PRELIMINARY CRUISE REPORT, W0101C
R/V WECOMA, 27-28 January 2001
GLOBEC Long-Term Observations off Oregon

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PRINCIPAL INVESTIGATOR(S): GLOBEC: Adriana Huyer, Robert L. Smith, P. Michael Kosro, P. A. Wheeler, W. T. Peterson, Jack A. Barth, Barry Sherr, Evelyn Sherr

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 the Newport Hydro line, to make continuous bio-acoustic observations between the 50-500m. isobath, 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. Figure 1 shows the location of the CTD stations. Table 1 shows the CTD station positions, and Table 2 shows the biochemical sampling depths.

SAMPLING PLAN:

1. Use ship's intake continuously for Temperature, Salinity, and Fluorescence
2. Continuous ADCP Profiling (150 kHz transducer) for water velocity and backscattering for bio-acoustics.
3. Standard CTD Stations using SBE 9/11 plus CTD system for Temperature, Salinity, Fluorescence, Light Transmission, Oxygen, PAR.
4. Rosette sampling: 5 liter bottles for nutrients, chlorophyll, and microzooplankton.
5. Vertical net tows: 1/2 meter nets 100 m to surface; Horizontal net tows with 1 m^2 MOCNESS.
6. Continuous bio-acoustic observations between the 50-500m isobath along 5 sections using a Hydroacoustics Technology, Inc., system towed alongside the ship.

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 1000 PST on 27 January 2001. CTD sampling started at NH-1. At NH-3, the HTI (bio-acoustic system) was deployed, and MOCNESS tows were started. The winds stayed under 15 kts., and the seas remained calm for most of the Newport line, allowing all of the sampling to occur as scheduled. After completing 12 CTD's and net tows along the Newport Line at 1245 PST, 28 January, we began the transit to Newport. We arrived alongside the pier at Newport at 2100 PST on 28 January 2001.

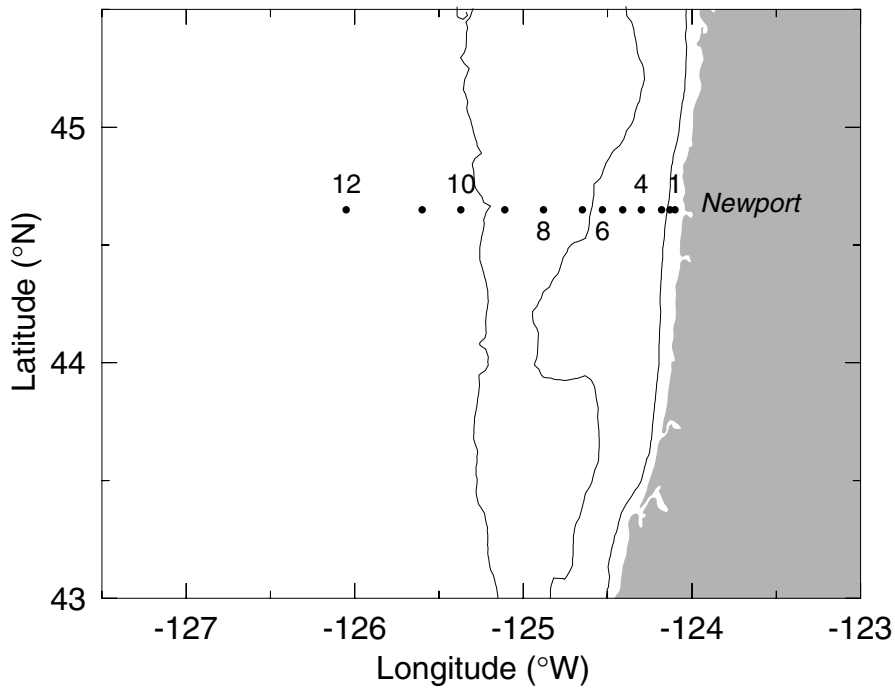


Figure 1. Location of CTD stations during W0101C.

PRELIMINARY RESULTS

Vertical sections of the parameters measured by the SBE CTD system (temperature, salinity, density, fluorescence voltage, percent light transmission and dissolved oxygen concentration) are presented at the end of this report. These parameters were also measured on an immediately preceeding cruise (J. A. Barth, chief scientist), and these partial sections of the NH-line are shown for comparison. Also included is a vertical section of the alongshore currents measured by the shipborne Acoustic Doppler Current Profiler (ADCP).

