PRELIMINARY CRUISE REPORT, AT721
R/V WECOMA, 27 September – 3 October 2002
GLOBEC NEP 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 5 lines (off Newport, Heceta Head, Coos Bay, the Rogue River, OR. and Crescent City, CA.), to make continuous bio-acoustic observations between the 50-500m. isobaths along the 5 lines, to deploy drifters at selected locations on the Newport line, 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, microzooplankton
5. Deploy surface drifters at selected NH-line stations.
6. Vertical net tows: 1/2 meter nets 100 m to surface; Horizontal net tows with 1 m^2 MOCNESS.
7. 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 AT721 is presented here. An event log is provided in Table 3, and participating personnel are listed in Table 4. The R/V Atlantis departed Newport at 1510 PDT on 27 September 2002. CTD sampling started at NH-3 and continued out to NH-85. NH-1 was skipped to save time since both the ship's crew and the science party needed to learn the sampling procedures on the Atlantis. The HTI (bio-acoustic system) was deployed at NH-3, and both MOCNESS and vertical net tows were started at NH-5. Drifters were released at NH-10, 15, 25, 45 and 65. At NH-85, a shallow CTD cast was done prior to the usual cast to 1005 m., in order to collect surface water. The ship transited to the offshore end of the Crescent City line, since this line had the second highest sampling priority, and began sampling at CR-11 at 2157 PDT, 29 September. After the CTD and a vertical net

tow at CR-6, the ship transited to CR-1, so the inshore stations could be done in daylight. Following the CTD and vertical net tow at CR-1, the HTI was deployed. The CR line was worked out doing CTDs and net tows, ending with just a MOCNESS tow at CR-6, after which the HTI was recovered. The CR line was finished at 0505 PST, 1 October, and the ship transited to the inshore end of the Five Mile line. The Rogue River line was not sampled since the line had the lowest priority for sampling, and there was not sufficient time to do it.

The ship arrived at FM-1 at 1226 PDT, and worked out doing CTDs and net tows, completing FM-9 at 0306 PDT, 2 October. The HTI was deployed at FM-1 and recovered at FM-7. After transiting to the Heceta Head line, sampling began at HH-1 at 0850 PDT on 2 October, doing CTD's and net tows while working offshore. Following the CTD and vertical net tow at HH-2, the HTI was deployed, and MOCNESS tows were started. The HH line was finished at 0212 PDT on 3 October, and headed for Newport; arriving at the pier at 1130 PDT.

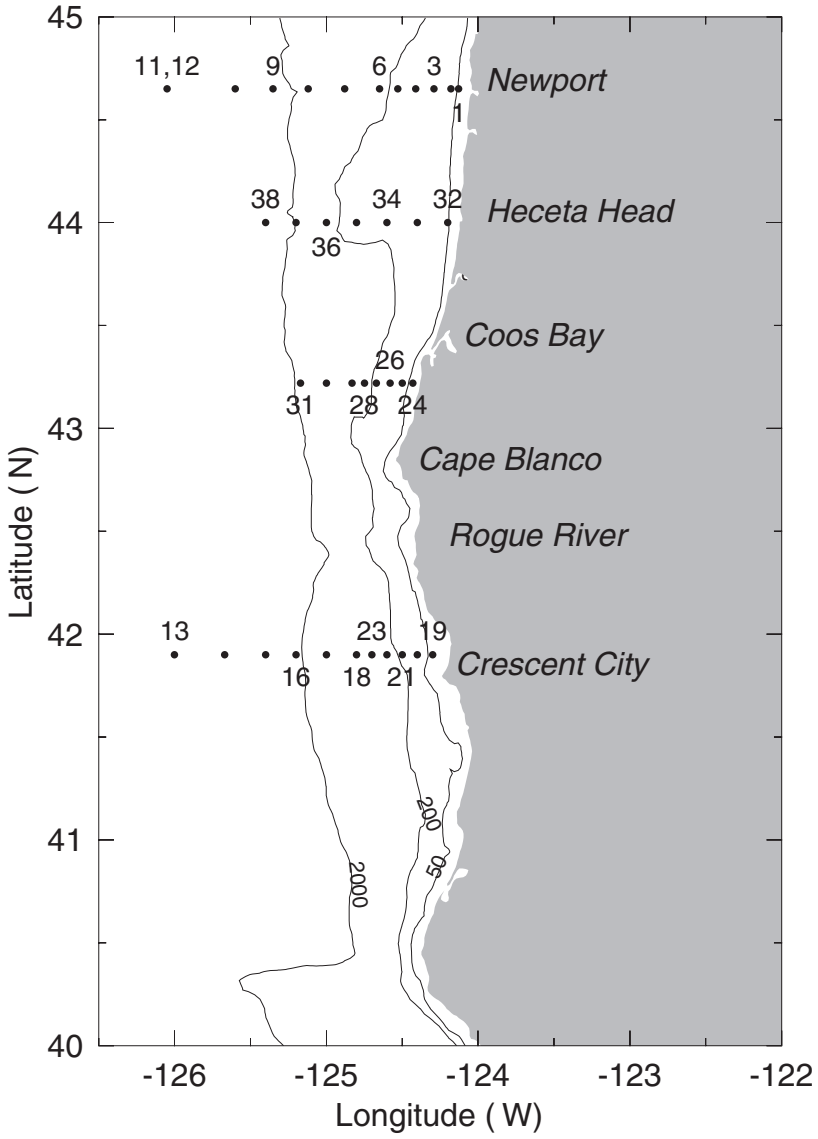


Figure 1. Location of CTD stations during AT721.

