CRUISE REPORT
C244

Scientific data collected aboard
SSV Corwith Cramer

Christiansted, St. Croix, USVI – St John, USVI – Samana, Dominican Republic – Port Antonio and Discovery Bay, Jamaica – Key West, Florida, USA

25 November 2012 – 02 January, 2013

First Scientist Mitch Schrimpf and students singing the Conservation Song on Christmas Day. Photo by Jeff Schell

Sea Education Association
Woods Hole, Massachusetts

Contact Information:
Jeffrey M. Schell, PhD
Associate Professor of Oceanography and Chief Scientist
Sea Education Association
P.O. Box 6
Woods Hole, MA
02543

508-540-3954 (phone)
800-552-3633 (phone)
508-457-4673 (fax)
www.sea.edu

Table of Contents C244

Table 1. C244 Ship's crew and student participants

Nautical Staff		
	Tom Sullivan	Captain
	Caroline Smith	Chief Mate
	Ben Hall	2nd Mate
	Jesse Kehr	3rd Mate
	Ben Spivak	Engineer
	Charlie Seibel	Steward
	Scott Murchison	Assistant Engineer
	Lauren Heinen	Assistant Steward
Scientific Staff		
	Jeff Schell	Chief Scientist
	Mitch Schrimpf	1st Scientist
	Patrick Lynch	2nd Scientist
	Anne Handschy	3rd Scientist
Academic Staff and Visitors		
	Elizabeth Fisher	Maritime Studies Professor
	Timothy McGee	SEA President, Rear Admiral US Navy (retired)
	Nashieka Guyah, Hugh Small, and Patrice Francis	Scientific Observers (Jamaica)
Sailing Interns		
	Becky Slattery	
	Lydia Mathewson	
	Kevin Murray	
	Jordan Brazill Eckstein	
	Tori Pinheiro	
	Sofia Rebekah	
Students		
	Henry August Bell	Middlebury College
	Clark Wesley Bockelman	University of Denver
	Mary Hall Burkett	Juniata College
	Keara Shea Fenzel	Hamilton College
	Rebecca Leiva Hernandez	Muhlenberg College
	Jennifer Rose Hyde	Chapman School of Seamanship
	Chelsea E Johnson	Lawrence University
	Amy Rebecca McDonagh	Goucher College
	Rebecca Ogus	Kenyon College
	Patricia Pyda	Rhodes College
	Erin Kay Schulz	Macalester College

Table 2. C244 Calendar of Events

DATE (2011)	PORT OF CALL	EVENT
25 Nov	St. Croix	Embark Students, Begin Orientation
26 Nov	Depart St. Croix	Watch Bill Assignments / Safety Drill
27-29 Nov		MSAM – Life at Sea
29 Nov	Arrive St. John	**Field Trip:** Tour/Discussion Maho Bay Camps with Adrian Davis
30 Nov		**Field Trip:** Annaberg Plantation &Snorkel Waterlemon Cay
		Reef & Ciguatera Surveys & Water Quality
01 Dec	Depart St. John	
02-04 Dec		MSAM – Illustration
		Creature Feature Presentations and Line Chase
05 Dec	Arrive Samana, Dominican Republic	Zooplankton Charades
06 Dec		**Field Trip:** Los Haitises National Park / EcoMar Whale Museum / Mrs. Mabel Phipps English class /
07 Dec		**Field Trip:** Agriculture Tour, Playa de Rincon Beach Clean-up / Iguanario Tour
08 Dec		Reef & Ciguatera Surveys & Water Quality
09 Dec	Depart Dominican Republic	NS and OC Safety Checklist due
		Watch Change and begin Phase II
10-12 Dec		MSAM – Celestial
13 Dec		Jamaican Petrel Observing Station on Formigas Bank
14 Dec	Arrive Port Antonio, Jamaica	Illustration Gallery
15 Dec		**Field Trip:** Mooretown Maroon Community with Colonel Wallace Sterling
16-17 Dec		Reef & Beach Surveys / Nutrient Analyses
18 Dec	Depart Port Antonio	Embark Univ West Indies participants (3)
		UWI research collaborations
19 Dec	(AM) Arrive Discovery Bay (PM) Depart Jamaica	**Field Trip:** DB Marine Lab and Snorkel Trip Disembark UWI participants (3)
23 Dec		NS and OC Skills Checklist due
		Watch Change and begin Phase III
24 Dec		OC Project Presentations
		Holiday Eve Celebrations
25 Dec		**Holiday Celebrations**
28 Dec		Change Paper Addendum/Reflection due and
		OC Project Papers due
30 Dec	Arrive Key West, USA	Welcome back Liz Fisher
		Final Illustration Gallery
31 Dec		Change Paper Presentations
		Holiday Eve Celebrations
02 Jan		Disembark Students, Program ends

Data Description C244

The cruise track for C-244 (Figure 1) departed from Christiansted, St. Croix, USVI and finished in Key West, FL, USA. During the nearly six week voyage we had three port stops; the first in St John USVI, Samana, Dominican Republic and the third in Port Antonio, Jamaica which included a day stop in Discovery Bay, Jamaica. Our cruise track traversed several major oceanographic provinces (Figure 1): a) the shelf and coastal waters of the Leeward Islands, b) the NW Atlantic Ocean or Sargasso Sea, including the waters overlying the Puerto Rico Trench and Mouchoir Bank, c) the shelf and coastal waters of the Greater Antilles including Formigas Bank, d) the Western Caribbean Sea*, and e) the shelf and coastal waters of the Florida Straits.

We collected various oceanographic data from 59 discrete stations encompassing106 separate gear deployments along our cruise track (Table 3). Comparison of the physical, chemical, biological and geological features of these regions represented the major oceanographic theme of this Sea Semester.

1. Physical oceanographic studies focused on the distribution of surface and sub-surface (to 1800 m) water masses and the delineation of frontal boundaries. Specifically, North Atlantic sub-tropical mode water (18°C Water) was studied in relation to the phase of the North Atlantic Oscillation (NAO).
2. Chemical oceanographic studies focused on the geographic distribution of nutrients (phosphate), and extracted chlorophyll-*a*.
3. Biological studies focused on the geographic distribution of charismatic megafauna (seabirds, sea turtles, flying fish, and marine mammals), lantern fish in Family Myctophidae, several meroplanktonic larvae including lobster (phyllosoma) and eel (leptocephali), the marine insect *Halobates micans*, the floating macroalgae – *Sargassum* spp., and general density and diversity of zooplankton.
4. Geological studies focused on the relationship between sediment grain size and benthic faunal diversity on shallow banks and island harbors visited during the cruise (Figure 1).

Sea surface temperature, salinity, fluorescence (chlorophyll-*a* and CDOM) and tranmissivity levels; along with barometric pressure, winds, bathymetry, and geographic position were recorded continuously along the cruise track.* Large scale hydrography is summarized with surface plots for some parameters (Figure 2 a-c), other data is available upon request. Surface samples (38) of nutrients (phosphate) and chlorophyll-*a* were collected routinely along the cruise track (Table 4).

Hourly Observations of marine included the enumeration of seabirds, sea turtles, flying fish, marine mammals, *Sargassum* spp clumps, and floating plastic debris. Observations occurred only during daylight hours 0700-1900 for a period of 6 minutes each hour (n=107). Opportunistic sightings were also recorded when notable megafauna or marine debris were present (n=66). Data available upon request.

But for the occasional eddy and our crossing of the Florida Current, surface currents along the C244 cruise track were weak (< 500mm/s, or 1.0 knot) and variable in direction (Figure 3).

The density structure, dissolved oxygen, and extracted chlorophyll-*a* profiles of the water column (maximum depth 600m) were determined using a 12 bottle carousel package with attached CTD sensor (3 stations, Table 5). Additional *in situ* sensors included chlorophyll-*a* fluorescence, dissolved oxygen, and

PAR. Additional deployments of a free standing CTD were also conducted (21 stations, maximum depth of 1800 m, Table 6). Sub-surface water masses are revealed with a cross-section plot along the cruise track (Figure 4a-b).

Surface plankton assemblages along with the floating macroalgae *Sargassum* spp., marine debris and tar were sampled regularly with a neuston net (34 stations, 335 µm mesh, Table 7). Plankton assemblages at discrete depths were collected using a circular framed net of varying diameters (2-meter, 2 stations, 500 µm mesh; 1-meter, 3 stations, 335 µm mesh Table 8). Targeted depths ranged from 20m to 200m. In addition, vertical and horizontal distribution patterns of myctophids (lantern fish), the marine insect *Halobates*, eel (Leptocephali) and spiny lobster (Phyllosoma) larvae, and fish larvae were studied in relation to environmental characteristics (Table 7 and 8). Zooplankton diversity and taxonomic composition was examined for all nets (Table 9).

Discrete samples of *Sargassum* clumps were collected with a dip net (9 stations, 335 µm mesh, Table 10). Shrimp, crab and fish specimens were removed from collected clumps and quantified by abundance and overall biomass in relation to *Sargassum* spp age and clump size (g).

Five sediment samples were collected using a shipek grab from St. Croix shelf; Francis Bay, St John; Samana Bay, Dominican Republic (n=2); and Mouchoir Bank (Table 11).

A single secchi disc deployment (Table 12) for demonstration purposes only.

Hydrophone listening stations occurred routinely to determine presence of migrating humpback whales and dolphins along the St. Croix to Dominican Republic leg of the cruise (12 stations, Table 13).

Additional CTD, CHIRP, ADCP and biological data not reported here are available on request through Sea Education Association (SEA) and the Chief Scientist. The information 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.

During each port stop we also conducted a coral reef ecosystem survey to measure coastal water quality in relation to human development of local watersheds. Reef surveys recorded coverage of live and dead coral, macroalgae cover, abundance and diversity of fish, as well as motile invertebrates. Water quality parameters recorded included horizontal water visibility, nutrients (phosphate and nitrate), extracted chlorophyll-*a*, dissolved oxygen, and abundance of *Escherichia coli* bacteria and the toxic, dinoflagellate *Gambeirdiscus* rinsed from samples of the benthic algae *Dictyota* sp.. Data available upon request.

As part of SEA's educational program, undergraduates conducted independent oceanographic research during the cruise. Projects explored regionally, relevant topics in the disciplines of physical, chemical, and biological oceanography (Table 14). Student research efforts culminated in a written report and public presentation to the ship's company. These papers are available on request from SEA.

* No scientific samples or data were collected or recorded in the Exclusive Economic Zones of Cuba or Mexico.

Jeffrey Schell, Associate Professor – Chief Scientist, C244

Figure 1. Final cruise track for C244 based on hourly (local time) positions. Regional oceanographic biomes (Leeward Islands, Sargasso Sea, Greater Antilles, and Western Caribbean), and interesting bathymetric features (Puerto Rico Trench, Mouchoir Bank and Formigas Bank) surveyed during the cruise are shown, along with ports of call.

