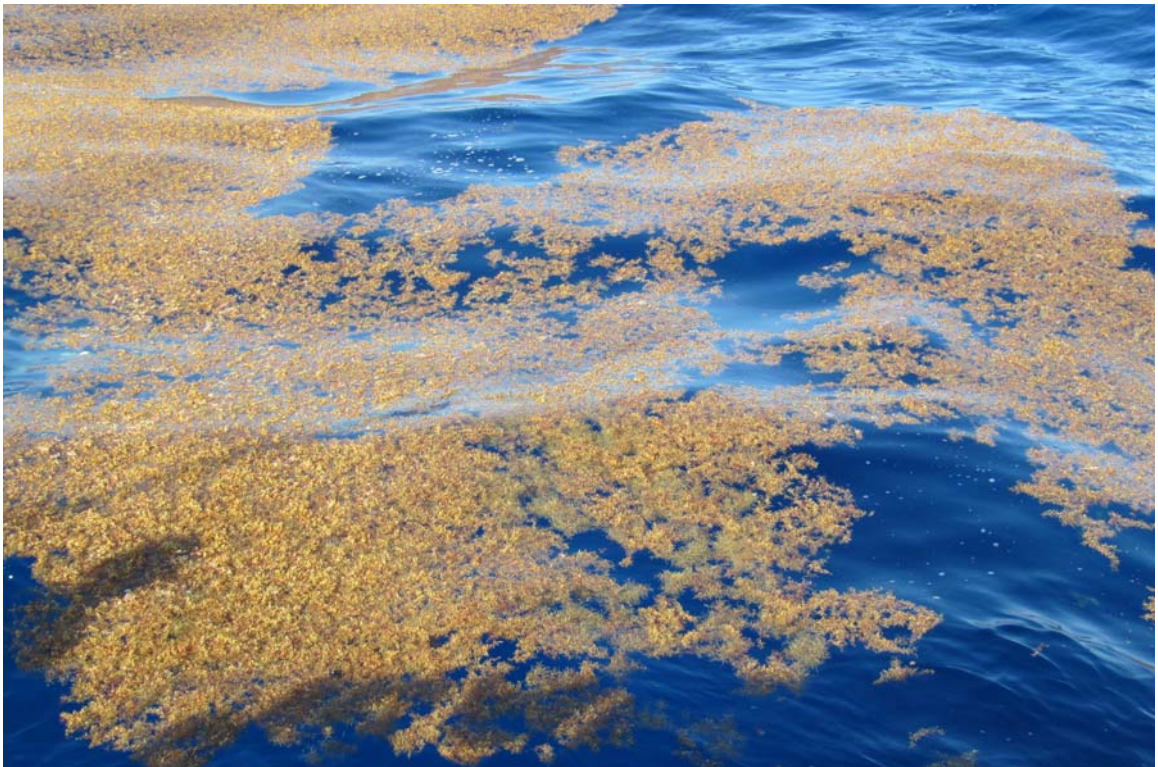


Cruise Report C-227

Scientific Data Collected Aboard
SSV Corwith Cramer

Key West, Florida, USA –
Portsmouth, Dominica – Christiansted, St. Croix, USA
17 February 2010 – 26 March 2010



Sea Education Association
Woods Hole, Massachusetts

This document should be cited as:
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To obtain unpublished data, contact the Chief Scientist or SEA data archivist:

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Ship's Company

SSV *Corwith Cramer*, Cruise C-227

Nautical Staff

Chris McGuire	Captain
Tom Sullivan	Chief Mate
Colleen Allard	Second Mate
Meredith Helfrich	Third Mate
Seth Murray	Engineer
Lilian Corbin	Steward

Scientific Staff

Amy Siuda	Chief Scientist
Juliet Alla	First Assistant Scientist
Randy Jones	Second Assistant Scientist
Dave Murphy	Third Assistant Scientist

Students

Megan Bingham	University of Denver
Yoko Bowen	College of the Atlantic
Ryan D'jay	U. Washington, Seattle
Jordan Eckstein	Macalester College
Darren Fazzino	Ripon College
Hope Fillingim	Bryn Mawr College
Erin Finucane	Reed College
Megan Hafner	Carleton College
Emily Hoffman	Northeastern University
Amy Homer	Northeastern University
Zoe Jacobson	Macalester College
Nick Keeney	Boston University
Stephanie Margolis	Hamilton College
Colleen O'Brien	U. Rhode Island
Alia Osseiran	U. Washington, Seattle
B. Wren Patton	Oregon State University
Jasmine Schonwald	Roger Williams University
Jared Schroder	Wesleyan University
Eric Stengrevics	Syracuse University
H. Bo Ward	College of Charleston
Lida Wise	Oberlin College
Zachary Wissman	Trinity College, Connecticut

Visiting Scientist

Sarah Mussoline	NMFS/WHOI
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Introduction

This cruise report provides a summary of scientific activities aboard the SSV *Corwith Cramer* during cruise C-227 (17 February – 26 March 2010). The 2900 nm cruise served as the second half of the 12-week Sea Semester: Ocean Exploration program with Sea Education Association (SEA), during which extensive oceanographic sampling was conducted for both student research projects (Table 1) and the ongoing SEA research program. Students examined physical, chemical, biological, and environmental oceanographic characteristics in accordance with their written proposals and presented their results in a final poster session and papers (available upon request from SEA).

The brief summary of data contained in this report is not intended to represent final data interpretation and should not be excerpted or cited without written permission from SEA.

Amy NS Siuda
Chief Scientist, C-227

Table 1. Student research projects, C-227.

Title	Student Investigator(s)
The Relationship between Bioluminescence, Zooplankton, and Phytoplankton.	Megan Bingham Amy Homer
Impact of Nutrients on Zooplankton Diversity.	Yoko Bowen Colleen O'Brien
Coral Reef Health Indicators in the Water Column.	Ryan D'Jay
An Examination of Copepod Pigmentation and Diel Vertical Migration.	Jordan Eckstein
Measuring CO ₂ Flux Against Diel Temperature and Salinity Along Cruise C227.	Darren Fazzino
The Distribution and Density of Leptocephali in the South Sargasso Sea.	Hope Fillingim
The Distribution and Density of Plastic Debris along the C-227 Cruise Track.	Erin Finucane
Counting Carbs: The Carbon Emissions of C-227 Cruise from Key West to St. Croix.	Megan Hafner Stephanie Margolis
Zooplankton Density and Diversity Distribution in the Dysphotic and Aphotic Zones Along the C227 Cruise Track.	Emily Hoffman
Effect of Wind-Stress Variability on Phytoplankton Biomass in the Mixed Layer.	Zoe Jacobs Eric Stengrevics
Internal Wave Mixing in the Tropical Atlantic.	Nick Keeney
Growth and Grazing of <i>Synechococcus Sp.</i> in the Sargasso Sea.	Alia Osserian
Utilization of <i>Sargassum</i> habitat by fishes in the South Sargasso Sea.	Wren Patton Lida Wise
Relative Health and Distribution of Myctophids in the South Sargasso and Tropical Atlantic.	Jasmine Schonwald Bo Ward Zach Wissman
Mapping the Distribution and Aging of the 18°C Water Mass.	Jared Schroder

Table 2. Academic Program.

