

CRUISE REPORT

S-204

SCIENTIFIC ACTIVITIES UNDERTAKEN ABOARD THE

SSV Robert C. Seamans

Oahu, HI, USA – Kiritimati, Republic of Kiribati – Palmyra Atoll, USA – Oahu, HI, USA

24 March – 1 May 2006



Photo courtesy of TC Collyer

Sea Education Association
Woods Hole, Massachusetts

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Table of Contents

Ship's Complement	4
Data Description	5
Figure 1: Cruise Track	7
Figure 2: Hydrographic sections	8
Figure 3: Acoustic Doppler Current Profiler sections	9
Table 1: Student Research Projects	10
Table 2: Oceanographic sampling stations	11
Table 3: Surface station data	14
Table 4: Neuston tow data	15
Table 5: Hydrocast data	15
Table 6. ARGO float deployment sites	18

Ship's Complement for SSV *Robert C. Seamans S-204*

Scientific Staff

Gary Jaroslow	Chief Scientist
Matt Lambert	First Assistant Scientist
Erika Stafne	Second Assistant Scientist
Lynn Asbeck	Third Assistant Scientist

Nautical Staff

Chris McGuire	Captain
T.C. Collyer	Chief Mate
Lizzy Grubin	Second Mate
John O'Keefe	Third Mate
Ted Fleming	Engineer
Megan Matsutani	Assistant Engineer
Sarah Collyer	Steward

Guest

Franklin "Nick" King III

Students

Jaime L. Budzynkiewicz	Roger Williams University
Russell A. Chaput	Roger Williams University
Rhea W. Davis	Mount Holyoke College
William M. Diamond	St. Michael's College
Valerie M. Hastings	Harvard University
Andrew J. Horsburgh	Rollins College
Nastasha A. Horvath	Bowdoin College
Chanel G. Jencks	Boston University
Scott MacLellan	University of Massachusetts, Amherst
Andrew T. Modlin	University of Vermont
Rachel S. Philbrick	Cornell University
Sarah J. Pilzer	Oberlin College
Giovanni Poles	University of Massachusetts, Boston
Rachel A. Reynolds	Roger Williams University
Christopher R. Rydz	Ripon College
Nicole Scesny	Simmons College
Roman J. Shor	University of Pennsylvania
Daniel S. Silva	Wesleyan University
Jenna M. Sullivan	University of New Hampshire
Seisei Tatebe-Goddu	McGill University
Lieva Whitbeck	Brown University
Marit D. Wilson	McGill University

Data Description

This cruise report provides a record of data collected aboard the SSV *Robert C. Seamans* during Cruise S-204 during March - May of 2006. The cruise track transected the central Pacific Ocean from Oahu, HI to the Equator and back (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 S-204 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.

Permission to conduct oceanographic research within the territorial jurisdiction of the Republic of Kiribati was most kindly granted by the Ministry of Foreign Affairs and Immigration of the Republic of Kiribati under Diplomatic Note: FA:44/21/060. Water sampling within the Jarvis Island and Palmyra Atoll National Wildlife Refuges was performed under Special Use Permit 12533-06018 under the auspices of the United States Department of Interior, Fish and Wildlife Service. Special thanks to the Project Leader of the Pacific Remote Islands NWR Complex for granting said Permit, and to The Nature Conservancy staff at Palmyra Atoll for hosting such an educationally beneficial port stop.

During the cruise, samples or data were collected at 167 discrete oceanographic stations (Tables 2 and 3) 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
S-204