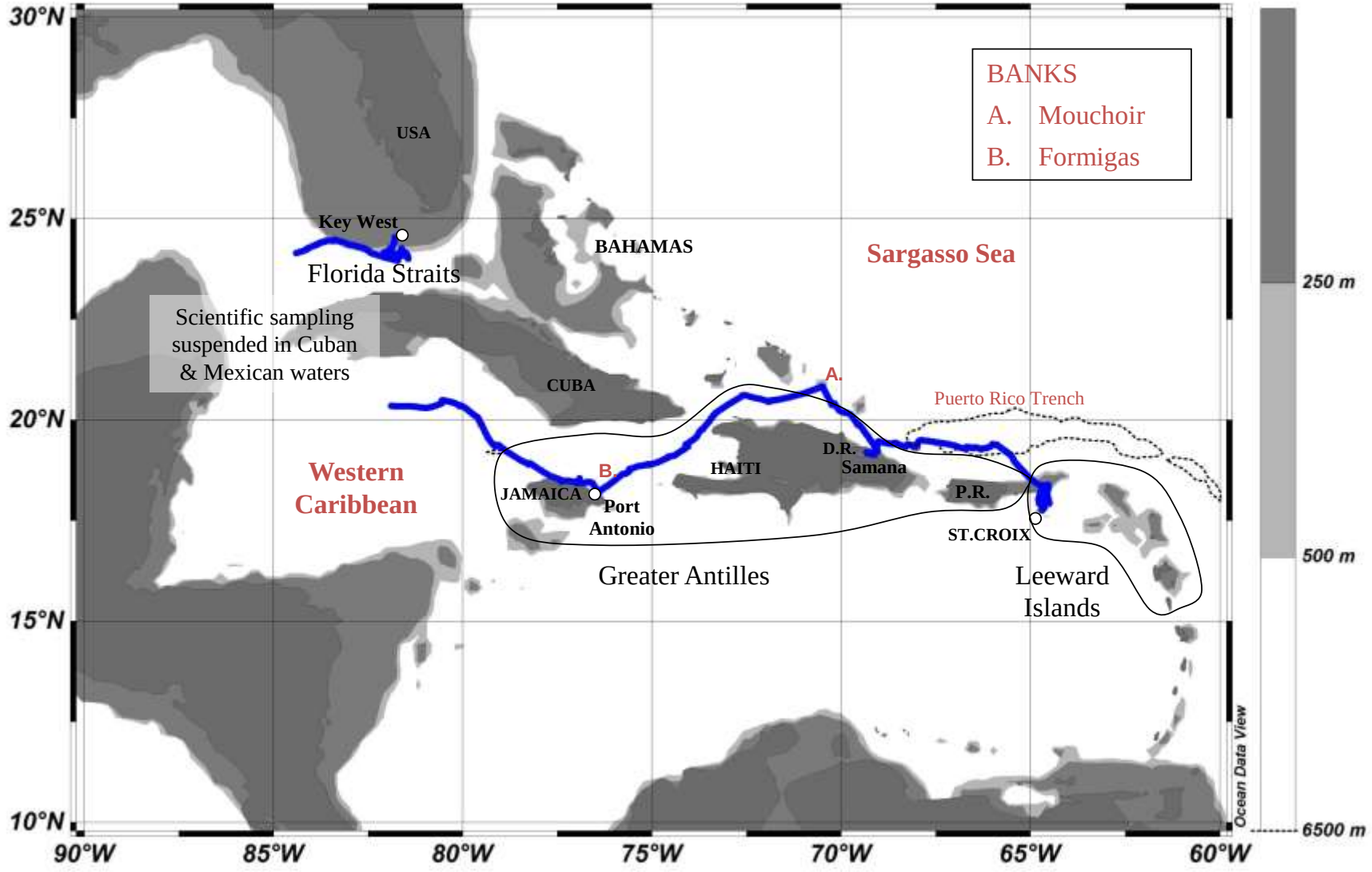


Table 3. Summary of oceanographic sampling stations for C244.

Station # (C244-)	Date (2012)	Time (local +4 GMT)	Log (nm)	Lat (dec Deg N)	Lon (dec Deg W)	Location	Station Type
001	26-Nov	1726	12.0	17.81	-64.64	St. Croix Bank	SG
001	26-Nov	1830	12.0	17.81	-64.64	St. Croix Bank	SG
001	26-Nov	1830	12.0	17.81	-64.64	St Croix Bank	RBR-CTD
002	27-Nov	1016	67.4	17.97	-64.71	Leeward Islands	HP
002	27-Nov	1110	67.8	17.96	-64.74	Leeward Islands	CTD
002	27-Nov	1239	67.8	17.95	-64.77	Leeward Islands	NT
003	27-Nov	1722	84.5	18.15	-64.76	Leeward Islands	DN
004	28-Nov	0013	113.4	18.06	-64.62	Leeward Islands	NT
005	28-Nov	0954	146.1	17.97	-64.54	Leeward Islands	HP
005	28-Nov	1039	146.1	17.97	-64.55	Leeward Islands	HC
005	28-Nov	1219	146.2	17.95	-64.58	Leeward Islands	NT
006	29-Nov	0017	192.2	17.94	-64.51	Leeward Islands	NT
007	29-Nov	1031	231.8	18.38	-64.61	Leeward Islands	DN
007	29-Nov	1031	231.8	18.38	-64.61	Leeward Islands	DN
008	30-Nov	0930	238.8	18.36	-64.73	St John, Waterlemon Cay	Small boat(A)
008	1-Dec	1030	238.8	18.36	-64.73	St John, Waterlemon Cay	Small boat(B)
009	1-Dec	0804	243.0	18.36	-64.75	St John, Francis Bay	RBR-CTD
009	1-Dec	0804	243.0	18.36	-64.75	St John, Francis Bay	SG
010	1-Dec	1022	247.8	18.40	-64.82	St John	DN
010	1-Dec	1022	247.8	18.40	-64.82	St John	DN
011	1-Dec	1344	261.6	18.54	-65.02	Leeward Islands	DN
011	1-Dec	1344	261.6	18.54	-65.02	Leeward Islands	DN
012	2-Dec	0106	298.6	19.15	-65.55	Puerto Rico Trench	NT
013	2-Dec	0953	319.4	19.39	-65.92	Puerto Rico Trench	HP
013	2-Dec	1056	319.4	19.39	-65.95	Puerto Rico Trench	CTD
013	2-Dec	1220	319.5	19.39	-65.97	Puerto Rico Trench	NT
014	2-Dec	1726	320.5	19.39	-66.02	Puerto Rico Trench	DN
014	2-Dec	1726	320.5	19.39	-66.02	Puerto Rico Trench	DN
015	3-Dec	0000	333.1	19.28	-66.31	Puerto Rico Trench	NT
016	3-Dec	1005	345.5	19.33	-66.71	Sargasso Sea	HP
016	3-Dec	1100	345.5	19.31	-66.71	Sargasso Sea	HC
016	3-Dec	1209	345.5	19.29	-66.73	Sargasso Sea	NT
017	4-Dec	0034	418.2	19.48	-67.96	Puerto Rico Trench	NT
018	4-Dec	1002	420.7	19.39	-68.27	Mona Passage	HP
018	4-Dec	1115	430.5	19.37	-68.29	Mona Passage	CTD
018	4-Dec	1219	430.5	19.35	-68.30	Mona Passage	NT
019	4-Dec	1645	440.9	19.43	-68.63	Greater Antilles	HP
020	5-Dec	0002	471.3	19.43	-69.05	Greater Antilles	NT
021	5-Dec	0815	492.5	19.18	-69.14	Samana Bay	HP
021	5-Dec	0927	492.5	19.17	-69.15	Samana Bay	RBR-CTD
021	5-Dec	0927	492.5	19.17	-69.15	Samana Bay	SG
022	8-Dec	1430	492.5	19.19	-69.32	Samana Bay	Small boat
023	8-Dec	2030	492.5	19.19	-69.33	Samana Bay	RBR-CTD
023	8-Dec	2030	492.5	19.19	-69.33	Samana Bay	SG
024	9-Dec	0930	492.5	19.19	-69.32	Samana Bay	Small boat
025	9-Dec	2356	554.7	19.89	-69.57	Greater Antilles	NT
026	10-Dec	0959	601.5	20.41	-70.21	Greater Antilles	HP
026	10-Dec	1035	601.5	20.40	-70.23	Greater Antilles	CTD
026	10-Dec	1047	589.0	20.40	-70.23	Greater Antilles	DN

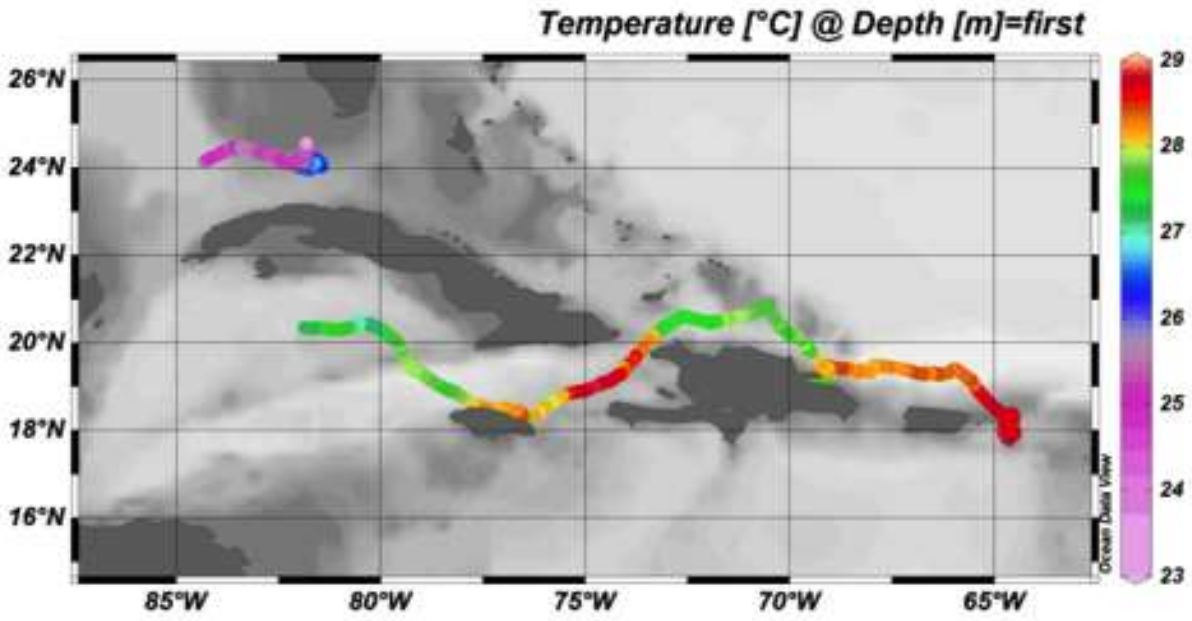
Station # (C244-)	Date (2012)	Time (local +4 GMT)	Log (nm)	Lat (dec Deg N)	Lon (dec Deg W)	Location	Station Type
026	10-Dec	1145	601.5	20.39	-70.25	Greater Antilles	NT
027	10-Dec	1828	633.1	20.83	-70.53	Mouchoir Bank	RBR-CTD
027	10-Dec	1828	633.1	20.84	-70.53	Mouchoir Bank	SG
028	10-Dec	2357	658.1	20.70	-70.96	Greater Antilles	NT
029	11-Dec	0958	706.8	20.49	-71.85	Greater Antilles	HP
029	11-Dec	1043	706.7	20.49	-71.87	Greater Antilles	CTD
029	11-Dec	1149	706.8	20.48	-71.89	Greater Antilles	NT
029	11-Dec	1206	707.2	20.48	-71.90	Greater Antilles	DN
030	12-Dec	0947	823.8	19.77	-73.69	Windward Passage	HP
030	12-Dec	1021	823.8	19.77	-73.69	Windward Passage	DN
030	12-Dec	1021	823.8	19.77	-73.69	Windward Passage	DN
030	12-Dec	1035	823.8	19.77	-73.69	Windward Passage	CTD
030	12-Dec	1137	824.2	19.76	-73.70	Windward Passage	NT
031	12-Dec	2009	859.8	19.39	-74.11	Greater Antilles	2MN
032	13-Dec	1018	910.3	19.09	-74.59	Greater Antilles	HC
033	13-Dec	1620	935.3	18.89	-75.10	Formigas Bank	HP
034	14-Dec	0013	983.8	18.78	-75.60	Greater Antilles	NT
035	14-Dec	0940	1041.5	18.32	-76.30	Greater Antilles	DN
035	14-Dec	0940	1041.5	18.32	-76.30	Greater Antilles	DN
036	16-Dec	1030	1048.6	18.19	-76.46	Port Antonio, Jamaica	Small boat
037	17-Dec	0915	1048.6	18.19	-76.45	Port Antonio, Jamaica	Small boat
038	18-Dec	0958	1050.1	18.19	-76.45	Greater Antilles [Port Antonio Inshore]	NT(A)
038	18-Dec	1017	1050.7	18.20	-76.45	Greater Antilles [Port Antonio Offshore]	NT(B)
039	18-Dec	1919	1082.4	18.44	-76.88	Galenas Point	MN
039	18-Dec	1925	1082.5	18.44	-76.89	Galenas Point	NT
040	19-Dec	0025	1047.7	18.43	-76.95	Orocabessa	MN
040	19-Dec	0029	1097.2	18.43	-76.96	Oracabessa Bay	NT
041	19-Dec	0326	1106.8	18.44	-77.02	5.3 miles E of Ocho Rios Bay	MN
041	19-Dec	0331	1106.8	18.44	-77.02	Greater Antilles [5.3 miles east of Ocho Rio Bay]	NT
042	19-Dec	0748	1129.6	18.49	-77.40	Greater Antilles [Discovery Bay]	NT(A)
042	19-Dec	0805	1130.0	18.48	-77.40	Greater Antilles [Discovery Bay]	NT(B)
043	20-Dec	0005	1189.9	18.91	-78.28	Greater Antilles	NT
044	20-Dec	1015	1243.3	19.38	-79.11	Western Caribbean	CTD
044	20-Dec	1135	1443.8	19.36	-79.15	Western Caribbean	NT
045	20-Dec	2011	1280.1	19.90	-79.53	Western Caribbean	2MN
046	21-Dec	0002	1284.9	20.00	-79.59	Western Caribbean	NT
047	21-Dec	1001	1334.2	20.36	-80.08	Western Caribbean	CTD
048	21-Dec	1755	1350.5	20.49	-80.56	Western Caribbean	CTD-Styro
049	25-Dec	2043	1795.7	24.24	-84.13	Florida Straits	NT
050	26-Dec	0018	1808.6	24.34	-83.91	Florida Straits	NT
051	26-Dec	0337	1812.9	24.38	-83.80	Florida Straits	NT
052	26-Dec	1541	1832.5	24.47	-83.40	Florida Straits	SD
053	26-Dec	2111	1853.0	24.37	-83.05	Florida Straits	CTD
054	27-Dec	0051	1866.0	24.32	-82.80	Florida Straits	CTD
055	27-Dec	0425	1876.5	24.27	-82.62	Florida Straits	CTD
056	27-Dec	0958	1886.9	24.17	-82.45	Florida Straits	HP
056	27-Dec	1045	1886.9	24.17	-82.45	Florida Straits	CTD