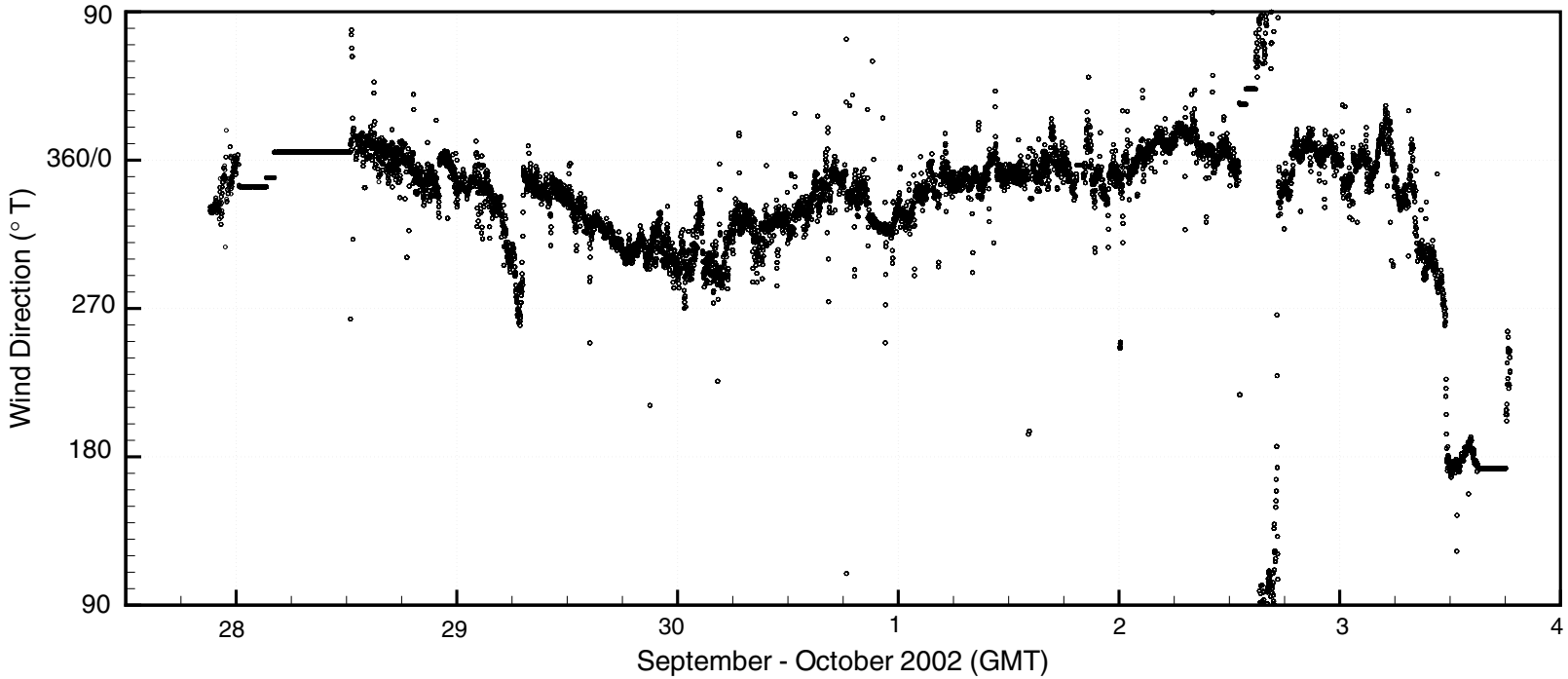
PRELIMINARY RESULTS

Winds during the cruise were weak and predominantly from the north (page 4).
The attached drifter data was provided by Dr. Jack Barth.

Table 4. Names, affiliations, and responsibilities of scientific personnel participating on AT721.

Adriana Huyer	Chief Scientist	OSU	CTD
Robert L. Smith	Scientist	OSU	CTD
Jane Fleischbein	Technician	OSU	CTD
Margaret Sparrow	Technician	OSU	CTD
Joe Jennings	Technician	OSU	CTD, Oxygen
Dale Hubbard	Technician	OSU	CTD
Chad Waluk	Technician	OSU	CTD
Jennifer Jarrell-Wetz	Technician	OSU	nuts, chl
Julie Arrington	Technician	OSU	nuts, chl
Jennifer Harman	Technician	OSU	nuts, chl
Mike Wetz	Graduate Student	OSU	nuts, chl
Kerry Mammone	Observer	OSU	nuts, chl
Barry Sherr	Scientist	OSU	microzooplankton
Carlos López	Technician	OSU	microzooplankton
Julie Keister	Technician	HMSC	zooplankton
Anders Roestad	Technician	HMSC	zooplankton
Carolyn Tracy Shaw	Technician	HMSC	zooplankton
Mitch Vance	Technician	HMSC	zooplankton
Frank Estella	Technician	HMSC	zooplankton
Carolyn Knight	Technician	HMSC	zooplankton
Linda Fayler	Technician	OSU	martec
Daryl Swensen	Technician	OSU	martec

AT721 Wind Speed and Direction



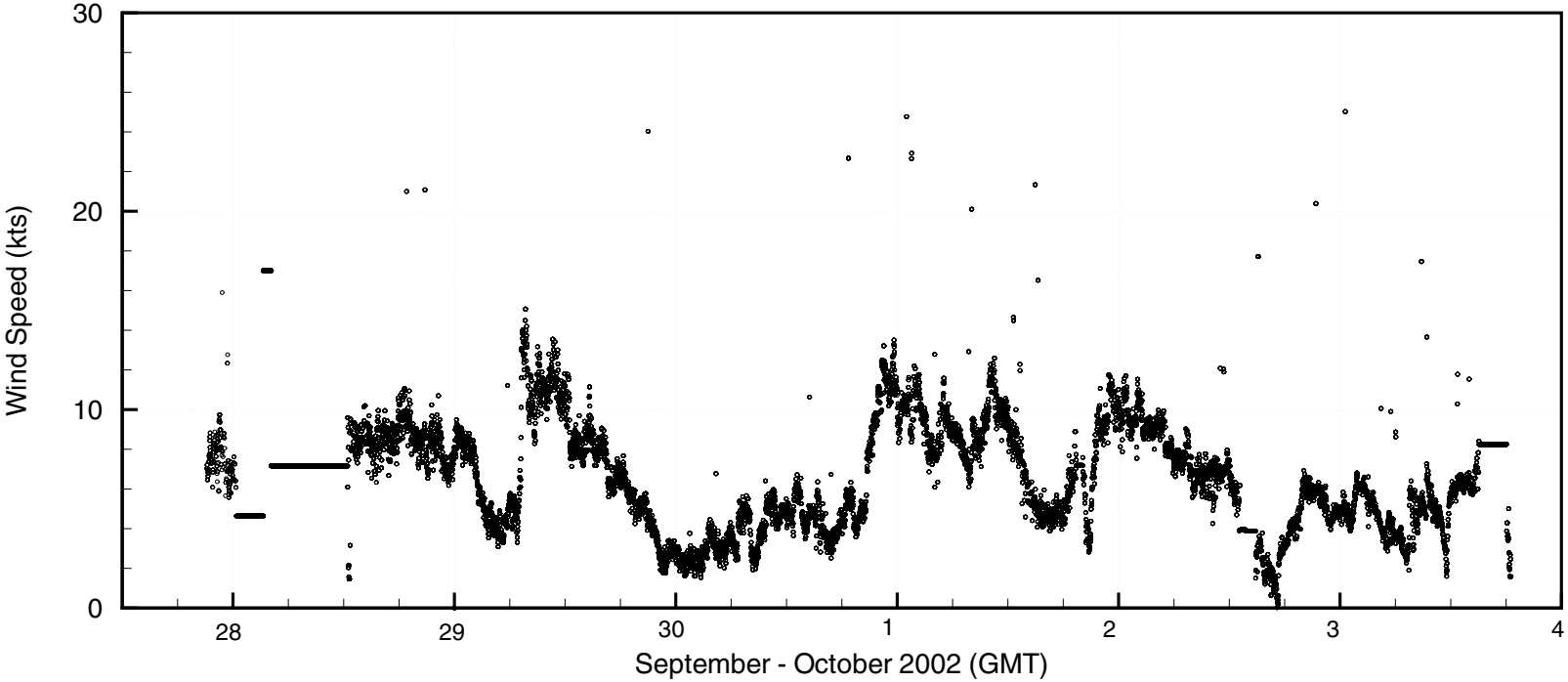


Table 1. CTD station positions during AT721, and sampling at each station (C: Bio/Chem bottle sampling, N:half-meter vertical net tows, M:Mocness, O2:Oxygen samples, D:Drifter, Z:Microzooplankton bottle sampling).