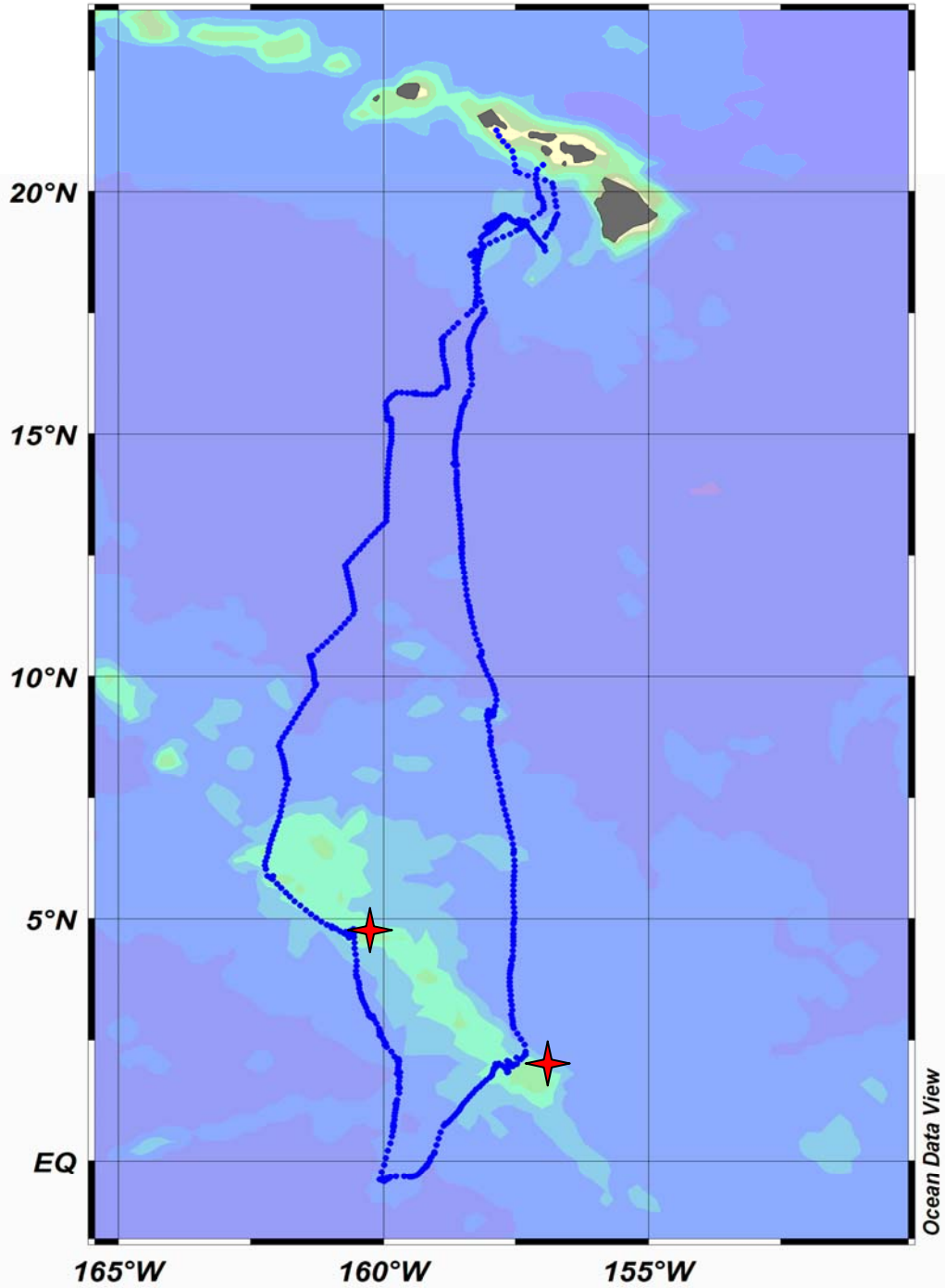


Figure 1. Cruise-track map for Cruise S-204 of the SSV *Robert C. Seamans* from March 24 – May 1, 2006. The cruise began and ended in Oahu, HI, USA, with port stops (starred) at the island of Kiritimati, Republic of Kiribati, and Palmyra Atoll, USA.

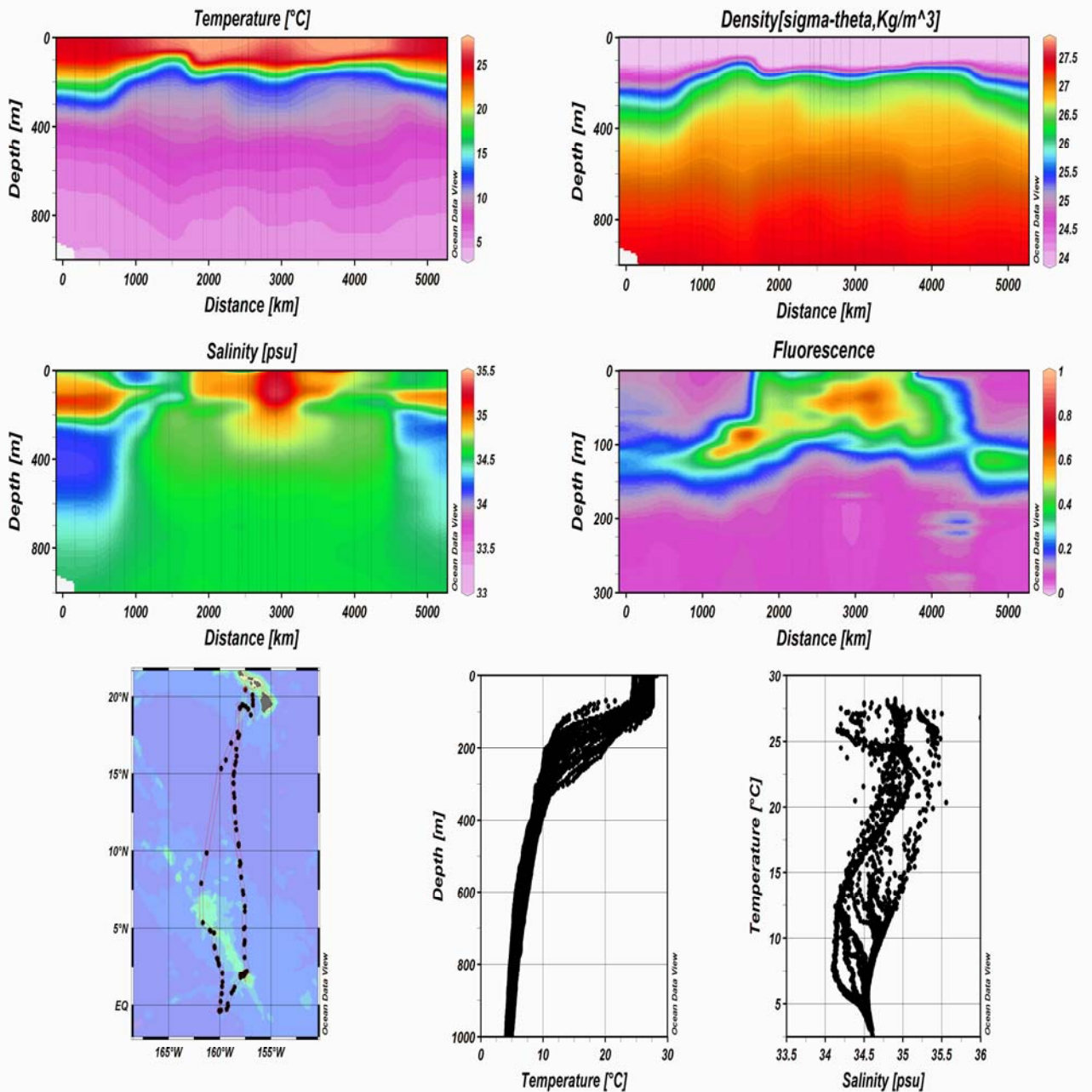


Figure 2. Data collected at CTD and surface stations located in map (lower left, stations shown by blue dots). Along-track water temperature, salinity, density and *in-vivo* relative fluorescence (top and middle sections). Plots of water-column temperature and temperature versus salinity (lower right).