Station # (C244-)	Date (2012)	Time (local +4 GMT)	Log (nm)	Lat (dec Deg N)	Lon (dec Deg W)	Location	Station Type
056	27-Dec	1133	1887.2	24.16	-82.44	Florida Straits	NT
057	28-Dec	2103	1998.5	24.09	-82.09	Florida Straits (Navy Box)	CTD
057	28-Dec	2158	2009.0	24.09	-82.09	Florida Straits (Navy Box)	NT
058	29-Dec	0123	2013.1	24.13	-82.06	Florida Straits (Navy Box)	CTD
058	29-Dec	0223	2013.5	24.15	-82.06	Florida Straits (Navy Box)	NT
059	29-Dec	0530	2021.5	24.21	-81.95	Florida Straits (Navy Box)	CTD
059	29-Dec	0615	2021.6	24.22	-81.94	Florida Straits (Navy Box)	NT

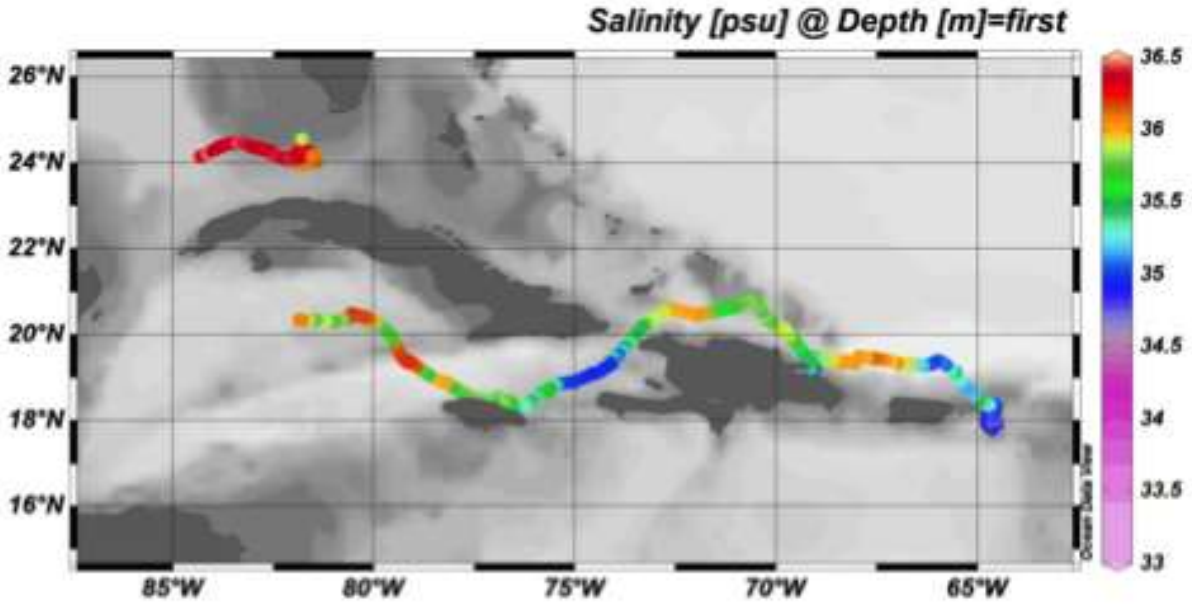
Duplicate station numbers indicate multiple oceanographic deployments that either occurred concurrently in the same location or were deployed sequentially in the same general location after the vessel was hove to. General Locations are categorized by traditional oceanic biomes or significant geologic feature. Abbreviations for oceanographic equipment deployed are: NT – neuston tow, DN – dip net, , MN – meter net, CTD & RBR-CTD – two types of conductivity, temperature, and depth profilers, HC – hydrocast with 12 Niskin bottles and CTD, HP – hydrophone listening station, SG – shipek grab, and SD – secchi disc, small boat operations occurred while in port to support snorkel surveys.

Figure 2a-c. Surface water hydrography for C244. Oceanographic sensors secured during passage through Cuban EEZ.

a. Temperature (seawater flow thru system with in-line thermistor)



b. Salinity



c. Chlorophyll-a fluorescence

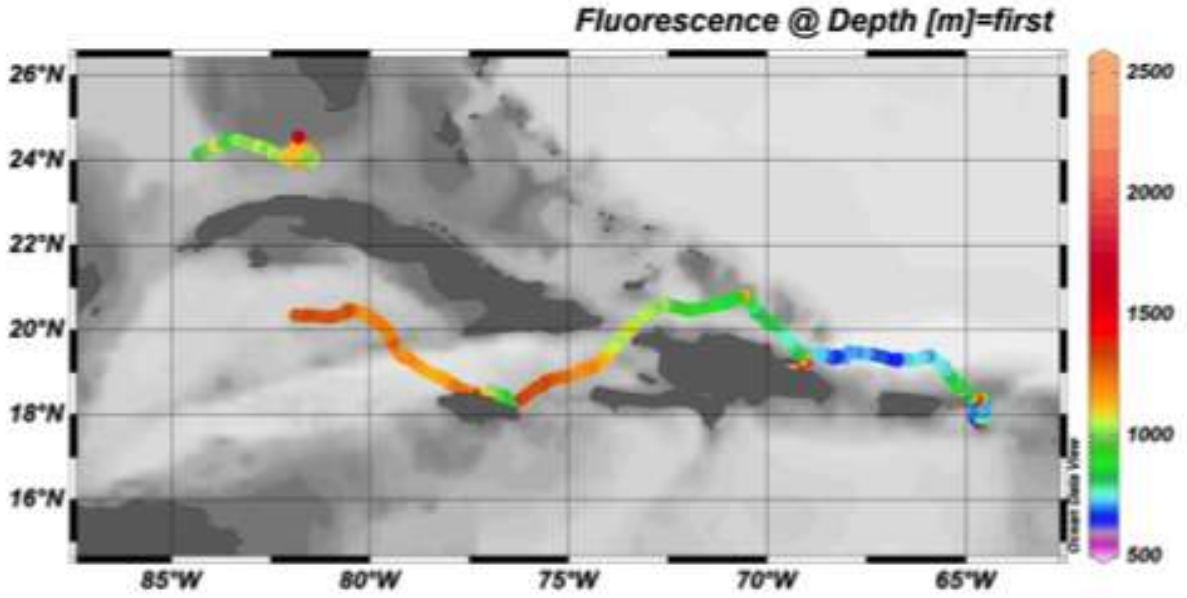


Table 4. Surface station location and surface sensor data for C244.

Station # (C244)	Date (2012)	Local Time (+4 GMT)	Log (nm)	Lat (dec Deg N)	Lon (dec Deg W)	Temp (°C)	Salinity (ppt)
SS-001	26-Nov	2227	22.9	17.98	-64.77	28.8	31.934
SS-002	27-Nov	0053	34.1	17.98	-64.76	28.7	34.969
SS-003	27-Nov	0351	39.4	17.89	-64.68	28.7	34.847
SS-004	27-Nov	1250	67.3	17.94	-64.78	28.8	31.896
SS-005	27-Nov	1810	87.1	18.21	-64.75	28.8	34.900
SS-006	28-Nov	0044	114.0	18.04	-64.63	28.7	34.913
C244-005-HC #13	28-Nov	1219	146.1	17.97	-64.54	28.7	34.780
SS-007	28-Nov	1235	146.5	17.94	-64.58	28.7	34.740
SS-008	28-Nov	1732	160.5	18.03	-64.64	28.8	34.720
SS-009	29-Nov	0032	192.7	17.93	-64.51	28.7	34.850
SS-010	29-Nov	1046	235.4	18.39	-64.58	28.7	35.020
SS-011	01-Dec	0836	243.0	18.36	-64.75	28.5	35.270
SS-012	01-Dec	1045	249.9	18.41	-64.85	28.7	35.359
SS-013	01-Dec	1351	262.1	18.55	-65.03	28.7	35.421
SS-014	01-Dec	1732	275.0	18.76	-65.25	28.7	35.123
SS-015	02-Dec	0123	298.6	19.15	-65.56	28.3	35.410
SS-016	02-Dec	1245	320.0	19.38	-65.99	28.4	35.130
SS-017	02-Dec	1734	320.9	19.39	-66.02	28.3	34.872
SS-018	03-Dec	0020	333.3	19.27	-66.32	28.4	35.099
C244-016-HC #13	03-Dec	1100	345.5	19.31	-66.71	28.2	35.930
SS-019	03-Dec	1225	346.0	19.29	-66.72	28.3	35.893
SS-020	04-Dec	0048	418.2	19.48	-67.96	28.1	36.001
SS-021	04-Dec	1229	430.5	19.34	-68.30	28.2	36.002
SS-022	04-Dec	1759	449.0	19.41	-68.64	28.3	35.900
SS-023	04-Dec	0009	471.3	19.43	-69.05	28.1	35.400
SS-024	05-Dec	1020	492.5	19.16	-69.19	27.8	34.200
SS-025	07-Dec	1343	488.6	19.19	-69.33	27.5	33.110
SS-026	09-Dec	1225	496.7	19.18	-69.29	27.9	33.980
SS-027	10-Dec	0012	554.7	19.94	-69.57	27.5	35.558
SS-028	10-Dec	1155	602.4	20.38	-70.26	27.6	35.735
SS-029	11-Dec	0010	658.4	20.69	-70.93	27.8	35.795
SS-030	11-Dec	1157	707.0	20.47	-71.90	27.5	36.020
SS-031	12-Dec	1153	824.4	19.75	-73.71	28.2	35.341
SS-032	12-Dec	1730	845.7	19.51	-73.94	28.6	35.026
SS-033	13-Dec	0228	882.6	19.24	-74.24	28.6	34.927
SS-034	13-Dec	1710	945.3	18.90	-75.11	28.8	34.974
SS-035	14-Dec	0030	984.2	18.78	-75.59	27.7	35.554
SS-036	14-Dec	0946	1041.5	18.31	-76.31	28.2	35.321

