

# **CRUISE REPORT**

**C-195**

## **SCIENTIFIC ACTIVITIES UNDERTAKEN ABOARD THE**

***SSV Corwith Cramer***

**Woods Hole, MA – Bequia - Iles des Saintes - St. Croix USVI**

**14 October – 20 November 2004**



Sea Education Association  
Woods Hole, Massachusetts

To obtain unpublished data, contact the SEA data archivist:  
Erik Zettler, Science Coordinator  
Sea Education Association  
PO Box 6  
Woods Hole, MA 02543

(508) 540-3954 phone  
(800) 552-3633 phone  
(508) 457-4673 fax  
[ezettler@sea.edu](mailto:ezettler@sea.edu) email  
[www.sea.edu](http://www.sea.edu) website

## **Table of Contents**

Ship 's Complement	4
Data Description	5
Figure 1: Cruise Track	6
Figure 2: Hydrographic sections	7
Table 1: Student Research Projects	8
Table 2: Oceanographic sampling stations	10
Table 3: Surface station data	14
Table 4: Neuston tow data	16
Table 5: Hydrocast data	17
Table 6: Sediment composition data	20

## Ship's Complement for SSV *Corwith Cramer C-195*

### *Nautical Staff*

Binh Le	Captain
TC Collyer	Chief Mate
PJ Meyer	Second Mate
Lizzy Grubin	Third Mate
Morgan Simmons	Engineer
Sarah Kleb	Steward
Dr. Edward Walton	Medical Officer
Rick Burns	Guest Watchstander

### *Scientific Staff*

Gary Jaroslow	Chief Scientist
Meg Estapa	First Assistant Scientist
Jen Barone	Second Assistant Scientist
Justin Shaw	Third Assistant Scientist

### *Observer*

Thomas Nelson	Department of Fisheries Ministry of Agriculture, Forestry and Fisheries Pointe Seraphine, Castries Saint Lucia
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### *Students*

Emma R. Bassein	Massachusetts Institute of Technology
Joel L. Cartwright	Bowdoin College
Catherine R. Crafts	UC, Santa Cruz
Ian F. Dargon	Colorado College
Rachel A. Decker	Oberlin College
Kathryn D. Feller	Hobart & William Smith Colleges
M. Charles Festa	URI, Narragansett Bay
Paul T. Fusco-Gessick	Ithaca College
Amber E. Gillis	Hamilton College
Kimberly A. Gniadek	Northeastern University
Gavin E. Gregory	Colgate University
Travis L. Hollingsworth	Georgetown University
Randolph M. Jones	Connecticut College
Jonathan Liberzon	U of Michigan, Ann Arbor
Maureen A. Lynch	Colgate University
Brittain M. Mason	Skidmore College
Ann K. Miller	Wellesley College
Madeleine C. Moulton	Emerson College
Sarah E. O'Connor	University of New Hampshire
Elizabeth A. Ochoa	Cornell University
Stephanie R. Pritchard	Middlebury College
Adele L. Roland	Cornell University
Elizabeth A. Summers	Barnard College
Yoana G. Voynova	Franklin & Marshall College
Jeremy M. Wansor	UC, San Diego

## **Data Description**

This cruise report provides a record of data collected aboard the SSV *Corwith Cramer* during Cruise C-195 during October and November of 2004. The cruise track transected the North Atlantic Ocean from Woods Hole, MA to St. Croix, USVI (Fig. 1). The sea-going program is an extension of Sea Education Association (SEA) courses conducted for six weeks on shore in Woods Hole and emphasizes the application of theoretical concepts to the study of the oceans. Oceanographic research conducted during Cruise C-195 involved extensive data collection for individual student projects (Table 1) and ongoing SEA research programs. The student projects focused on current scientific problems in physical, chemical, biological, geological, and environmental oceanography, and stressed the interdisciplinary nature of the applied science. In particular, the complex interaction of oceanic processes was emphasized by interdisciplinary, regional, and temporal comparative analyses of the various data sets collected. Student research papers are available on request from SEA.

During the cruise, samples or data were collected at 153 discrete oceanographic stations (Table 2) in addition to continuously sampling water depth, sub-bottom acoustic profiling, Acoustic Doppler Current Profiles (ADCP) and flow-through sea surface temperature, salinity and *in-vivo* fluorescence. This report summarizes sea surface chemical properties (Table 3), subsurface physical, chemical and biological characteristics (Fig. 2, Tables 4 and 5), and surface sediment qualities (Table 6). Lengthy CTD, CHIRP, ADCP and flow-through data are not reported here. All unpublished data can be made available by arrangement with the SEA archivist (Contact information, p.2). The information contained in this report is not intended to represent final interpretation of the data and should not be excerpted or cited without written permission from SEA.