Station		Distance	Lat.	Long.	Bottom	Cast	Sampling
Name	No.	from shore	°N	°W	Depth	Depth	Type
		(km)			(m)	(db)	
NH-3	1	5.4	44.65	-124.13	47	41	
NH-5	2	9.1	44.65	-124.18	58	53	C,Z,N,M
NH-10	3	18.3	44.65	-124.29	80	74	N,D
NH-15	4	27.6	44.65	-124.53	91	87	C,Z,N,M,D
NH-20	5	36.9	44.65	-124.41	143	134	N
NH-25	6	46.7	44.65	-124.65	294	272	C,Z,N,M,D
NH-35	7	65.0	44.65	-124.88	435	435	C,Z,N,M
NH-45	8	83.3	44.65	-125.12	698	684	C,Z,N,M,D
NH-55	9	101.9	44.65	-125.35	2845	1005	O2
NH-65	10	121.5	44.65	-125.60	2834	1006	C,Z,N,D
NH-85	11	157.4	44.65	-126.05	2864	8	
NH-85	12	157.2	44.65	-126.05	2863	1014	C
CR-11	13	148.5	41.90	-126.00	3330	1006	C,Z,N
CR-10	14	120.9	41.90	-125.67	2907	1007	O2
CR-9a	15	98.9	41.90	-125.40	3073	1002	C,Z,N
CR-8	16	82.2	41.90	-125.20	2707	1005	
CR-7	17	65.0	41.90	-125.00	827	802	C,Z,N
CR-6	18	49.3	41.90	-124.80	693	689	N
CR-1	19	7.8	41.90	-124.30	41	35	C,Z,N
CR-2	20	16.1	41.90	-124.40	69	63	N,M
CR-3	21	24.4	41.90	-124.50	137	132	C,Z,N,M
CR-4	22	32.6	41.90	-124.60	501	495	C,Z,N,M
CR-5	23	40.9	41.90	-124.70	652	646	C
FM-1	24	3.3	43.22	-124.43	35	29	N
FM-3	25	8.7	43.22	-124.50	60	57	C,Z,N
FM-4	26	15.6	43.22	-124.58	84	79	C,Z,N
FM-5	27	22.2	43.22	-124.67	158	152	C,N
FM-6	28	28.9	43.22	-124.75	312	305	O2
FM-7	29	35.7	43.22	-124.83	341	335	C,Z,N
FM-8	30	49.1	43.22	-125.00	1055	1009	C,Z,N
FM-9	31	63.0	43.22	-125.17	1632	1006	C,Z,N
HH-1	32	5.0	44.00	-124.20	54	49	C,Z,N
HH-2	33	20.9	44.00	-124.40	121	116	C,Z,N,M
HH-3	34	36.9	44.00	-124.60	153	146	C,Z,N,M
HH-4	35	53.0	44.00	-124.80	110	104	C,Z,N,M
HH-5	36	68.9	44.00	-125.00	924	915	C,Z,N
HH-7	37	84.8	44.00	-125.20	1689	1005	C,Z
HH-9	38	100.9	44.00	-125.40	3029	500	C,Z

Table 2: Actual sample depths and types of sub samples for biological/chemical sampling during the September '02 LTOP GLOBEC cruise.

Station, Depth, Dist. From Shore	**Sample Collection Depths (m)**	**Type of Sample Collected**
NH-05, 58m, 9km	53, 51, 41, 31, 26, 21, 16, 10, 6, 1	TOC (all depths), Nutrients, TN (all depths), Chl and POC/PON (all depths)
NH-15, 91m, 28km	87, 72, 61, 51, 41, 30, 21, 11, 6, 2	TOC (all depths), Nutrients, TN (all depths), Chl and POC/PON (all depths)
NH-25, 294m, 46km	252, 202, 152, 102, 71, 52, 41, 31, 20, 14, 10, 2	TOC (all depths), Nutrients, TN (all depths), Chl and POC/PON (all depths) (except 252, 202 and 152 m)
NH-35, 435m, 65km	435, 287, 152, 100, 72, 41, 30, 20, 16, 11, 1	TOC (surface), Nutrients, TN (surface), Chl and POC/PON (all depths) (except 435 and 287 m)
NH-45, 698m, 83km	683, 503, 151, 101, 71, 51, 41, 30, 20, 10, 1	TOC (surface), Nutrients, TN (surface), Chl and POC/PON (all depths) (except 683 and 503 m)
NH-65, 2834m, 121km	1006, 623, 151, 103, 72, 52, 41, 31, 21, 11, 6, 2	TOC (surface), Nutrients, TN (surface), Chl and POC/PON (except 1006, 623 and 151 m)
NH-85, 2863m, 157km	1001, 880, 320, 150, 100, 70, 50, 40, 30, 20, 10, 2	TOC (all depths), Nutrients, TN (all depths), Chl and POC/PON (except 1001, 880, 320, and 150 m)
FM-3, 60m, 9km	56, 50, 40, 30, 25, 20, 15, 10, 9, 5, 2	TOC (all depths), Nutrients, TN (all depths), Chl and POC/PON (all depths)
FM-4, 84m, 16km	78, 71, 60, 50, 40, 30, 20, 10, 5, 2	TOC (surface), Nutrients, TN (surface), both Chl and POC/PON (all depths)
FM-5, 158m, 22km	151, 140, 100, 70, 59, 51, 41, 31, 20, 14, 11, 2	TOC (surface), Nutrients, TN (surface), Chl and POC/PON (all depths)
FM-7, 341m, 36km	300, 235, 150, 100, 70, 50, 40, 30, 20, 18, 10, 2	TOC (all depths), Nutrients, TN (all depths), Chl and POC/PON (except 300 and 235 m)
FM-8, 1055m, 49km	1000, 320, 150, 100, 70, 50, 40, 30, 20, 10, 5, 2	TOC (surface), Nutrients, TN (surface), Chl and POC/PON (except 1000 and 320 m)
FM-9, 1632m, 63km	1000, 330, 284, 150, 101, 72, 50, 40, 30, 20, 10, 2	TOC (all depths), Nutrients, TN (all depths), Chl and POC/PON (except 1000, 330, and 284 m)

Table 2 cont.

CR-1, 41m, 8km	34, 32, 26, 21, 15, 10, 5, 2	TOC (all depths), Nutrients, TN (all depths), both Chl and POC/PON (all depths)
CR-3, 137m, 24km	115, 100, 70, 60, 50, 40, 30, 20, 10, 5, 2	TOC (surface), Nutrients, TN (all depths), both Chl and POC/PON (all depths)
CR-4, 501m, 33km	451, 392, 145, 100, 72, 51, 41, 31, 21, 11, 6, 2	TOC (surface), Nutrients, TN (surface), both Chl and POC/PON (except 451 and 392 m)
CR-5, 652m, 41km	645, 501, 151, 102, 70, 50, 40, 30, 25, 20, 10, 2	TOC (all depths), Nutrients, TN (all depths), both Chl and POC/PON (except 645 and 501 m)
CR-7, 827m, 66km	800, 498, 153, 102, 72, 52, 42, 32, 22, 12, 7, 2	TOC (surface), Nutrients, TN (surface), both Chl and POC/PON (except 800 and 498 m)
CR-9a, 3073m, 99km	1002, 840, 680, 150, 100, 71, 46, 41, 32, 22, 10	TOC (all depths), Nutrients, TN (all depths), both Chl and POC/PON (except 1002, 840, 680, and 150m)
CR-11, 3300m, 148km	1005, 784, 150, 102, 72, 50, 40, 34, 30, 20, 10, 2	TOC (surface), Nutrients, TN (surface), both Chl and POC/PON (except 1005 and 784 m)