Date	Topic	Speaker(s)
18 Feb	Heaving To & HC Deployment	Crew
19 Feb	Set, Strike, Furl	Mates
20 Feb	Water Sample Collection	Assistant Scientists
21 Feb	Line Chase	Students
22 Feb	Whale ID and Hydrophone Deployment	Mussoline
23 Feb	Waves Pre-computing Stars	Siuda McGuire
26 Feb	Engineering Systems: Water Makers	Murray
27 Feb	Lab Practical	Students
28 Feb	Marlinspike Seamanship	Mates
1 Mar	Spectrometry and Fluorometry	Alla
2 Mar	Data Discussion I	Students
5 Mar	Engineering Systems: Refrigeration	Murray
6 Mar	MS Discussion: Open Ocean Reserves	Siuda
7 Mar	Radar	Helfrich
8 Mar	Introduction to JWO	McGuire
9 Mar	Harmful Algal Blooms	Jones
12 Mar	MS Discussion: Life at Sea/Initiations	McGuire
13 Mar	Seabirds / Anchoring	Siuda / Sullivan
14 Mar	Adaptations for Life at Sea	Murphy
15 Mar	Data Discussion II	Students
22 Mar	Project Presentations	Students

Data Description

This section provides a record of data collected aboard the SSV *Corwith Cramer* cruise C-227 (US State Department Cruise: 2009-098) from Key West, Florida, USA to Christiansted, St. Croix, USVI via the Sargasso Sea (Figure 1). A port stop was made at Portsmouth, Dominica.

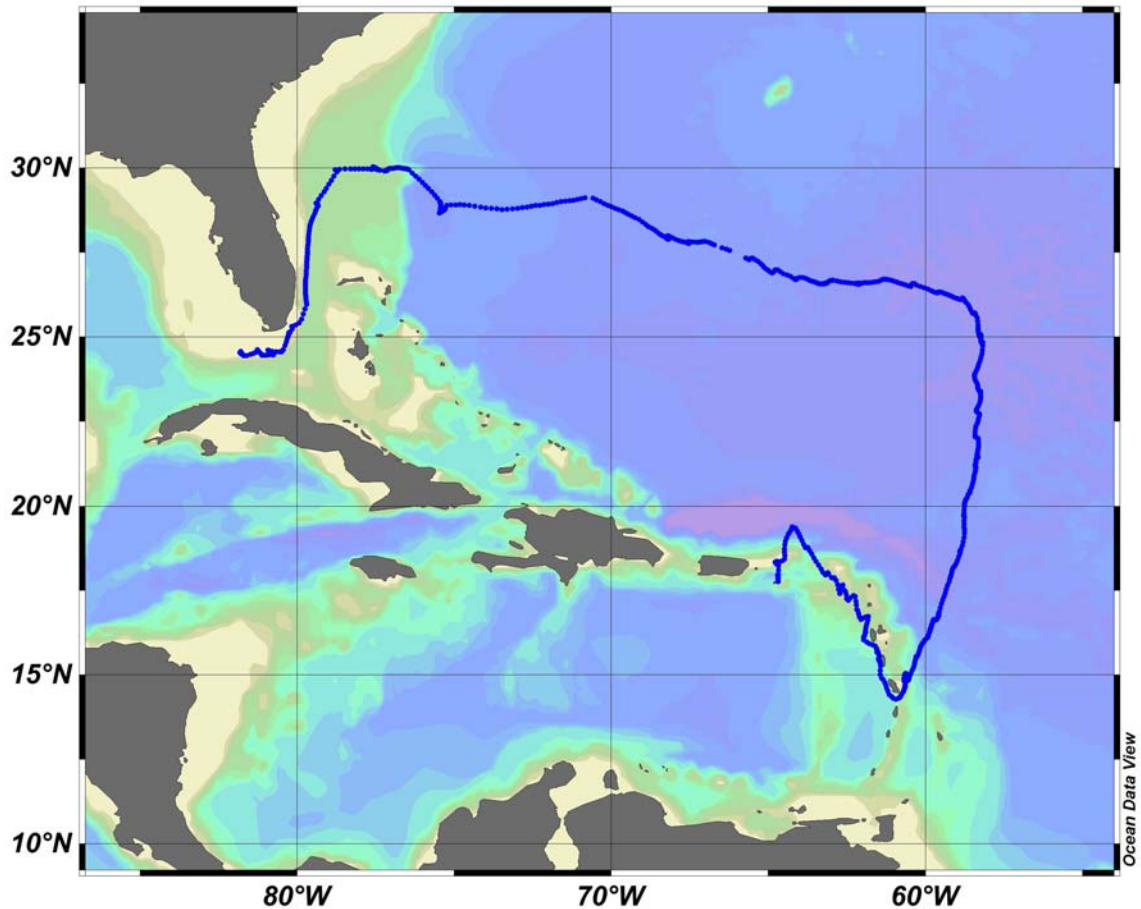


Figure 1. Hourly positions along the C-227 cruise track.

During the six-week voyage, we sampled at 58 discrete oceanographic stations (Table 3). Of the 76 surface sampling stations, 39 occurred coincident with hydrocast and neuston tow stations (Table 4). Additionally, we continuously sampled water depth and sub-bottom profiles (CHIRP system), upper ocean currents (ADCP, Figure 2), and sea surface temperature, salinity, and *in vivo* fluorescence, CDOM, and transmittance (seawater flow-through system, Figure 3 – temperature, salinity and fluorescence).

Discrete CTD measurements of vertical temperature and salinity profiles are presented in Figure 4. Additional instrumentation on the CTDs allowed for profiling of dissolved oxygen, fluorescence, transmittance, PAR and CDOM (Figure 5). Summaries of sea surface and water column chemical and biological properties are found in Tables 4-7. Lengthy CTD, CHIRP, ADCP and flow-through data are not fully presented here. All unpublished data can be made available by arrangement with the SEA data archivist (contact information, p. 2).

Table 3. Oceanographic sampling stations. X indicates type of station. (NT = Neuston Tow, MN = Meter Net, 2MN = 2-Meter Net, TT = Tucker Trawl, PN = Phytoplankton Net, HC = Hydrocast with CTD, RBR/CTD = Free CTD, SG = Shipek Grab, BP = Bathypotometer.

Station	Date	Time	Latitude (N)	Longitude (W)	NT	MN	2MN	TT	PN	HC	RBR/CTD	SG	BP	General Locale
C227-001	18-Feb-10	1643	24°29.5'	81°47.8'	x				x	x	x			Key West Reef
C227-002	19-Feb-10	0109	24°36.9'	81°16.5'	x				x	x	x			Sombrero Reef
C227-003	20-Feb-10	0037	25°7.8'	80°16.3'	x				x	x	x			Elbow Reef, FL
C227-004	20-Feb-10	0358	25°18.5'	80°9.7'	x				x	x	x			Turtle Reef
C227-005	20-Feb-10	1236	26°5.9'	79°43.5'	x									Gulf Stream
C227-006	21-Feb-10	0023	26°59.2'	79°42.6'	x									Gulf Stream
C227-007	21-Feb-10	1034	27°51.3'	79°38.8'	x						x			Gulf Stream
C227-008	22-Feb-10	0007	28°55.4'	79°21.6'	x	x								E of Jacksonville, FL
C227-009	22-Feb-10	0937	29°55.1'	78°43.8'				x			x			E of Jacksonville, FL
C227-010	22-Feb-10	2111	29°58.4'	79°34.9'	x					x	x		x	E of Jacksonville, FL
C227-011	23-Feb-10	0900	29°56.6'	77°25.0'						x	x			S. Sargasso Sea
C227-012	23-Feb-10	1152	29°54.7'	77°8.9'	x			x						S. Sargasso Sea
C227-013	23-Feb-10	2258	29°58.7'	76°33.7'		xx					x		x	S. Sargasso Sea
C227-014	24-Feb-10	1036	28°58.7'	75°26.7'	x					xx				S. Sargasso Sea
C227-015	24-Feb-10	2135	28°48.3'	75°17.1'	x									S. Sargasso Sea
C227-016	27-Feb-10	0921	27°53.0'	68°11.7'	x			xx		xx	xx			S. Sargasso Sea
C227-017	27-Feb-10	2108	27°45.9'	67°32.1'	x	xx					x		x	S. Sargasso Sea
C227-018	28-Feb-10	2135	27°17.3'	65°37.6'	x	xx					x			S. Sargasso Sea
C227-019	1-Mar-10	0938	26°53.7'	64°52.9'	x			xx		x	x			S. Sargasso Sea
C227-020	1-Mar-10	2110	26°41.5'	64°8.2'	x	xx					x		x	S. Sargasso Sea
C227-021	2-Mar-10	1124	26°33.8'	63°16.7'	x					x	x			S. Sargasso Sea
C227-022	3-Mar-10	0000	26°40.3'	62°58.7'	x									S. Sargasso Sea
C227-023	3-Mar-10	0922	26°33.5'	62°7.1'	x			x		x	x			S. Sargasso Sea
C227-024	4-Mar-10	1004	26°29.8'	60°28.3'	x			xx		x	x			S. Sargasso Sea

Table 3 continued.