Gary E. Jaroslow  
Chief Scientist  
C-195

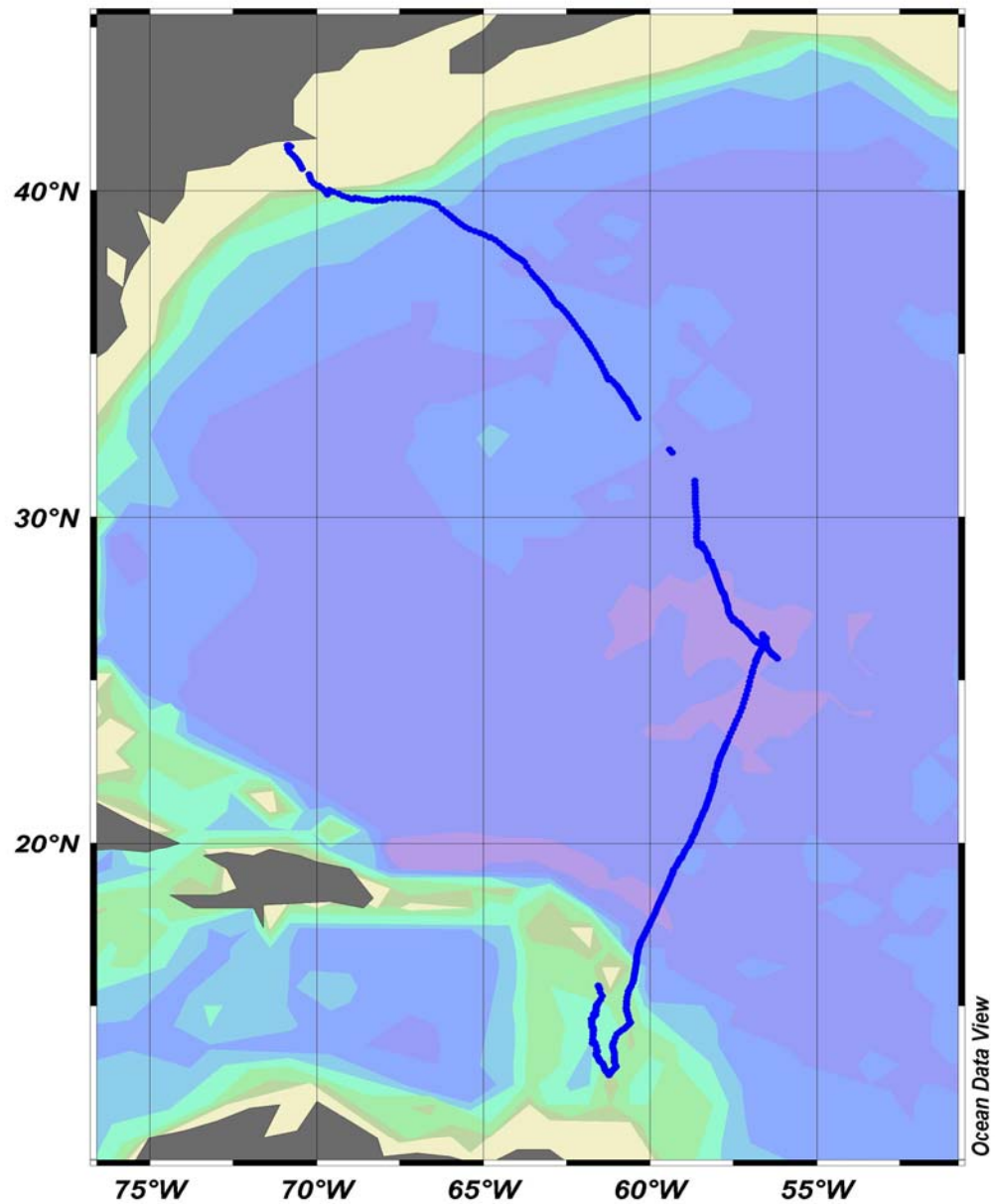


Figure 1. Cruise-track map for Cruise C-195 of the SSV *Corwith Cramer* from October 14 - November 20, 2004. The cruise began in Woods Hole, MA USA, made port stops in the Caribbean islands of Bequia and Iles des Saintes and ended in St. Croix, USVI.

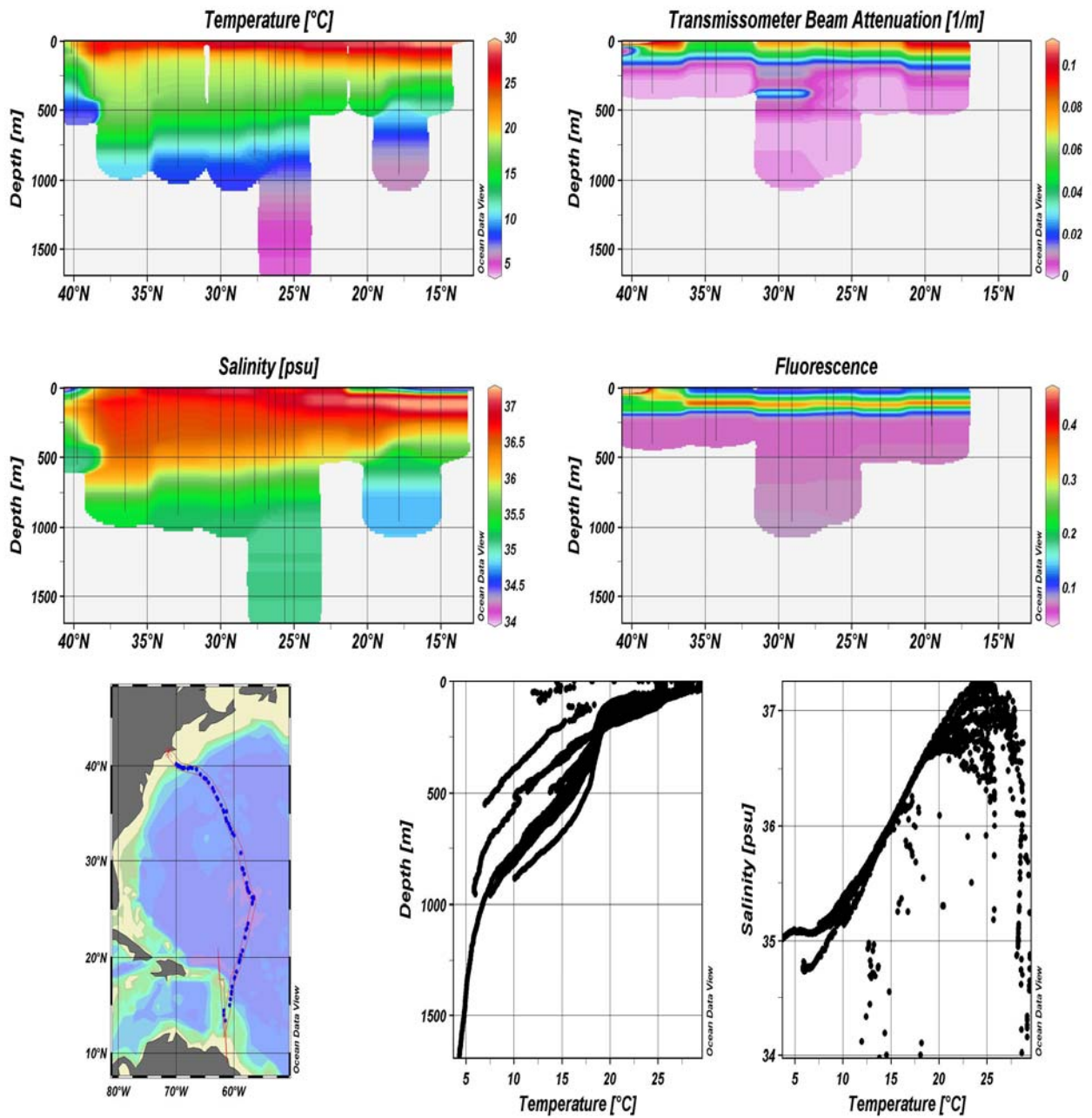


Figure 2. Data collected at CTD stations located in map (lower left, stations shown by blue dots). Along-track water temperature, salinity, transmissometer beam attenuation and *in-vivo* fluorescence (top and middle sections). Plots of water-column temperature and temperature versus salinity (lower right).