Winds during most of the cruise were moderate (< 15kts.) and out of the NW or NE until station 9 at NH-45. As a low pressure system approached, the winds shifted around to the SE and steadily increased to 22 kts. at the final station at NH-85. The winds continued to increase quickly, and the steepening wave height made the ride back to Newport very uncomfortable.

The below normal rainfall and absence of winter storms during January were reflected in the relatively high salinity (>32.4) and density (>25 kg/m^3) over the inner shelf, compared to February 2000 when salinity was 31.8 - 32.4 and density was 24.2 - 25 kg/m^3. The ADCP section shows weak poleward flow over the outer shelf and slope, which is consistent with the north winds that blew before and during much of the cruise. The ADCP section also shows a weak equatorward undercurrent offshore between NH-45 and NH-55.

The attached zooplankton report was provided by Dr. Wm. Peterson.

Table 1. CTD station positions during W0101C, and sampling at each station (C: Bio/Chem bottle sampling, N:half-meter vertical net tows, M:Mocness, P:Pigment, O:Oxygen samples).

Station		Distance	Lat.	Long.	Bottom	Cast	Sampling
Name	**No.**	**from shore**	**°N**	**°W**	**Depth**	**Depth**	**Type**
NH-1	1	3.0	44.65	-124.10	29	24	N
NH-3	2	5.4	44.65	-124.13	49	42	P
NH-5	3	8.9	44.65	-124.18	57	53	C,N,M
NH-10	4	18.5	44.65	-124.30	82	76	P,N
NH-15	5	27.6	44.65	-124.41	94	87	C,N,M
NH-20	6	36.9	44.65	-124.53	141	135	P,N
NH-25	7	46.3	44.65	-124.65	293	288	C,N,M
NH-35	8	65.0	44.65	-124.88	436	430	C,N,M
NH-45	9	83.2	44.65	-125.11	691	684	C,N,M,O2
NH-55	10	103.2	44.65	-125.37	2866	1006	P,O2
NH-65	11	121.5	44.65	-125.60	2857	1006	C,N
NH-85	12	157.2	44.65	-126.05	2885	1006	C,O2

Table 4. Names, affiliations, and responsibilities of scientific personnel participating on W0101C.

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
Margaret Sparrow	Technician	OSU	CTD
Julie Arrington	Technician	OSU	nuts, chl
Woody Moses	Graduate Student	OSU	nuts, chl
Kaylene Shearing	Undergraduate Student	OSU	nuts, chl
Jennifer Harman	Undergraduate Student	OSU	nuts, chl
Evelyn Sherr	Co-Chief Scientist	OSU	microzooplankton
William T. Peterson	Co-Chief Scientist	NOAA	zooplankton
Julie Keister	Technician	HMSC	zooplankton
Leah Feinberg	Technician	HMSC	zooplankton
Anders Roestad	Technician	ODFW	zooplankton
Linda Fayler	Technician	OSU	martec
Daryl Swensen	Technician	OSU	martec

Table 2: Actual sample depths and types of subsamples for biochemical sampling during the Jan.-'01 LTOP GLOBEC cruise.