Station	Date	Time	Latitude (N)	Longitude (W)	NT	MN	2MN	TT	PN	HC	RBR CTD	SG	BP	General Locale
C277-025	4-Mar-10	2141	26°18.1'	59°38.9'	x	x	x				x			S. Sargasso Sea
C227-026	5-Mar-10	1030	26°8.7'	58°58.4'	x	x					x			S. Sargasso Sea
C227-027	5-Mar-10	2130	25°41.6'	58°28.5'	x	xx					x		x	S. Sargasso Sea
C227-028	6-Mar-10	1012	25°1.6'	58°17.5'	x					xxxx	x			S. Sargasso Sea
C227-029	6-Mar-10	2203	24°47.1'	58°11.5'	x			x						S. Sargasso Sea
C227-030	7-Mar-10	1102	23°51.8'	58°27.0'	x					x	x			S. Sargasso Sea
C227-031	7-Mar-10	2140	23°22.5'	58°15.8'	x	xx					x		x	S. Sargasso Sea
C227-032	8-Mar-10	0930	22°47.5'	58°22.5'	x			xx		x	x			S. Sargasso Sea
C227-033	8-Mar-10	2145	22°3.1'	58°25.6'	x	xx					x			S. Sargasso Sea
C227-034	9-Mar-10	0955	21°30.3'	58°21.8'	x			xx		x	x			Tropical Atlantic
C227-035	9-Mar-10	2205	21°10.9'	58°25.6'	x	xx					x			Tropical Atlantic
C227-036	10-Mar-10	0929	20°28.6'	58°34.7'	x			xx		x	x			Tropical Atlantic
C227-037	10-Mar-10	2000	20°0.9'	58°45.6'							x		x	Tropical Atlantic
C227-038	11-Mar-10	0018	19°43.2'	58°47.0'	x									Tropical Atlantic
C227-039	11-Mar-10	1100	18°41.5'	58°53.8'	x					x	x			Tropical Atlantic
C227-040	11-Mar-10	2237	17°56.6'	59°12.1'	x	x								Tropical Atlantic
C227-041	12-Mar-10	0949	16°50.2'	59°35.0'	x			xx		x	x			Tropical Atlantic
C227-042	12-Mar-10	2057	16°35.4'	59°49.5'						x	x			Tropical Atlantic
C227-043	13-Mar-10	0000	16°31.3'	59°47.5'	x									Tropical Atlantic
C227-044	13-Mar-10	0934	16°6.4'	59°56.5'	x			xx		x	x			Tropical Atlantic
C227-045	13-Mar-10	2028	15°34.8'	60°15.0'			x							Tropical Atlantic
C227-046	13-Mar-10	2305	15°32.8'	60°17.3'	x								x	Tropical Atlantic
C227-047	14-Mar-10	1122	14°50.6'	60°34.0'	x					x	x		x	Tropical Atlantic
C227-048	14-Mar-10	2104	14°49.5'	60°40.4'									x	Tropical Atlantic
C227-049	15-Mar-10	0026	14°51.7'	60°41.0'	x									Tropical Atlantic
C227-050	15-Mar-10	1113	14°38.7'	60°38.9'	x					x	x			Tropical Atlantic

Table 3 continued.

Station	Date	Time	Latitude (N)	Longitude (W)	NT	MN	2MN	TT	PN	HC	RBR CTD	SG	BP	General Locale
C227-051	16-Mar-10	0807	14°52.2'	61°21.1'							x			Caribbean Sea
C227-052	20-Mar-10	1028	15°41.1'	61°31.3'							x			Caribbean Sea
C227-053	20-Mar-10	1207	15°46.1'	61°33.0'	x									Caribbean Sea
C227-054	21-Mar-10	0004	16°18.1'	61°54.8'	x									Caribbean Sea
C227-055	21-Mar-10	0805	16°41.3'	61°59.1'							x			Caribbean Sea
C227-056	21-Mar-10	1206	16°54.9'	62°9.3'	x									Caribbean Sea
C227-057	21-Mar-10	2359	17°31.0'	62°35.8'	x									Caribbean Sea
C227-058	22-Mar-10	0900	17°53.1'	62°54.6'								x		Caribbean Sea

Table 4. Surface sampling station data (SS-XXX, XXX-HC, XXX-NT). Blanks indicate no sample collected.

Station	Date	Time	Latitude (N)	Longitude (W)	Temp (C)	Salinity (PSU)	Fluoro (mV)	Chl-a ($\mu\text{mg/L}$)	PO ₄ (μM)	NO ₃ (μM)	pH	Carbonate Alkalinity ($\mu\text{mol/kg}$)
005-NT/SS	20-Feb-10	1246	26°6.1'	79°43.6'	24.7	36.431	884.8	0.067	0.055	0.300		
006-NT/SS	21-Feb-10	0035	27°0.1'	79°42.6'	24.6	36.430	1233.9	0.094	0.045	0.000		
007-NT/SS	21-Feb-10	1129	27°53.5'	79°39.3'	24.8	36.477	1078.6	0.093	0.045	0.248		
008-NT/SS	22-Feb-10	0018	28°55.8'	79°21.9'	24.4	36.435	1587.0	0.081	0.082	0.216		
009-NT/SS	22-Feb-10	1130	29°56.6'	78°46.9'	22.2	36.637	1344.3	0.076	0.095	1.478		
010-HC #13	22-Feb-10	2119	29°58.6'	77°35.1'	21.1	36.699	2337.5	0.074	0.095	0.605		
011-HC #13	23-Feb-10	0908	29°56.6'	77°25.0'	21.3	36.668	1354.7	0.052	0.159	1.762		
SS-001	23-Feb-10	1345	29°58.7'	77°4.9'	21.0	36.687	1359.3				8.10	2594.1
013-NT/SS	23-Feb-10	2259	29°58.2'	76°31.0'	21.6	36.680	2567.5	0.053	0.145	0.668		
SS-002	24-Feb-10	0205	29°45.6'	76°14.1'	22.2	36.778	2054.2				8.15	2421.8
014-HC #13	24-Feb-10	1130	28°58.8'	75°27.4'	23.1	36.812	1045.2	0.026	0.123	0.668		
SS-003	24-Feb-10	1406	28°53.2'	75°25.9'	22.2	36.740	1161.1				8.11	
015-NT/SS	24-Feb-10	2140	28°48.2'	75°17.3'	22.6	36.600	1097.6	0.019	0.105	0.595		
SS-004	25-Feb-10	0204	28°54.4'	74°57.5'	22.3	36.661	1217.6				8.08	2396.4
SS-005	25-Feb-10	1413	28°48.1'	72°58.5'	20.9	36.655	1526.0				8.08	2222.9
SS-006	26-Feb-10	0200	29°1.9'	71°20.6'	20.9	36.683	1496.7				8.08	1700.5
SS-007	26-Feb-10	1353	28°48.9'	69°54.8'	20.1	36.627	1268.9				8.10	2488.5
SS-008	27-Feb-10	0204	28°9.5'	68°38.0'	21.4	36.690	1127.5				8.10	2411.1
016-HCb #13	27-Feb-10	1015	27°53.7'	68°11.9'	22.2	36.712	850.5	0.014	0.132	0.288		
SS-009	27-Feb-10	1432	27°58.0'	68°7.7'	22.1	36.704	866.5				8.10	2428.9
017-NT/SS	27-Feb-10	2250	27°48.1'	67°33.4'	22.5	36.719	924.5	0.038	0.023	0.367		
SS-010	28-Feb-10	0200	27°48.4'	67°22.9'	22.0	36.723	1148.3				8.14	2443.0
SS-011	28-Feb-10	1606	27°31.0'	66°7.4'	22.5	36.730	922.9				8.13	2247.6
018-NT/SS	28-Feb-10	2340	27°18.6'	65°35.2'	21.8	36.710	1291.7	0.062	0.132	0.203		
SS-012	1-Mar-10	0200	27°17.4'	65°26.0'	21.8	36.709	1316.1					2179.8
019-NT/SS	1-Mar-10	1335	26°58.2'	64°47.9'	21.8	36.717	949.4	0.025	0.118	0.315	8.11	2231.1

Table 4 continued.