**Table 1. Student Research Projects**

<b>Title</b>	<b>Student Researcher(s)</b>
North Atlantic Oscillation and its affect on the formations of Eighteen Degree Water and Salinity Maximum Water	Ann Miller Kimberly Gniadek
Flow variations in mesoscale eddies	Katie Crafts
Thermohaline structure of mesoscale eddies	Travis Hollingsworth
Studying mesoscale eddies in the Sargasso Sea through nutrient signal	Emma Bassein Stephanie Pritchard
Diatom and dinoflagellate species variation in response to formation of mesoscale eddies in the North Atlantic	Yoana Voynova
Bathymetrically-induced flow and associated chemical and biological responses	Paul Fusco-Gessick
Phytoplankton concentration and population composition in relation to wind-induced mixing in a transect of the Sargasso Sea	Kathryn Feller
Phytoplankton size and other factors contributing to the Deep Chlorophyll Maximum depth and magnitude from the temperate to tropical North Atlantic	Amber Gillis
The vertical distribution of dissolved oxygen in the Western Atlantic: a study of the SOM	Rachel Decker
Changes in light intensity as a cue for diel vertical migration in the North Atlantic	Elly Roland
Active transport of nutrients below the pycnocline by DVM zooplankton in the North Atlantic	Randolph Jones
Size-dependent timing of diel zooplankton migration as a test of the predator avoidance theory	Jonathon Liberzon
The lifecycle and seasonal variation of <i>Halobates micans</i> in the Atlantic Ocean	Ian Dargon
Distribution and relative health of myctophids in the Northwest Atlantic in relation to water masses and food availability	Maureen Lynch Sarah O'Connor
Eutecosomatous pteropods as an indicator species for climate changing the southwestern North Atlantic	Joel Cartwright Elizabeth Ochoa
The effects of hydrodynamic forces and sediment composition on bedform structure	M. Charles Festa Brittain Mason Jeremy Wansor



Sub-bottom structure and marine sedimentation patterns in the tectonically active region of the southern Lesser Antilles

Gavin Gregory  
Besty Summers

A comparison of compositional variations of sediment on the windward versus leeward side of Bequia island, Lesser Antilles island arc, East Caribbean

Madeleine Moulton

**Table 2: Oceanographic sampling stations**

Station	Date	Local Time	Log (nm)	Latitude (N)	Longitude (W)	Sampling Depth (m)	General Locale
<b>CTD Casts</b>							
C195-001-CTD	17-Oct-04	0800	77.5	40°09.2'	069°57.3'		6.5 nm S of Nantucket
C195-006-CTD	18-Oct-04	1100	210.1	39°45.8'	067°12.7'		Bear Seamount (south of Georges Bank)
C195-008-CTD	19-Oct-04	0809	334.2	38°34.8'	064°48.4'		Gulf Stream
C195-010-CTD	20-Oct-04	0900	485.0	36°29.5'	062°46.9'		Northern Sargasso Sea
C195-013-CTD	21-Oct-04	0920	655.0	34°14.1'	061°15.3'		Northern Sargasso Sea
C195-016-CTD	22-Oct-04	0907	772.7	32°52.8'	060°15.8'		Subtropical Convergence Zone
C195-020-CTD	24-Oct-04	0959	1048.5	29°03.6'	058°25.1'		Southern Sargasso Sea
C195-022-CTD	25-Oct-04	1115	1138.9	27°40.1'	057°48.8'		Southern Sargasso Sea
C195-026-CTD	26-Oct-04	0920	1220.5	26°42.5'	057°20.2'		Southern Sargasso Sea
C195-028-CTD	27-Oct-04	1015	1309.2	25°39.5'	056°11.1'		Southern Sargasso Sea
C195-031-CTD	28-Oct-04	1021	1367.4	26°14.2'	056°34.4'		Southern Sargasso Sea
C195-032-CTD	29-Oct-04	1033	1404.9	25°35.9'	056°49.8'		Southern Sargasso Sea
C195-033-CTD	30-Oct-04	1000	1571.0	23°02.5'	057°43.3'		North Equatorial Current
C195-036-CTD	1-Nov-04	0840	1802.3	19°31.0'	059°03.7'		Tropical Atlantic
C195-037-CTD	1-Nov-04	0948	1802.2	19°31.0'	059°05.0'		Tropical Atlantic
C195-039-CTD	2-Nov-04	0917	1905.2	17°49.9'	059°52.2'		Tropical Atlantic
C195-041-CTD	3-Nov-04	0805	2006.5	16°18.9'	060°25.1'		Tropical Atlantic
C195-061-CTD	9-Nov-04	0920	2284.7	13°31.0'	061°37.0'		Caribbean
C195-068-CTD	11-Nov-04	1009	2429.5	15°38.5'	061°33.0'		Caribbean
<b>Hydrocasts</b>							
C195-001-CTD	17-Oct-04	0800	77.5	40°09.2'	069°57.3'		6.5 nm S of Nantucket
C195-008-CTD	19-Oct-04	0809	334.2	38°34.8'	064°48.4'		Gulf Stream
C195-013-CTD	21-Oct-04	0920	655.0	34°14.1'	061°15.3'		Northern Sargasso Sea
C195-020-CTD	24-Oct-04	0959	1048.5	29°03.6'	058°25.1'		Southern Sargasso Sea
C195-026-CTD	26-Oct-04	0920	1220.5	26°42.5'	057°20.2'		Southern Sargasso Sea
C195-031-CTD	28-Oct-04	1021	1367.4	26°14.2'	056°34.4'		Southern Sargasso Sea
C195-036-CTD	1-Nov-04	0840	1802.3	19°31.0'	059°03.7'		Tropical Atlantic
C195-037-CTD	1-Nov-04	0948	1802.2	19°31.0'	059°05.0'		Tropical Atlantic
<b>Meter Nets*</b>							
C195-003-MN	17-Oct-04	1640	141.8	39°43.3'	068°54.7'	200	Slope Waters
C195-011-MN	20-Oct-04	2112	573.6	35°18.1'	061°50.7'	100	Northern Sargasso
C195-014-MN	21-Oct-04	0000	714.1	33°37.3'	060°42.1'	100	Northern Sargasso
C195-027-MN	26-Oct-04	2114	1267.5	26°10.3'	056°49.3'	50	Southern Sargasso
	*335- $\mu$ m-mesh 1-m diameter net						
<b>Neuston Nets</b>							
C195-004-NT	18-Oct-04	0033	157.7	39°44.0'	068°32.7'	0	174 nm SW of Nantucket
C195-005-NT-A	18-Oct-04	0536	183.2	39°42.7'	067°58.1'	0	Slope Waters
C195-005-NT-B	18-Oct-04	0557	183.7	39°42.7'	067°58.1'	0	Slope Waters