Table 4 continued. Surface station location and surface sensor data for C244.

Station # (C244)	chl-a Fluor (volts x30)	Chl-*a* (µg/l)	CDOM Fluor (volts)	Xmiss (volts)	PO_4 (µM)
SS-001	715	0.072	92.2	3806	0.054
SS-002	695	0.057	91.9	3840	0.221
SS-003	662	0.199	92.5	3856	0.050
SS-004	657	0.064	91.1	3835	0.067
SS-005	692	0.077	90.7	3843	0.175
SS-006	690	0.066	90.9	3860	0.067
C244-005-HC #13	756				0.050
SS-007	676	0.152	92.0	3856	0.221
SS-008	685	0.072	92.0	3804	0.113
SS-009	772	0.109	94.5	3860	0.171
SS-010	1150	0.397	103.1	3778	0.084
SS-011	1541	0.668	111.5	3653	0.088
SS-012	923	0.289	99.8	3784	0.084
SS-013	878	0.130	93.3	3810	0.029
SS-014	890	0.138	95.2	3818	0.092
SS-015	719	0.074	89.7	3848	0.054
SS-016	664	0.077	89.6	3855	0.071
SS-017	735	0.110	89.5	3840	0.021
SS-018	740	0.087	89.6	3852	0.000
C244-016-HC #13	659	0.049			0.017
SS-019	650	0.042	85.6	3851	0.021
SS-020	697	0.029	85.6	3785	0.096
SS-021	653	0.078	85.7	3777	0.125
SS-022	726	0.066	85.6	3813	0.096
SS-023	723	0.072	89.6	3817	0.096
SS-024	2513	2.621	175.6	3579	0.121
SS-025	1981	1.939			0.121
SS-026	2406	2.054	196.4	3585	0.193
SS-027	750	0.132	89.6	3788	0.087
SS-028	818	0.042	89.7	3722	0.136
SS-029	869	0.078	86.8	3774	0.260
SS-030	875	0.088	89.9	3732	0.078
SS-031	1041	0.104	91.3	3723	0.198
SS-032	1053	0.075	93.2	3722	0.167
SS-033	1139	0.084	95.3	3720	0.074
SS-034	1232	0.094	93.3	3697	0.171
SS-035	1306	0.056	89.6	3696	0.025
SS-036	1313	0.110	91.5	3691	0.078

Surface water samples were collected using a clean, seawater flow-thru system (intake ~ 1-3m depth) with in-line temperature, salinity and *in vivo* chlorophyll-a, fluorescence sensors. Discrete water samples were collected for phosphate (PO_4) analysis, measured by colorimetric analysis with an Ocean Optics Chem2000 digital spectrophotometer; and extracted chlorophyll-*a* (Chl-*a*) concentrations, measured with a Turner Designs Model 10-AU Fluorometer following methods outlined in Parsons, Maita and Lalli, *A Manual of Chemical and Biological Methods for Seawater Analysis*, Pergamon Press 1984. Chlorophyll-*a* samples were filtered through 0.45 µm filters. A blank space indicates that no sample was collected for that analysis.

Figure 3. Surface current magnitude during C244. Note, 500 mm/s is approximately 1.0 knot. Weak circulation (< 1 knot) predominates the Eastern Caribbean and Sargasso Sea. Several meso-scale eddies, originating from constricted flow through the Windward Passage, were observed with current magnitude > 1 knot. The position of the Florida Current is readily discernable north of Cuba with current magnitude nearing 2 knots.

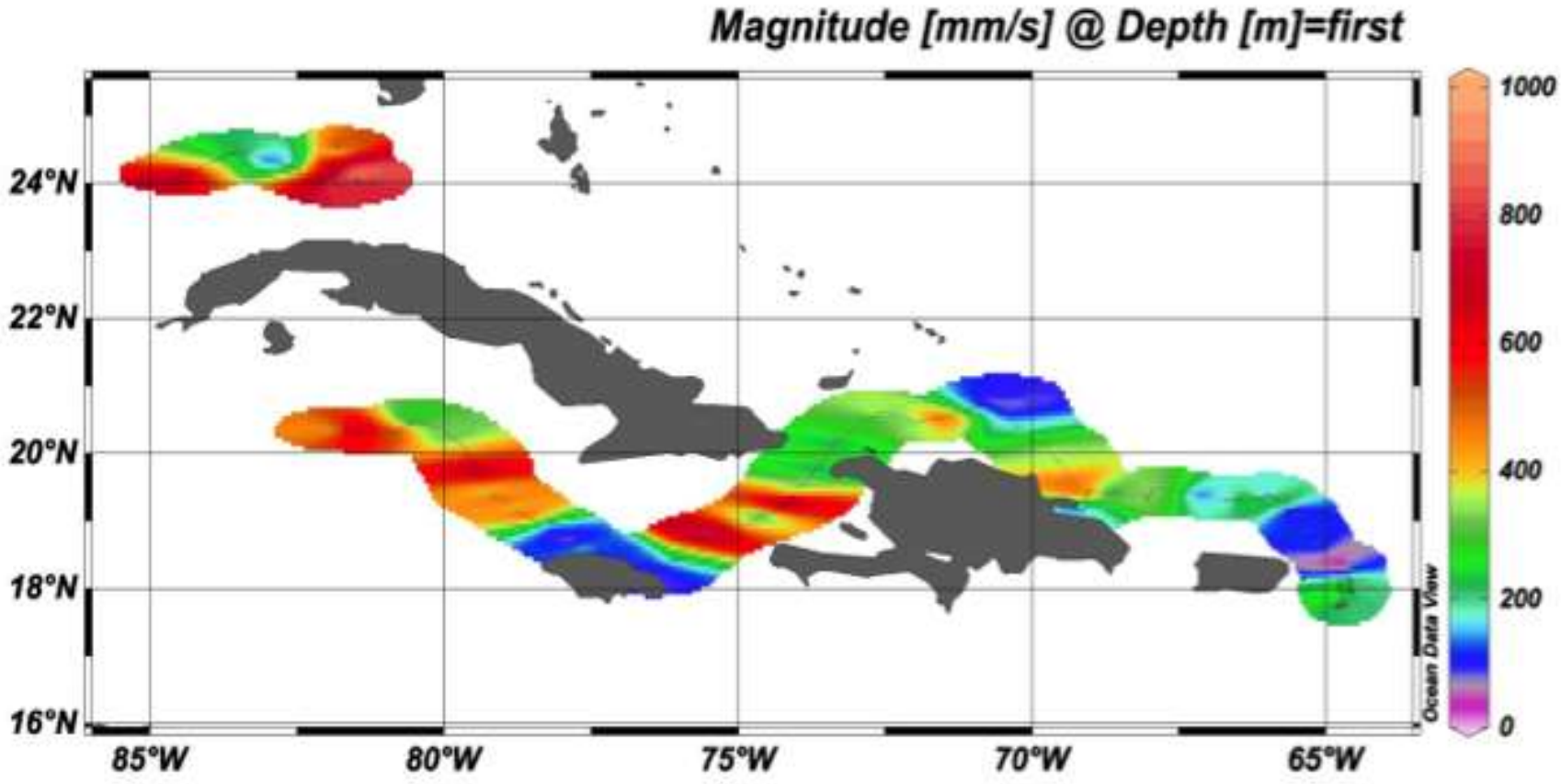


Table 5. Hydrocast station data for C244. Physical characteristics of the water column were measured with a Seabird SEACAT Profiler Model SBE 19plus Conductivity-Temperature-Depth unit and three attached sensors: dissolved oxygen (SBE 43), chlorophyll-a fluorescence (PF-2105), and PAR (Biospherical QSP 2300). Vertical profile data available upon request. Water samples were collected from 12 depths using niskin bottles and a surface sample (bottle 13) using a clean, seawater flow-thru system (intake ~ 1-3m depth).

Station # (C244-) General Locale Date and Time	Bottle	Z Corr (m)	Temp (deg C)	Salinity (psu)	Density (kg/m3)	O2 Seapoint (mL/L)	O2 Winkle (mL/L)	PO4 (uM)	Chl a (ug/l)	Chla-Fluoro (V)
	13	0	28.70	34.78				0.050	0.149	
Station - 005	12	9	28.59	34.75	22.01	194.02	4.06	0.038	0.180	0.138
Leeward Islands	11	10	28.58	34.75	22.01	193.36				0.138
28-Nov	10	48	28.54	36.02	22.98	200.90		0.017	0.145	0.159
1039	9	50	28.45	36.05	23.03	201.33				0.165
	8	74	26.47	36.49	24.01	199.32		0.004	0.495	0.228
Cast Depth	7	75	26.34	36.53	24.08	196.91				0.221
972m	6	98	25.32	36.76	24.57	184.07		0.046		0.203
	5	99	25.20	36.81	24.64	182.22			0.281	0.207
Water Depth	4	149	21.98	37.01	25.75	159.82	3.61		0.014	0.133
1850m	3	150	21.97	37.01	25.75	160.40		0.105		0.133
	2	398	13.42	35.70	26.85	132.17		0.997		0.124
CTD Unit # 4447	1	794	6.90	34.91	27.36	136.43	2.88	1.694		0.130
	13	0	28.20	35.93				0.017	0.049	
Station - 016	12	11	28.16	35.94	23.05	192.69	4.68	0.025	0.044	0.132
Sargasso Sea	11	11	28.16	35.94	23.05	191.86				0.134
03-Dec	10	49	28.25	36.21	23.22	192.48		0.000	0.072	0.139
1100	9	50	28.25	36.21	23.22	192.47				0.144
	8	73	26.17	36.57	24.17	207.02		0.201	0.188	0.160
Cast Depth	7	74	25.97	36.58	24.24	206.81				0.166
967m	6	98	24.80	36.77	24.74	200.09		0.017	0.286	0.186
	5	100	24.74	36.77	24.76	200.37				0.188
Water Depth	4	149	23.09	37.11	25.51	172.72	4.30		0.066	0.158
7630m	3	149	23.06	37.10	25.51	172.00		0.034		0.153
	2	397	15.88	36.19	26.69	163.62		0.626		0.120
CTD Unit # 4447	1	794	7.72	34.96	27.28	126.05	3.34	1.673		0.130