Station, Depth, Dist. From Shore	**Sample Collection Depths (m)**	**Type of Sample Collected**
NH-03, 49m, 5km	30, 23, 16, 3	Slide Samples at 23 and 3 m
NH-05, 57m, 9km	51, 50, 40, 38, 30, 25, 20, 15, 10, 5, 2	TOC (all depths), Nutrients, TN (all depths), Chl, POC/PON
NH-10, 82m, 18km	67, 65, 40, 18, 1	Slide Samples at 65 and 1 m
NH-15, 92m, 28km	86, 70, 65, 60, 50, 45, 40, 29, 20, 10, 5, 1	TOC (all depths), Nutrients, TN (all depths), Chl, POC/PON
NH-20, 141m, 37km	134, 50, 40, 10, 2	Slide Samples at 65 and 1 m
NH-25, 293m, 46km	287, 201, 151, 100, 71, 50, 37, 30, 20, 15, 10, 1	TOC (all depths), Nutrients, TN (all depths), Chl, POC/PON
NH-35, 436m, 65km	426, 300, 150, 100, 68, 50, 40, 31, 25, 20, 10, 1.5	TOC (suface), Nutrients, TN (surface), both Chl, POC/PON (except 426, 300 and 150 m)
NH-45, 691m, 83km	624, 500, 150, 100, 70, 50, 40, 30, 25, 20, 10, 1	TOC (suface), Nutrients, TN (surface), both Chl, POC/PON (except 625, 500 and 150m)
NH-55, 2866m, 103km	1005, 800, 600, 500, 400, 300, 200, 160, 100, 51, 19, 1	Slide Samples at 19 and 1 m
NH-65, 2857m, 121km	1004, 947, 151, 100, 70, 50, 40, 30, 24, 20, 10, 1	TOC (suface), Nutrients (except 1004), TN (surface), both Chl, POC/PON (except 1004, 947 and 150m)
NH-85, 2885m, 157km	1005, 870, 150, 100, 70, 50, 40, 30, 20, 10, 2.5	TOC (all depths), Nutrients, TN (all depths), both Chl and POC/PON (except 1005, 870 and 150 m)

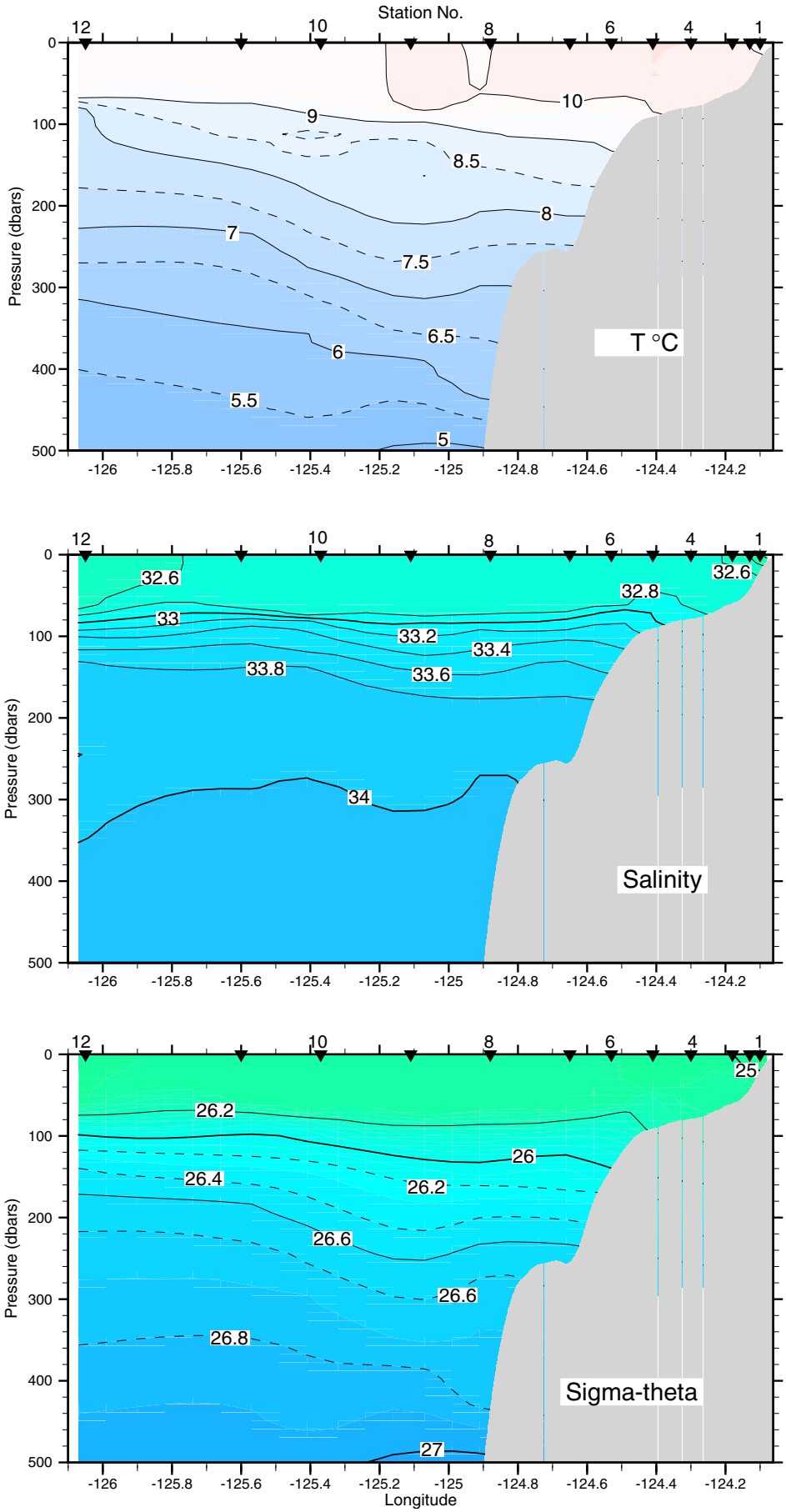
Subsample	Replicates
TOC	3
Nutrients	1
TN	3
Chl	2
POC/PON	1
Slides	2