C195-005-NT-C	18-Oct-04	0616	183.9	39°42.7'	067°58.1'	0	Slope Waters
C195-005-NT-D	18-Oct-04	0636	184.0	39°42.7'	067°58.1'	0	Slope Waters
C195-007-NT-A	18-Oct-04	1700	234.3	39°37.2'	066°29.6'	0	East of Mytilus Seamount
C195-007-NT-B	18-Oct-04	1720	234.3	39°37.2'	066°29.6'	0	East of Mytilus Seamount
C195-007-NT-C	18-Oct-04	1739	234.3	39°37.2'	066°29.6'	0	East of Mytilus Seamount
C195-007-NT-D	18-Oct-04	1759	234.4	39°37.2'	066°29.6'	0	East of Mytilus Seamount
C195-009-NT	19-Oct-04	2359	427.8	37°19.1'	063°26.1'	0	Gulf Stream
C195-012-NT	21-Oct-04	0000	589.5	35°09.0'	061°43.7'	0	Northern Sargasso Sea
C195-015-NT	22-Oct-04	0000	726.7	33°31.0'	060°38.3'	0	Northern Sargasso Sea
C195-017-NT	24-Oct-04	0000	1035.5	29°11.2'	058°34.5'	0	Subtrop. Convergence Zone
C195-019-NT-A	24-Oct-04	0501	1039.0	29°10.7'	058°30.3'	0	Subtrop. Convergence Zone
C195-019-NT-B	24-Oct-04	0501	1039.3	29°10.7'	058°30.3'	0	Subtrop. Convergence Zone
C195-019-NT-C	24-Oct-04	0501	1039.4	29°10.7'	058°30.3'	0	Subtrop. Convergence Zone
C195-019-NT-D	24-Oct-04	0501	1039.6	29°10.7'	058°30.3'	0	Subtrop. Convergence Zone
C195-019-NT-E	24-Oct-04	0501	1039.7	29°10.7'	058°30.3'	0	Subtrop. Convergence Zone
C195-021-NT-A	24-Oct-04	1741	1078.4	28°37.7'	058°13.4'	0	Southern Sargasso
C195-021-NT-B	24-Oct-04	1741	1078.4	28°37.7'	058°13.4'	0	Southern Sargasso
C195-021-NT-C	24-Oct-04	1741	1078.4	28°37.7'	058°13.4'	0	Southern Sargasso
C195-021-NT-D	24-Oct-04	1741	1078.4	28°37.7'	058°13.4'	0	Southern Sargasso
C195-023-NT	25-Oct-04	2100	1174.6	27°01.5'	057°38.0'	0	Southern Sargasso
C195-024-NT	26-Oct-04	0125	1191.7	26°53.9'	057°33.3'	0	Southern Sargasso
C195-025-NT	26-Oct-04	0418	1203.2	26°50.1'	057°30.4'	0	Southern Sargasso
C195-027-NT	26-Oct-04	2121	1267.9	26°10.3'	056°49.3'	0	Southern Sargasso
C195-029-NT	27-Oct-04	2237	1340.8	26°07.8'	056°31.7'	0	Southern Sargasso
C195-030-NT	28-Oct-04	2343	1341.1	26°09.7'	056°32.2'	0	Southern Sargasso
C195-034-NT	31-Oct-04	0019	1630.9	22°04.7'	058°04.2'	0	North Equatorial Current
C195-035-NT	1-Nov-04	0008	1755.8	20°13.2'	058°45.4'	0	North Equatorial Current
C195-038-NT	2-Nov-04	0018	1862.1	18°31.2'	059°33.5'	0	Tropical Atlantic
C195-040-NT	3-Nov-04	0015	1972.6	16°51.9'	060°19.8'	0	Tropical Atlantic
C195-042-NT-A	4-Nov-04	0432	2116.6	14°32.4'	060°36.8'	0	Tropical Atlantic
C195-042-NT-B	4-Nov-04	0450	2117.2	14°32.4'	060°36.8'	0	Tropical Atlantic
C195-042-NT-C	4-Nov-04	0507	2118.1	14°32.4'	060°36.8'	0	Tropical Atlantic
C195-042-NT-D	4-Nov-04	0524	2118.7	14°32.4'	060°36.8'	0	Tropical Atlantic
C195-042-NT-E	4-Nov-04	0541	2119.2	14°32.4'	060°36.8'	0	Tropical Atlantic
C195-059-NT	8-Nov-04	1959	2279.3	13°17.9'	061°28.4'	0	Caribbean
C195-060-NT	9-Nov-04	0025	2283.4	13°23.5'	061°32.4'	0	Caribbean
C195-062-NT	9-Nov-04	1725	2303.4	13°52.8'	061°42.8'	0	Caribbean
C195-063-NT	9-Nov-04	1740	2303.6	13°52.8'	061°42.8'	0	Caribbean
C195-064-NT	9-Nov-04	1755	2303.9	13°52.8'	061°42.8'	0	Caribbean
C195-065-NT	9-Nov-04	1811	2304.2	13°52.8'	061°42.8'	0	Caribbean
C195-066-NT	9-Nov-04	1827	2304.5	13°52.8'	061°42.8'	0	Caribbean
C195-067-NT	10-Nov-04	0006	2332.8	14°20.2'	061°42.8'	0	Caribbean
C195-069-NT	15-Nov-04	0148	2449.6	15°55.9'	061°54.9'	0	Caribbean

**Towed CTD**

C195-002-TF	17-Oct-04	1232	103.0	39°56.1'	069°39.5'	0-250	Veatch Canyon
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**Shipek Sediment Grabs\***

C195-043-SG	5-Nov-04	0142	2232.2	13°09.0'	061°01.0'	717	Windward side of Bequia
C195-044-SG	5-Nov-04	0229	2237.0	13°06.7'	061°03.5'	393	Windward side of Bequia
C195-045-SG	5-Nov-04	0330	2238.7	13°05.1'	061°05.1'	67	Sill south of Bequia

