HOT-172: Chief Scientist Report

Cruise ID: KOK 05-14
Departed: Aug. 12, 2005 at 0900 (HST)
Returned: Aug. 16, 2005 at 0800
Vessel: R/V Kaimikai O Kanaloa
Operator: University of Hawaii
Master of the Vessel: Captain Ross Barnes
Chief Scientist: Thomas K. Gregory
Deck Technician: Dave Gravatt
Electronics Technician: Steve Poulos

1. SCIENTIFIC OBJECTIVES

The objective of this cruise was to maintain a collection of hydrographic and biogeochemical data at the Hawaii Ocean Time-series(HOT) stations. Four 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 August 12 for about 2 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, 158W. This is the main HOT Station and was to be occupied for 3 days.

3) Station 51, is the site of the MOSEAN Mooring, is located at 22º 45'N, 158º 6'W and will be occupied on the 4th day of the cruise for about 30 minutes.

4) Station 6, referred to as Station Kaena, is located off Kaena Point at 21º 50.8'N, 158º 21.8'W and will be occupied on the 4th day of the cruise for about 2 hours.

5) In addition, we will be using time at the end of the cruise to sample an apparent phytoplankton bloom near Station ALOHA.

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, the free-drifting sediment trap array was to be deployed, followed by two 200 m CTD casts to collect water for the gas array and then the first deep cast. The sediment trap array was to stay in the water for about 52 hours, and the gas array for about 24 hours. After this, 1000-m CTD casts at strict 3 hour intervals would follow for at least 36 hours for continuous and discrete data collection, ending with another full-depth CTD cast.

One free-drifting array was to be deployed for 12 hours for primary productivity experiments on August 14.

Zooplankton net tows were to be conducted by C. Hannides on six occasions; three near midnight and three near noontime.

A Profiling Reflectance Radiometer (PRR) was to be deployed for half-hour periods near noon time on two days.

A package including a Wet Labs AC9, a Chelsea Fast Repetition Rate Fluorometer (FRRF), and a SeaBird Seacat was to be used to profile the upper 200 m at Sta. ALOHA on four separate occasions including one nighttime and three daytime casts.

After CTD work at Station ALOHA was accomplished, the ship was to transit to recover the floating sediment traps.

After recovering the floating sediment traps, we were to sample a phytoplankton bloom in the region around Station ALOHA and then finally to Station Kaena for a near-bottom CTD cast.

The following instruments were to collect data throughout the cruise:
shipboard ADCP, thermosalinograph, and two anemometers.

2. SCIENCE PERSONNEL

Cruise Participant	**Affiliation**	**Title**
Alvarez, Victoria	UH/PO	Volunteer
Beversdorf, Lucas	UH/BEACH	Graduate Student
Bjorkman, Karin	UH/BEACH	Research Specialist
Church, Matthew	UH/BEACH	Research Oceanographer
Clemente, Tara	UH/BEACH	Research Associate
Curless, Susan	UH/BEACH	Research Associate
Fong, Allison	UH/BEACH	Graduate Student
Fujieki, Lance	UH/BEACH	Computer Specialist
Grabowski, Eric	UH/BEACH	Research Associate
Gravatt, Dave	UH/STAG	Deck Technician
Gregory, Thomas	UH/BEACH	Chief Scientist
Hannides, Cecelia	UH/BEACH	Graduate Student
Laney, Sam	OSU/BEACH	Graduate Student
Lethaby, Paul	UH/PO	Research Associate
Poulos, Steve	UH/STAG	Electronics Technician
Santiago - Mandujano, Fernando	UH/PO	Research Associate
Shacat, Joseph	UH/PO	Research Associate
Stump, Charles	UW/BEACH	Technician
Tottori, Steve	UH/PO	Electronics Technician
Watkins, Blake	UH/BEACH	Marine Engineer

3. GENERAL SUMMARY

All objectives for HOT 172 were successfully completed. We experience a problem with the CTD computer which caused the delay of the 36 hour period and cancellation of one cast. All sampling objectives and the 36 hour period were completed nonetheless. In addition to core HOT objectives, we occupied three stations in the vicinity of Station ALOHA in order to characterize a phytoplankton bloom that was in the area.

4. R/V KOK, OFFICERS AND CREW, TECHNICAL SUPPORT

The R/V KOK maintained the excellent ship support for our work we have come to expect from other vessels in the UNOLS fleet. The officers, crew and STAG technicians were most helpful and accommodating. They showed enthusiasm and concern for our work and were very flexible in receiving changes in our operational schedule.

5. DAILY REPORT OF ACTIVITIES (HST)

August 11, 2005; Loading Day

Equipment loaded during this day. CTD wire was re-terminated and CTD system tested.

August 12, 2005

The ship departed from Snug harbor at 0900. We arrived at Station Kahe at 1200 and performed a weight cast, PRR cast and then a 1000 m CTD cast after which we steamed to Station ALOHA.

August 13, 2005

We arrived at Station ALOHA at 0043 and immediately deployed the floating sediment trap array.

The sediment trap array was deployed at 0010 after which we started the first of two casts to collect water for the gas array. Following these two casts we performed the first deep cast.

The gas array was deployed at 0803

C. Hannides conducted net tows at 1215 and 2207.

The ATE was deployed at 1250.

Two 200 m casts, five 1000 m casts and one 4800 m cast were performed this day. Problems with the CTD computer forced the delay of the beginning of the 36 hour period and ultimately the cancellation of one cast.

August 14, 2005

Six 1000 m and one 4800 m CTD casts were conducted on this day.

The primary production array was deployed at 0600, was recovered at 1916 and had drifted northwest.

The gas array was recovered at 0804 and had drifted northwest.

C. Hannides conducted net tows at 0009, 0049, 1000 and 1351.

The PRR was deployed at 1212.

AC9/FRRf casts were conducted at 1243.

C. Stump deployed the glider at 1550.

August 15, 2005

The sediment trap array was recovered at 0706. The array drifted northwest.

After recovery of the sediment trap array, we conducted operations at a series of three stations in order to characterize the phytoplankton bloom. Operations at each station are summarized below.

Station 60: 500 m CTD cast, net tow, PRR, AC9/FRRF

Station 61: 500 m CTD cast, PRR, AC9/FRRF

Station 51 (MOSEAN Mooring): 500 m CTD cast, net tow, PRR, AC9/FRRF

August 16, 2005

Arrived at Snug Harbor at 0800 and completed a full offload.

Sub component programs:

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

Ancillary programs:

Investigator:	Project/Institution:
Charles Keeling	CO2 dynamics and intercalibration/SIO
Mark Abbott/Ricardo Letelier	Optical measurements/OSU
Paul Quay	DI13C and O isotopes/UW
Penny Chisholm	Prochlorococcus population dynamics/MIT

Ancillary research during this cruise:

Investigator:	Project/Institution:
Matthew Church	Bacterial production and dynamics/UH
Sam Laney	Optical characterization of photosynthetic parameters/OSU
Chuck Stump	Deployment of glider/UW