Table 2. R/V WECOMA Cruise W0101C

	Start	End	Sta.	Sta.	Latitude		Longitude		Bottom	Atmos	Wind	Wind	Event	Event ID
(UT)	Time	Time	No.	Name	(deg)	(min)	(deg)	(min)	Depth	Press	Dir.	Speed		
	(UT)	(UT)							(m)	(mbar)	(deg T)	(kts)		
27-Jan	1815												Depart Newport	
	1810												Start ADCP and DAS	
	1845												Start echosounder	
	1854												Start flo-thru	
	1935												air calibration of transmissometer	
	1945		1	NH-1	44	39.1	-124	06.0	29	1023.0	055	7	CTD	WE02701.01
	1959	2001			44	39.1	-124	06.0					vertical net tow, 25 m	WE02701.02
	2002	2005			44	39.1	-124	06.0					secchi disk	WE02701.03
	2027		2	NH-3	44	39.1	-124	07.8	49	1023.0	055	10	CTD with pigments	WE02701.04
	2041				44	39.1	-124	07.8		1023.1	055	10	HTI deployed	WE02701.05
	2120		3	NH-5	44	39.1	-124	10.5	57	1021.0	010	7	CTD with biochem, mzp	WE02701.06
	2141	2141			44	39.0	-124	10.6					vertical net tow, 55 m	WE02701.07
	2142	2144			44	39.0	-124	10.6					secchi disk	WE02701.08
	2152				44	39.1	-124	10.6					Mocness deployed	WE02701.09
		2217			44	38.9	-124	10.5					Mocness aboard	WE02701.10
	2339		4	NH-10	44	39.1	-124	17.8	82	1020.2	340	10	CTD with pigments	WE02701.11
	2358	0002			44	39.1	-124	17.9					vertical net tow, 78 m	WE02701.12
28-Jan	0003	0005			44	39.1	-124	18.0					secchi disk	WE02801.01
	0052		5	NH-15	44	39.1	-124	24.7	92	1020.0	010	10	CTD with biochem, mzp	WE02801.02
	0113	0119			44	39.1	-124	24.7					vertical net tow, 89 m	WE02801.03
	0127				44	39.2	-124	24.8					Mocness deployed	WE02801.04
	0152				44	39.9	-124	24.8					Mocness aboard	WE02801.05
	0243		6	NH-20	44	39.1	-124	31.7	141	1020.2	005	10	CTD with pigments	WE02801.06
	0304	0310			44	39.1	-124	31.7					vertical net tow, 100 m	WE02801.07
	0401		7	NH-25	44	39.1	-124	38.9	293	1020.0	040	6	CTD with biochem, mzp	WE02801.08
	0428	0433			44	39.1	-124	39.0					vertical net tow, 100 m	WE02801.09
	0441				44	39.4	-124	39.0					Mocness deployed	WE02801.10
	0548				44	42.0	-124	39.3					Mocness aboard	WE02801.11
	0727		8	NH-35	44	39.1	-124	53.0	436	1018.5	070	5	CTD with biochem, mzp	WE02801.12
	0759	0806			44	39.2	-124	53.0					vertical net tow, 100 m	WE02801.13
	0816				44	39.3	-124	53.2					Mocness deployed	WE02801.14
	0929				44	41.0	-124	56.2					Mocness aboard	WE02801.15
	1044			NH-45	44	39.1	-125	07.1					Mocness deployed	WE02801.16
	1144				44	41.5	-125	07.2					Mocness aboard	WE02801.17
	1219	1225			44	39.1	-125	07.1					vertical net tow	WE02801.18
	1237		9	NH-45	44	39.1	-125	06.9	691	1016.8	140	5	CTD with biochem, oxygen, mzp	WE02801.19
	1506	1553	10	NH-55	44	39.1	-125	22.0	2866	1014.2	160	12	CTD with pigments, oxygen	WE02801.20
	1704	1750	11	NH-65	44	39.1	-125	36.0	2857	1013.8	165	15	CTD with biochem, mzp	WE02801.20
	1759	1804			44	39.2	-125	36.0					vertical net tow, 100 m	WE02801.20
	1949	2036	12	NH-85	44	39.1	-126	03.0	2885	1010.9	175	22	CTD with biochem, oxygen, mzp	WE02801.20
29-Jan	0353												Shut down ADCP and flow thru	
	0400												Shut down echosounder	
	0431												Shut down DAS	
	0500												Arrive at Newport dock	