C195-046-SG	5-Nov-04	0352	2240.9	13°03.6'	061°06.7'	51	Sill south of Bequia
C195-047A-SG	5-Nov-04	0446	2245.8	12°58.9'	061°09.7'	44	Sill south of Bequia
C195-047B-SG	5-Nov-04	0455	2246.0	12°59.9'	061°09.7'	44	Sill south of Bequia
C195-048-SG	5-Nov-04	0541	2252.0	12°55.0'	061°13.5'	30	Sill south of Bequia
C195-049-SG	5-Nov-04	0607	2253.0	12°54.1'	061°14.1'	95	Sill south of Bequia
C195-050-SG	5-Nov-04	0625	2253.0	12°53.9'	061°14.3'	225	Sill south of Bequia
C195-051-SG	5-Nov-04	0650	2253.2	12°53.9'	061°14.4'	344	Sill south of Bequia
C195-053-SG	8-Nov-04	1159	n/a	13°00.3'	061°14.7'	8	Admiralty Bay, Bequia
C195-054-SG	8-Nov-04	1230	n/a	13°00.3'	061°15.0'	34	Admiralty Bay, Bequia
C195-055-SG	8-Nov-04	1249	n/a	13°00.1'	061°15.3'	45	Admiralty Bay, Bequia
C195-056-SG	8-Nov-04	1312	n/a	13°00.9'	061°16.5'	79	Admiralty Bay, Bequia
C195-057-SG	8-Nov-04	1339	n/a	13°00.0'	061°16.8'	269	Admiralty Bay, Bequia
C195-058-SG	8-Nov-04	1401	n/a	13°00.0'	061°14.0'	323	Admiralty Bay, Bequia
C195-001-HS	5-Nov-04	1400	n/a	13°00.3'	061°14.7'	1.5	Admiralty Bay, Bequia
C195-002-HS	5-Nov-04	1420	n/a	13°00.3'	061°14.7'	1.5	Admiralty Bay, Bequia
C195-003-HS	5-Nov-04	1440	n/a	13°00.3'	061°14.7'	1.5	Admiralty Bay, Bequia
C195-004-HS	5-Nov-04	1500	n/a	13°00.3'	061°14.7'	1.8	Admiralty Bay, Bequia
C195-005-HS	5-Nov-04	1520	n/a	13°00.3'	061°14.7'	1.8	Admiralty Bay, Bequia
C195-006-HS	5-Nov-04	1540	n/a	13°00.3'	061°14.7'	2.3	Admiralty Bay, Bequia
C195-007-HS	5-Nov-04	1600	n/a	13°00.3'	061°14.7'	2.3	Admiralty Bay, Bequia
C195-009-HS	5-Nov-04	1620	n/a	13°00.3'	061°14.7'	2.5	Admiralty Bay, Bequia
C195-010-HS	6-Nov-04	1000	n/a	12°59.8'	061°14.7'	1.1	Friendship Bay, Bequia
C195-011-HS	6-Nov-04	1015	n/a	12°59.8'	061°14.7'	1.1	Friendship Bay, Bequia
C195-012-HS	6-Nov-04	1030	n/a	12°59.8'	061°14.7'	1.4	Friendship Bay, Bequia
C195-013-HS	6-Nov-04	1045	n/a	12°59.8'	061°14.7'	1.4	Friendship Bay, Bequia
C195-014-HS	6-Nov-04	1100	n/a	12°59.8'	061°14.7'	1.9	Friendship Bay, Bequia
C195-015-HS	6-Nov-04	1115	n/a	12°59.8'	061°14.7'	1.9	Friendship Bay, Bequia

\*SG=Shipek Grab

HS=Hand Sample

#### Phytoplankton Nets

C-195-001-PN	15-Oct-04	2000	0.0	41°21.5'	70°46.9'	0	
C-195-002-PN	17-Oct-04	0700	72.7	40°08.8'	69°57.8'	0	
C-195-003-PN	17-Oct-04	1610	114.0	39°57.5'	69°28.3'	0	
C-195-004-PN	17-Oct-04	2319	152.1	39°45.8'	69°41.3'	0	
C-195-005-PN	18-Oct-04	1259	212.2	39°45.4'	67°00.5'	0	
C-195-006-PN	18-Oct-04	1759	234.4	39°36.5'	66°27.0'	0	
C-195-007-PN	19-Oct-04	0600	317.5	38°42.0'	65°01.8'	0	
C-195-008-PN	19-Oct-04	0641	323.2	38°40.3'	64°59.9'	0	
C-195-009-PN	19-Oct-04	1215	363.0	38°16.6'	64°22.5'	0	
C-195-010-PN	19-Oct-04	2051	402.5	37°42.3'	63°42.0'	0	
C-195-011-PN	20-Oct-04	0300	446.5	37°04.1'	63°11.9'	0	
C-195-012-PN	20-Oct-04	1015	485.9	36°30.6'	62°05.6'	0	
C-195-013-PN	20-Oct-04	1634	536.7	35°49.5'	62°12.6'	0	
C-195-014-PN	20-Oct-04	2315	584.5	35°11.7'	61°46.4'	0	
C-195-015-PN	21-Oct-04	0614	635.1	34°29.1'	61°22.6'	0	
C-195-016-PN	21-Oct-04	1540	688.8	33°54.8'	60°54.5'	0	
C-195-017-PN	22-Oct-04	0300	744.3	33°17.8'	60°30.9'	0	
C-195-018-PN	22-Oct-04	1400	798.7	32°36.9'	59°57.3'	0	
C-195-019-PN	22-Oct-04	2310	851.7	31°56.5'	59°19.1'	0	
C-195-020-PN	23-Oct-04	0710	913.3	30°46.0'	58°48.0'	0	
C-195-021-PN	23-Oct-04	1730	986.5	29°58.3'	58°35.2'	0	

C-195-022-PN	23-Oct-04	0800	1044.6	29°06.9'	58°26.3'	0
C-195-023-PN	25-Oct-04	0240	1104.5	38°15.4'	58°02.3'	0
C-195-024-PN	25-Oct-04	1910	1164.0	27°12.4'	57°40.5'	0
C-195-025-PN	26-Oct-04	1210	1225.0	26°40.7'	57°16.2'	0
C-195-026-PN	27-Oct-04	0238	1284.8	26°00.4'	56°34.5'	0
C-195-027-PN	28-Oct-04	0200	1345.0	26°14.3'	56°33.7'	0
C-195-028-PN	29-Oct-04	0830	1405.0	25°39.2'	56°48.3'	0
C-195-029-PN	29-Oct-04	2205	1471.2	24°32.7'	57°07.1'	0
C-195-030-PN	30-Oct-04	0605	1539.8	23°30.3'	57°31.3'	0
C-195-031-PN	30-Oct-04	1800	1602.4	22°52.9'	57°56.0'	0
C-195-032-PN	31-Oct-04	0544	1668.6	21°37.9'	58°09.6'	0
C-195-033-PN	31-Oct-04	1500	1721.3	20°43.7'	58°30.3'	0
C-195-034-PN	01-Nov-04	1600	1789.1	19°45.9'	58°57.0'	0
C-195-035-PN	01-Nov-04	2103	1846.1	18°46.3'	59°27.1'	0
C-195-036-PN	02-Nov-04	1050	1909.7	17°45.3'	59°54.4'	0
C-195-037-PN	03-Nov-04	0019	1972.6	16°51.8'	60°19.8'	0
C-195-038-PN	03-Nov-04	1000	2012.0	16°12.3'	60°26.0'	0
C-195-039-PN	03-Nov-04	1750	2052.6	15°34.3'	60°36.5'	0
C-195-040-PN	04-Nov-04	0015	2092.6	14°55.7'	60°42.9'	0
C-195-041-PN	04-Nov-04	0850	2132.6	14°21.2'	60°49.5'	0
C-195-042-PN	04-Nov-04	1630	2177.8	13°49.9'	60°07.2'	0
C-195-043-PN	04-Nov-04	2316	2218.2	13°20.1'	61°04.9'	0
C-195-044-PN	08-Nov-04	1809	2276.6	13°13.6'	61°24.5'	0

