HOT-164: Chief Scientist Report

Chief Scientist: T. Gregory

Departed: Oct. 29, 2004 at 1100 (HST)
Returned: Nov. 2, 2004 at 0800 (HST)
Vessel: R/V Ka‘imikai-o-Kanaloa
Cruise ID: KOK0425
Operator: University of Hawaii
Master of the Vessel: Captain Ross Barnes
Chief Scientist: Thomas Gregory
STAG Electronics Technician: Dan Fitzgerald
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. Five 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 Oct. 29 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 Oct. 30 – Nov. 1.

3) Station 50, the site of the Ocean Reference Station Mooring, is located at 22° 45’N, 157° 54’W and was to be occupied on Nov. 1 for about 30 minutes.

4) Station 51, the site of the MOSEAN Mooring, is located at 22° 45’N, 158° 6’W and was to be occupied on Nov. 1 for about 30 minutes.

5) 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 Nov. 1 for about 4 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. PRR measurements were also to be made.

Upon arrival at Station ALOHA, a CTD cast to 1000 m to obtain seawater for the mixing experiment was to be the first operation followed by the deployment of a free-drifting sediment trap array. After deployment, a full-depth CTD cast was to be conducted followed by 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 Oct. 31 for 12 hours. PRR and AC-9 operations were to be done around noon Oct. 31 and Nov. 1. The drifting sediment trap array was to be recovered near dawn on Nov. 1.

Plankton net tows were to be conducted near noon and midnight on Oct. 30 and 31.

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
Church, Matt	UH/BEACH	Research Oceanographer
Fitzgerald, Dan	UH/STAG	Electronics Technician
Fujieki, Lance	UH/BEACH	Computer Specialist
Grabowski, Eric	UH/BEACH	Research Associate
Grabowski, Marcie	UH/BEACH	Graduate Student
Gravatt, Dave	UH/STAG	Deck Technician
Gregory, Tom (Chief Scientist)	UH/BEACH	Research Associate
Iriondo, Maya	UH/PO	Graduate Student
Lethaby, Paul	UH/PO	Research Associate
Sadler, Dan	UH/BEACH	Research Associate
Santiago - Mandujano, Fernando	UH/PO	Research Associate
Schwerin-Whyte, Rebecca	UH/BEACH	Undergraduate Student
Simmons, Melinda	SIO/BEACH	Graduate Student
Snyder, Jeffrey	UH/PO	Electronics Technician
Stone, David	WCC/PO	Undergraduate Student
Tognacchini, Camilla	UH/PO	Undergraduate Student
Valenciano, Mark	UH/PO	Electronics Technician
Watkins, Blake	UH/BEACH	Marine Engineer

3. GENERAL SUMMARY

Most operations at Stations ALOHA, Kahe and Kaena were conducted as planned. One 1000 m cast was obtained at Station Kahe. Thirteen 1000 m, and two 4800 m CTD casts were obtained at Station ALOHA. One 200 m cast was performed at both mooring stations. One 2500 m cast was obtained at Station Kaena. Both free-floating arrays were deployed and recovered without incident. Due to AC9 battery problems, the AC9/FRRf optics package was deployed for one nighttime cast and one daytime cast on Nov. 1.

M. Simmons successfully completed six plankton net tows.

Weather conditions did not affect our cruise objectives however we did experience rainy weather. The rain was quite heavy at times.

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 Nov. 2 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)

Oct. 29, 2004

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

The ship departed from Snug harbor at 1100. Fire and abandon ship drills were conducted at 1200, followed by a short science meeting during which the cruise schedule was reviewed and safety issues were discussed.

We arrived at Station Kahe at 1355 and immediately conducted a weight cast (400 lb) to 500 m. Next we deployed and recovered the PRR. A 1000 m CTD cast was recovered at 1623 at which time we began transit to Station ALOHA.

Oct. 30, 2004

We arrived at Station ALOHA at 0213 and immediately began a 1000 m cast. Next we deployed the sediment trap array. The deep PO cast started at 0450 followed by the shallow WOCE cast, which initiated the 36-hr CTD cast period. We conducted six 1000 m casts this day.

Net tows were conducted at 1018, 1304 and 2205.

Oct. 31, 2004

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

Net tows were performed at 0013, 0050, 1000 and 1300.

The PRR was deployed at 1208. .

The primary productivity array was deployed at 0623 and recovered at 1830.

Nov. 1, 2004

The deep cast was recovered at 0207 after which we performed a FRRf cast and then steamed to the sediment trap array and prepared for a recovery at dawn.

The sediment trap was recovered at 0706. After the sediment trap array had been recovered we steamed back to Station 50 for a 200 m cast after which we returned to Station ALOHA for optics work.

A PRR cast was performed at 1109 and FRRf casts were performed at 0313 and 1207. Next we proceeded to Station 51 for a 200 m cast after which we steamed to Station Kaena.

A 2500 m CTD cast was performed at Station Kaena. This was recovered at 2254 and we began steaming back to Snug Harbor.

Nov. 2, 2004

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

Sub component programs:

Investigator:	Project:
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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
Penny Chisholm	Prochlorococcus ecotype dynamics/MIT