Station # (C244-) General Locale Date and Time	Bottle	Z Corr (m)	Temp (deg C)	Salinity (psu)	Density (kg/m3)	O2 Seapoint (mL/L)	O2 Winkle (mL/L)	PO4 (uM)	Chl a (ug/l)	Chla-Fluoro (V)
	13	0	28.70	34.89						
Station - 032	12	9	28.53	34.88	22.13	193.15	4.63	0.012	0.098	0.138
Greater Antilles	11	10	28.53	34.88	22.13	193.29				0.139
13-Dec	10	49	28.98	35.56	22.49	191.03		0.030	0.305	0.190
1018	9	50	28.96	35.58	22.51	191.11				0.195
	8	74	28.53	35.93	22.92	186.89		0.016	0.377	0.257
Cast Depth	7	75	28.39	35.95	22.98	186.71				0.268
836m	6	98	27.35	36.21	23.52	179.27				0.202
	5	99	27.07	36.30	23.67	180.30				0.206
Water Depth	4	148	23.22	36.89	25.30	163.02	4.12		0.016	0.137
2125m	3	149	23.09	36.91	25.36	160.69		0.096		0.136
	2	397	14.87	36.02	26.79	154.42		0.778		0.124
CTD Unit # 4447	1	794	7.13	34.97	27.38	139.91	3.25	1.823		0.136

Table 6. CTD station data for C244. Physical characteristics of the water column were measured with a Seabird SEACAT Profiler Model SBE 19plus Conductivity-Temperature-Depth unit. No attached sensors. Vertical profile data available upon request.

Station # (C244)	Date (2012)	Local Time (+4 GMT)	Cast Depth (m)	Locale	Notes
001	26-Nov	1830	64	St Croix shelf	RBR sensor
002	27-Nov	1110	867	Leeward Islands	CTD Unit # - 2237
009	01-Dec	0804	10	St John, Francis Bay	RBR sensor
013	02-Dec	1056	962	Puerto Rico Trench	CTD Unit # - 2237
018	04-Dec	1115	772	Mona Passage	CTD Unit # - 2237
021	05-Dec	0927	11	Samana Bay	RBR sensor
023	08-Dec	2030	8	Samana Bay	RBR sensor
026	10-Dec	1035	767	Greater Antilles	CTD Unit # - 2237
027	10-Dec	1828	18	Mouchoir Bank	RBR sensor
029	11-Dec	1043	892	Greater Antilles	CTD Unit # - 2237
030	12-Dec	1035	1002	Windward Passage	CTD Unit # - 2237
044	20-Dec	1015	No data	Western Caribbean	CTD Unit # - 2737; Unit not powered on
047	21-Dec	1001	952	Western Caribbean	CTD Unit # - 2237
048	21-Dec	1755	1764	Western Caribbean	CTD Unit # - 2737; Prelube & Styrocast
053	26-Dec	2111	135	Florida Straits	CTD Unit # - 2237
054	27-Dec	0051	190	Florida Straits	CTD Unit # - 2237
055	27-Dec	0425	336	Florida Straits	CTD Unit # - 2237
056	27-Dec	1045	636	Florida Straits	CTD Unit # - 2237
057	28-Dec	2103	626	Florida Straits (Navy Box)	CTD Unit # - 2237
058	29-Dec	0123	606	Florida Straits (Navy Box)	CTD Unit # - 2237
059	29-Dec	0530	551	Florida Straits (Navy Box)	CTD Unit # - 2237

Figure 4a-b. CTD cross-section plots for C244. Water column structure of temperature and salinity, VG gridding: X-axis 20, Y-axis 20.

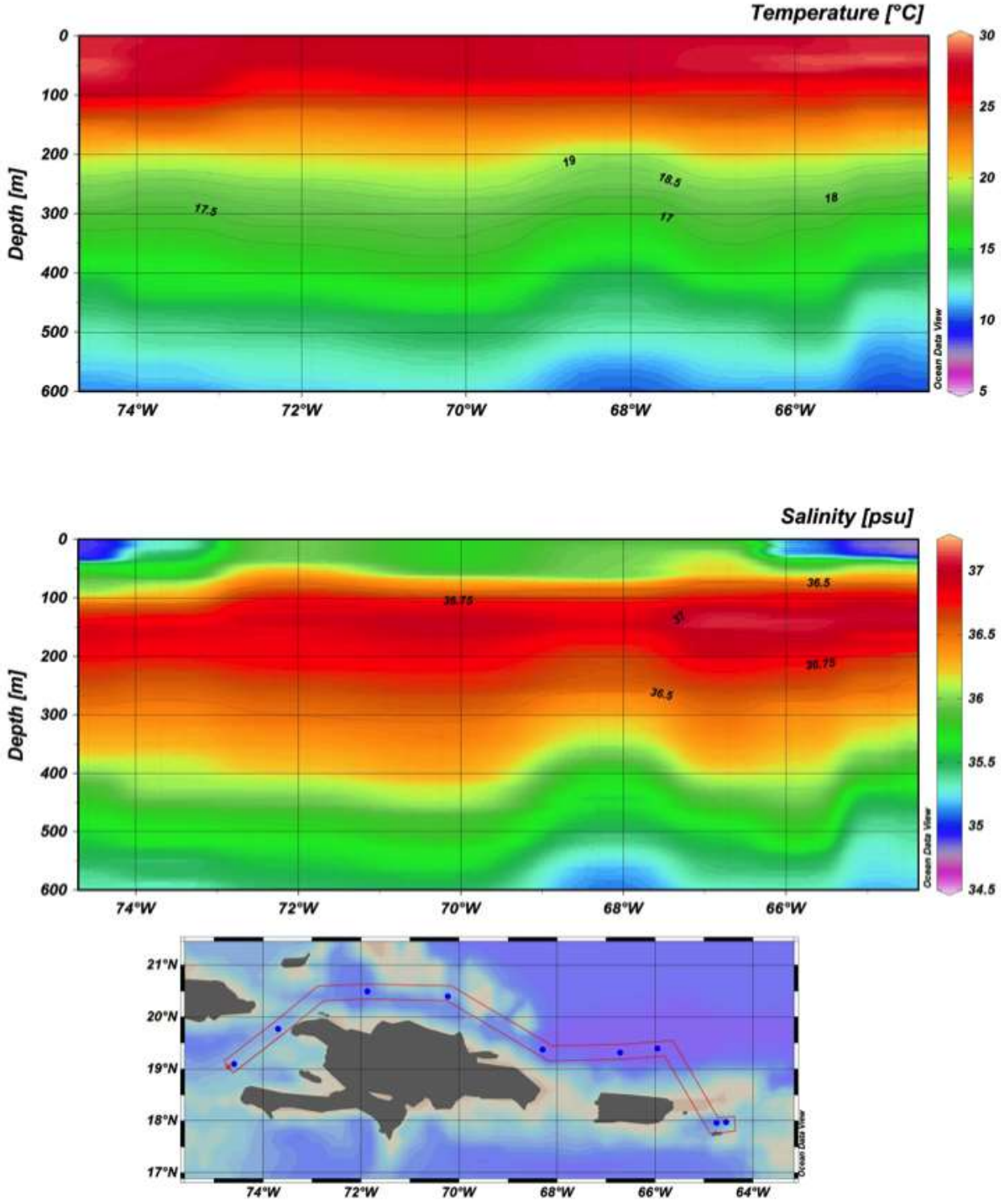


Table 7. Neuston station data for C244.

Station # (C244-)	Date (2012)	Local Time (+4 GMT)	Moon Phase (%)		Temp (°C)	Salinity (ppt)	chl-a Fluor (volts x30)	Tow Area (m^2)	Distance Method (GPS)	Zoop Biomass (ml)	Zoop Den (ml/m^2)	Locale
002	27-Nov	1239	99%	set	28.8	34.90	612.8	1810.0	GPS	1.5	0.0008	Leeward Isl
004	28-Nov	0013	100%	risen	28.8	34.92	687.4	2319.0	GPS	5.0	0.0022	Leeward Isl
005	28-Nov	1219	100%	set	28.7	34.74	698.5	1683.0	GPS	3.3	0.0020	Leeward Isl
006	29-Nov	0017	99%	risen	28.7	34.81	787.9	2088.0	GPS	6.8	0.0033	Leeward Isl
012	02-Dec	0106	87%	risen	28.3	35.38	711.6	1181.0	GPS	11.0	0.0093	Puerto Rico Trench
013	02-Dec	1220	87%	set	28.4	35.12	652.5	1683.0	GPS	2.8	0.0017	Puerto Rico Trench
015	03-Dec	0000	80%	risen	28.4	35.10	746.0	2020.0	GPS	13.0	0.0064	Puerto Rico Trench
016	03-Dec	1209	80%	set	28.3	35.92	660.3	1809.0	GPS	2.0	0.0011	Sargasso Sea
017	04-Dec	0034	71%	risen	28.1	35.99	701.1	1723.0	GPS	2.0	0.0012	Puerto Rico Trench
018	04-Dec	1219	71%	set	28.2	35.99	652.1	1814.0	GPS	4.0	0.0022	Mona Passage
020	05-Dec	0002	71%	risen	28.1	35.41	719.1	1061.0	GPS	3.8	0.0036	Greater Antilles
025	09-Dec	2356	12%	set	27.5	35.57	746.9	1701.0	GPS	9.0	0.0053	Greater Antilles
026	10-Dec	1145	12%	risen	27.6	35.70	807.4	2064.0	GPS	1.0	0.0005	Greater Antilles
028	10-Dec	2357	5%	set	27.7	35.79	897.5	1775.0	GPS	6.5	0.0037	Greater Antilles

Station # (C244-)	Date (2012)	Local Time (+4 GMT)	Moon Phase (%)		Temp (°C)	Salinity (ppt)	chl-a Fluor (volts x30)	Tow Area (m^2)	Distance Method (GPS)	Zoop Biomass (ml)	Zoop Den (ml/m^2)	Locale
029	11-Dec	1149	5%	risen	27.5	36.00	876.1	2206.0	GPS	1.8	0.0008	Greater Antilles
030	12-Dec	1137	5%	risen	28.2	35.30	1040.8	1251.0	GPS	10.5	0.0084	Windward Passage
034	14-Dec	0013	2%	set	28.1	35.56	1302.9	1335.0	GPS	12.5	0.0094	Greater Antilles
038	18-Dec	0958	33%	set	27.5	33.70	1606.4	1497.0	GPS			Greater Antilles [Port Antonio Inshore]
038	18-Dec	1017	33%	set	27.8	35.63	1063.4	1504.0	GPS			Greater Antilles [Port Antonio Offshore]
039	18-Dec	1925	33%	risen	28.2	35.80	936.6	1969.0	GPS			Galenas Point
040	19-Dec	0029	43%	set	28.2	35.83	942.2	1906.0	GPS			Oracabessa Bay
041	19-Dec	0331	43%	set	28.2	35.77	1096.1	1981.0	GPS			Greater Antilles [5.3 miles east of Ocho Rio Bay]
042	19-Dec	0748	43%	set	28.1	35.81	1085.7	991.0	GPS			Greater Antilles [Discovery Bay]
042	19-Dec	0805	43%	set	27.8	35.57	1267.4	893.0	GPS			Greater Antilles [Discovery Bay]
043	20-Dec	0005	43%	set	27.6	36.00	1157.2	2383.0	GPS	11.0	0.0046	Greater Antilles
044	20-Dec	1135	50%	risen	27.8	36.20	1182.6	2651.0	GPS	2.0	0.0008	Western Caribbean