Station	Date	Time	Latitude (N)	Longitude (W)	Temp (C)	Salinity (PSU)	Fluoro (mV)	Chl-a ($\mu\text{mg/L}$)	PO ₄ (μM)	NO ₃ (μM)	pH	Carbonate Alkalinity ($\mu\text{mol/kg}$)
020-NT/SS	1-Mar-10	2258	26°43.6'	64°5.5'	23.1	36.717	1113.0	0.021	0.114	1.017		
SS-013	2-Mar-10	0200	26°43.7'	63°49.3'	23.4	36.658	1062.3				8.12	2259.5
021-NT/SS	2-Mar-10	1300	26°34.4'	63°15.9'	23.4	36.662	966.8	0.023	0.109	0.269		
SS-014	2-Mar-10	1400	26°34.3'	63°14.8'	23.4	36.682	951.2				8.13	2328.5
022-NT/SS	3-Mar-10	0000	26°40.3'	62°58.7'	23.7	36.598	1100.5	0.025	0.095	0.341		
SS-015	3-Mar-10	0200	26°39.0'	62°49.9'	23.7	36.590	1121.9				8.12	2377.3
023-NT/SS	3-Mar-10	1135	26°34.7'	62°12.6'	23.6	36.851	1109.7	0.022	0.082	0.301		
SS-016	3-Mar-10	1400	26°35.4'	62°7.6'	23.5	36.813	1065.2				8.05	2407.6
SS-017	4-Mar-10	0200	26°40.8'	61°7.9'	22.8	36.852	1112.3				8.12	2356.3
024-NT/SS	4-Mar-10	1004	26°29.8'	60°28.3'	23.8	36.957	1047.5	0.022	0.136	0.400		
025-NT/SS	4-Mar-10	2348	26°19.1'	59°35.9'	22.1	36.852	1388.0	0.037	0.091	0.131		
SS-018	5-Mar-10	0200	26°17.9'	59°27.2'	21.5	36.796	1479.0				8.04	2209.9
026-NT/SS	5-Mar-10	1225	26°9.1'	58°49.9'	22.4	36.802	1496.9	0.041	0.091	0.603		
SS-019	5-Mar-10	1400	26°8.4'	58°48.6'	22.4	36.738	1578.8				8.10	2431.2
027-NT/SS	6-Mar-10	0230	25°42.3'	58°27.4'	23.7	36.888	1536.4	0.032	0.150	0.124		
SS-020	6-Mar-10	0210	25°37.5'	58°22.9'	23.6	36.906	1547.5				8.06	2371.0
028--NT/SS	6-Mar-10	1236	25°3.2'	58°15.4'	23.5	36.895	1576.6	0.014	0.086	0.098		
SS-021	6-Mar-10	1420	25°1.3'	58°14.2'	23.2	36.934	1638.9				8.08	
029-NT/SS	6-Mar-10	2225	24°48.7'	58°11.4'	23.5	36.975	1717.4	0.017	0.091	0.052		
SS-022	7-Mar-10	0158	24°37.7'	58°11.4'	24.0	37.017	1725.9				8.11	2425.9
030-NT/SS	7-Mar-10	1125	23°51.5'	58°26.9'	24.8	36.765	1642.8	0.022	0.127	0.269		
SS-023	7-Mar-10	1400	23°44.1'	58°25.3'	24.8	36.690	1631.2					2291.9
SS-023'	7-Mar-10	1425	23°42.7'	58°24.8'	24.8	36.722	1624.3				8.04	
031-NT/SS	7-Mar-10	2335	23°22.9'	58°14.8'	24.1	37.012	1784.7	0.034	0.114	0.039		
SS-024	8-Mar-10	0216	23°16.7'	58°14.9'	24.2	37.004	1798.6				8.08	2450.1
032-NT/SS	8-Mar-10	1215	22°45.0'	58°19.2'	24.6	36.739	1724.4	0.021	0.041	0.098		

Table 4 continued.

Station	Date	Time	Latitude (N)	Longitude (W)	Temp (C)	Salinity (PSU)	Fluoro (mV)	Chl-a ($\mu\text{mg/L}$)	PO ₄ (μM)	NO ₃ (μM)	pH	Carbonate Alkalinity ($\mu\text{mol/kg}$)
SS-025	8-Mar-10	1400	22°40.3'	58°17.5'	24.8	36.424	1750.7				8.14	2442.4
033-SS/NT	9-Mar-10	0025	22°0.7'	58°21.2'	25.1	36.290	2027.2	0.032	0.114	3.904		
SS-026	9-Mar-10	0223	21°54.3'	58°19.1'	25.6	36.190	1994.6				8.15	2930.6
034-NT/SS	9-Mar-10	1242	21°26.9'	58°20.2'	26.3	36.311	1888.5	0.036	0.168	0.157		
SS-027	9-Mar-10	1400	21°25.2'	58°20.4'	26.6	36.361	1884.7				8.10	2369.8
035-NT/SS	9-Mar-10	2336	21°9.5'	58°25.1'	25.8	36.443	2060.1	0.041	0.095	0.905		
SS-028	10-Mar-10	0157	21°4.6'	58°24.6'	25.8	36.323	2130.2				8.14	2265.9
036-NT/SS	10-Mar-10	1208	20°23.9'	58°36.3'	25.7	36.391	2374.2	0.041	0.091	0.190		
SS-029	10-Mar-10	1400	20°17.5'	58°39.4'	25.7	36.376	2358.4				8.09	2277.2
038-NT/SS	11-Mar-10	0018	19°43.2'	58°47.0'	26.4	35.870	1699.6	0.038	0.132	0.157		
SS-030	11-Mar-10	0200	19°35.8'	58°46.1'	26.5	35.877	1735.8				8.17	2325.6
039-NT/SS	11-Mar-10	1230	18°35.8'	58°54.0'	26.9	35.707	1856.9	0.043	0.232	0.242		
SS-031	11-Mar-10	1400	18°31.8'	58°55.9'	26.9	35.700	1898.7				8.14	2434.8
040-NT/SS	11-Mar-10	2300	17°56.1'	59°12.2'	27.3	35.803	2259.5	0.072	0.241	0.341		
SS-032	12-Mar-10	0200	17°40.6'	59°17.8'	27.5	35.916	2322.9				7.99	2416.5
041-NT/SS	12-Mar-10	1300	16°44.1'	59°35.7'	27.4	35.754	2461.2	0.033	0.191	0.288		
SS-033	12-Mar-10	1400	16°42.5'	59°36.5'	27.4	35.656	2499.8				8.15	2103.0
043-NT/SS	13-Mar-10	0000	16°31.3'	59°47.5'	27.5	35.711	2814.7	0.033	0.082	0.315		
SS-034	13-Mar-10	0200	16°26.7'	59°48.8'	27.5	35.690	2895.8				8.13	2687.4
044-NT/SS	13-Mar-10	1212	16°3.9'	59°59.7'	27.9	35.967	3033.2	0.037	0.109	1.030		
SS-035	13-Mar-10	1414	15°59.1'	60°3.4'	28.1	35.923	3067.3				8.15	2182.1
046-NT/SS	14-Mar-10	0004	15°32.6'	60°17.9'	27.9	34.578	3534.8	0.091	0.177	0.584		
SS-036	14-Mar-10	0200	15°26.2'	60°17.5'	27.9	33.899	3694.9				8.12	2122.5
047-NT/SS	14-Mar-10	1318	14°54.1'	60°35.0'	28.1	35.258	3976.0	0.070	0.277	0.577		
SS-037	14-Mar-10	1400	14°56.6'	60°34.4'	28.1	35.306	3971.2				8.11	2276.6