**Table 3. Surface station data.\***

Station	Date	Time	Log	Latitude	Longitude	Temp (°C)	Salinity (PSU)	PO <sub>4</sub> (μM)	SiO <sub>2</sub> (μM)	Chl-a (μg/l)
SS-001	17-Oct-04	1224	102.9	39°55.5'	69°39.8'	20.4	35.3	0.112		0.330
SS-002	17-Oct-04	1443	107.1	40°1.7'	69°36.9'	18.1	34.0	0.391		0.399
SS-003	17-Oct-04	1600	111.7	39°58.3'	69°30.3'	18.2	34.1	0.186		0.378
SS-004	17-Oct-04	1730	123.6	39°53.1'	69°17.6'			0.540		0.960
SS-005	17-Oct-04	1805	128.6	39°50.5'	69°11.5'	20.5	35.3	0.684		0.018
SS-006	17-Oct-04	2319	151.1	39°45.9'	68°42.1'	16.3	33.4	0.376	6.369	0.606
SS-007	18-Oct-04	0852	196.8	39°46.8'	67°35.3'	25.8	36.4	0.236	4.075	0.196
SS-008	18-Oct-04	1843	235.5	39°35.1'	66°24.0'	23.4	35.5	0.595	5.099	0.499
SS-009	19-Oct-04	0100	276.3	39°3.2'	65°45.8'	23.0	35.9		4.805	0.220
SS-010	19-Oct-04	0556	315.4	38°43.1'	65°6.6'	24.8	36.5	0.097	4.111	0.157
SS-011	19-Oct-04	1221	363.7	38°15.7'	64°21.5'	25.7	36.5	0.112	3.828	0.219
SS-012	19-Oct-04	2115	406.2	37°39.0'	63°40.1'	25.5	36.4	0.107	2.416	0.071
SS-013	20-Oct-04	0657	471.0	36°41.2'	62°55.8'	25.5	36.5	0.027	3.981	0.091
SS-014	20-Oct-04	1015	485.9	36°30.5'	62°46.3'	24.9	36.6	0.127	4.240	0.086
SS-015	20-Oct-04	1634	536.7	35°49.5'	62°12.6'	24.7	36.7	0.067	3.440	0.057
SS-016	20-Oct-04	2315	584.5	35°11.7'	61°16.4'	24.7	36.9	0.520	2.734	0.044
SS-017	21-Oct-04	0614	635.1	34°29.1'	61°22.6'	25.5	37.0	0.107	2.769	0.044
SS-018	21-Oct-04	1540	688.8	33°54.8'	60°54.5'	25.6	36.6	0.241	3.816	0.086
SS-019	22-Oct-04	0300	744.3	33°17.8'	60°30.9'	24.0		0.102	4.064	0.052
SS-020	22-Oct-04	1400	798.7	32°36.9'	59°57.3'	25.3	36.7	0.695	1.287	0.039
SS-021	23-Oct-04	0710	913.3	30°46.0'	58°48.0'	26.4		0.201	1.722	0.038
SS-022	24-Oct-04	0800	1044.6	29°6.9'	58°26.3'	27.1	37.1	0.159	1.875	0.038
SS-023	24-Oct-04	1910	1164.0	27°12.4'	57°40.5'	27.1		0.007	1.734	0.036
SS-024	27-Oct-04	0238	1289.8	26°0.9'	56°34.5'	27.3		0.065	1.593	0.025
SS-025	29-Oct-04	0830	1405.0	25°39.2'	56°48.3'	27.3	36.7	0.000	1.275	0.024
SS-026	30-Oct-04	0605	1539.8	23°30.3'	57°31.3'	27.7	36.6	0.019	3.840	0.024
SS-027	30-Oct-04	1800	1602.4	22°52.9'	57°56.0'	27.9	37.0	0.293	2.087	0.015
SS-028	31-Oct-04	1500	1721.3	20°42.9'	58°30.7'	28.4	36.1	0.000	3.299	0.018
SS-029	1-Nov-04	0600	1786.1	19°45.9'	58°57.0'	28.3	35.0	0.000	3.852	0.033
SS-030	2-Nov-04	1045	1909.7	17°45.3'	59°54.4'	28.7	34.7	0.000	5.628	0.064
SS-031	3-Nov-04	1116	2018.5	16°6.6'	60°27.0'	29.6	34.6	0.000	5.746	0.038
SS-032	3-Nov-04	1750	2052.6	15°34.3'	60°36.5'	29.4	34.6	0.000	6.158	0.043
SS-033A	4-Nov-04	0015	2092.6	14°55.7'	60°42.9'	29.2	34.3	0.004	6.711	0.081
SS-033B	4-Nov-04	0015	2092.6	14°55.7'	60°42.9'	29.2	34.3		9.699	0.086
SS-034	4-Nov-04	0850	2133.0	14°55.7'	60°42.9'	29.2	35.0	0.263		
SS-035	4-Nov-04	1630	2177.8	13°49.9'	61°7.2'	29.4	34.9	0.065	6.252	0.031
SS-036	4-Nov-04	1738	2183.0	13°45.9'	61°7.6'	29.3	34.8	0.000		0.035
SS-037	4-Nov-04	1828	2188.2	13°41.9'	61°6.6'	29.4	34.9	0.000		0.031
SS-038	4-Nov-04	1916	2193.2	13°37.8'	61°5.4'	29.4	34.8	0.000		0.028
SS-039	4-Nov-04	1958	2199.4	13°33.6'	61°4.5'	29.4	34.7	0.000		0.025
SS-040	4-Nov-04	2050	2204.4	13°28.1'	61°4.7'	29.1	34.9	0.024		0.024
SS-041	4-Nov-04	2115	2209.0	13°25.8'	61°4.7'	29.3	34.8	0.029		0.102
SS-042	4-Nov-04	2212	2214.0	13°22.4'	61°4.5'	29.1	34.9	0.000		0.028
SS-043	4-Nov-04	2306	2218.2	13°20.1'	61°4.7'	29.1	34.9	0.000	5.028	0.032
SS-044	5-Nov-04	0040	2226.5	13°13.2'	61°3.1'	27.6	34.9	0.000		0.051
SS-045	5-Nov-04	0121	2232.7	13°9.7'	61°5.5'	29.5	34.9	0.000		0.039

SS-046	5-Nov-04	0340	2238.0	13°4.5'	61°5.7'	29.3	35.3	0.000		0.101
SS-047	5-Nov-04	0420	2243.0	13°1.7'	61°8.4'	29.4	35.1	0.000		0.069
SS-048	5-Nov-04	0510	2248.2	12°58.1'	61°11.0'	29.3	35.1	0.000		
SS-049	5-Nov-04	0530	2252.9	12°54.0'	61°14.3'	29.2	35.0	0.000		
SS-050	5-Nov-04	0640	2258.2	12°53.9'	61°14.4'	29.2	35.0		7.111	0.158
SS-051	5-Nov-04	0834	2264.0	13°0.3'	61°14.8'	29.2	35.0	0.000		0.112

\*Blank spaces = data not available.

