

HOT-166: Chief Scientist Report

Chief Scientist: T. Gregory

Departed: Dec. 18, 2004 at 1815 (HST)
Returned: Dec. 23, 2004 at 0800 (HST)
Vessel: R/V Ka'imikai-o-Kanaloa
Cruise ID: KOK0435
Operator: University of Hawaii
Master of the Vessel: Captain Ross Barnes
Chief Scientist: Thomas Gregory
STAG Electronics Technician: Kuhio Vellalos
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. Additionally, we were to deploy the MOSEAN mooring. Three stations were to be occupied during the cruise, in the following order:

- 1) 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 4 days from Dec. 19 – Dec. 22.
- 2) Station 51, the site of the MOSEAN Mooring, is located at 22° 46'N, 158° 6'W and was to be occupied on Dec. 19 for about 9 hours.
- 3) Station 6, referred to as Station Kaena, is located off Kaena Point at 21° 50.8'N, 158° 21.8'W and was to be occupied on Dec. 22 for about 4 hours.

Upon arrival at Station ALOHA, a weight cast to 500 m was to be the first operation followed by a CTD cast to 125 m. Then we were to transit to the MOSEAN site for mooring deployment. Following mooring deployment we were to return to Station ALOHA for the deployment of a free-drifting sediment trap array. After deployment, two shallow CTD casts bracketing a net tow were to be conducted followed by a deep CTD cast and then CTD casts at strict 3-hour intervals for at least 36 hours for continuous and discrete data collection followed by another full-depth CTD cast. The primary production array was to be deployed on Dec. 21 for 12 hours. PRR and AC-9 operations were to be done around noon on Dec. 21 and 22. The drifting sediment trap array was to be recovered near dawn on Dec. 22.

Plankton net tows were to be conducted near noon and midnight Dec. 19 - 21.

Following Station ALOHA operations, the ship was to transit to Station 6 to conduct one 2500 m CTD cast including salinity samples for calibration, after which the ship was to transit back to Snug Harbor.

The following instruments were to collect data throughout the cruise: a shipboard ADCP, a thermosalinograph and fluorometer, and an anemometer.

2. SCIENCE PERSONNEL

Bjorkman, Karin	UH/BEACH	Research Specialist
Bullister, John	PMEL/PO	Researcher
Chapman, Kai	HPU/BEACH	Undergraduate Student

Church, Matt	UH/BEACH	Research Oceanographer
Clemente, Tara	UH/BEACH	Research Associate
Fujieki, Lance	UH/BEACH	Computer Specialist
Gravatt, Dave	UH/STAG	Deck Technician
Gregory, Tom (Chief Scientist)	UH/BEACH	Research Associate
Hannides, Cecelia	UH/BEACH	Graduate Student
Kemp, John	WHOI/MOSEAN	Mooring Specialist
Lethaby, Paul	UH/PO	Research Associate
Nakagawa, Kazuhiro	UH/PO	Undergraduate Student
Pequignet, Christine	UH/PO	Volunteer
Sadler, Dan	UH/BEACH	Research Associate
Santiago - Mandujano, Fernando	UH/PO	Research Associate
Shepherd-Jones, Blade	HPU/PO	Undergraduate Student
Spada, Frank	UCSB/MOSEAN	Mooring Technician
Valenciano, Mark	UH/PO	Electronics Technician
Vellalos, Kuhio	UH/STAG	Electronics Technician

3. GENERAL SUMMARY

The MOSEAN mooring was successfully deployed. A late arrival to Station ALOHA and a longer than expected mooring deployment required some shuffling of operations on Dec. 19. Nevertheless, most operations at Stations ALOHA and Kaena were conducted as planned and all sampling objectives were met. One 125 m, one 350 m, thirteen 1000 m, and two 4800 m CTD casts were obtained at Station ALOHA. One 200 m cast was performed at Station 51 and one 2500 m cast was obtained at Station Kaena. All optics cast objectives were completed. Both free-floating arrays were deployed and recovered without incident.

C. Hannides successfully completed six plankton net tows.

Weather conditions were favorable throughout the cruise.

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

We arrived back at Snug Harbor on Dec. 23 at around 0800. A full 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 continue to deliver excellent ship support for our work. The officers and crew were most helpful and accommodating and are to be commended for maintaining high standards. They showed enthusiasm and concern for our work and were very flexible in receiving changes in our operational schedule.

Technical support during this cruise was excellent. STAG personnel were available at any time to assist in our work and were, in general, quite helpful.

5. DAILY REPORT OF ACTIVITIES (HST)

Dec. 18, 2004

Equipment loaded on this day. The CTD system was tested.

The ship departed from Snug harbor at 1815. Fire and abandon ship drills were conducted at 1850, followed by a short science meeting during which the cruise schedule was reviewed and safety issues were discussed.

Dec. 19, 2004

We arrived at Station ALOHA at 0645 and immediately began a 500 m weight cast during which the mooring acoustic releases were tested. Next we performed a 125 m cast which was completed at 0825 and then moved to the MOSEAN mooring site. Mooring deployment commenced at 1028 and finished at 2038. Following this we returned to Station ALOHA and deployed the sediment trap array at 2213. The two shallow casts originally planned for this evening were combined to make up time lost during mooring deployment. One 350 cast was initiated at 2311.

One net tow was conducted at 2225.

Dec. 20, 2004

The first deep cast was started at 0152 and was recovered at 0525. The first cast of the 36 hour period was initiated at 0814. Six 1000 m CTD casts were conducted this day.

Net tows were performed at 0059, 1002 and 1300.

Dec. 21, 2004

Seven 1000 m CTD casts were conducted this day. The second deep cast was initiated at 2300.

The primary productivity array was deployed at 0610 and recovered at 1754.

Net tows were performed at 0103 and 1000.

A PRR cast was conducted at 1210 followed by an AC9/FRRf cast at 1238.

Dec. 22, 2004

The deep cast was recovered at 0215 after which we performed an AC9/FRRf cast and then steamed to the sediment trap array and prepared for a recovery at dawn.

The sediment traps were recovered at 0748. After the sediment trap array had been recovered we steamed back to Station 51 for a 200 m CTD cast. Next we returned to Station ALOHA for more optics work

A PRR cast was performed at 1156 and AC9/FRRf casts were performed at 0314, 1226 and 1338. Next we proceeded to Station Kaena.

A 2500 m CTD cast was performed at Station Kaena. This was recovered at 2256 and we began steaming back to Snug Harbor.

Dec. 23, 2004

We arrived at Snug Harbor at around 0800. A full offload took place immediately.

Sub component programs:

Investigator:	Project:
-----	-----
Bob Bidigare	HPLC pigments/UH
Mike Landry	zooplankton dynamics/SIO
John Dore	CO ₂ dynamics/UH

Ancillary programs:

Investigator:	Project:
-----	-----
Charles Keeling	CO ₂ dynamics and intercalibration/SIO
Paul Quay	DI ¹³ C and O isotopes/UW
Mark Abbott/Ricardo Letelier	optical measurements/OSU
Sally Chisholm	Prochlorococcus ecotype dynamics/MIT
John Bullister	CFC/SF ₆ measurements