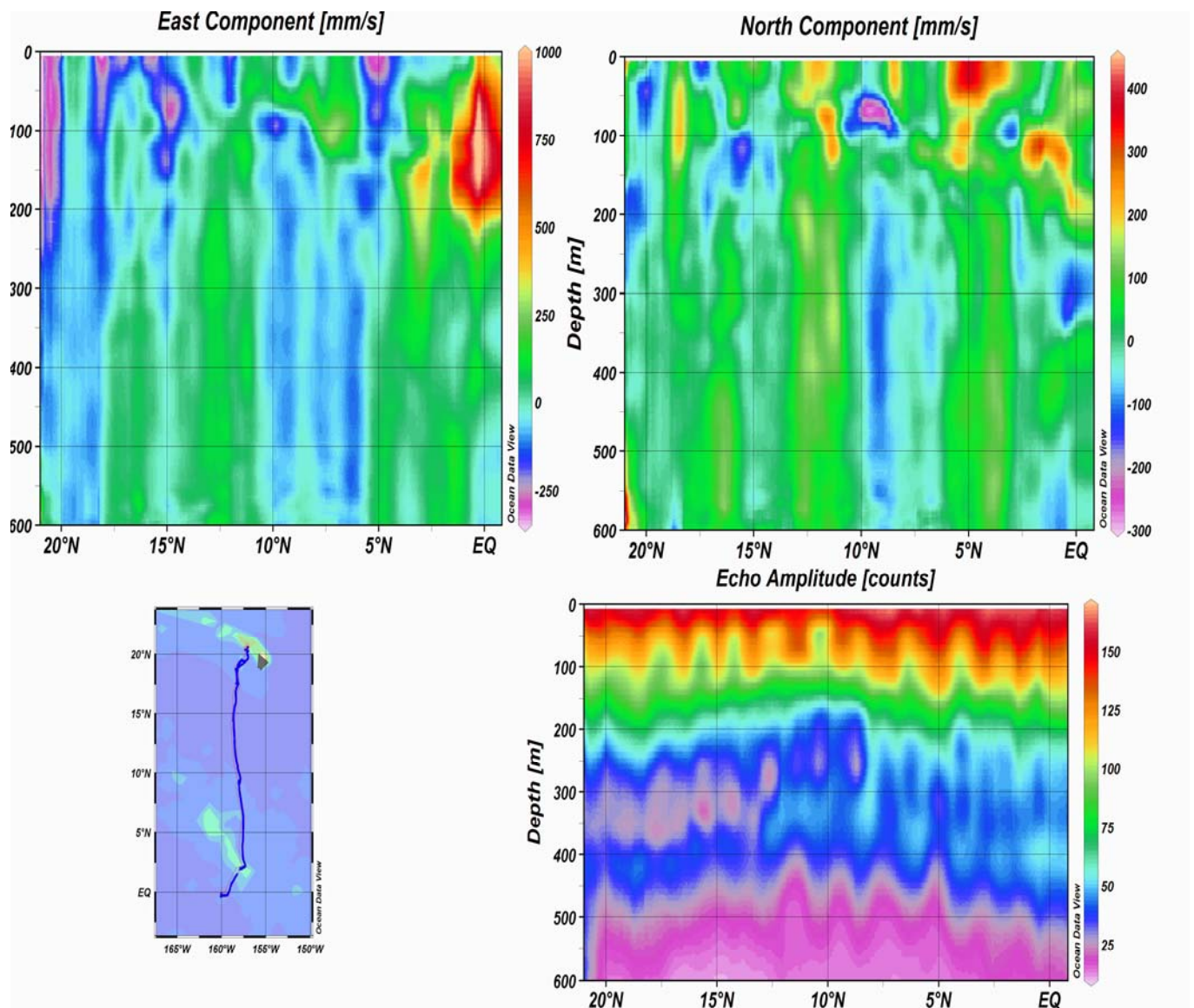


Figure 3. Acoustic Doppler Current Profiler data continuously collected along cruise track (blue line) located in map (lower left). East and North current speed along-track sections (top and middle sections). Echo intensity amplitude along-track section (lower right).

Table 1. Student Research Projects

Title	Student Researcher(s)
The effects of major currents on biota and nutrient distribution in the Equatorial Pacific	Rhea Davis Drew Horsburgh, Scott MacLellan Daniel Silva Chanel Jencks Nastasha Horvath
Correlation between increased productivity and vertical water mass movement as affected by mesoscale eddy size and velocity	Rachel A. Reynolds Nickie A. Scensy Marit D. Wilson Sarah J. Pilzer
Primary production and copepod migration in the Central Pacific	Val Hastings Rachel Philbrick Jenna Sullivan Seisei Tatebe-Goddu
‘Island mass effect’ and its role in increasing primary production of the water surrounding Hawaii, Christmas Atoll and Fanning Island	Russ Chaput Andrew Modlin Chris Rydz Jaime Budzynkiewicz
Seamount growth and collapse, an investigation of three Pacific seamounts using single beam sonar	Will Diamond, Giovanni Poles, Roman Shor, and Lieva Whitbeck