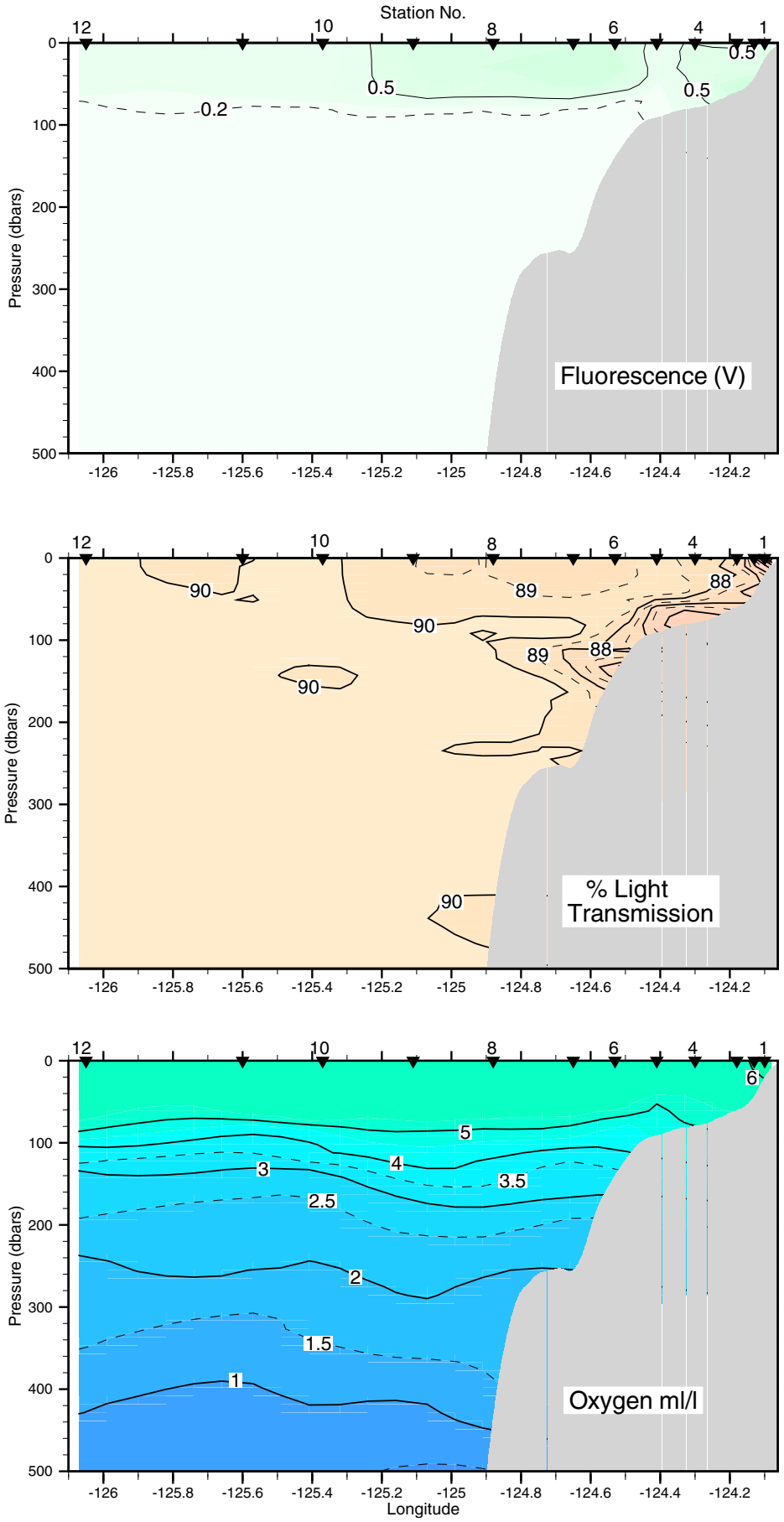
Newport Hydro Line 44° 39'N

27-28 January 2001



Newport Hydro Line 44° 39'N

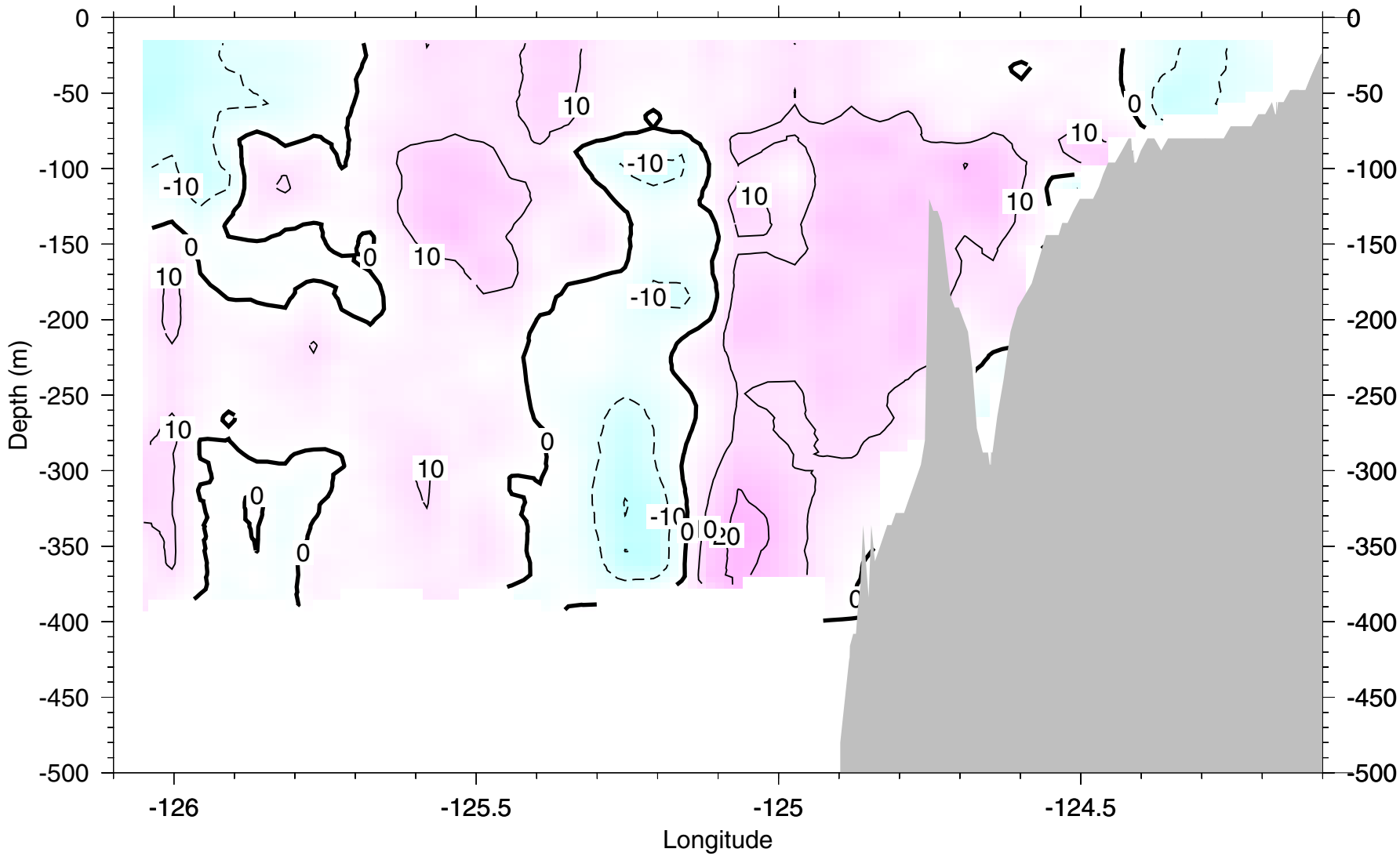
27-28 January 2001



Newport Hydrographic Line 44.6°N

27-28 Jan 2001

ADCP: Northward current (cm/s)



Zooplankton Report

MOCNESS DESCRIPTIONS

NH 5 1350 h water depth = 60 m

20-50 m	Pleurobrachia, amphipods, pteropods
10-20 m	pteropods, Pleurobrachia, copepods, 1 amphipod
0-10 m	pteropods, Pleurobrachia, copepods, 1 amphipod

NH 15 1730 h water depth = 91 m

50-80 m	greenish goo
20-50 m	couple of jellies, stringy gelatinous stuff, a few pteropods + copepods
10-20 m	pteropods, greenish gooey foam
0-10 m	15 cm “yellow” medusa

NH 25 2040 h (NIGHT) water depth = 298 m

250-285 m	siphonophores
200-250 m	30 euphausiids, 1 Sergestes, a 3 cm shrimp, 200 S. scrippsae, 1 big ctenophore