Station # (C244-)	Date (2012)	Local Time (+4 GMT)	Moon Phase (%)		Temp (°C)	Salinity (ppt)	chl-a Fluor (volts x30)	Tow Area (m^2)	Distance Method (GPS)	Zoop Biomass (ml)	Zoop Den (ml/m^2)	Locale
046	21-Dec	0002	63%	risen	27.8	35.66	1198.7	2168.0	GPS	11.0	0.0051	Western Caribbean
049	25-Dec	2043	93%	risen	24.7	36.46	989.5	1028.0	GPS	4.8	0.0047	Florida Straits
050	26-Dec	0018	93%	risen	24.7	36.34	1031.1	724.0	GPS	13.0	0.0180	Florida Straits
051	26-Dec	0337	93%	risen	24.8	36.35	1022.3	912.0	GPS	6.0	0.0066	Florida Straits
056	27-Dec	1133	99%	set	24.8	36.40	1024.4	1468.0	GPS	11.0	0.0075	Florida Straits
057	28-Dec	2158	100%	risen	25.3	36.37	1095.6	1148.0	GPS	8.0	0.0070	Florida Straits (Navy Box)
058	29-Dec	0223	99%	risen	25.2	36.39	1097.5	1970.0	GPS	3.0	0.0015	Florida Straits (Navy Box)
059	29-Dec	0615	99%	risen	25.2	36.37	1090.8	878.0	GPS	30.0	0.0342	Florida Straits (Navy Box)

Table 7. Neuston station data for C244 continued.

Station # (C244-)	Halo (#)	Lepto (#)	Phyllo (#)	Mycto (#)	Gelatinous >2cm (#)	Types of Gelatinous	Other Nekton >2cm (#)	Types of Nekton	Plastic Pieces (#)	S natans (g)	S fluitans (g)	Tow Description and other notes	Surface station #
002	0	0	0	0	0	n/a	0	n/a	0	0	11	Tow caught 2 species of Sargassum w/ related organisms, also included fish larvae and blue copepods. Rinse bucket was accidentally discarded before prcoessing.	SS-004
004	3	0	0	3	0	n/a	0	n/a	1	0	15	Contains large amount of sargassum and associated organisms including large crab. Also includid myctophids, plastic, seagrass, and a tree nut	SS-006

Station # (C244-)	Halo (#)	Lepto (#)	Phyllo (#)	Mycto (#)	Gelatinous >2cm (#)	Types of Gelatinous	Other Nekton >2cm (#)	Types of Nekton	Plastic Pieces (#)	S natans (g)	S fluitans (g)	Tow Description and other notes	Surface station #
005	1	0	0	0	0	n/a	5	3 crabs, 1 shrimp, 1 fish	1	0	81	Large amount of Sargassum related fauna, including two Sargassum fish (<2cm), were released. The plastic piece was accidentally lost in the lab.	SS-008
006	30	0	0	0	0	n/a	6	4 pipefish, 1flying fish, 1 unidentified fish	2	1	3	A good amount of manatee grass, three or four seeds from land, fragments of sargassum, biomass with small organisms, brownish multicolored, some blue copepods, a sprig fo Turbinaria.	SS-009
012	7	1	0	5	1	unknown	2	2 sargassum fish	24	5	20	Dominated by blue copepods, several pteropods present.	SS-015
013	4	0	0	0	0	n/a	0	n/a	6	58	87	Land weed and coastal seaweed, giant blue copepods and janthina.	SS-016
015	6	0	0	0	7	7 salps	0	n/a	0	0	0	Lots of copepods, several salps, a few halobates, no sargassum	SS-018
016	0	0	0	8	0	n/a	0	n/a	1	0	8	Overall, not a lot of organisms in tow. Some shrimp, copepods and Myctophids are visible. One fragment of Sargassum.	SS-019
017	1	1	0	1	0	n/a	12	12 stomatopod	0	0	4	Largely gelatinous organisms, many small salps. One small (< 2cm) medusa; overall color tan.	SS-020
018	0	0	0	0	0	n/a	0	n/a	0	0	1	Contents included an abundance of sargassum floats, as well blue copepods and gelatinous organisms (clear).	SS-021
020	10	1	0	3	0	n/a	1	1 stomatopod	2	0	260	Lots of clear stuff, 1 salp (small and fast), sargassum shrimp, overall color like Sargassum	SS-023
025	9	0	1	6	0	n/a	3	2 pink shrimp 1 stomatopod	9	0	14	Lots of Sargassum floats, many with tube worms, lots of bioluminescence, several porpita, many small, mobile zooplankton	SS-027

Station # (C244-)	Halo (#)	Lepto (#)	Phyllo (#)	Mycto (#)	Gelatinous >2cm (#)	Types of Gelatinous	Other Nekton >2cm (#)	Types of Nekton	Plastic Pieces (#)	S natans (g)	S fluitans (g)	Tow Description and other notes	Surface station #
026	0	0	0	0	0	n/a	1	1 unknown fish	1	0	52	Clear gelatinous organisms, copepods, tiny silver blue fish, sargassum crabs	SS-028
028	0	1	7	23	0	n/a	1	1 pipefish	9	0	251	contains lots of Sargassum and myctophids. Also, Sargassum fish and shrimp. One leptocephali and several phylosoma.	SS-029
029	0	0	0	0	0	n/a	1	1 long. Skinny eel-like fish	10	0	4	Lots of green algae, might be eel grass (15g). Pieces of bark and debris from shore. A few pieces of plastic.	SS-029
030	0	0	0	0	0	n/a	0	n/a	5	0	29	Sargassum, other plant material (terrestrial - 110 g), and siphonophores were abundant. Five plastic fragments, including a large bottle cap are also present.	SS-031
034	3	0	9	7	1	unknown jelly	6	2 flying fish, one sargassum fish >2cm (also 6 <2cm not included in total), 1 stomatopod, 2 shrimp	32	0	470	Lots of Sargassum!! Also: phyllosoma, small fish, halobates, plastic and terrestrial debris (4 g)	SS-035
038												Sample collected for UWI without processing. Contained plastic bag, small pieces of plastic, benthic plant debris, lucifer fasconi was dominant.	
038												Sample collected for UWI without processing. Sample mostly consisted of a plastic bottle, small pieces of styrofoam, and pieces of plant debris.	
039												Sample collected for UWI without processing. Sample contained seabeans (3) cradled like eggs in Sargassum.	

Station # (C244-)	Halo (#)	Lepto (#)	Phyllo (#)	Mycto (#)	Gelatinous >2cm (#)	Types of Gelatinous	Other Nekton >2cm (#)	Types of Nekton	Plastic Pieces (#)	S natans (g)	S fluitans (g)	Tow Description and other notes	Surface station #
040												Sample collected for UWI without processing. Sample contained a fagment of benthic Sargassum, one small fish, small pieces of wood, land insects (firefly) and seagrass.	
041												Sample collected for UWI without processing. Lots of crustaceans and pipefish with one large jelly (bell ~3 cm long). Plenty of near shore plant material.	
042												Sample collected for UWI without processing.	
042												Sample collected for UWI without processing.	
043	3	0	0	17	1	n/a	6	3 mesopelagic shrimp, 1 stomatopod, 1 larval flying fish, sea wasp, 1 larval flounder <2cm	1	70	120	Primary color brown, large sea wasp, heavy on the myctophids	
044	0	0	0	0	0	n/a	0	n/a	62	0	30	Lots of sargassum floats, few fragments, several plastic pieces and land debris, noticeable amounts of copepods	
046	3	0	0	21	0	n/a	2	Larval flying fish, 1mL, needle fish, 2mL	1	0	8	Small fragments of sargassum, high concentration of gelatinous organisms, some fish	
049	19	1	0	0	3	3 salps	0	n/a	0	0	8	Lots of clear stuff, plus pink zooplankton, active salps and stomatopods, green benthic seagrass	
050	21	6	0	0	3	2 pyrosomes, 1 medusa	8	1 juvenile mahi, 7 stomatopods	1	0	0	Small amount of near-shore plant material, plenty of small gelatinous organisms, lots of stomatopods, halobates, and pinkish-tan zooplankton. One small Man-o-war (2cm)	

Station # (C244-)	Halo (#)	Lepto (#)	Phyllo (#)	Mycto (#)	Gelatinous >2cm (#)	Types of Gelatinous	Other Nekton >2cm (#)	Types of Nekton	Plastic Pieces (#)	S natans (g)	S fluitans (g)	Tow Description and other notes	Surface station #
051	10	9	2	4	11	10 salps, 1 physalia	0	n/a	0	0	3	Organisms as listed in big stuff, plus sargassum crab	
056	3	0	0	0	0	n/a	6	3 larval fish, 1 shrimp	5	0	8	Many gelatinous organisms <2cm and larval fish <2cm. An abundance of porpita and some turbinaria	
057	12	0	0	1	3	3 salps	1	1 small flying fish	2	21	10	Mostly small shrimp and other crustaceans. A few gelatinous (salps and siphonophores), and several fragments of Sargassum.	
058	27	0	0	2	1	1 Man-o-war	2	1 larval fish (stripped), 1 larval flying fish	4	0	0	Small man-o-war, jellyfish, halobates,small fish and gelatinous organisms	
059	18	0	0	0	1	1 Man-o-war	2	Juvenile fish	7	0	2	Large number of clear worms, about 1cm long, many gelatinous organisms <2cm, floating clear round soft masses (maybe egg masses) mainly reddish pink and clear organisms. Lots of sargassum floats, some manatee grass and porpitas	

Tow area was calculated using distance in meters between successive (every minute) GPS positions. Net opening was 1.0 m wide by 0.5 m tall with a net mesh of 335 µm. Zooplankton density is recorded as wet volume displacement per tow area (ml/m^2). Eel larvae (leptocephali), spiny lobster larvae (phyllosoma), and Lantern fish (Family Myctophidae), were sorted from net contents and recorded as numbers caught per tow. Micronekton, gelatinous micronekton, and plant material was removed using a 1 cm mesh sieve and biomass (ml) or length (cm) was recorded. Floating plastic was also removed from net contents, sorted as pellets (none collected entire cruise) or pieces and recorded as numbers collected per tow. Floating tar was sorted from the nets contents and recorded present or absent (none collected entire cruise). Floating *Sargassum* weed was removed, identified to species and measured in grams using a spring scale. Qualitative description of micronekton removed from the zooplankton biomass is provided, and when available biomass (ml) and length (cm) of specimens are recorded.

In partnership with University of the West Indies (UWI) several tows were conducted near Jamaica (station 038 to 042). The entire sample was preserved for their use and analysis, thus no data available to report here.

Table 8. Meter net station data for C244.