HH-1, 54m, 5km	49, 41, 31, 26, 21, 16, 10, 6, 4, 1	TOC (all depths), Nutrients, TN (all depths), both Chl and POC/PON (all depths)
HH-2, 121m, 21km	116, 102, 71, 60, 50, 40, 30, 20, 10, 5, 1	TOC (surface), Nutrients, TN (surface), both Chl and POC/PON (all depths)
HH-3, 153m, 37km	145, 100, 90, 70, 60, 50, 40, 30, 20, 10, 2	TOC (surface), Nutrients, TN (surface), both Chl and POC/PON (all depths)
HH-4, 110m, 53km	104, 95, 70, 60, 50, 40, 30, 20, 10, 5, 1	TOC (all depths), Nutrients, TN (all depths), both Chl and POC/PON (all depths)
HH-5, 924m, 69km	914, 500, 150, 100, 70, 50, 40, 30, 20, 15, 10, 1	TOC (all depths), Nutrients, TN (all depths), both Chl and POC/PON (except 914 and 500 m)
HH-7, 1689m, 85km	1004, 315, 150, 100, 70, 49, 40, 30, 20, 10, 6, 2	TOC (surface), Nutrients, TN (surface), both Chl and POC/PON (except 1005 and 315 m)
HH-9, 3029m, 101km	500, 262, 150, 100, 71, 50, 40, 30, 20, 10, 5, 1	TOC (surface), Nutrients, TN (surface), both Chl and POC/PON (except 500 and 262 m)