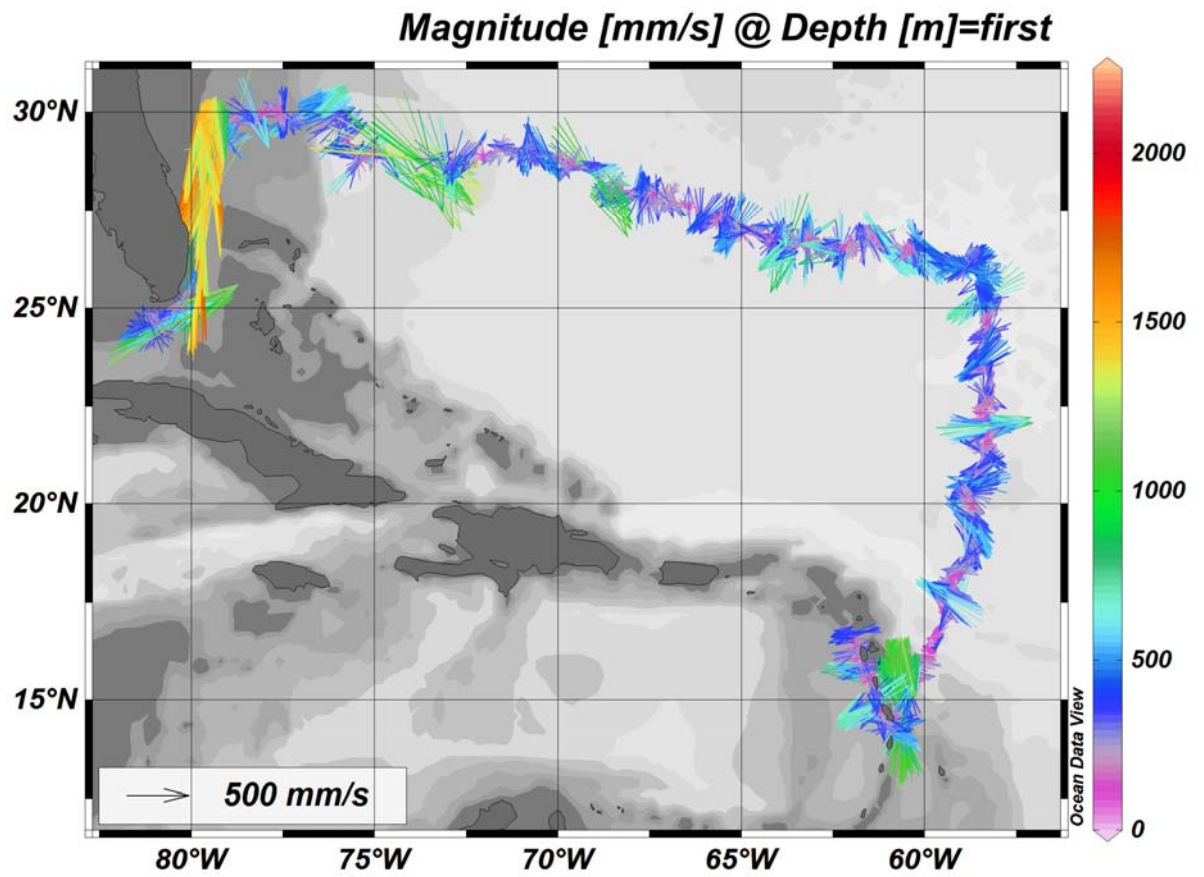


Figure 2. Surface current direction and velocity measured with the ADCP.

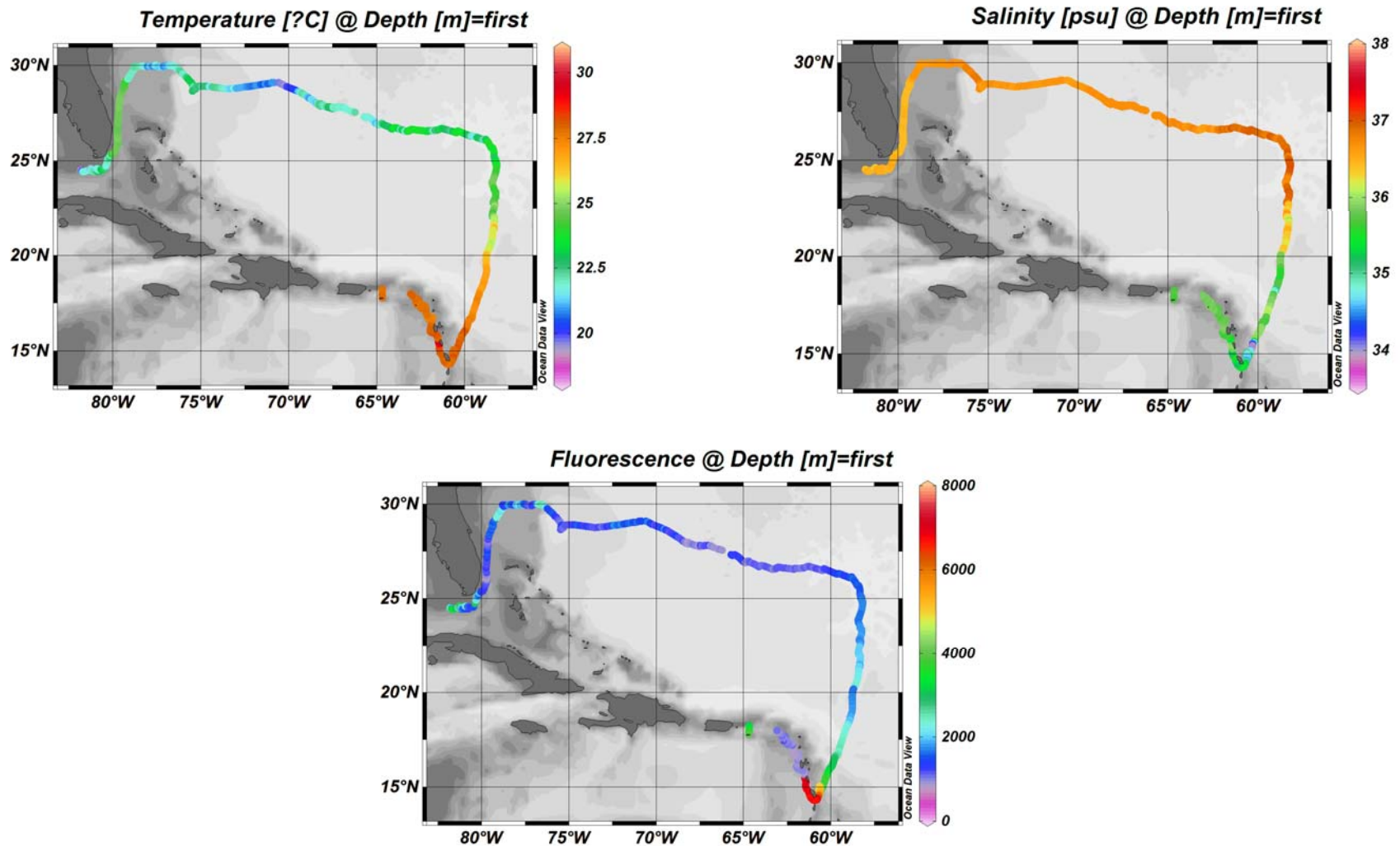


Figure 3. Surface temperature (top left), salinity (top right) and fluorescence (bottom) measurements from the continuous flow-through data logger. Break in sampling through British Virgin Island