Station # (C244-)	Date (2012)	Local Time (+4 GMT)	Net Type (1m / 2m)	Tow Type (Oblique / Discrete)	Water depth (m)	Tow Depth (m)	Tow Volume (m3)	Distance Method	Minilogger file .xls	Locale
031	12-Dec	2009	2MN	Discrete	1133	185.0	7132	Flow Meter	C244-031-2MN.xls	Greater Antilles
039	18-Dec	1919	1MN	Discrete	727	21.0	1373	Flow Meter	C244-039-MN.xls	Galenas Point
040	19-Dec	0025	1MN	Discrete	563	14.0	1290	Flow Meter	C244-040-MN.xls	Orocabessa
041	19-Dec	0326	1MN	Discrete	452	18.0	1232	Flow Meter	C244-041-MN.xls	Greater Antilles (5.3 miles E of Ocho Rios Bay)
045	20-Dec	2011	2MN	Discrete	1665	214.0	5967	Flow Meter	C244-045-2MN.xls	Western Caribbean

Table 8. Meter net station data for C244 continued.

Station # (C244-)	Zoop Biomass (ml)	Zpl Density (ml/m3)	Halo (#)	Lepto (#)	Phyllo (#)	Mycto (#)	Gelatinous >2cm (mL)	Types of Gelatinous	Nekton >2cm (#)	Types of Nekton	Plastic Pieces (#)
031	74.0	0.0104	0	15	0	9	6.0	1 pyrosome, 5 salps	73	22 shrimp, 16 larval fish, 10 chaetognaths, 1 stomatopod	0
039	Sample for UWI										
040	Sample for UWI										

Station # (C244-)	Zoop Biomass (ml)	Zpl Density (ml/m3)	Halo (#)	Lepto (#)	Phyllo (#)	Mycto (#)	Gelatinous >2cm (mL)	Types of Gelatinous	Nekton >2cm (#)	Types of Nekton	Plastic Pieces (#)
041	Sample for UWI										
045	69.0	0.0116	0	15	2	11	24.0	2 medusa,18 salps, 3 pyrosomes, 1 siphonophore	43	3 shrimp, 1.8 mL, 1 isopod, 0.2, 10 other mesopelagic fish, 1mL	1

Meter nets (1 m diameter frame, 335µm mesh net) were towed at discrete target depth for ~ 30' at 2 knots. Tow volume was calculated using an attached flow meter and net area based on net diameter. Zooplankton density is recorded as wet volume displacement per tow area (ml/m^3). Eel larvae (leptocephali), spiny lobster larvae (phyllosoma), and Lantern fish (Family Myctophidae), were sorted from net contents and recorded as numbers caught per tow. Blank spaces represents stations were no data was collected for that parameter. Qualitative description of micronekton removed from the zooplankton biomass is provided, and when available biomass (ml) and length (cm) of specimens are recorded.

In partnership with University of the West Indies (UWI) several tows were conducted near Jamaica (station 038 to 042). The entire sample was preserved for their use and analysis, thus no data available to report here.

Table 9. Zooplankton 100 count station data for C244.

Station	Net Type	Time	Cnid med	Siph	Cten	Salp	Pter	Nud	Het	Other snails	Ceph	Poly	Chae	Cope	Gam Amp	Hyp Amp	Cr_ meg	Cr_ zoea
002	NT	1239	0	6	0	0	52	3	6	1	0	0	0	20	0	0	0	0
004	NT	0013	1	9	0	0	16	1	0	0	0	0	1	53	0	16	0	0
005	NT	1219	0	23	0	0	7	0	0	0	0	0	0	15	0	0	0	0
006	NT	0017	0	1	0	0	29	0	0	6	0	0	0	43	0	11	0	0
012	NT	0106	0	0	0	3	3	0	0	0	0	0	3	66	0	5	1	1
013	NT	1220	0	11	0	1	0	0	8	0	0	0	0	13	3	0	1	0
015	NT	0000	0	4	0	7	1	0	2	0	0	0	8	69	3	2	1	0
016	NT	1209	0	0	0	0	2	0	0	20	0	0	0	67	2	1	0	0
017	NT	0034	0	28	0	0	1	0	2	0	0	0	1	28	0	3	0	0
018	NT	1219	0	20	0	0	13	0	1	0	0	0	0	43	0	2	0	0
020	NT	0002	0	3	0	12	0	0	0	0	0	0	4	60	0	7	0	0
025	NT	2356	0	0	0	0	1	0	1	1	0	0	6	58	0	9	0	0
026	NT	1145	0	17	0	2	6	0	0	6	0	0	0	62	0	2	0	0
028	NT	2357	3	9	0	1	3	0	1	0	0	0	0	58	0	5	0	0
029	NT	1149	0	18	0	0	0	0	0	2	0	0	0	78	0	2	0	0
030	NT	1137	0	44	0	0	0	0	1	7	0	3	0	38	0	3	0	0
034	NT	0013	1	16	0	0	8	1	5	8	0	1	1	45	0	5	0	0
038 - A	NT	0958																
038 - B	NT	1017																
039	NT	1925																
040	NT	0029																
041	NT	0331																
042 - A	NT	0748																
042 - B	NT	0805																
043	NT	0005	0	5	0	0	1	0	0	1	0	0	3	81	0	2	0	0
044	NT	1135	1	2	0	0	2	0	0	18	0	0	0	47	0	1	0	0
046	NT	0002	0	12	2	0	11	0	0	0	0	0	2	59	0	2	0	0
049	NT	2043	0	20	0	0	5	1	0	0	0	0	5	55	0	13	0	0
050	NT	0018	0	3	0	0	8	0	0	2	0	0	3	51	0	9	1	0
051	NT	0337	2	4	0	0	7	0	0	0	0	0	6	36	1	17	4	1

Station	Net Type	Time	Cnid med	Siph	Cten	Salp	Pter	Nud	Het	Other snails	Ceph	Poly	Chae	Cope	Gam Amp	Hyp Amp	Cr_ meg	Cr_ zoea
056	NT	1133	0	19	0	1	2	0	0	5	0	0	1	57	0	3	0	0
057	NT	2158	0	16	0	0	4	0	0	3	0	0	0	40	1	32	0	0
058	NT	0223	0	17	0	0	8	0	0	14	0	0	0	48	0	3	7	0
059	NT	0615	0	7	0	0	3	0	2	0	0	0	6	79	0	1	0	0
Meter Nets																		
031	2MN	2009	0	4	0	0	6	0	1	0	0	0	0	63	0	8	0	0
039	1MN	1919																
040	1MN	0025																
041	1MN	0326																
045	2MN	2011	0	12	1	0	6	0	3	3	0	0	3	33	1	2	2	4

Table 9. Zooplankton 100 count station data for C244 continued.

Station	Net Type	Time	Shr_ larv	Lob_ larv	Mys	Euph	Stom	Ostr	Clad	Iso	Fish Larv	Fish Eggs	Oth	Oth	Oth	Total #	Shannon-Weiner Diversity Index
002	NT	1239	1	0	2	1	0	0	0	0	0	0	0	0	0	92	0.59
004	NT	0013	0	0	0	1	0	1	0	1	0	0	0	0	0	100	0.61
005	NT	1219	0	0	35	1	0	1	0	8	1	1	1	0	0	93	0.72
006	NT	0017	7	0	0	0	0	0	0	0	0	2	1	0	0	100	0.65
012	NT	0106	12	0	4	0	0	1	0	0	1	4	0	0	0	104	0.62
013	NT	1220	28	0	8	0	0	0	0	0	0	27	0	0	0	100	0.79
015	NT	0000	0	0	2	1	0	0	0	0	0	0	0	0	0	100	0.54
016	NT	1209	1	0	1	6	0	0	0	0	0	0	0	0	0	100	0.46
017	NT	0034	0	0	1	0	0	1	0	11	0	24	0	0	0	100	0.72
018	NT	1219	1	0	1	0	0	4	0	0	0	12	0	0	0	97	0.68
020	NT	0002	4	0	0	0	0	4	0	0	0	7	2	0	0	103	0.65
025	NT	2356	6	0	7	10	0	0	0	0	0	0	1	0	0	100	0.64
026	NT	1145	2	0	1	0	0	0	0	0	0	2	0	0	0	100	0.56
028	NT	2357	9	0	9	3	0	0	0	0	0	0	0	0	0	101	0.66
029	NT	1149	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0.29

Station	Net Type	Time	Shr_ larv	Lob_ larv	Mys	Euph	Stom	Ostr	Clad	Iso	Fish Larv	Fish Eggs	Oth	Oth	Oth	Total #	Shannon-Weiner Diversity Index
030	NT	1137	2	0	0	0	0	0	0	0	0	2	0	0	0	100	0.58
034	NT	0013	8	0	0	0	0	0	0	0	0	0	0	0	0	99	0.76
038 - A	NT	0958															
038 - B	NT	1017															
039	NT	1925															
040	NT	0029															
041	NT	0331															
042 - A	NT	0748															
042 - B	NT	0805															
043	NT	0005	2	0	5	2	0	0	0	0	0	0	0	0	0	102	0.39
044	NT	1135	1	0	0	2	0	1	0	0	1	1	0	0	0	77	0.55
046	NT	0002	7	0	2	0	0	0	0	0	3	0	0	0	0	100	0.61
049	NT	2043	1	0	1	0	0	0	0	0	1	0	0	0	0	102	0.60
050	NT	0018	0	0	8	0	0	14	0	0	0	0	1	0	0	100	0.70
051	NT	0337	0	0	14	1	1	1	0	0	0	5	0	0	0	100	0.88
056	NT	1133	1	0	0	1	0	0	0	0	5	0	1	4	1	101	0.66
057	NT	2158	0	0	4	0	3	0	0	0	0	0	0	0	0	103	0.66
058	NT	0223	1	0	1	1	1	0	0	1	0	0	6	3	0	111	0.80
059	NT	0615	0	0	0	0	0	0	0	3	0	0	0	0	0	101	0.38
Meter Nets																	
031	2MN	2009	6	0	2	0	0	3	0	0	6	0	1	0	0	100	0.61
039	1MN	1919															
040	1MN	0025															
041	1MN	0326															
045	2MN	2011	2	0	13	7	1	3	0	0	2	0	2	0	0	100	1.01

Abbreviations for zooplankton categories:
Cnid med – cnidarian medusa, Siph – siphonophore bracts and floats, Cten – ctenophores, Salp – salps and doliolids, Pter – pteropods, Nudi – nudibranch, Het – heteropods, Other Snail – pelagic snails, Ceph – cephalopods, Poly – polychaetes, Chae – chaetognaths Cop – copepods, Gam Amp – gammarid amphipods, Hyp Amp – hyperiid amphipods, Cr_meg – Crab megalopae, Cr_zoea – Crab zoea, Shr_larv – Shrimp larval stage, Lob_larv – lobster larval stage, Mys – mysids, Euph – euphausiids, Stom (larv) – Stomatopod larval stage, Ost – ostracods, Clad – cladocerans, Iso – isopods, larval fish and fish eggs.

In partnership with University of the West Indies (UWI) several tows were conducted near Jamaica (station 038 to 042). The entire sample was preserved for their use and analysis, thus no data available to report here.

Table 10. Dip net station data for C244.