Table 2: Oceanographic sampling stations

Station	Date	Local Time	Log (nm)	Latitude	Longitude (W)	Sampling Depth (m)	General Locale
CTD Casts							
S204-004-CTD	26-Mar-06	0907	130.0	19°29.0' N	156°44.6'	891	Hawaii Island Transect
S204-008-CTD	27-Mar-06	2202	276.0	19°14.4' N	158°01.7'	932	Hawaii Island Transect
S204-011-CTD	29-Mar-06	0839	496.7	17°31.1' N	158°05.2'	1372	N. Pac. Subtropical Gyre
S204-014-CTD	30-Mar-06	0834	611.0	15°44.8' N	158°25.7'	1261	N. Pac. Subtropical Gyre
S204-017-CTD	31-Mar-06	0911	702.4	14°22.9' N	158°39.4'	1479	N. Pac. Subtropical Gyre
S204-020-CTD	1-Apr-06	0912	815.8	12°40.8' N	158°31.9'	1450	N. Pac. Subtropical Gyre
S204-023-CTD	2-Apr-06	0900	963.5	10°27.2' N	158°09.1'	1453	N. Pac. Subtropical Gyre
S204-029-CTD	4-Apr-06	0950	1279.1	6°22.8' N	157°32.7'	1465	N. Equat. Countercurrent
S204-031-CTD	5-Apr-06	0900	1436.9	4°09.3' N	157°34.4'	1352	S. Equat. Current
S204-033-CTD	6-Apr-06	0753	1579.0	2°11.5' N	157°18.9'	1443	11 nm N of Christmas Is
S204-037-CTD	9-Apr-06	1811	1611.4	1°59.5' N	157°32.9'	922	4 nm W of Christmas Is
S204-042-CTD	10-Apr-06	0918	1670.7	1°55.9' N	157°54.0'	1453	17 nm W of Christmas Is
S204-046-CTD	11-Apr-06	0850	1761.0	0°46.6' N	158°50.3'	1335	S. Equat. Current
S204-047-CTD	11-Apr-06	2136	1828.6	0°04.8' S	159°11.8'	1495	Equatorial Undercurrent
S204-051-CTD	12-Apr-06	1655	1893.8	0°22.5' S	159°56.1'	795	Windward Jarvis
S204-052-CTD	13-Apr-06	0007	1916.8	0°22.3' S	160°03.9'	1480	Leeward Jarvis Island
S204-055-CTD	13-Apr-06	2025	2024.1	1°11.3' N	159°45.8'	1400	S. Equat. Current
S204-062-CTD	15-Apr-06	0837	2186.8	2°59.9' N	160°12.8'	1255	S. Equat. Current
S204-066-CTD	21-Apr-06	0930	2245.0	7°54.0' N	161°48.0'	1225	N. Equat. Current
S204-067-CTD	22-Apr-06	0950	2784.1	9°50.8' N	161°16.5'	1458	N. Equat. Current
S204-069-CTD	25-Apr-06	0928	3186.6	15°18.7' N	159°52.1'	1650	N. Equat. Current
S204-072-CTD	27-Apr-06	0934	3432.6	17°40.0' N	158°15.3'	960	220 nm S of Oahu
Hydrocasts							
S204-004-HC	26-Mar-06	0907	130.0	19°29.0' N	156°44.6'	891	Hawaii Island Transect
S204-008-HC	27-Mar-06	2316	276.2	19°15.6' N	158°03.4'	330	Hawaii Island Transect
S204-017-HC	31-Mar-06	1043	702.2	14°32.2' N	158°40.6'	307	N. Pac. Subtropical Gyre
S204-023-HC	2-Apr-06	1054	963.9	10°25.8' N	158°10.4'	295	N. Pac. Subtropical Gyre
S204-033-HC	6-Apr-06	0928	1579.5	2°11.5' N	157°20.1'	271	12 nm N of Christmas Is
S204-037-HC	9-Apr-06	1926	1611.5	1°58.1' N	157°33.3'	291	5 nm W of Christmas Is
S204-042-HC	10-Apr-06	1046	1670.9	1°55.1' N	157°55.1'	286	18 nm W of Christmas Is
S204-051-HC	12-Apr-06	1810	1893.8	0°22.0' S	159°56.4'	300	Windward Jarvis
S204-052-HC	13-Apr-06	0135	1916.5	0°22.4' S	160°04.2'	345	Leeward Jarvis Island
S204-062-HC	15-Apr-06	1009	2187.5	2°58.6' N	160°14.2'	275	S. Equat. Current
Open Nets*							
S204-045-MN	11-Apr-06	0000	1734.5	1°06.4' N	158°32.8'	75	Equatorial Undercurrent
S204-068-MN	22-Apr-06	2018	2823.1	10°24.1' N	161°23.5'	300	N. Equat. Current
S204-074-2MN	28-Apr-06	2113	3611.5	19°54.9' N	157°3.2'	500	S of Lana'i
S204-002-CN	26-Mar-06	0333	92.0	20°07.2' N	156°48.3'	5	Hawaii Island Transect
S204-003-CN	26-Mar-06	0615	113.5	19°46.1' N	156°45.2'	5	Hawaii Island Transect
S204-005-CN	26-Mar-06	2006	159.3	18°47.7' N	156°57.2'	5	Hawaii Island Transect
S204-006-CN	27-Mar-06	0457	207.2	19°23.2' N	157°20.5'	5	Hawaii Island Transect
S204-007-CN	27-Mar-06	1642	251.0	19°31.2' N	157°45.6'	5	Hawaii Island Transect

S204-034-CN	6-Apr-06	1022	1580.9	2°10.4' N	157°21.0'	5	23 km N of Christmas Is
S204-035-CN	6-Apr-06	1131	1589.0	2°04.9' N	157°23.8'	5	4 nm NE of Christmas Is
S204-036-CN	6-Apr-06	1236	1596.2	2°09.3' N	157°28.9'	5	11 km N of Christmas Is
S204-038-CN	9-Apr-06	2030	1647.4	1°57.9' N	157°33.7'	5	4 mi W of Christmas Is
S204-039-CN	9-Apr-06	2306	1624.1	2°03.8' N	157°40.0'	5	11 nm NW of Christmas Is
S204-040-CN	10-Apr-06	0125	1636.9	1°52.7' N	157°39.5'	5	7 nm W of Christmas Is
S204-041-CN	10-Apr-06	0625	1659.8	2°00.3' N	157°50.1'	5	17 nm W of Christmas Is
S204-043-CN	10-Apr-06	1318	1677.8	1°47.6' N	157°57.4'	5	W of Christmas Is
S204-049-CN	12-Apr-06	1056	1885.5	0°19.3' S	159°52.1'	5	Windward Jarvis Is
S204-050-CN	12-Apr-06	1314	1891.5	0°20.8' S	159°56.1'	5	Windward Jarvis Is
S204-053-CN	12-Apr-06	0228	1917.0	0°23.0' S	160°04.6'	5	Leeward Jarvis Is

*MN = 335- μ m-mesh, 1-m diameter net
 2MN=1000- μ m-mesh, 2-m diameter net
 CN = 500- μ m-mesh, 0.5 m diameter net