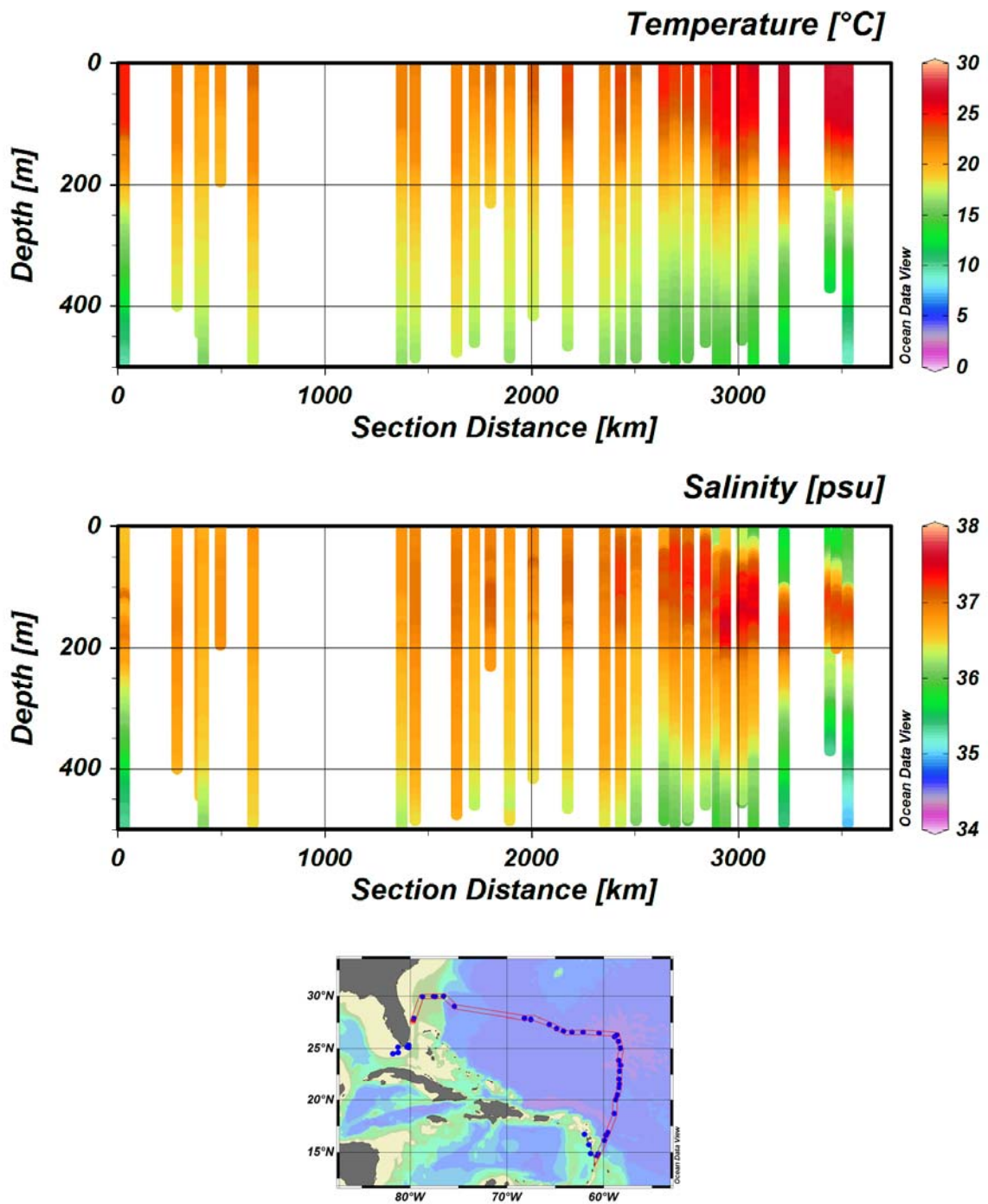


Figure 4. Temperature (top) and salinity (bottom) cross sections created from CTD data collected along the entire cruise track. Map (bottom) indicates which stations were included in the section.

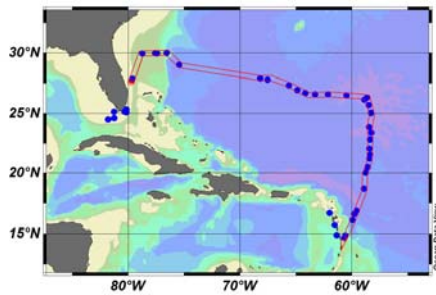
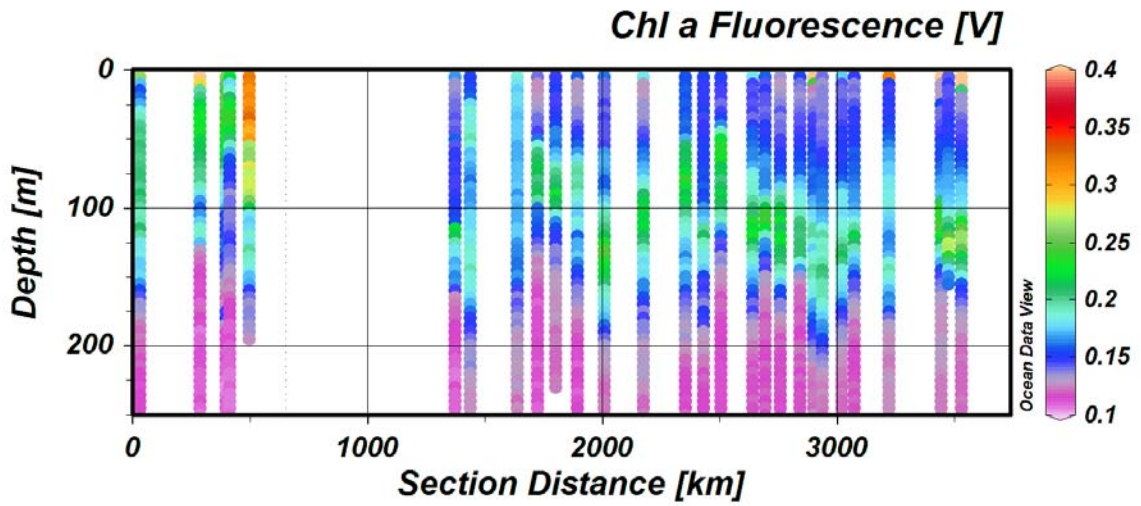
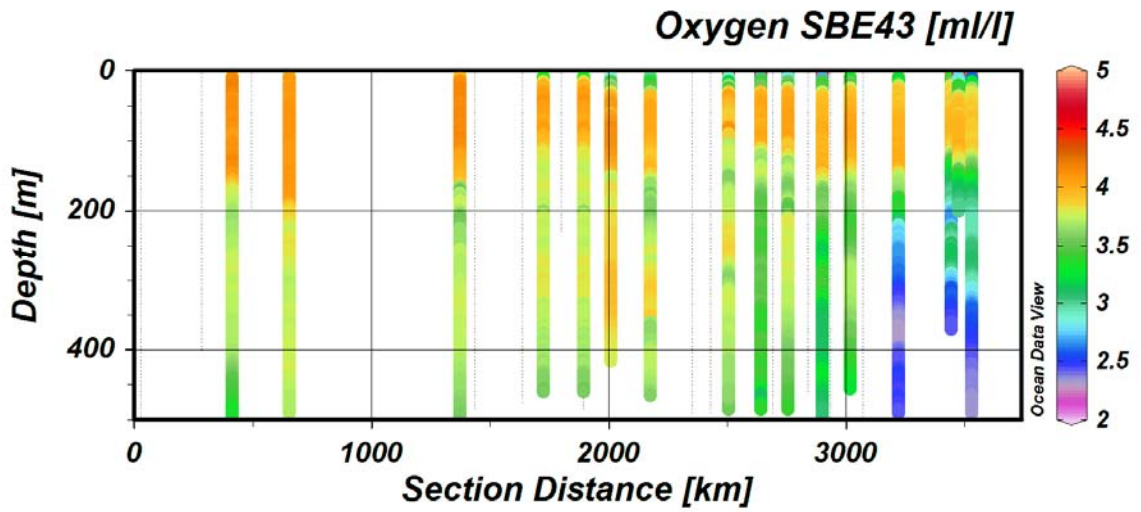


Figure 5. Oxygen (top) and raw fluorescence (middle) cross sections. The oxygen and fluorescence sensors are mounted on different CTDs. Map (bottom) indicates which stations were included in the section.