Station # (C244)	Date (2012)	Local Time (+4 GMT)	Temp (deg C)	Salinity (psu)	chl-a Fluor (volts x30)	Collection Conditions / Notes	Rep (A, B, etc)	Isolated / Windrow	Clumps (#)	Fragments (#)	Species (*Sfluitans, Snatans, benthic* or Mixed)	Total Mass (g)
003	27-Nov	1722	28.8	34.92	714	BF 4 ENE, seas 2-3ft ENE	A	isolated	0	several	fluitans	
007	29-Nov	1031	28.7	35.02	1128		A	windrow	0	several	fluitans	1.5
007	29-Nov	1031	28.7	35.02	1128		B	isolated	0	several	fluitans	1
010	01-Dec	1022	28.6	35.30	1030		A	isolated	1	0	benthic	30
010	01-Dec	1022	28.6	35.30	1030		B	isolated	1	0	benthic	8
011	01-Dec	1344	28.7	35.43	842		A	isolated	1	0	fluitans	17
011	01-Dec	1344	28.7	35.43	842		B	isolated	0	several	benthic	10
014	02-Dec	1726	28.3	34.87	874	Hove-to in calm seas; drifted over top of 3m wide windrow; multiple pieces of Sargassum in net - all of it was included for macrofauna and total weight, but we only chose the largest clump for age/color and epibiont analysis	A	windrow	1	several	fluitans	35
014	02-Dec	1726	28.3	34.87	874	Hove-to in calm seas; drifted over top of 3m wide windrow; multiple pieces of Sargassum in net - all of it was included for macrofauna and total weight, but we only chose the largest clump for age/color and epibiont analysis	B	windrow	1	several	fluitans	550
026	10-Dec	1047	27.5	35.73	792		A	isolated	1	0	fluitans	10
029	11-Dec	1206	27.5	36.00	881	Wind:080, Force 5, Seas: 080, 4ft	A	isolated	1	0	fluitans	46
030	12-Dec	1021	28.2	35.30	1021	multiple pieces of Sargassum in net - using everything for mass and macrofauna, but chose the largest clump for age/color/epibionts	A	isolated	2	13	benthic	200
030	12-Dec	1021	28.2	35.30	1021		B	isolated	2	15	fluitans	65
035	14-Dec	0940	28.1	35.30	1330	BF 2 WNW, 1-2ft ExN	A	isolated	1	2	fluitans	12.5
035	14-Dec	0940	28.1	35.30	1330		B	isolated	0	several	fluitans	10

Table 10 continued. Dip net station data for C244.

		Growth		Succession		Decline		Macrofauna						Epibionts					
Station # (C244)	**Replicate (A, B, etc)**	**%**	**Color (Munsell)**	**%**	**Color (Munsell)**	**%**	**Color (Munsell)**	**Fish (#)**	**Crab (#)**	**Shrimp (#)**	**Snail (#)**	**Nudibranch (#)**	**Other (#)**	**Hydroid Cover (%)**	**Bryozoan cover (%)**	**Worm Tubes (#)**	**Barnacles (#)**	**Anemones (#)**	**Other (#)**
003	A	5	5Y 8/8	80	5Y 7/6	15	2.5Y 5/2	0	2	5	3	0	0	40	30	0	0	0	0
007	A	20	5Y 7/6	30	2.5Y 6/6	50	5YR 4/6	0	0	16	0	0	0	100	30	0	0	0	0
007	B	10	5Y 6/4	50	5Y 7/6	40	5YR 5/6	0	0	23	0	0	0	80	20	0	0	0	0
010	A	5	2.5YR 5/6	80	7.5YR 5/6	15	7.5YR 4/4	1	3	10	0	0	0	100	95	15	0	0	0
010	B	5	5Y 6/6	95	2.5 6/6	0		0	2	1	0	0	0	100	100	6	0	0	0
011	A	15	5Y 8/6	55	2.5Y 7/6	30	2.5Y 5/6	0	2	55	0	0	0	90	60	1	0	0	0
011	B	20	2.5Y 8/6	70	2.5Y 7/8	10	7.5YR 5/8	0	1	18	0	0	0	100	20	0	0	0	0
014	A	5	2.5Y 8/4	55	5Y 7/6	40	7.5YR 6/8	0	0	33	0	0	0	15	60	24	0	5	0
014	B	2	2.5Y 7/4	53	2.5Y 7/4	45	2.5Y 6/6	1	4	248	0	0	5	10	60	46	0	1	0
026	A	10	5YR 8/6	15	7.5YR 6/6	75	7.5YR 4/4	0	0	0	0	0	0	12	20	0	0	0	0
029	A	30	5Y8/6	55	2.5Y 7/10	15	5YR 4/6	0	0	5	0	0	0	70	50	45	0	0	0
030	A	40	5Y 8/4	35	2.5Y 6/8	25	2.5YR 4/8	2	2	17	0	0	1	65	75	15	0	24	0
030	B	5	5Y 8/10	85	5Y 7/6	10	2.5Y 7/6	1	1	13	0	0	15	30	20	0	0	0	0
035	A	20	5Y 6/6	20	5Y 6/8	60	7.5YR 4/4	0	0	13	0	0	1	30	80	3	0	130	0
035	B	5	2.5Y 7/3	40	2.5Y 6/3	55	5YR 4/2	0	0	0	1	0	0	25	85	1	0	100	0

Table 11. Sediment collections for C244.

Station # (C244)	Date (2012)	Local Time (+4 GMT)	Equipment	Location	Water Depth (m)	Surface Temp (°C)	Surface Salinity (ppt)	Surface chl-a Fluor (volts x30)	Color Description & Munsell code
001	26-Nov	1726	Shipek	St. Croix Bank	227	28.8	34.86	1109	N/A
001	26-Nov	1830	Shipek	St. Croix Bank	69	28.7	34.88	2109	10YR 7/4 Grayish orange, 10R 6/6 moderate reddish orange
009	1-Dec	0804	Shipek	Maho Bay	17	28.5	35.27	1494	yellowish gray 5y 7/2
021	5-Dec	0927	Shipek	Samana Bay	20	27.7	34.74	1700	very pale orange 10YR 8/2
023	8-Dec	2030	Shipek	Samana Bay	20				Dusky Yellow 5Y6/4
027	10-Dec	1828	Shipek	Mouchoir Bank	24	27.6	35.76	1164	Grayish Orange 10YR 7/4

Table 11 continued. Sediment collections for C244.

Station # (C244)	General size	Sediment Shape	Organics	Comments	sub-Surface PO4 (uM)	sub-Surface Chl-a (ug/l)
001	N/A	N/A	N/A	Shipek did not collect sediment. Tried again with 001-SG-B	N/A	N/A
001	5-10cm clumps and sandy	fragmented, irregular, jagged	Yes, shell fragments, coral pieces (varying colors), sponges, various reef invertebrates, small crab	Shipek grab collected sediment just seaward of the shelf break. RBR-CTD attached above shipek. Water sample with C244-001-NB (PO_4, Chl-a x 250 mL) 6m off bottom.	0.009	0.397
009	Silty mud	unknown (too small to tell)	yes, broken shells	RBR-CTD attached above shipek. Water sample with C244-009-NB (PO4, chla 250mL) triggered at 9m off bottom.	0.017	0.668
021	Granular/sandy	Angular	yes, algae and shell fragments	RBR-CTD attached above shipek. Niskin bottle attched to wire 5m above shipek. Triggered 10m off bottom.	0.025	0.747
023	Silty mud	unknown (too small to tell)	yes, a few shell fragments	RBR-CTD attached above shipek. Associated with 022-RBR and 022-NB	0.251	1.326
027	Granular	Angular	yes, algae and shell fragments	RBR-CTD attached above shipek. Niskin bottle triggered 10m above bottom. Associated with C244-027-NB	0.242	0.241

Table 12. Secchi disc station data for C244.

Station # (C244)	Date (2012)	Local Time (+4 GMT)	chl-a Fluor (volts x30)	CDOM Fluor (volts)	Xmiss (volts)	Water Depth (m)	Cloud Cover (%)	Wave Ht/Wind Sp (BF)	Secchi Depth (m)	Calculated 1% (m)	Locale
052	26-Dec	1541	966	92.8	3814	237	30	Waves - 2ft / BF - 3	31	83	Florida Straits

Table 13. Hydrophone station data for C244.

Station # (C244)	Date (2012)	Local Time (+4 GMT)	Temp (°C)	chl-a Fluor (volts x30)	Salinity (ppt)	Water Depth (m)	Wave Ht/Wind Sp (BF)	Acoustic Observations	Visual Observations	Locale
002	27-Nov	1016	28.7	682.6	34.92	1900	Wind = 1-2, ESE. Sea = 2-3	Chirp and boat machinery audible. Engine intermittent: vacuum and water pump. Constant engine sounds: generator, generator cooling system, water maker	none	Leeward Islands
005	28-Nov	0954	28.7	752.8	34.78	1838	Wind = 3, 093°. Sea = 3-5	Chirp and boat machinery audible. Possible chirp return.	none	Leeward Islands
013	2-Dec	0953	28.3	727.3	35.06	7598	Wind = 3, 110°. Sea = 2-4	Chirp and generator	none	Puerto Rico Trench
016	3-Dec	1005	28.2	695.4	35.90	7647	7/8 cloud coverage. Wind = 3, 075°	Hiss, sniffle and trickle.	Every hiss the bouy pulls quickly forward past the wave	Sargasso Sea
018	4-Dec	1002	28.2	648.8	36.00	5437	Wind = 6, 85° 5/8 cloud coverage.	Hiss, fizzle, chirp, hum, water flowing.	Fizzle and water flow sounds strengthen with increased wave size.	Mona Passage
019	4-Dec	1645	28.3	722.1	35.89	n/a	n/a	Wind and water. Chirp. Occasional scraping sounds. Several loud taps that may be triggerfish interference.	Seabid chumming affects school of triggerfish (~20)	Greater Antilles

Station # (C244)	Date (2012)	Local Time (+4 GMT)	Temp (°C)	chl-a Fluor (volts x30)	Salinity (ppt)	Water Depth (m)	Wave Ht/Wind Sp (BF)	Acoustic Observations	Visual Observations	Locale
021	5-Dec	0815	27.8	2032.3	34.65	290	Wind=3, ENE. Sea=2-4ft dir ENE	Chirp, main generator, dolphin(one high pitched call), shipek grab	Did not see any dolphins during this time	Samana Bay
026	10-Dec	0959	27.5	860.5	35.72	3540	Wind=5, ExS; Sea=3-5ft, E	Chirp, generator, water	None	Greater Antilles
029	11-Dec	0958	27.5	912.7	36.02	4171	Wind=5, E; Sea=4ft, E.	Waves, generator, chirp (2 tones)	None	Greater Antilles
030	12-Dec	0947	28.3	1039.8	35.31	2180	4kts, 4ft seas	Chirp, wind, waves, boat sounds	none	Windward Passage
033	13-Dec	1620	28.8	1229.9	35.98	2061	F2, NExN, 3ft NE seas	Chirp, generator, waves, wind	none	Formigas Bank
056	27-Dec	0958	24.8	1028.7	36.40	638	4kts, NxE, 4-5ft NxW	Waves, generator, chirp	none	Florida Straits

Table 14. Student research topics for C244.

Title	Author(s)
Ecosystem Health / Water Quality	
Coral reef health in the Caribbean: A comparative study between St. John, USVI, Samana, Dominican Republic, and Port Antonio, Jamaica	Clark Bockelman Jen Hyde Chelsea Johnson
Biodiversity / Fisheries	
Megafauna Distribution and Supporting Habitats in the Greater Caribbean	Erin Schulz Amy McDonagh Maggie Burkett
Deadliest Catch: The Prevalence of *Gambierdiscus* sp. on the C-244 Cruise Track	Patricia Pyda Keara Fenzel
An Examination of the Relationship between the Biovolume of Motile Macrofauana and the Age of *Sargassum fluitans*	Rebecca Ogus
Geologic Setting	
The Effects of Environmental Variability on Benthic Biodiversity	Rebecca Hernandez
Climate Connections	
The North Atlantic Oscillation and Sea Surface Temperatures Relationship in the Caribbean	Henry Bell
Tracking 18° Mode Water with Regards to the North Atlantic Oscillation and Climate Change	Cara Murray