HOT-156: Chief Scientist Report

Chief Scientist: D. Sadler

Cruise ID: KOK00403
Departed: February 23, 2004; 0900 (HST)
Returned: February 27, 2004; 0800 (HST)
Vessel: R/V Ka'imikai-o-Kanaloa
Operator: University of Hawaii
Master of the Vessel: Captain Ross Barnes
Chief Scientist: Dan Sadler
STAG Electronics Technician: Steve Poulos
STAG Deck Operations: Dave Gravatt

1. SCIENTIFIC OBJECTIVES

The objective of this cruise was to continue building a collection of hydrographic and biogeochemical data at the Hawaii Ocean Time-series (HOT) stations. Three stations were to be occupied during the cruise, in the following order:

1) Station 1, referred to as Station Kahe, is located at 21° 20.6' N, 158° 16.4' W and was to be occupied on February 23 for about 3 hours.

2) Station 2: ALOHA (A Long Term Oligotrophic Habitat Assessment) is defined as a circle with a 6 nautical mile radius centered at 22° 45' N, 158° W. This is the main HOT station and was to be occupied for 3 days from February 23 though February 26.

3) Station 6: Located off Kaena Point at 21° 50.8' N, 158° 21.8' W. Station 6 was planned to be occupied on February 26 for about 3 hours.

A single CTD cast was to be conducted at Station 1 to collect continuous profiles of various physical and chemical parameters. Water samples were to be collected at discrete depths for biogeochemical measurements.

Upon arrival at Station ALOHA, a floating sediment trap array was to be deployed. A full-depth CTD cast was to be conducted followed by CTD casts at 3-hour intervals for 36 hours of continuous and discrete data collection. Plankton net tows were to be conducted near noon and midnight on February 24 and 25. A floating primary production experiment was to be deployed and recovered on February 25. Following recovery of the sediment traps on February 26, the ship was scheduled to return to Station ALOHA for optical casts. Once work was completed at Station ALOHA, the ship was to transit to Station 6 for a single 2500 m cast. The ship was scheduled to return to SNUG Harbor at 0800 on February 27 and unload. The following instruments were to collect data throughout the cruise: a shipboard ADCP, a thermosalinograph, a fluorometer and an anemometer.
2. SCIENCE PERSONNEL

PO Group:

Fernando Santiago-Mandujano Research Associate UH
(Watch Leader)
Maya Iriondo Graduate Student UH
Mark Valenciano Electronics Technician UH
Daniel Fitzgerald Research Associate UH
Xavier Murard Research Associate UH

BGC&E Group:

Lance Fujieki Computer Specialist UH
Tara Clemente (Watch Leader) Research Associate UH
Daniel Sadler (Chief Scientist) Research Associate UH
Cecelia Sheridan Graduate Student UH
Tom Gregory Research Associate UH
Blake Watkins Marine Engineer UH

STAG Group:

Dave Gravatt STAG UH
Steve Poulos STAG UH

3. GENERAL SUMMARY

All operations at all stations were conducted as planned. Thirteen 1000 m and two 4800 m CTD casts were obtained at Station ALOHA. A 1000 m cast was obtained at Station Kahe. A 2500 m CTD cast was completed at Kaena Point. Also, three PRR casts were performed: one at Station Kahe and two at Station ALOHA.

C. Sheridan successfully completed six plankton net tows.

The PRR and AC9/FRRf were deployed as planned.

The ADCP ran without interruption throughout the cruise, as well as the fluorometer, thermosalinograph and the ship's anemometer.

Weather during the cruise was influenced by some systems to the South, causing mostly cloudy conditions with southerly winds. A strong NNE current during the cruise carried the primary production and sediment trap arrays out of the station circle by 9nm and 22 nm, respectively.

We arrived back at Snug Harbor on February 27 at 0818. A complete off-load took place immediately.

4. R/V KA'IMIKAI-O-KANALOA, OFFICERS AND CREW, TECHNICAL SUPPORT

The R/V Ka'imikai-o-Kanaloa and her crew delivered excellent ship support for our work. The officers and crew were most helpful and accommodating and are to be commended for maintaining high standards.
Technical support during this cruise was excellent. STAG personnel were available at any time to assist in our work and made things much easier for us.

5. DAILY REPORT OF ACTIVITIES (HST)

February 20, 2003; Loading Day

Equipment loaded on this day. The CTD cable was re-terminated, followed by a test of the CTD system.

February 23, 2004

The ship departed from Snug harbor at 0900. Fire and abandon ship drills were conducted followed by a science meeting to review the objectives and schedule for the cruise. We arrived at Station Kahe at 1241 and conducted a weight cast (400 lb) to 1000 m. The PRR was deployed at 1328 followed by a 1000 m CTD cast. The ship departed Station Kahe at 1515 and proceeded to Station ALOHA.

February 24, 2004

We arrived at Station ALOHA at 0028. A net tow was conducted at 0042. The sediment trap array was deployed at 0152 followed by a 4500 m CTD cast at 0208. The 36 hour "burst" CTD sampling began at 0801 and continued throughout the day. Six 1000 m casts were completed. Additional net tows were completed at 1002, 1302, and 2205.

February 25, 2004

Seven 1000 m CTD casts were completed. The primary production array was deployed at 0558 and recovered at 1842. Net tows were completed at 0104, and 1000. The PRR optical package was deployed at noon. An AC-9/FRRf casts was conducted at 1236.

February 26, 2004

A 4500 m deep CTD cast was completed at 0201. The AC9/FRRf was deployed at 0304. The sediment trap array was successfully recovered at 0814. The PRR optical package was deployed at 1203 followed by AC-9/FRRf casts at 1307 and 1411. The ship departed Station ALOHA at 1513 and transited to Station 6. We arrived at Station 6 at 2158 and conducted a 2500 m CTD cast at 2205. We departed Station 6 at 2356 and proceeded to Honolulu Harbor.

February 27, 2004

We arrived at Snug Harbor at 0818. A full offload took place upon arrival.
WEATHER:

Below is the cruise bridge log description for HOT 156. Wind and sea directions are in degrees, wind speed in knots, seas in Beaufort scale, swells in feet, barometer in inches Hg, temp in F (dry bulb), clouds in tenths.

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<thead>
<tr>
<th>Date</th>
<th>Wind</th>
<th>Sea</th>
<th>Swell</th>
<th>Barometer</th>
<th>Temp</th>
<th>Clouds</th>
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<td>120, 0-16</td>
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<td>090, 10-19</td>
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<td>Thu. 26 February</td>
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Sub component programs:

Investigator: Project:
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Bob Bidigare  HPLC pigments/UH
Mike Landry   zooplankton dynamics/UH
John Dore     CO₂ dynamics/UH

Ancillary programs:

Investigator: Project:
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Charles Keeling CO₂ dynamics and intercalibration/SIO
Paul Quay     DI³C and O isotopes/UW
Mark Abbott/Ricardo Letelier Optical measurements/OSU
Sallie Chisholm Prochlorococcus population dynamics/MIT