195-200 m	siphonophores, 50 euphausiids, circle salps (aborted due to winch problems)
150-200 m	200 adult euphausiids, S. scrippsae
100-150 m	150 adult euphausiids, 1 squid, radiolaria
50-100 m	1000 euphausiids
20-50 m	2000 euphausiids, Corolla, pteropods, small copepods
10-20 m	1000 euphausiids, Corolla, copepods
0-10 m	1000 euphausiids, 1 12"diameter Aurelia (discarded), pteropods, 10 Corolla

NH 35 0015 (NIGHT) water depth 463 m

300-350 m	chaetognaths, 3 myctophids, 1 large mesopelagic fish, siphonophores, copepods, green goo
200-300 m	chaetognaths, radiolaria, 4 shrimp, 1 myctophid, amphipods
150-190 m	circle salps, radiolaria, 4 shrimp, 1 myctophid
100-150 m	circle salps, 30 euphausiids, 3 shrimp
50-100 m	radiolaria, 2 myctophids, 100 euphausiids, 10 shrimp, 1 Corolla
20-50 m	4 myctophids, 200 euphausiids, 7 shrimp
10-20 m	2000 young euphausiids (at least two species)
0-10 m	9 Corolla, 500 well-fed euphausiids (both E.pac. and T.spin.)

NH 45 0245 (NIGHT) water depth 664 m

300-350 m	3 Atolla, siphonophores, chaetognaths, amphipods, Pleurobrachia, 1 silver dollar, some copepods
200-300 m	1 Gnathophausia, 100 chaetognaths (scrippsae), siphonophores, circle salps, 10 euphausiids
150-200 m	circle salps, juv. Rockfish, radiolaria
100-150 m	2 myctophids, 30 juv. Euphausiids, 4 Sergestes
50-100 m	300 euphausiids, radiolaria, 1 myctophid, 6 Sergestes
20-50 m	2000 euphausiids, 6 myctophids, 10 Sergestes,
10-20 m	1000's of euphausiids, 1 myctophid, 1 Corolla, a few shrimp
0-10 m	1000 small euphausiids, 5 salps, 2 Corolla,

OTHER SAMPLING

Vertical tows from 100 m to the surface were completed at NH 1, 5, 10, 15, 20, 25, 35, 45 and 65.