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

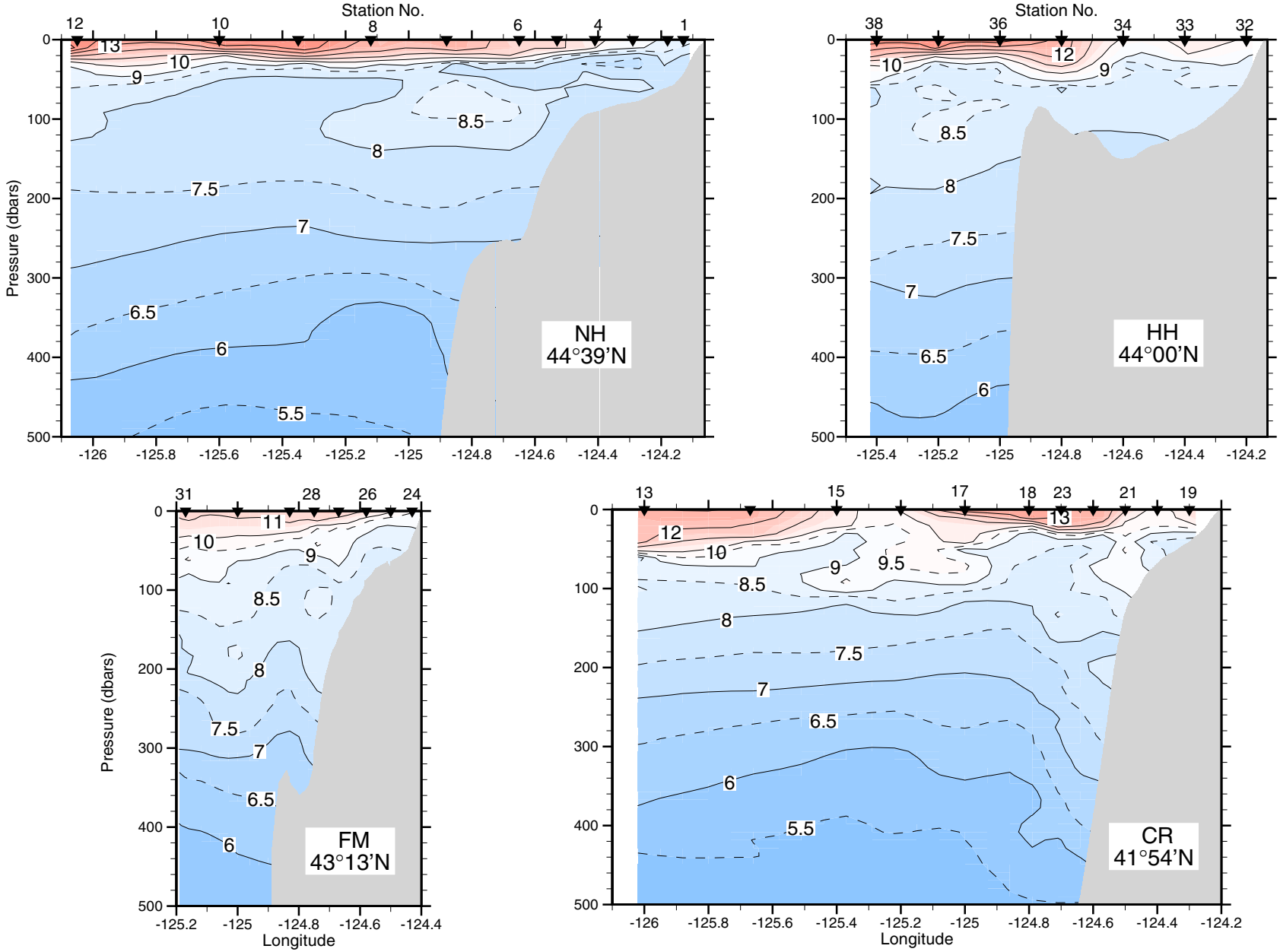
Table 3. R/V ATLANTIS Cruise 7 Leg 21

	Start	End	Sta.	Sta.	Latitude		Longitude		Bottom	Event	Event ID
(UT)	Time	Time	No.	Name	(deg)	(min)	(deg)	(min)	Depth		
	(UT)	(UT)							(m)		
27-Sep	2145									air calibration of transmissometer	
	2210									Depart Newport	
	2300									Start ADCP	
										NH-1 omitted due to dense fog	
28-Sep	0022	0041	1	NH-3	44	39.1	-124	07.8	47	CTD	AT27102.1
	0152				44	39.1	-124	07.8		HTI deployed	AT27102.2
	0346	0346	2	NH-5	44	39.1	-124	10.6	58	CTD with biochem, mzp	AT27102.3
	0416	0433			44	39.1	-124	10.6		vertical net tow	AT27102.4
	0525				44	39.1	-124	10.6		Mocness deployed	AT27102.5
		0600								Mocness aboard	AT27102.6
	0716	0753	3	NH-10	44	39.1	-124	17.7	80	CTD	AT27102.7
	0805	0810			44	39.1	-124	17.7		vertical net tow	AT27102.8
	0823				44	39.1	-124	17.7		drifter 35904 deployed	AT27102.9
	0933	0952	4	NH-15	44	39.1	-124	24.7	91	CTD with biochem, mzp	AT27102.10
	1009	1021			44	39.1	-124	24.7		vertical net tow	AT27102.11
	1035				44	39.1	-124	24.7		Mocness deployed	AT27102.12
		1125			44	39.9	-124	24.5		Mocness aboard	AT27102.13
	1147				44	39.9	-124	24.5		drifter 35905 deployed	AT27102.14
	1328	1350	5	NH-20	44	39.1	-124	31.6	143	CTD	AT27102.15
	1355	1405			44	39.1	-124	31.7		vertical net tow	AT27102.17
	1519		6	NH-25	44	39.1	-124	39.0	294	CTD with biochem, mzp	AT27102.18
	1609	1623			44	39.1	-124	39.0		vertical net tow	AT27102.19
	1655				44	39.1	-125	39.0		Mocness deployed	AT27102.20
		1743								Mocness aboard	AT27102.21
	1750				44	40.10	-124	38.59		Drifter 35901 deployed	AT27102.22
	1928	2014	7	NH-35	44	39.1	-124	53.0	435	CTD with biochem, mzp	AT27102.23
	2029	2038			44	39.1	-124	53.0		vertical net tow	AT27102.24
	2108				44	39.1	-124	53.0		Mocness deployed	AT27102.25
		2154			44	40.8	-124	52.3		Mocness aboard	AT27102.26
29-Sep	0006	0058	8	NH-45	44	39.1	-125	07.0	698	CTD with biochem, mzp	AT27202.1
	0113	0124			44	39.1	-125	07.0		vertical net tow	AT27202.2
	0130	0142			44	39.1	-125	07.0		second vertical net tow	AT27202.3
	0230				44	39.1	-125	07.0		Mocness deployed	AT27202.4
		0322								Mocness aboard	AT27202.5
	0330				44	41.4	-125	08.2		drifter 35902 deployed	AT27202.6
	0505			NH-55	44	39.1	-125	21.9		HTI recovered	AT27202.7
	0525	0640	9	NH-55	44	39.1	-125	21.9	2845	CTD with oxygen	AT27202.8
	0817		10	NH-65	44	39.1	-125	36.0	2858	CTD with biochem, mzp	AT27202.9
	0937	0948			44	39.1	-125	36.0		vertical net tow	AT27202.10
	0951	1004			44	39.1	-125	36.0		second vertical net tow	AT27202.11
					44	39.1	-125	36.0		drifter 35903 deployed	AT27202.12
	1236		11	NH-85	44	39.1	-126	03.1	2864	short CTD to catch surface water	AT27202.13
	1314	1418	12	NH-85	44	39.1	-126	03.1	2863	CTD with biochem	AT27202.14
	1430									begin transit to CR-Line	
30-Sep	0457	0608	13	CR-11	41	54.0	-126	00.0	3300	CTD with biochem, mzp	AT27302.1
	0622	0637			41	54.0	-126	00.0		vertical net tow	AT27302.2
	0824	0931	14	CR-10	41	54.0	-125	40.0	2907	CTD with oxygen	AT27302.3
	1103	1205	15	CR-9a	41	54.0	-125	24.1	3073	CTD with biochem, mzp	AT27302.4
	0525	0537			41	54.0	-125	24.0		vertical net tow	AT27302.5
	1402	1508	16	CR-8	41	54.0	-125	12.0	2707	CTD	AT27302.6
	1636	1740	17	CR-7	41	54.0	-125	00.0	827	CTD with biochem, mzp	AT27302.7
	1744	1756			41	54.0	-125	00.0		vertical net tow	AT27302.8
	1802	1817			41	54.0	-125	00.0		second vertical net tow	AT27302.8
	1923	2012	18	CR-6	41	54.0	-124	48.0	693	CTD	AT27302.9
	2020	2032			41	54.0	48	48.0		vertical net tow	AT27302.10
	2035									begin transit to CR-1	
	2245	2255	19	CR-1	41	54.0	-124	18.0	41	CTD with biochem, mzp	AT27302.11
	2302	2307			41	54.0	-124	18.0		vertical net tow	AT27302.12
	2325				41	54.0	-124	18.0		HTI deployed	AT27302.13

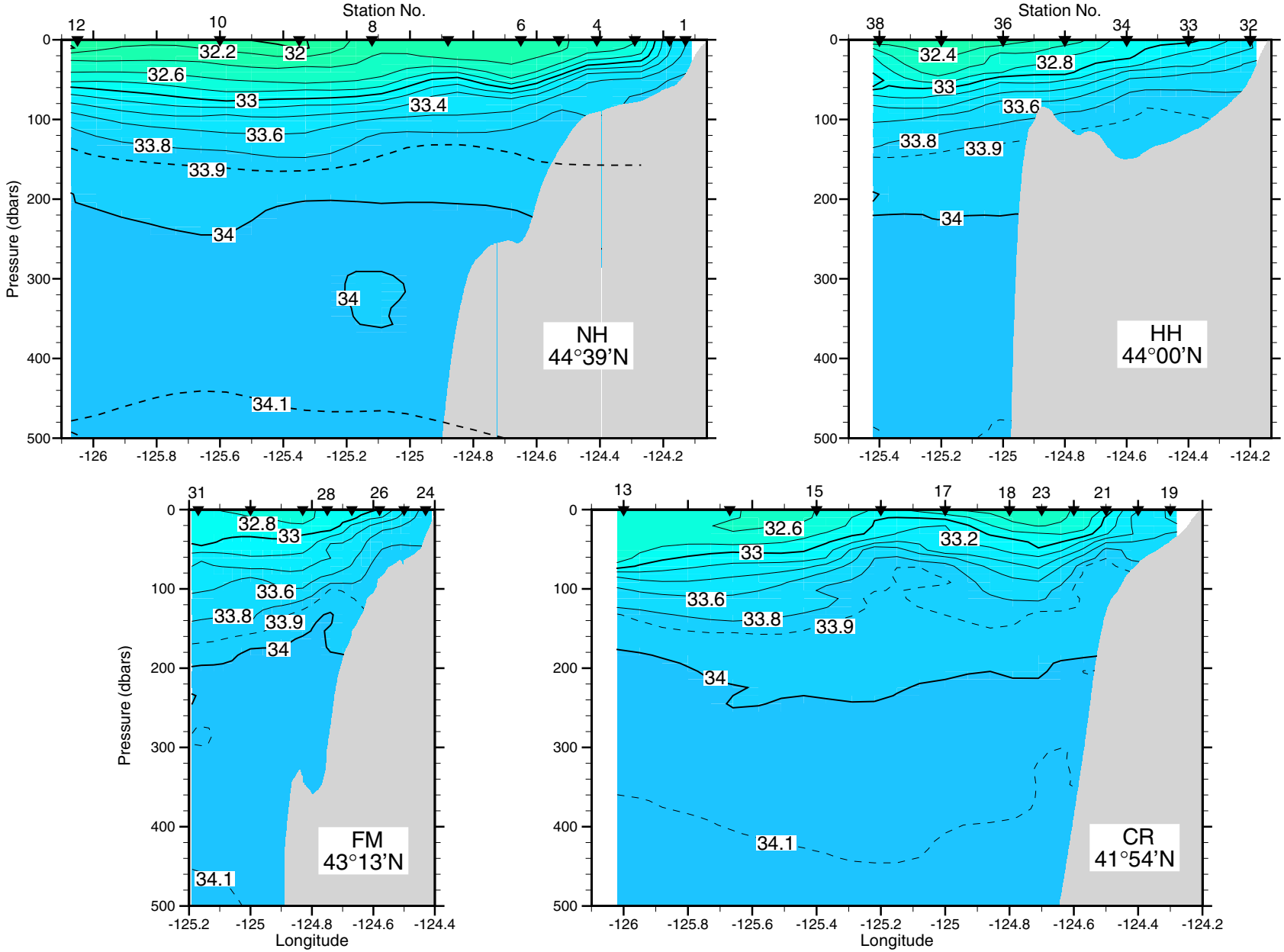
Table 3 cont.