Neuston Nets

S204-001-NT	25-Mar-06	2205	48.8	20°25.4' N	157°30.2'	0	S. of Molakai
S204-012-NT	29-Mar-06	1156	505.0	17°22.1' N	158°10.8'	0	N. Pac. Subtropical Gyre
S204-013-NT	30-Mar-06	0005	555.3	16°34.5' N	158°22.8'	0	N. Pac. Subtropical Gyre
S204-014-NT	30-Mar-06	1210	621.2	15°34.7' N	158°29.7'	0	N. Pac. Subtropical Gyre
S204-015-NT	30-Mar-06	2012	655.0	15°05.5' N	158°35.6'	0	N. Pac. Subtropical Gyre
S204-016-NT	31-Mar-06	0000	670.0	14°53.5' N	158°38.0'	0	N. Pac. Subtropical Gyre
S204-018-NT	31-Mar-06	1210	708.0	14°21.6' N	158°37.1'	0	N. Pac. Subtropical Gyre
S204-019-NT	31-Mar-06	0003	768.0	13°28.2' N	158°34.2'	0	N. Pac. Subtropical Gyre
S204-021-NT	1-Apr-06	1200	824.7	12°33.3' N	158°31.3'	0	N. Pac. Subtropical Gyre
S204-022-NT	2-Apr-06	0000	903.6	11°22.4' N	158°22.4'	0	N. Pac. Subtropical Gyre
S204-028-NT	4-Apr-06	0014	1209.9	7°24.3' N	157°45.1'	0	N. Equat. Current
S204-030-NT	5-Apr-06	0010	1379.2	4°56.4' N	157°37.8'	0	N. Equat. Countercurrent
S204-032-NT	5-Apr-06	1203	1449.8	3°56.7' N	157°36.7'	0	N. Equat. Countercurrent
S204-044-NT	11-Apr-06	0010	1732.1	1°08.8' N	158°31.8'	0	Equatorial Undercurrent
S204-048-NT	11-Apr-06	2235	1828.8	0°05.0' S	159°11.3'	0	Equatorial Undercurrent
S204-054-NT	13-Apr-06	1205	1993.0	0°44.3' N	159°48.0'	0	S. Equat. current
S204-056-NT	14-Apr-06	0007	2045.4	1°30.2' N	159°42.3'	0	S. Equat. current
S204-061-NT	15-Apr-06	0200	2156.9	2°36.4' N	160°03.9'	0	S. Equat. current
S204-063-NT	15-Apr-06	1206	2193.5	3°01.4' N	160°16.1'	0	S. Equatorial current
S204-064-NT	16-Apr-06	0034	2251.9	3°48.3' N	160°30.3'	0	N. Equat. Countercurrent
S204-065-NT	17-Apr-06	0020	2393.9	4°50.1' N	160°58.4'	0	N. Equat. Current
S204-070-NT	26-Apr-06	0016	3260.8	15°51.3' N	159°24.0'	0	N. Equat. Current
S204-071-NT	27-Apr-06	0000	3369.0	16°58.8' N	158°53.1'	0	275 nm S of Oahu
S204-073-NT	28-Apr-06	0054	3508.8	18°53.4' N	158°06.7'	0	150 nm S of Oahu

Sediment Samples*

S204-009-SG	28-Mar-06	1745	374.3	18°44.5' N	158°16.3'	480	Cross Seamount
S204-010-SG	28-Mar-06	1816	376.2	18°42.4' N	158°16.5'	386	Cross Seamount

*SG=Shipek Grab

Phytoplankton Samples*

PN009	29-Mar-06	1047	500.5	17°26.1' N	158°08.1'	2	N. Pac. Subtropical Gyre
PN010	30-Mar-06	0514	583.5	16°06.9' N	158°20.3'	2	N. Pac. Subtropical Gyre
PN011	30-Mar-06	2226	663.6	14°58.5' N	158°37.5'	2	N. Pac. Subtropical Gyre
PN012	31-Mar-06	2119	752.3	13°42.4' N	158°36.1'	2	N. Pac. Subtropical Gyre
PN014	1-Apr-06	2028	879.9	11°49.3' N	158°26.4'	2	N. Pac. Subtropical Gyre

PN015	2-Apr-06	1318	927.1	10°18.2' N	158°08.5'	2	N. Pac. Subtropical Gyre
PN017	3-Apr-06	0415	1060.0	9°18.2' N	158°01.7'	2	N. Equat. Current
PN019	3-Apr-06	1648	1136.0	8°17.7' N	157°55.0'	2	N. Equat. Current
PN020	4-Apr-06	0322	1225.0	7°11.2' N	157°42.1'	2	N. Equat. Current
PN021	4-Apr-06	1308	1299.0	6°04.3' N	157°31.9'	2	N. Equat. Current
PN022	4-Apr-06	2315	1371.7	5°01.1' N	157°31.9'	2	N. Equat. Countercurrent
PN023	5-Apr-06	1124	1145.4	4°03.5' N	157°35.5'	2	N. Equat. Countercurrent
PN024	5-Apr-06	2215	1513.3	3°05.2' N	157°34.3'	2	N. Equat. Countercurrent
PN025	6-Apr-06	1258	1597.3	2°08.5' N	157°29.7'	2	S. Equat. Current
PN026	11-Apr-06	0400	1742.1	0°58.3' N	158°38.9'	2	S. Equat. Current
PN027	11-Apr-06	1124	1777.7	0°32.9' N	158°56.4'	2	S. Equat. Current
PN033	12-Apr-06	0349	1847.3	0°15.6' S	159°19.6'	2	S. Equat. Current
PN034	13-Apr-06	1102	1884.0	0°07.7' N	159°56.3'	2	S. Equat. Current
PN042	13-Apr-06	2100	2023.0	1°11.2' N	159°46.3'	2	S. Equat. Current
PN043	14-Apr-06	1400	2097.8	2°04.1' N	159°44.7'	2	S. Equat. Current
PN044	15-Apr-06	0500	2167.7	2°43.6' N	160°05.3'	2	S. Equat. Current
PN045	15-Apr-06	2316	2241.9	3°43.2' N	160°28.8'	2	S. Equat. Current
PN046	16-Apr-06	0917	2312.6	4°39.9' N	160°33.2'	2	S. Equat. Current
PN047	16-Apr-06	2204	2382.6	4°47.1' N	160°51.9'	2	S. Equat. Current
PN048	17-Apr-06	0740	2452.6	5°20.2' N	161°38.6'	2	S. Equat. Current