**Table 4: Neuston tow data. Locations given in Table 1.**

				Zoopl.	Zoopl.	Plastic	Plastic			
	Tow	Temp	Salinity	Biomass	Density	Pieces	Pellets	Tar	Halobates	Myctophids
Station	length (m)	(°C)	(PSU)	(ml)	(ml/m <sup>2</sup> )	(#)	(#)	(yes/no)	(#)	(#)
C195-004-NT	926	20.6	35.1	55.0	0.0594	0	1	no	0	21
C195-005-NT-A	926	23.6	35.4	7.7	0.0083	0	0	no	0	0
C195-005-NT-B	370	23.6	35.4	3.3	0.0089	0	0	no	0	0
C195-005-NT-C	185	23.6	35.4	5.8	0.0313	0	0	no	0	0
C195-005-NT-D	463	23.6	35.4	3.6	0.0078	0	0	no	0	0
C195-007-NT-A	463	24.3	35.9	5.0	0.0108	0	1	no	0	0
C195-007-NT-B	463	24.3	35.9	20.0	0.0432	0	0	no	0	0
C195-007-NT-C	463	24.3	35.9	18.0	0.0389	0	0	no	0	0
C195-007-NT-D	463	24.3	35.9	44.0	0.0950	3	0	yes	0	0
C195-009-NT	1111	25.1	36.4	39.0	0.0350	7	0	no	0	15
C195-012-NT	1852	24.9	36.8	4.5	0.0024	0	4	no	2	5
C195-015-NT	1759	24.7	36.7	3.0	0.0017	0	0	no	1	2
C195-017-NT	1852	27.3	37.1	2.0	0.0011	0	0	no	5	0
C195-019-NT-A	556	27.3	37.1	1.2	0.0022	0	0	no	2	0
C195-019-NT-B	463	27.3	37.1	2.1	0.0045	0	0	no	5	0
C195-019-NT-C	463	27.3	37.1	2.0	0.0043	1	0	no	21	0
C195-019-NT-D	463	27.3	37.1	3.0	0.0065	1	0	no	6	0
C195-019-NT-E	463	27.3	37.4	1.5	0.0032	1	0	no	11	0
C195-021-NT-A	463	26.6	36.9	0.8	0.0016	0	0	no	2	0
C195-021-NT-B	463	26.6	36.9	1.2	0.0026	0	0	no	0	0
C195-021-NT-C	463	26.6	36.9	0.7	0.0014	0	0	no	0	0
C195-021-NT-D	463	26.6	36.9	1.0	0.0022	0	0	no	0	0
C195-023-NT	2593	27.7	37.1	5.0	0.0019	0	2	no	13	0
C195-024-NT	3334	27.2	36.9	4.0	0.0012	4	0	no	16	0
C195-025-NT	4260	26.1	36.9	3.5	0.0008	0	7	no	11	4
C195-027-NT	1852	27.9	36.6	4.0	0.0022	4	0	no	5	1
C195-029-NT	3704	27.8	36.6	6.5	0.0018	26	0	yes	18	
C195-030-NT	1852	27.7	36.7	1.8	0.0009	11	0	no	15	9
C195-034-NT	2037	27.9	36.7	2.9	0.0014	45	0	yes	10	5
C195-035-NT	1852	28.4	35.6	2.0	0.0011	1	1	no	25	1



**Table 5. Hydrocast station data. Locations given in Table 1.\***

<b>Station</b>	<b>Bottle (#)</b>	<b>Depth (m)</b>	<b>O2 (ml/l)</b>	<b>PO4 (<math>\mu</math>M)</b>	<b>Chl a (<math>\mu</math>g/l)</b>
C195-001-HC	1	79.5	5.60	0.468	0.062
	2	69.9	5.63	0.284	0.057
	3	61.0	5.52	0.204	0.077
	4	49.8	6.21	0.742	0.067
	5	39.8	6.17	0.513	0.215
	6	35.3	6.09	0.656	0.150
	7	31.1	6.09	0.488	0.157
	8	24.5	6.57	0.592	0.289
	9	19.7	6.69	0.378	0.413
	10	15.1	6.81	0.373	0.601
	11	10.0	6.78	0.328	0.486
	12	5.7	6.86	0.458	0.456
	13	0.0	6.97	0.493	
C195-008-HC	1	99.3		0.124	0.103
	2	79.3			0.069
	3	69.0		0.169	0.096
	4	59.1		0.174	0.086
	5	49.4			0.089
	6	44.7		0.229	0.158
	7	40.1		0.134	0.081
	8	35.0		0.010	0.133
	9	29.8		0.184	0.153
	10	25.0		0.109	0.079
	11	20.2		0.229	0.152
	12	10.2		0.219	0.163
	13	0.0		0.343	0.100
C195-013-HC	1	199.3	6.63	0.189	0.106
	2	169.3	6.61	0.154	0.023
	3	149.0	5.58	0.139	0.029
	4	129.2	5.58	0.119	0.106
	5	119.7	5.78	0.259	0.106
	6	109.0	5.86	0.149	0.138
	7	99.5	5.80	0.124	0.241
	8	89.8	6.15	0.259	0.121
	9	79.5	6.29	0.149	0.207
	10	69.5	6.35	0.279	0.096
	11	49.6	6.21	0.119	0.065
	12	29.1	5.95	0.129	0.032
	13	0.0	5.55	0.313	0.036
C195-020-HC	1	794.0	5.78	0.144	0.000
	2	397.1	6.93	0.313	0.000
	3	248.6	6.32	0.219	0.001
	4	149.0	6.26	0.000	0.114
	5	119.6	6.72	0.403	0.143
	6	109.8	5.75	0.025	0.279
	7	98.9	6.78	0.034	0.230