	Start	End	Sta.	Sta.	Latitude		Longitude		Bottom	Event	Event ID
(UT)	Time	Time	No.	Name	(deg)	(min)	(deg)	(min)	Depth		
	(UT)	(UT)							(m)		
1-Oct	0018	0029	20	CR-2	41	54.0	-124	24.0	69	CTD	AT27402.1
	0034	0042			41	54.0	-124	24.0		vertical net tow	AT27402.2
	0112				41	54.0	-124	24.0		Mocness deployed	AT27402.3
		0140			41	55.0	-124	24.5		Mocness aboard	AT27402.4
	0240	0308	21	CR-3	41	54.0	-124	30.0	137	CTD with biochem, mzp	AT27402.5
	0316	0331			41	54.0	-124	30.0		vertical net tow	AT27402.6
	0340				41	54.0	-124	30.0		Mocness deployed	AT27402.7
		0417								Mocness recovered	AT27402.8
	0522	0613	22	CR-4	41	54.0	-124	36.0	501	CTD with biochem, mzp	AT27402.9
	0620	0638			41	54.0	-124	36.0		vertical net tow	AT27402.10
	0645				41	54.0	-124	36.0		Mocness deployed	AT27402.11
		0752			41	56.2	-124	36.5		Mocness aboard	AT27402.12
	0855	0945	23	CR-5	41	54.0	-124	42.0	652	CTD with biochem	AT27402.13
	1047			CR-6	41	54.0	-124	48.0		Mocness deployed	AT27402.14
		1148			41	56.4	-124	48.0		Mocness recovered	AT27402.15
	1204				41	56.9	-124	47.9		HTI recovered	AT27402.16
	1205									begin transit to FM-1	
	1926		24	FM-1	43	13.0	-124	26.0	35	CTD	AT27402.17
	1940				43	13.0	-124	26.0		vertical net tow	AT27402.18
	2005				43	13.0	-124	26.0		HTI deployed	AT27402.19
	2046	2100	25	FM-3	43	13.0	-124	30.0	60	CTD with biochem, mzp	AT27402.20
	2108	2117			43	12.9	-124	30.0		vertical net tow	AT27402.21
	2210	2230	26	FM-4	43	13.0	-124	35.1	84	CTD with biochem, mzp	AT27402.22
	2235	2245			43	13.0	-124	35.1		vertical net tow	AT27402.23
	2335	2358	27	FM-5	43	13.0	-124	40.1	158	CTD with biochem	AT27402.24
2-Oct	0007	0015			43	13.0	-124	40.1		vertical net tow	AT27502.1
	0113	0151	28	FM-6	43	13.0	-124	45.0	312	CTD with oxygen	AT27502.2
	0243	0326	29	FM-7	43	13.0	-124	50.0	341	CTD with biochem, mzp	AT27502.3
	0331	0347			43	13.0	-124	50.0		vertical net tow	AT27502.4
	0510				43	13.0	-125	00.0		HTI recovered	AT27502.8
	0516	0627	30	FM-8	43	13.0	-125	00.0	1055	CTD with biochem, mzp	AT27502.5
	0633	0648			43	13.0	-125	00.0		vertical net tow	AT27502.6
	0651	0704			43	13.0	-124	00.0		2nd vertical net tow	AT27502.7
	0817	0925	31	FM-9	43	13.0	-125	10.1	1632	CTD with biochem, mzp	AT27502.9
	0933	0947			43	13.0	-125	10.4		vertical net tow	AT27502.10
	0950	1003			43	13.0	-124	10.4		2nd vertical net tow	AT27502.11
	1006									begin transit to HH-1	
	1550	1612	32	HH-1	44	00.0	-124	12.0	54	CTD with biochem, mzp	AT27502.12
	1616	1629			44	00.0	-124	12.0		vertical net tow	AT27502.13
	1733	1802	33	HH-2	44	00.0	-124	24.0	121	CTD with biochem, mzp	AT27502.14
	1806	1820			44	00.0	-124	24.0		vertical net tow	AT27502.15
	1830				44	00.0	-124	24.0		deploy HTI	AT27502.16
	1853				44	00.0	-124	24.0		deploy Mocness	AT27502.17
		1932								recover Mocness	AT27502.18
	2054	2121	34	HH-3	44	00.0	-124	36.0	153	CTD with biochem, mzp	AT27502.19
	2126	2136			44	59.9	-124	36.0		vertical net tow	AT27502.20
	2145				44	59.9	-124	36.0		deploy Mocness	AT27502.21
		2215								recover Mocness	AT27502.22
	2344	0006	35	HH-4	44	00.0	-124	48.0	110	CTD with biochem, mzp	AT27502.23
3-Oct	0020				44	00.0	-124	48.0		deploy Mocness	AT27602.1
		0058			44	00.7	-124	45.3		recover Mocness	AT27602.2
	0107	0118			44	00.7	-124	46.5		vertical net tow	AT27602.3
	0313			HH-5	44	00.0	-125	00.0		recover HTI	AT27602.4
	0336	0440	36	HH-5	44	00.0	-125	00.0	924	CTD with biochem, mzp	AT27602.5
	0445	0503			44	00.0	-125	00.0		vertical net tow	AT27602.6
	0618	0723	37	HH-7	44	00.0	-125	12.0	1689	CTD with biochem, mzp	AT27602.7
	0827	0908	38	HH-9	44	00.0	-125	24.0	3029	CTD with biochem, mzp	AT27602.8
	0912									begin transit to Newport	
										shut down ADCP	
	1830									arrive at pier in Newport	