*sampled underway using filtered flow-through system

Tucker Trawl

S204-024A-TT	2-Apr-06	1851	1007.6	9°47.2' N	157°55.6'	0-90	N. Equat. Current
S204-024B-TT	2-Apr-06	1858	1007.8	9°47.2' N	157°55.6'	90	N. Equat. Current
S204-024C-TT	2-Apr-06	1937	1008.8	9°47.2' N	157°55.6'	25	N. Equat. Current
S204-025A-TT	3-Apr-06	0004	1037.4	9°18.1' N	157°55.4'	0-90	N. Equat. Current
S204-025B-TT	3-Apr-06	0012	1037.8	9°18.1' N	157°55.4'	90	N. Equat. Current
S204-025C-TT	3-Apr-06	0045	1038.8	9°18.1' N	157°55.4'	25	N. Equat. Current
S204-026A-TT	3-Apr-06	0553	1071.2	9°12.5' N	158°02.7'	0-90	N. Equat. Current
S204-026B-TT	3-Apr-06	0604	1071.6	9°12.5' N	158°02.7'	90	N. Equat. Current
S204-026C-TT	3-Apr-06	0638	1073.0	9°12.5' N	158°02.7'	90-25	N. Equat. Current
S204-027A-TT	3-Apr-06	1211	1108.1	8°39.9' N	157°58.8'	0-90	N. Equat. Current
S204-027B-TT	3-Apr-06	1221	1108.5	8°39.9' N	157°58.8'	90	N. Equat. Current
S204-027C-TT	3-Apr-06	1252	1109.5	8°39.9' N	157°58.8'	25	N. Equat. Current
S204-057A-TT	14-Apr-06	0525	2068.8	1°50.3' N	159°41.7'	5	S. Equat. Current
S204-057B-TT	14-Apr-06	0551	2069.9	1°50.3' N	159°41.7'	50	S. Equat. Current
S204-057C-TT	14-Apr-06	0632	2071.4	1°50.3' N	159°41.7'	50-0	S. Equat. Current
S204-058A-TT	14-Apr-06	1205	2092.6	2°06.0' N	159°43.1'	7	S. Equat. Current
S204-058B-TT	14-Apr-06	1241	2093.7	2°06.0' N	159°43.1'	50-0	S. Equat. Current
S204-059A-TT	14-Apr-06	1831	2127.1	2°27.1' N	159°58.3'	0-100	S. Equat. Current
S204-059B-TT	14-Apr-06	1838	2127.6	2°27.1' N	159°58.3'	50	S. Equat. Current
S204-059C-TT	14-Apr-06	1910	2128.7	2°27.1' N	159°58.3'	5	S. Equat. Current
S204-060A-TT	15-Apr-06	0032	2153.5	2°41.1' N	160°04.3'	6	S. Equat. Current
S204-060B-TT	15-Apr-06	0103	2154.7	2°41.1' N	160°04.3'	50	S. Equat. Current
S204-060C-TT	15-Apr-06	0136	2155.7	2°41.1' N	160°04.3'	50-0	S. Equat. Current