Table 5. Hydrocast bottle data. Blanks indicate no sample collected.

Station	Bottle	Z Corr (m)	Chl a (ug/L)	PO ₄ (uM)	SiO ₂ (uM)	NO ₃ (uM)	pH
C227-001-HC	12	1.3					
C227-001-HC	11	1.4	0.202				
C227-001-HC	10	1.5		0.064		0.647	8.10
C227-001-HC	9	1.7					
C227-001-HC	8	1.8					
C227-001-HC	7	1.9					
C227-001-HC	6	6.0					
C227-001-HC	5	6.4					
C227-001-HC	4	6.7	0.120				
C227-001-HC	3	7.0		0.327		0.668	8.08
C227-001-HC	2	7.4					
C227-001-HC	1	7.8					
C227-002-HC	12	1.8					
C227-002-HC	11	1.8					
C227-002-HC	10	1.7					
C227-002-HC	9	1.7					
C227-002-HC	8	1.8					
C227-002-HC	7	1.9	0.636	0.123		0.448	8.06
C227-002-HC	6	7.8					
C227-002-HC	5	8.0					
C227-002-HC	4	8.2					
C227-002-HC	3	8.4					
C227-002-HC	2	7.6					
C227-002-HC	1	8.8	0.644	0.168		0.679	8.05
C227-003-HC	12	0.9					
C227-003-HC	11	1.3					
C227-003-HC	10	0.9					
C227-003-HC	9	1.2					
C227-003-HC	8	1.4					
C227-003-HC	7	1.8	0.088	0.100		0.479	8.11
C227-003-HC	6	7.5					
C227-003-HC	5	7.7					
C227-003-HC	4	8.1					
C227-003-HC	3	8.3					
C227-003-HC	2	8.5					
C227-003-HC	1	8.8	0.133	0.027		0.490	8.10
C227-004-HC	12	1.3					
C227-004-HC	11	1.5					
C227-004-HC	10	1.6					
C227-004-HC	9	1.7					
C227-004-HC	8	1.7					
C227-004-HC	7	1.9	0.114	0.068		0.080	8.11
C227-004-HC	6	8.3					
C227-004-HC	5	8.5					

Table 5 continued.

Station	Bottle	Z Corr (m)	Chl a (ug/L)	PO ₄ (uM)	SiO ₂ (uM)	NO ₃ (uM)	pH
C227-004-HC	4	8.6					
C227-004-HC	3	8.8					
C227-004-HC	2	8.9					
C227-004-HC	1	9.0	0.063	0.032		0.584	8.11
C227-010-HC	12	5.4					
C227-010-HC	11	6.1					
C227-010-HC	10	5.1		0.159		4.873	
C227-010-HC	9	5.2					
C227-010-HC	8	5.2					
C227-010-HC	7	5.5		0.123		1.152	
C227-010-HC	6	5.9					
C227-010-HC	5	5.1					
C227-010-HC	4	4.9					
C227-010-HC	3	4.9					
C227-010-HC	2	6.0					
C227-010-HC	1	5.2					
C227-011-HC	12	10.1					
C227-011-HC	11	29.9					
C227-011-HC	10	49.4					
C227-011-HC	9	70.0					
C227-011-HC	8	100.4		0.159		4.095	
C227-011-HC	7	124.6					
C227-011-HC	6	DNF					
C227-011-HC	5	173.8					
C227-011-HC	4	199.4					
C227-011-HC	3	249.3					
C227-011-HC	2	299.8		0.155		14.030	
C227-011-HC	1	350.2					
C227-014-HC	12	19.8		0.200		0.532	
C227-014-HC	11	74.7		0.127		0.153	
C227-014-HC	10	124.8		0.136		2.561	
C227-014-HC	9	175.1		0.105		2.928	
C227-014-HC	8	249.7					
C227-014-HC	7	274.8					
C227-014-HC	6	300.1					
C227-014-HC	5	324.6					
C227-014-HC	4	349.9					
C227-014-HC	3	374.9					
C227-014-HC	2	399.9					
C227-014-HC	1	450.4					
C227-016a-HC							
C227-016b-HC	13	0.0		0.132		0.288	
C227-016b-HC	12	19.3		0.100		0.354	
C227-016b-HC	11	50.0		0.095		0.301	

Table 5 continued.

Station	Bottle	Z Corr (m)	Chl a (ug/L)	PO ₄ (uM)	SiO ₂ (uM)	NO ₃ (uM)	pH
C227-016b-HC	10	75.0		0.091		0.150	
C227-016b-HC	9	100.6		0.105		0.420	
C227-016b-HC	8	250.2					
C227-016b-HC	7	273.6					
C227-016b-HC	6	300.3					
C227-016b-HC	5	325.3					
C227-016b-HC	4	349.8					
C227-016b-HC	3	374.3					
C227-016b-HC	2	399.9					
C227-016b-HC	1	450.3					
C227-019-HC	13						8.11
C227-021-HC							
C227-023-HC							
C227-024-HC							
C227-028-HCa							
C227-028-HCb							
C227-028-HCc							
C227-028-HCd							
C227-030-HC							
C227-032-HC							
C227-034-HC							
C227-036-HC							
C227-039-HC							
C227-041-HC							
C227-042-HC							
C227-044-HC							
C227-047-HC							
C227-050-HC							

Table 6. Neuston net tow data. Blank indicates no data collected. ** Indicates count: 123 *Sargassum nudibranch*, 998 purple bubble raft snail (*Janthina*), 728 *Velella*.