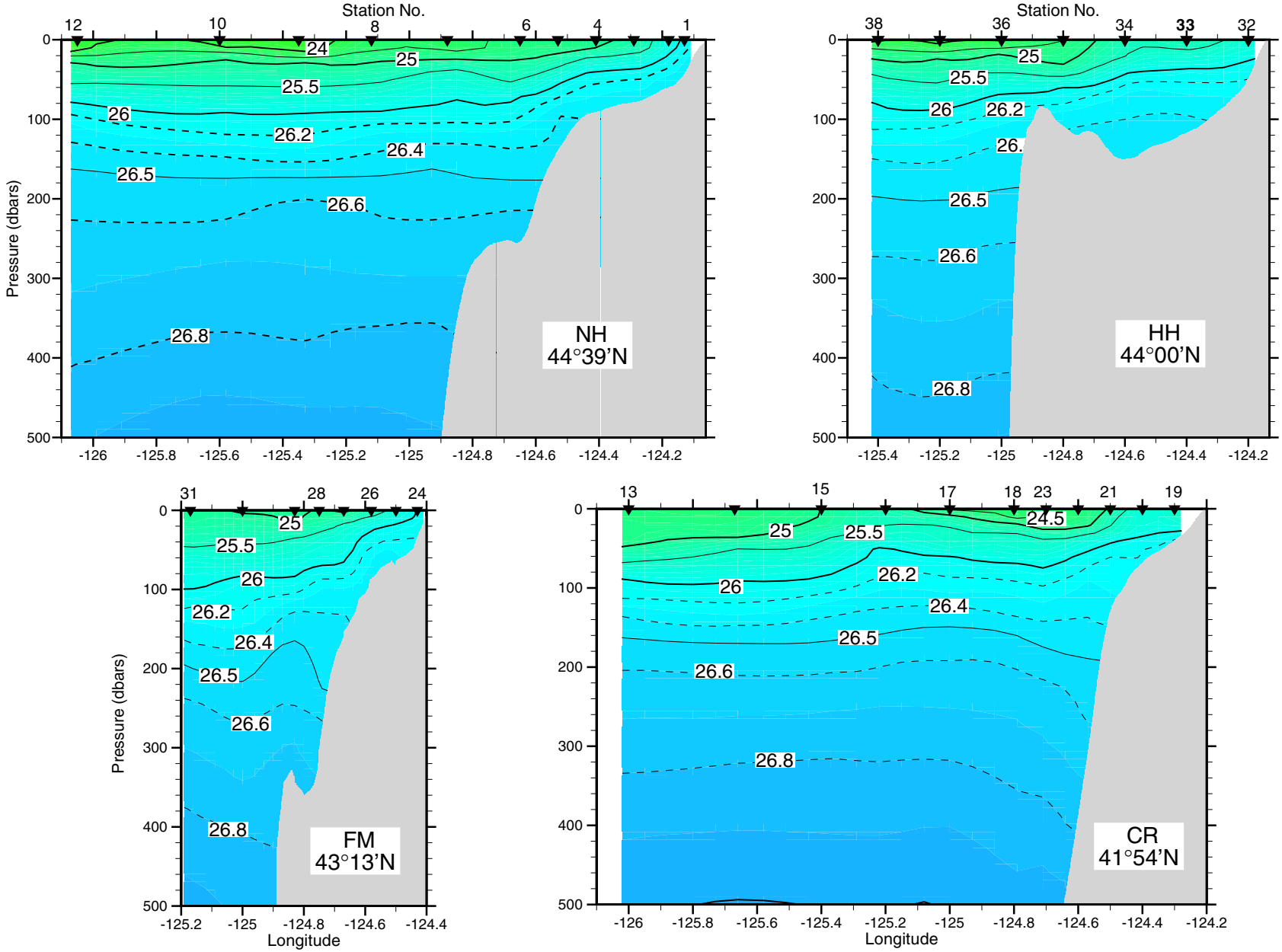
Temperature, 28 September - 3 October 2002