Table 3. Surface station data.*

Station	Date	Time	Log	Latitude	Longitude	Temp (°C)	Salinity (PSU)	PO ₄ (μM)	SiO ₂ (μM)	Chl-a (μg/l)
SS001	25-Mar-06	2217	49.1	20°25.1' N	157°30.0'	25.2	34.5	0.678	14.814	
SS002	26-Mar-06	0356	94.5	20°05.5' N	156°48.0'	24.9	34.5	0.685	25.313	0.090
SS003	26-Mar-06	0621	113.5	19°46.1' N	156°45.2'	24.9	34.6	0.169	26.531	0.186
SS004	26-Mar-06	2032	161.2	18°48.7' N	156°57.3'	25.1	34.8	0.771	7.225	0.048
SS005	27-Mar-06	0130	191.3	19°10.9' N	157°12.9'	24.8	34.6	0.506	9.418	0.082
SS006	27-Mar-06	0936	226.5	19°20.6' N	157°26.8'	24.5	34.2	0.190	1.744	0.133
SS007	27-Mar-06	1803	256.8	19°26.3' N	157°49.3'	24.8	34.4	1.539	19.844	0.114
SS008	28-Mar-06	0550	306.2	19°27.1' N	157°42.6'	24.7	34.5	0.484	17.761	0.099
SS009	29-Mar-06	1219	504.8	17°21.5' N	158°11.6'	25.2	34.9	0.283	24.582	0.042
SS010	30-Mar-06	0514	583.5	16°06.9' N	158°20.3'	26.3	34.2	0.312	24.826	0.035
SS011	30-Mar-06	2226	663.6	14°58.5' N	158°37.5'	26.3	34.2	0.484	12.037	0.024
SS012	31-Mar-06	2119	752.3	13°42.4' N	158°36.1'	27.1	34.4	0.513	15.033	0.032
SS013	1-Apr-06	0715	806.2	12°51.2' N	158°31.7'	27.2	34.3	0.226	18.906	0.186
SS014	1-Apr-06	2028	879.9	11°49.3' N	158°26.4'	27.5	34.2	0.000	24.217	0.060
SS015	2-Apr-06	1318	927.1	10°18.0' N	158°08.5'	27.1	34.9			
SS016	3-Apr-06	0250	1049.3	9°09.7' N	157°56.9'	27.9	34.6			
SS017	3-Apr-06	0415	1060.0	9°18.2' N	158°01.7'	27.8	34.5	0.291	0.000	0.101
SS018	3-Apr-06	0835	1083.2	9°02.1' N	158°01.7'	27.9	34.5	0.000	16.653	0.144
SS019	3-Apr-06	1648	1136.0	8°17.7' N	157°55.0'	28.0	34.8	0.000	16.190	0.181
SS020	4-Apr-06	0233	1225.0	7°11.2' N	157°42.1'	28.1	34.8	0.054	37.006	0.238
SS021	4-Apr-06	1308	1299.0	6°04.3' N	157°31.9'	28.1	34.9	0.513	11.927	0.169
SS022	4-Apr-06	2315	1371.7	5°01.1' N	157°31.9'	27.2	35.1	0.865	17.688	0.125
SS023	5-Apr-06	1114	1445.4	4°02.2' N	157°35.5'	28.0	34.9	0.549	15.423	0.164
SS024	5-Apr-06	2215	1513.3	3°05.2' N	157°34.3'	28.1	34.9	0.486	13.717	0.160
SS025	6-Apr-06	1258	1597.3	2°08.5' N	157°29.7'	28.2	34.9	0.004	8.297	0.120
SS026	6-Apr-06	1340	1605.7	2°01.9' N	157°30.7'	27.9	34.9	0.326	30.794	0.285
SS027	9-Apr-06	2327	1625.1	2°02.3' N	157°39.8'	28.0	33.2	0.793	8.408	0.169
SS028	10-Apr-06	0026	1632.0	1°56.9' N	157°39.6'	28.0	33.3	0.516	4.975	0.151
SS029	10-Apr-06	0128	1636.9	1°52.7' N	157°39.5'	27.9	33.3	0.491	7.285	0.180
SS030	10-Apr-06	0427	1644.0	1°58.3' N	157°45.2'	28.0	33.3	0.625	8.529	0.191
SS031	10-Apr-06	1320	1677.8	1°47.6' N	157°57.4'	28.3	33.3	0.525	5.963	0.146
SS032	11-Apr-06	0425	1744.0	0°57.9' N	158°39.1'	27.5	33.4	0.530	6.972	0.299
SS033	12-Apr-06	0349	1847.3	0°15.6' S	159°19.6'	27.4	35.2	0.669	7.143	0.151
SS034	12-Apr-06	1102	1885.8	0°19.8' S	159°52.4'	27.3	35.2	0.699	7.548	0.272
SS035	12-Apr-06	1311	1891.5	0°21.1' S	159°56.2'	26.8	36.0	1.131	7.683	0.225
SS036	12-Apr-06	1549	1893.8	0°22.3' S	159°57.5'	27.2	35.3	0.833	0.000	0.137
SS037	12-Apr-06	2050	1905.6	0°23.9' S	160°01.1'	27.2	35.3	0.694	8.415	0.275
SS038	12-Apr-06	2220	1909.5	0°21.5' S	160°01.7'	27.2	35.3	0.674	5.586	0.219
SS039	13-Apr-06	0305	1921.4	0°21.7' S	160°04.2'	27.4	35.2	0.724	5.330	0.154
SS040	13-Apr-06	0708	1961.0	0°14.3' N	159°54.7'	27.4	35.2	0.759	7.121	0.131
SS041	13-Apr-06	1225	1993.6	0°43.6' N	159°48.7'	27.1	35.5	0.759	7.150	0.157
SS042	13-Apr-06	2100	2030.0	1°12.3' N	159°46.1'	27.7	34.9	0.659	7.804	0.131
SS043	14-Apr-06	1400	2097.8	2°04.1' N	159°44.7'	28.1	34.9	0.540	7.121	0.115
SS044	15-Apr-06	0500	2167.7	2°43.6' N	160°05.3'	27.8	34.9	0.605	9.076	0.180
SS045	15-Apr-06	2316	2241.9	3°43.2' N	160°28.8'	26.9	35.4	0.635	7.925	0.211
SS046	16-Apr-06	0917	2312.6	4°39.9' N	160°33.2'	27.8	34.8	0.719	7.868	0.333
SS047	16-Apr-06	2240	2382.6	4°47.1' N	160°51.9'	27.2	35.4	0.441	9.275	0.203
SS048	17-Apr-06	0740	2452.3	5°20.2' N	161°38.6'	27.1	35.5	0.565	7.640	0.205

*Blank spaces = data not available.

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

Station	Tow length (m)	Temp (°C)	Salinity (PSU)	Zoopl. Biomass (ml)	Zoopl. Density (ml/m ²)	Plastic Pieces (#)	Plastic Pellets (#)	Tar (yes/no)	Halobates (#)	Myctophids (#)
S204-001-NT	2037	25.2	34.50	20	0.0098	2	0	no	25	20
S204-012-NT	1852	25.6	34.50	28	0.0151	0	6	no	123	0
S204-013-NT	1852	25.8	34.20	2.6	0.0014	1	0	no	65	5
S204-014-NT	1852	26.1	34.20	1	0.0005	1	0	no	8	0
S204-015-NT	1852	26.4	34.20	n/a	n/a	0	0	no	1	25
S204-016-NT	1852	26.3	34.10	1	0.0010	3	0	no	36	5
S204-018-NT	1482	26.4	34.16	1	0.0007	1	0	no	10	0
S204-019-NT	1852	26.7	34.70	2	0.0011	0	0	no	8	6
S204-021-NT	1482	27.5	34.40	3	0.0020	0	1	no	20	0
S204-022-NT	1482	27.4	34.20	14	0.0095	0	0	no	16	3
S204-028-NT	1852	28.1	34.80	6	0.0030	0	0	no	11	18
S204-030-NT	2037	27.5	35.30	36	0.0177	0	0	no	14	13
S204-032-NT	1852	28.1	34.80	9	0.0049	1	0	no	1	0
S204-044-NT	1852	27.5	33.50	15	0.0081	0	0	no	0	12
S204-048-NT	1852	27.6	35.20	9	0.0049	0	0	no	0	4
S204-054-NT	1296	27.7	35.10	2	0.0015	0	0	no	1	0
S204-056-NT	1482	27.7	34.90	38	0.0256	0	0	no	10	26
S204-061-NT	2593	27.9	34.90	40	0.0154	0	0	no	0	4
S204-063-NT	1852	27.8	34.80	11	0.0059	0	0	no	5	0
S204-064-NT	1852	26.8	34.80	16	0.0086	0	1	no	12	13
S204-065-NT	1852	28.0	34.80	28	0.0151	0	0	no	6	11
S204-070-NT	1852	26.1	34.50	90	0.0490	0	0	no	28	6
S204-071-NT	1852	25.0	34.50	2.5	0.0010	1	0	no	0	4
S204-073-NT	1482	25.0	34.50	4.5	0.003	2	1	no	35	5

