 44.6°N

3-4 November 1999

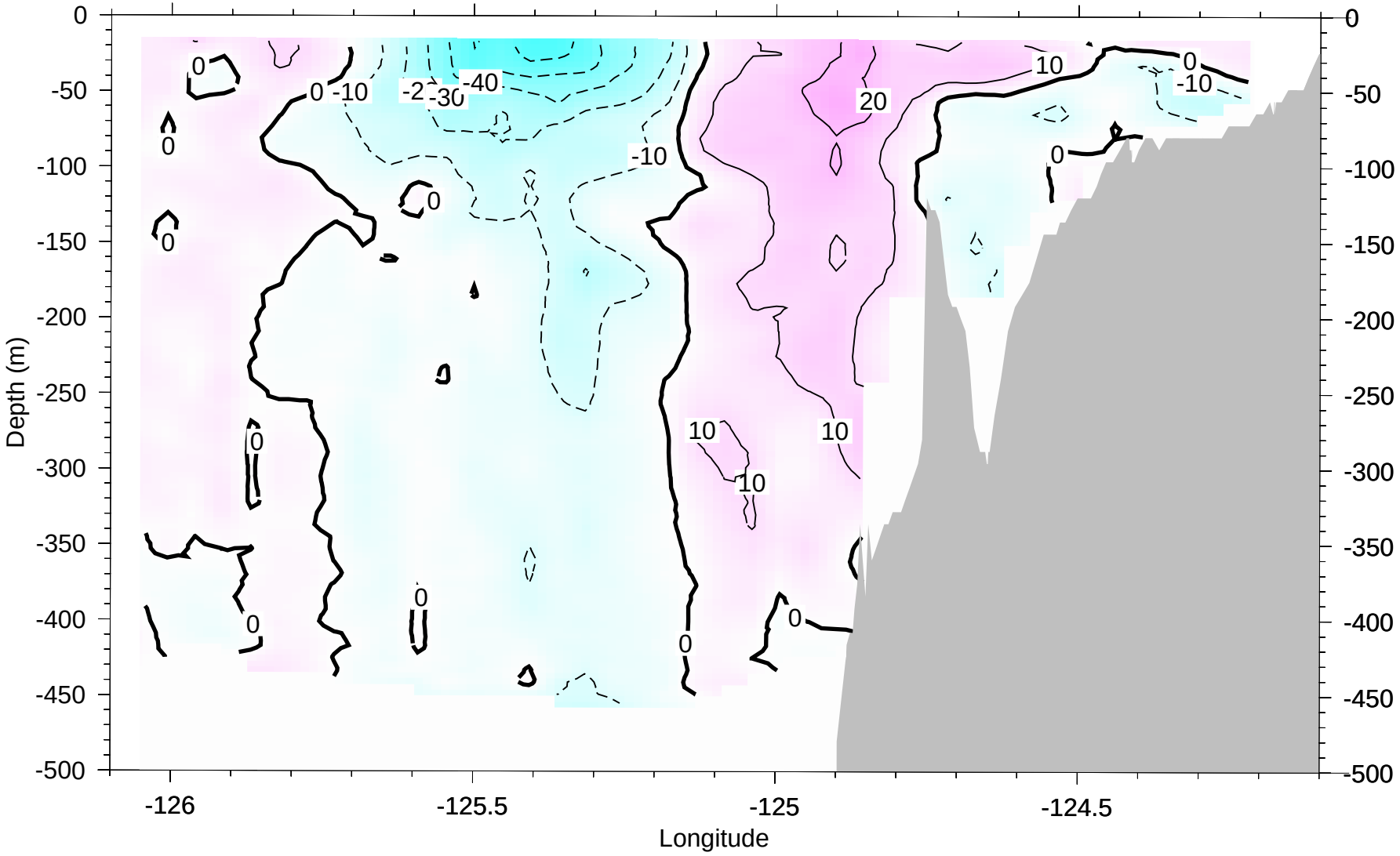
ADCP: Northward current (cm/s)



Newport Hydrographic Line 44.6°N

4-5 November 1999

ADCP: Northward current (cm/s)



Zooplankton report for the November 1999 GLOBEC LTOP Wecoma cruise.

- Relative Biomass is scaled low to high (1-5).
- Color is Orange, Green, White, or Tan. Orange generally indicates the presence of hi densities of lipid-filled large copepods or euphausiids. Green indicates high phytoplankto biomass; white may indicate low densities of small copepods, chaetognaths, gelatinous zooplankton, or other; tan coloring generally indicates high densities of copepods, etc.
- Gelatinous biomass scaled 0 (none) to 5.
- Euphausiid biomass scaled 0 (none) to 5.
- Comments: most abundant gelatinous forms and other obvious species.

1/2-m vertical plankton tow:

Station	Relative Biomass	Color	Gelats	Euphausiids	Comments
NH5	1	T	1	1	~10 Pleurobrachia; few euphausiid furcilia
NH10	1	T	1	1	~5 Pleurobrachia; amphipod; few furcilia/juvy euphausiids
NH15	2	T	0	2	juvy euphausiids; a few amphipods; small copepods
NH20	2	T	0	1	Juvy/adult euphausiids
NH25	3	T	0	1	Adult euphausiids
NH45	3	G	0	1	Few euphausiid furcilia; pteropods; phytoplankton; small copepods
NH65	1	W	0	0	Unusual pteropods including Clio pyramidata

1-m horizontal plankton tow:

Station	Relative Biomass	Color	Gelats	Euphausiids	Comments
NH5	3	T	2	2	4-5 Beroe; ~25 Pleurobrachia; furcilia; amphipods
NH10	2	T	2	1	4-5 Beroe; cumaceans?; ~50 Pleurobrachia; pteropods
NH15	2	T	2	1	pteropods; ~100 Pleurobrachia; amphipods
NH20					Not sampled
NH25	3	O	2	3	Many adult euphausiids; several sergestiid shrimp; 4-5 Beroe; pteropods
NH45	4	G	2	2	Phytoplankton; small euphausiid furcilia; Beroe; Pleurobrachia
NH65	1	W	0	1	Small euphausiids furcilia; pteropods; small copepods

Bongo tows:

Station	Relative Biomass	Color	Gelats	Euphausiids	Comments
NH5	1	T	2	1	40-50 Pleurobrachia; small shrimp; euphausiid furcilia; 3 Beroe; pteropods
NH10	2	O	3	2	Juvy/adult euphausiids; 1 large Beroe; ~50 Pleurobrachia; chaetognaths
NH15	2	W	2	3	4 Beroe; chaetognaths; adult T. spinifera; ~20 Pleurobrachia
NH20					Not sampled
NH25	3	O	0	4	Many adult euphausiids (E. pacifica); 1 fish larva; chaetognaths
NH45	2	G	2	2	Phytoplankton; pteropods; 5-6 Beroe; anthomedusae
NH65	1	O	1	1	Large chaetognaths; Clio pyramidata; 1 fish larva

Because of the weather, NH1 was not sampled.

A total of 45 *Thysanoessa spinifer* and *Euphausia pacifica* from stations NH10, NH15, and NH25 were preserved in 90% acetone for gut pigment analysis. 8 adult euphausiids from NH 25 were incubated for 24hrs at 8°C for egg production. No eggs were produced.