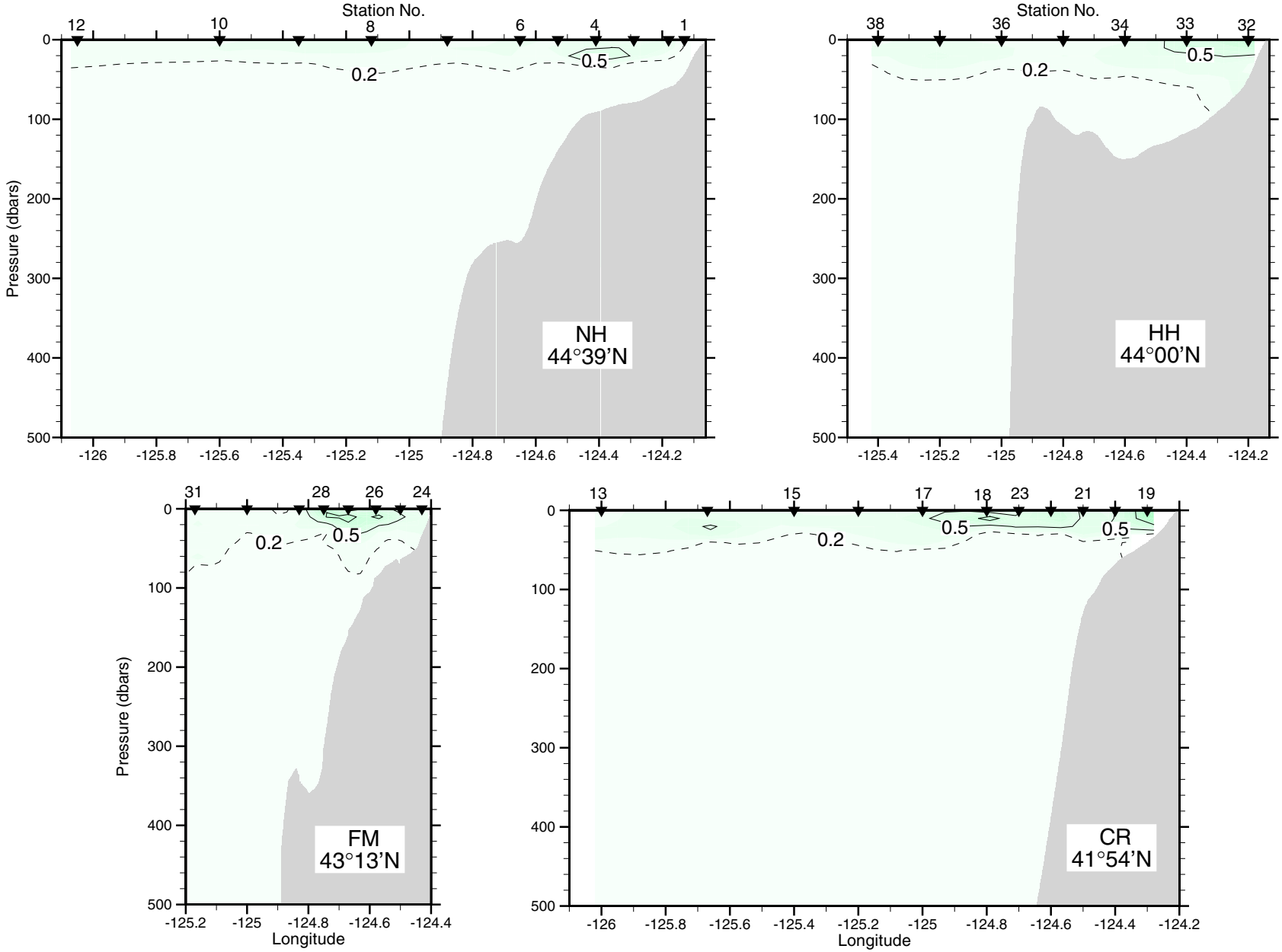
Salinity, 28 September - 3 October 2002



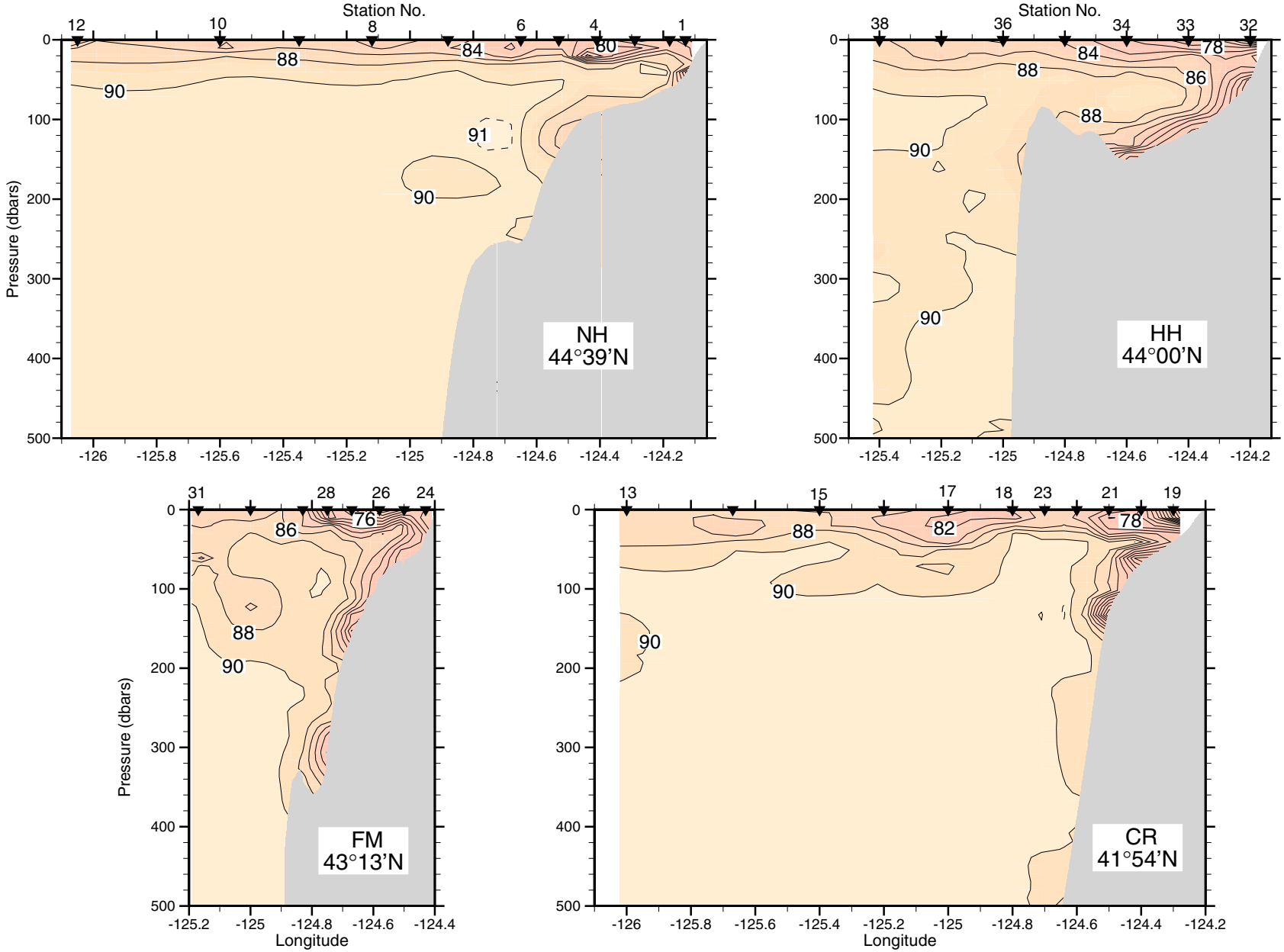
Sigma-theta, 28 September - 3 October 2002



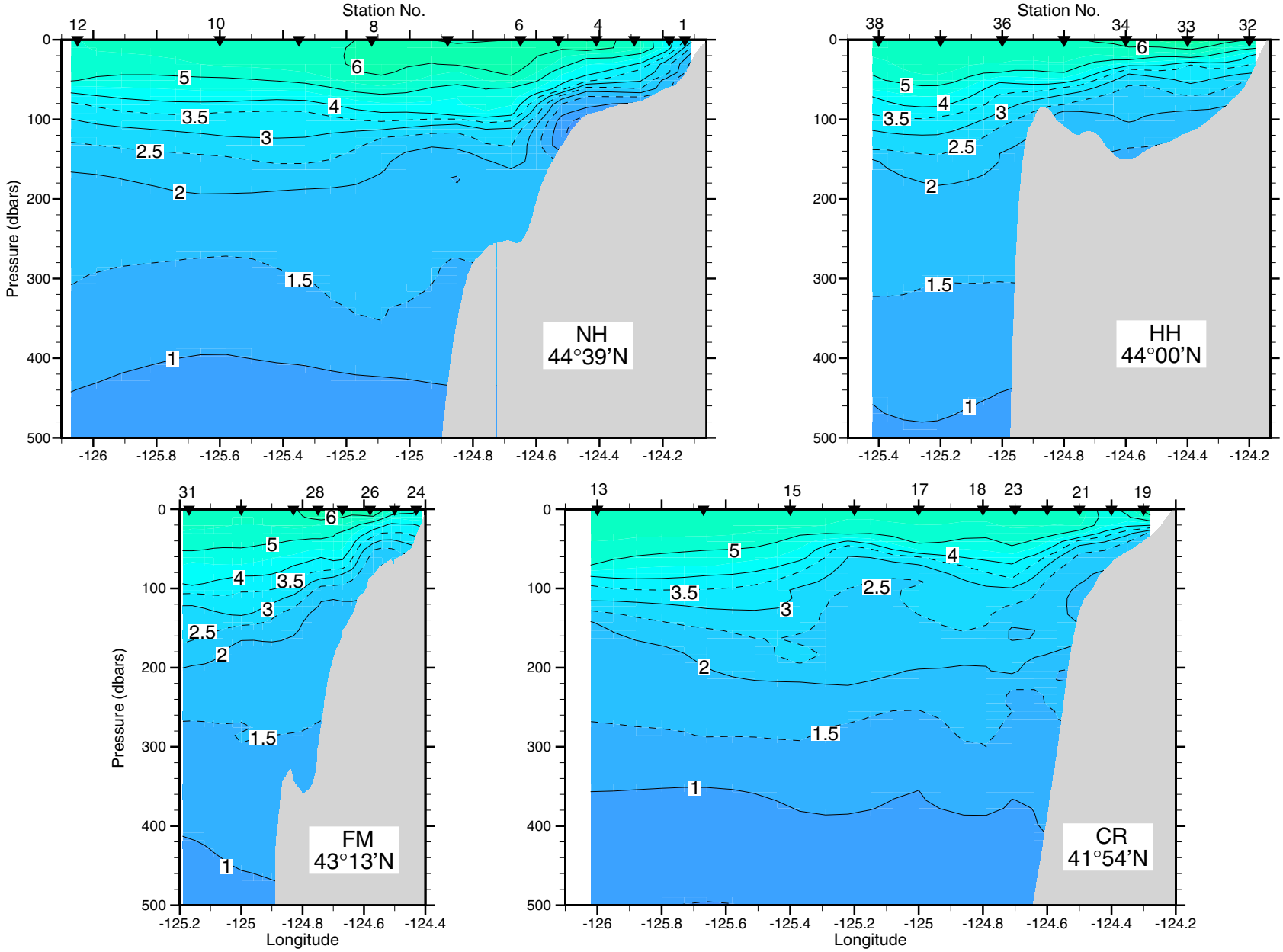
Fluorescence Voltage, 28 September - 3 October



% Light Transmission, 28 September - 3 October 2002



Oxygen, 28 September - 3 October 2002



Drifter data from Sep 28-29 to Oct 13 2002

(dates on land indicate last transmission from failed drifters)

(Courtesy of Jack Barth, Oregon State University)