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

Station	Bottle (#)	Depth (m)	O ₂ (ml/l)	PO ₄ (μM)	SiO ₂ (μM)	Chl a (μg/l)
S204-004-HC	1	300		2.565		0.003
	2	240		1.087		0.010
	3	190		0.169		0.021
	4	150		0.240		0.098
	5	130		0.233		0.111
	6	120		0.262		0.136
	7	110		0.061		0.203
	8	100		0.000		0.326
	9	80		0.298		0.075
	10	60		0.190		0.097
	11	40		0.154		0.150
	12	20		0.205		0.070
	13	0		0.269	21.659	0.066
S204-008-HC	1	298	3.95	0.000		0.003
	2	250	4.56	0.642		0.006
	3					

	4	159	4.74	0.240		0.083
	5	140	5.00	0.269		0.138
	6	130	4.91	0.111		0.212
	7	119	4.84	0.118		0.169
	8	109	4.86	0.836		0.235
	9	100	6.31	0.133		0.226
	10	80	5.62	0.147		0.171
	11	49	5.06	0.126		0.036
	12					
	13	5	4.92	0.169	9.649	0.088
S204-017-HC	1	263	3.11	4.172		0.001
	2	214	1.66	3.117		0.006
	3					
	4	174	3.80	1.984		0.041
	5	149	4.02	1.503		0.097
	6	119	4.74	0.441		0.196
	7	108	5.15	0.448		0.168
	8	100	5.23	0.441		0.154
	9	90	5.14	0.298		0.112
	10	75	4.97	0.298		0.085
	11	49	4.90	0.240		0.044
	12					
	13	10	4.90	0.305	0.000	0.028
S204-023-HC	1	259	0.90	4.502		0.007
	2	208	0.50	4.251		0.009
	3	179	0.49	4.753		0.029
	4	159	0.84	4.703		0.044
	5	140	1.37	4.272		0.082
	6	119	3.06	2.357		0.155
	7	99	4.10	1.360		0.209
	8	89	4.14	1.130		0.381
	9	80	4.08	0.570		0.375
	10	69	4.02	0.750		0.430
	11	50	4.95	0.000		0.165
	12	20	4.90	0.004		0.086
	13	5	4.39	0.233	11.671	0.023
S204-033-HC	1	246	2.55	2.156		0.007
	2	209	2.96	2.263		0.007
	3	174	3.01	1.847		0.008
	4	148	3.48	1.575		0.027
	5	124	4.11	0.491		0.090
	6	104	4.35	0.671		0.129
	7	95	4.86	1.238		0.106
	8	84	5.02	0.700		0.262
	9	75	5.11	-0.011		0.251
	10	64	4.93	0.413		0.311
	11	55	4.67	0.613		0.237
	12	39				
	13	10	4.63	0.405	9.004	0.059
S204-037-HC	1	248	2.61	2.158		0.006
	2	199	2.86	1.890		0.008
	3	159	2.93	1.523		0.011

	4	119	4.02	0.923		0.124
	5	90	4.54	0.684		0.244
	6	79	4.43	0.699		0.221
	7	69	4.49	0.635		0.221
	8	60	4.85	0.630		0.205
	9	50	4.88	0.625		0.440
	10	40	4.74	0.640		0.400
	11	30	4.91	0.521		0.274
	12	20	4.91	0.516		0.175
	13	5		0.669	5.159	0.129
S204-042-HC	1	248	2.61	2.272		0.006
	2	209	2.86	2.029		0.011
	3	179	2.93	1.965		0.011
	4	154	4.02	1.692		0.014
	5	119	4.54	1.022		0.095
	6	95	4.43	0.729		0.122
	7	94	4.49	0.664		0.319
	8	74	4.21	0.605		0.333
	9	65	4.42	0.585		0.156
	10	50	4.44	0.550		0.358
	11	40	4.46	0.555		0.283
	12	21	4.44	0.501		0.178
	13	10	4.31	0.655	3.887	0.179
S204-051-HC	1	248		2.332		0.003
	2	208		1.965		
	3	180		1.424		0.031
	4	150		0.977		0.088
	5	120		0.863		0.101
	6	94		0.873		0.159
	7	70		0.838		0.094
	8	59		0.803		0.131
	9	50		0.823		0.122
	10	40		0.769		0.300
	11	30		0.813		0.188
	12	20				
	13	5				
S204-052-HC	1	268	2.4	1.702		0.003
	2	238	2.8	1.816		0.003
	3	198	3.2	1.389		0.006
	4	149	3.2	1.106		0.032
	5	114	4.37	0.704		0.160
	6	90	4.44	0.749		0.276
	7	74	4.52	0.724		0.250
	8	65	4.54	0.570		0.395
	9	54	4.61	0.759		0.342
	10	45	4.59	0.679		0.367
	11	35	4.65	0.486		0.339
	12	20	4.77	0.530		0.265
	13	5	4.76	0.471	4.818	0.350
S204-062-HC	1	200	2.70	2.039		0.006
	2	150	2.30	1.722		0.008
	3	125				

4	100	4.05	0.625		0.178
5	85	4.46	0.625		0.145
6	70	4.59	0.550		0.275
7	60	4.61	0.550		0.284
8	51	4.64	0.461		0.282
9	40	4.66	0.535		0.261
10	30	4.64	0.481		0.286
11	20	4.71	0.550		0.190
12	10	5.15	0.396		0.283
13	5	4.56	0.267	6.062	0.308

*Blank spaces = no data collected.

Table 6: ARGO Float deployment sites

ARGO Float	Date	GMT Time	Latitude	Longitude (W)
2494	02-Apr-06	2148	10°25.2' N	158°11.2'
2495	13-Apr-06	2244	0°43.1' N	159°49.3'
2493	16-Apr-06	1023	3°49.0' N	160°29.9'
2492	22-Apr-06	0320	8°20.1 N	161°54.3'