Station	Tow Distance (m)	Zoop. Biomass (mL)	Zoop. Density (mL m ⁻²)	Nekton >2cm (mL)	Gelatinous >2cm (mL)	Leptocephali (#)	<i>Halobates</i> (#)	Myctophid (#)	<i>Sargassum natans</i> (g)	<i>Sargassum fluitans</i> (g)	Plastic Pieces (#)
C227-001-NT	1992.1	23.0	0.0115	2.0	2.0	0	0	0	0	0	2
C227-002-NT	2385.2	125.0	0.0524	13.0	0.0	0	0	0	0	0	0
C227-003-NT	2109.0	68.0	0.0322	2.0	0.0	0	0	0	0	43	22
C227-004-NT	1839.0	31.0	0.0169	0.0	0.0	0	0	0	0	11	0
C227-005-NT	1303.3		0.0000	334.0	**	0	0	0	800	2750	39
C227-006-NT	1666.8	29.0	0.0174	2.0	5.0	2	0	16	0	0	0
C227-007-NT	1953.6	17.5	0.0090	0.8	0.0	0	0	0	10	0	2
C227-008-NT	2626.9	25.0	0.0095	1.0	11.0	0	0	8	73	26	0
C227-009-NT	1789.7	75.0	0.0419	0.0	0.0	0	0	0	17	0	0
C227-010-NT	1654.5	30.0	0.0181	1.0	13.0	0	0	1	0	49	0
C227-012-NT	1985.6	10.2	0.0051	1.0	1.0	0	0	0	0	25	0
C227-013-NT	1699.0	18.0	0.0106	0.0	7.0	4	0	1	0	0	0
C227-014-NT	1083.0	22.0	0.0203	0.0	0.0	0	0	0	5	12	2
C227-015-NT	1936.6	21.0	0.0108	0.5	0.0	0	0	1	0	85	0
C227-016-NT	2110.0	5.0	0.0024	0.0	0.0	0	0	0	22	124	0
C227-017-NT	1779.0	6.6	0.0037	0.1	0.1	0	0	1	107	45	5
C227-018-NT	1103.2	5.0	0.0045	0.5	0.0	21	0	0	125	24	1
C227-019-NT	1711.0	3.0	0.0018	0.0	0.0	0	0	0	29	38	0
C227-020-NT	2054.2	6.0	0.0029	0.0	0.0	0	0	0	7	0	1
C227-021-NT	1097.4	89.0	0.0811	17.0	0.0	0	1	0	3630	5330	54
C227-022-NT	1077.5	3.5	0.0032	0.0	0.0	1	0	1	0	5	7
C227-023-NT	963.1	2.0	0.0021	0.0	0.0	0	0	0	0	0	2

Table 6 continued.

Station	Tow Distance (m)	Zoop. Biomass (mL)	Zoop. Density (mL m ⁻²)	Nekton >2cm (mL)	Gelatinous >2cm (mL)	Leptocephali (#)	<i>Halobates</i> (#)	Myctophid (#)	<i>Sargassum natans</i> (g)	<i>Sargassum fluitans</i> (g)	Plastic Pieces (#)
C227-024-NT	1794.1	14.0	0.0078	3.0	0.0	0	0	0	1010	300	18
C227-025-NT	1664.7	13.0	0.0078	0.0	0.0	39	3	0	0	0	2
C227-026-NT	1623.6	40.0	0.0246	0.5	0.0	0	0	0	1045	0	0
C227-027-NT	2054.2	8.0	0.0039	10.0	2.0	40	3	3	negligible	negligible	0
C227-028-NT	2002.5	7.0	0.0035	0.0	0.0	0	1	0	72	238	25
C227-029-NT	2398.8	6.0	0.0025	0.0	0.0	419	2	4	130	160	62
C227-030-NT	2219.0	8.0	0.0036	0.0	0.0	0	0	0	450	20	9
C227-031-NT	1693.8	17.0	0.0100	0.0	0.0	0	15	5	755	25	10
C227-032-NT	2038.6	3.0	0.0015	0.0	0.0	0	0	0	14	0	78
C227-033-NT	1986.9	5.0	0.0025	10.0	2.0	19	1	11	0	4	7
C227-034-NT	1858.0	7.5	0.0040	1.0	0.0	0	0	0	0	0	1
C227-035-NT	1634.2	17.5	0.0107	11.0	5.0	134	6	7	54	120	59
C227-036-NT	2207.5	4.0	0.0018	0.0	0.0	0	0	0	0	0	14
C227-038-NT	2998.7	14.0	0.0047	3.5	0.5	1	11	15	0	1	2
C227-039-NT	2286.8	3.0	0.0013	0.0	0.0	0	1	0	0	0	2
C227-040-NT	1550.8	30.0	0.0193	3.0	1.0	2	2	2	0	0	0
C227-041-NT	1938.6	2.0	0.0010	0.0	0.0	0	15	0	0	0	1
C227-043-NT	1914.7	8.0	0.0042	70.0	0.0	34	55	14	0	0	5
C227-044-NT	1768.6	21.0	0.0119	1.0	0.0	0	1	0	0	0	6
C227-046-NT	1029.2	25.0	0.0243	21.0	9.0	0	9	7	0	0	0
C227-047-NT	3387.5	10.0	0.0030	0.0	0.0	0	1	0	0	0	0
C227-049-NT	1433.4	41.5	0.0290	0.0	46.5	0	0	4	0	0	0
C227-050-NT	3019.3	6.1	0.0020	0.0	0.0	0	1	0	0	0	0

Table 6 continued.

Station	Tow Distance (m)	Zoop. Biomass (mL)	Zoop. Density (mL m ⁻²)	Nekton >2cm (mL)	Gelatinous >2cm (mL)	Leptocephali (#)	<i>Halobates</i> (#)	Myctophid (#)	<i>Sargassum natans</i> (g)	<i>Sargassum fluitans</i> (g)	Plastic Pieces (#)
C227-053-NT	2195.5	5.0	0.0023	0	0	0	1	0	0	0	0
C227-054-NT	1957.7	30.0	0.0153	11	3	0	36	0	0	0	0
C227-056-NT	2565.4		0.0000	1	0	0	4	0	0	0	0
C227-057-NT	1939.8	19.0	0.0098	0	2	0	1	12	0	0	0

Table 7. Meter net tow data.

Station	Tow Depth (m)	Tow Length (m)	Net Area (m ²)	Tow Volume (m ³)	Mesh Size (µm)	Zoop. Biomass (mL)	Zoop. Density (mL m ⁻³)	Leptocephali (#)	Myctophid (#)	Nekton >2cm (mL)	Gelatinous >2cm (mL)
C227-008-MN	30.0	2105.268	0.785	1652.6	335	190	0.1150	2	0	1	19
C227-013-MNa	~100.0	1965.414	0.785	1542.8	335	108	0.0700	2	6	2	0
C227-013-MNb	~30.0	843.907	0.785	662.5	335	76	0.1147	3	0	0	6
C227-017-MNa	100	2685.353	0.785	2108.0	335	50	0.0237	1	0	0	0
C227-017-MNb	30	1953.853	0.785	1533.8	335	66.8	0.0436	6	0	0	0.5
C227-018-MNa	100	3078.857	0.785	2416.9	335	34	0.0141	13	2	0	3
C227-018-MNb	30	1815.066	0.785	1424.8	335	24	0.0168	1	1	0	0.9
C227-020-MNa	100	3004.818	0.785	2358.8	335	33	0.0140	2	3	0.5	0.05
C227-020-MNb	30.0	2322.847	0.785	1823.4	335	53	0.0291	2	2	0.5	1.4
C227-025-MN	100.0	2035.475	0.785	1597.8	335	97	0.0607	4	4	7	12
C227-025-2MN	150.0	3563.166	2.490	8872.3	1000	144	0.0162	28	15	33.5	35
C227-026-MNa	285.0	3323.189	0.785	2608.7	335	40	0.0153	0	0	0	10
C227-026-MNb	135.0	1650.461	0.785	1295.6	335	35	0.0270	0	0	0	1
C227-027-MNa	108.0	2154.183	0.785	1691.0	335	25	0.0148	4	2	1	15
C227-027-MNb	33.0	1321.810	0.785	1037.6	335	37	0.0357	7	3	10	7
C227-031-MNa	65.0	2046.368	0.785	1606.4	335	39	0.0243	0	1	2	0
C227-031-MNb	30.0	1883.258	0.785	1478.4	335	42	0.0284	0	2	1.5	0.5
C227-033-MNa	100.0	2030.428	0.785	1593.9	335	37	0.0232	2	4	2	10
C227-033-MNb	65.0	1431.974	0.785	1124.1	335	25	0.0222	7	2	1	0
C227-035-MNa	100.0	2150.445	0.785	1688.1	333	50	0.0296	0	1	0.5	10.5
C227-035-MNb	65.0	1754.724	0.785	1377.5	333	52	0.0378	2	7	3	6
C227-040-MN	100.0	2796.505	0.785	2195.3	333	71	0.0323	2	13	4	47.5
C227-045-2MN	750.0	497.900	2.490	1239.8	1000	74	0.0597	1	1	11	8