Copepods were incubated for egg production measurements at NH 5. Six bottles were set-up with adult female Calanus marshallae and Pseudocalanus mimus

MISCELLANEOUS OBSERVATIONS

Secchi depths at stations 5 and 10 were greater than 16 m (we only have 16 m of line).

Large numbers of fulmars were seen at NH 35 and 45. Apart from that, only gulls were common.

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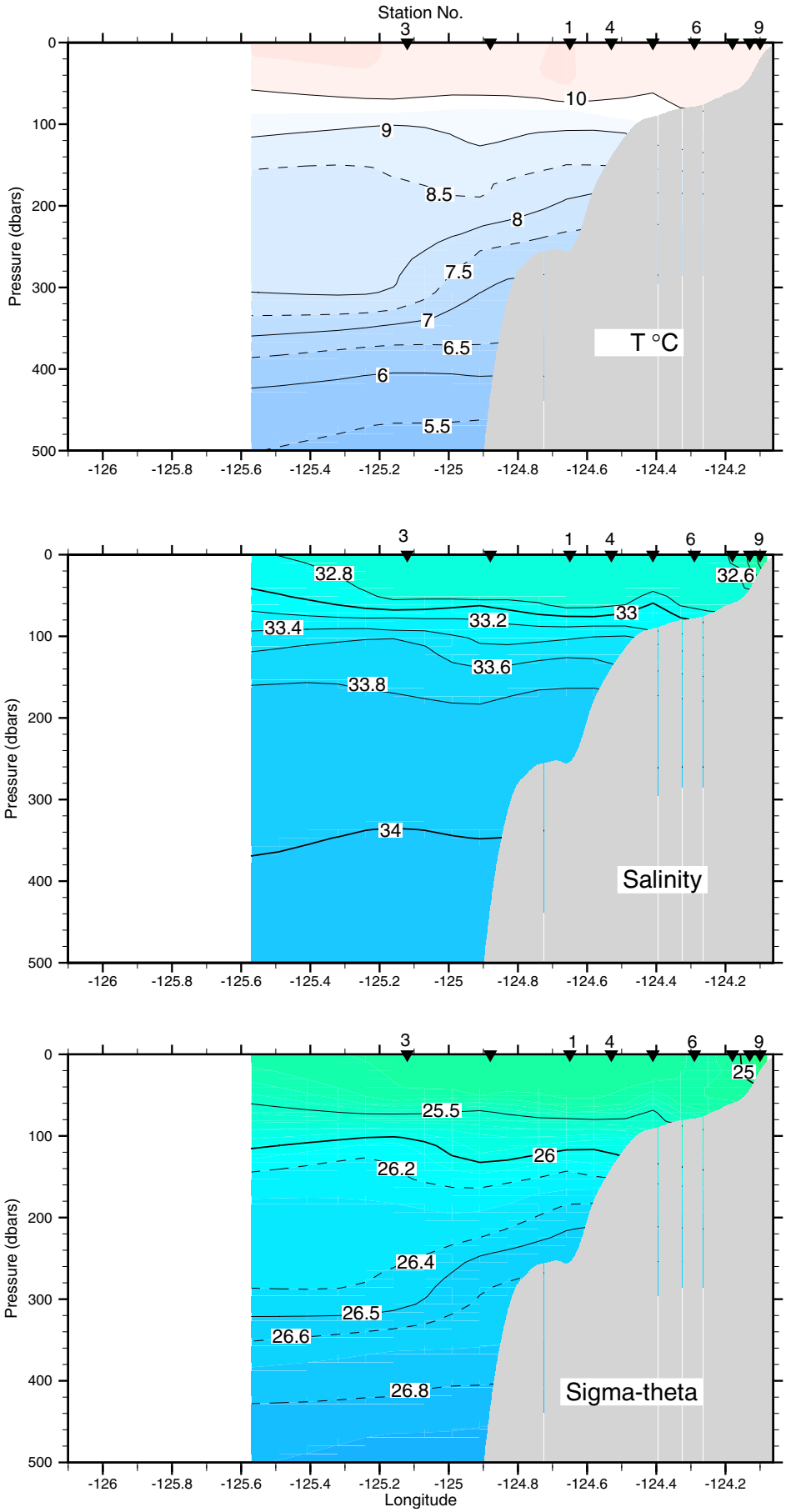
24-25 January 2001



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