	8	90.0	7.00	0.069	0.126
	9	79.5	7.20	0.089	0.170
	10	69.7	7.46	0.239	0.102
	11	59.8	7.33	0.104	0.095
	12	40.0	6.32	0.059	0.040
	13	0.0	5.98	0.159	0.038
C195-026-HC	1	299.0	6.58	0.279	0.000
	2	219.1	6.54	0.224	0.006
	3	178.6	6.61	0.388	0.047
	4	148.9	6.44	0.084	0.059
	5	139.5	6.43	0.274	0.073
	6	128.9	6.57	0.323	0.115
	7	118.8	7.13	0.274	0.136
	8	109.3	5.58	0.134	0.073
	9	89.0	8.06	0.119	0.098
	10	78.7	8.01	0.682	0.129
	11	68.9	7.75	0.064	0.087
	12	48.7	6.72	0.254	0.032
	13	0.0	7.21		0.030
C195-031-HC	1	248.6	6.66	0.115	0.001
	2	198.6	6.38	0.049	0.011
	3	174.0	6.26	0.049	0.008
	4	148.7	6.35	0.019	0.022
	5	129.8	6.66	0.095	0.079
	6	120.0	6.69	0.070	0.144
	7	109.3	6.86	0.080	0.148
	8	98.8	6.92	0.000	0.080
	9	89.1	6.90	0.000	0.072
	10	79.9	7.07	0.000	0.065
	11	70.2	7.23	0.044	0.034
	12	49.3	7.35	0.126	0.033
	13	0.0	7.37	0.202	0.011
C195-033-HC	1	248.5	6.56	0.278	0.000
	2	199.2	6.87	0.248	0.006
	3	173.2	6.83	0.065	0.015
	4	148.0	7.45	0.009	0.057
	5	139.2	7.21	-0.024	0.079
	6	129.2	7.32	0.000	0.116
	7	119.1	7.55	0.000	0.155
	8	109.1	7.81	0.000	0.092
	9	99.2	8.18	0.044	0.134
	10	90.0	7.24	0.049	0.017
	11	70.1	7.47	0.039	0.020
	12	49.7	7.04	0.110	0.034
	13	0.0	6.90	0.075	0.011
C195-036-HC	1	248.3	7.56		
	2	199.5			
	3	173.4	7.30		
	4	148.2	7.35		
	5	128.9	6.49		
	6	119.5	7.99		
	7	109.6	8.16		

	8	99.6	7.89		
	9	90.0	7.76		
	10	79.1	7.81		
	11	69.7	8.01		
	12	49.5	7.90		
	13	0.0	7.40		
C195-037-HC	1	249.0			
	2	198.4		0.131	0.010
	3	174.3		0.192	
	4	149.1		0.126	0.035
	5	129.1		0.000	0.067
	6	119.0		0.000	0.104
	7	110.1		0.000	0.154
	8	99.3			
	9	89.0		0.000	0.094
	10	79.3		0.000	0.074
	11	69.7		0.000	0.074
	12	49.6		0.000	0.025
	13	0.0		0.000	0.031
C195-061-HC	1	198.9			
	2	149.2		0.344	0.007
	3	119.7		0.131	0.027
	4	109.5	4.11	0.090	0.053
	5	99.5	4.13	0.085	0.040
	6	89.7	4.20	0.034	0.063
	7	79.4	4.20	0.070	0.149
	8	69.9	4.27	0.039	0.228
	9	59.6	4.53	0.049	0.248
	10	50.2	4.59	0.232	0.397
	11	39.9	5.03	0.293	0.162
	12	19.9	4.92	0.000	0.107
	13	0.0	4.76	0.000	0.093

\*Blank spaces = no data collected.

**Table 6. Sediment grain size distribution data. Locations given in Table 1.**

Station	Cumulative frequency of grain size distribution (%)							
	>4000 μm	2000 μm	1000 μm	500 μm	250 μm	125 μm	63 μm	<63μm
C195-043-SG	1.0	2.0	10.0	48.0	20.3	12.7	5.0	1.0
C195-044-SG	0.1	0.1	0.2	18.5	45.0	24.0	4.8	7.3
C195-045-SG	63.3	13.3	6.7	5.0	3.3	2.0	1.0	5.3
C195-046-SG	25.0	3.0	0.5	1.0	0.5	1.0	1.0	68.0
C195-047A-SG	40.0	6.0	1.0	1.2	0.3	0.1	0.2	51.2
C195-047B-SG	57.5	0.5	0.1	0.1	0.1	0.1	0.1	41.7
C195-048-SG	84.1	2.4	0.9	1.2	0.6	0.4	0.8	9.7
C195-049-SG	25.0	3.9	6.7	8.9	4.4	6.1	12.8	32.2
C195-050-SG	0.0	0.1	0.8	2.0	14.0	30.0	33.1	20.0
C195-051-SG	0.0	4.8	2.4	16.7	7.1	4.8	28.6	35.7
C195-053-SG	19.8	9.6	15.0	21.0	8.9	9.8	8.9	7.0
C195-054-SG	25.4	10.2	13.1	22.1	3.7	10.2	15.2	0.0
C195-055-SG	33.4	16.2	13.1	8.8	5.7	8.6	12.1	2.1
C195-056-SG	8.0	11.5	38.0	28.0	4.5	2.5	2.5	5.0
C195-057-SG	0.0	0.1	0.1	2.0	1.6	11.6	13.9	70.7
C195-058-SG	0.0	0.2	0.5	3.0	3.8	15.0	23.0	54.5
C195-001-HS	30.6	25.3	27.3	12.2	0.5	0.4	0.2	3.5
C195-002-HS	7.1	23.2	45.0	21.3	1.9	0.7	0.1	0.6
C195-003-HS	34.3	21.2	24.2	12.8	5.2	0.7	0.5	1.0
C195-004-HS	4.8	5.7	22.6	20.6	10.8	23.8	11.7	0.0
C195-005-HS	0.3	0.8	3.7	10.4	7.6	56.1	21.2	0.0
C195-006-HS	0.0	0.0	0.7	7.7	10.0	58.3	23.3	0.0
C195-007-HS	0.0	0.2	0.6	30.0	27.8	26.7	9.4	5.3
C195-009-HS	0.1	0.8	1.2	50.9	4.1	3.0	2.2	37.7
C195-001-HS	0.0	0.4	1.1	4.8	10.1	50.6	32.7	0.4
C195-002-HS	0.3	0.7	0.7	2.7	7.7	42.6	44.0	1.4
C195-003-HS	0.0	0.9	0.9	3.1	40.4	34.1	20.6	0.0
C195-004-HS	0.5	0.3	1.5	6.0	19.8	48.5	17.0	6.4
C195-005-HS	0.2	0.5	0.9	7.0	22.2	50.8	15.1	3.2
C195-006-HS	0.2	1.3	0.7	6.6	16.9	63.9	9.8	0.7