

HOT-180: Chief Scientist Report

Cruise ID: KM 06-11
Departed: March 31, 2006 at 0900 (HST)
Returned: April 4, 2006 at 0800
Vessel: R/V Kilo Moana
Operator: University of Hawaii
Master of the Vessel: Captain Rick Myer
Chief Scientist: Thomas K. Gregory
OTG Technicians: Gabe Foreman and 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. 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 the first day of the cruise 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, 158°W. 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 22° 45'N, 158° 6'W and was to be occupied on the 4th day of the cruise for about 30 minutes.
- 4) Station 50 is the site of the WHOTS Mooring, is located at 22° 46.1'N, 157° 53.4'W and was to be occupied on the 4th day of the cruise 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 the 4th day of the cruise for about 2 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, we were to perform CTD casts to collect water for the gas array and other experiments and assays following the deployment of the sediment trap array. Optics work was to be performed on the second day of the cruise. The 36 hour period was to begin on the second day of the cruise.

Three free-drifting arrays were to be deployed on this HOT cruise including the gas array, primary productivity array and sediment trap array.

Phytoplankton net tows were to be conducted by B. Watkins on several occasions throughout the cruise.

A Profiling Reflectance Radiometer (PRR) was to be deployed for half-hour periods near noon time on three 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 trap array. Following this operation, we were to perform CTD casts at both MOSEAN and WHOTS mooring and then transit to Station Kaena.

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

2. SCIENCE PERSONNEL

Bjorkman, Karin	UH/BEACH	Research Specialist
Curless, Susan	UH/BEACH	Research Associate
Defelice, Suzanne	UH/PO	Research Associate
Doggett, Ken	UH/BEACH	Research Associate
Foreman, Gabe	UH/OTG	Marine Technician
Fujieki, Lance	UH/BEACH	Research Associate
Gregory, Thomas	UH/BEACH	Chief Scientist
Harlan, Adriana	UH/BEACH	Research Associate
Huey, Teh Soo	UH/PO	Undergraduate Student
Lennon, Jay	Brown/BEACH	Postdoctoral Researcher
Lethaby, Paul	UH/PO	Research Associate
Martiny, Jennifer	Brown/BEACH	Assistant Professor
Menviel, Laurie	UH/PO	Graduate Student
Poulos, Steve	UH/OTG	Marine Technician
Sadler, Dan	UH/BEACH	Research Associate
Santiago - Mandujano, Fernando	UH/PO	Research Associate
Smith, Justin	UH/PO	Undergraduate Student
Taylor, Mana	UH/BEACH	Graduate Student
Tottori, Steve	UH/PO	Marine Technician
Watkins, Blake	UH/BEACH	Marine Engineer

3. GENERAL SUMMARY

Nearly all objectives for HOT 180 were successfully completed. We had trouble with the battery on the AC9 and so we cancelled the second optics on the last day. We also cancelled the MOSEAN mooring CTD cast to save time for work at Station Kaena.

4. R/V Kilo Moana, OFFICERS AND CREW, TECHNICAL SUPPORT

The R/V Kilo Moana maintained the excellent ship support for our work we have come to expect from other vessels in the UNOLS fleet. The officers, crew and OTG 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)

March 30, 2006; Loading Day

Equipment loaded during this day.

March 31, 2006

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

We arrived at Station ALOHA at 2230 and deployed the sediment trap array at 2353.

April 1, 2006

We performed two 200 m, five 1000 m and one full-depth CTD casts. The 36 hour period started at 1130.

The gas array was deployed at 0540

The ATE was deployed at 1300.

B. Watkins performed plankton net tows at 1024, 1322 and 2225.

April 2, 2005

Seven 1000 m CTD casts were conducted on this day.

The gas array was recovered at 0740.

The primary production array was deployed at 0555 and recovered at 1923.

The PRR was deployed at 1234.

AC9/FRRf casts were conducted at 1307.

B. Watkins performed plankton net tows at 0106, 1006 and 2225.

April 3, 2006

The second deep cast was initiated at 0010 and ended the 36 hour period. Three shallow casts were performed: one each at ALOHA, WHOTS and Kaena. The regular 2500 m cast was performed at Station Kaena at 2116.

The sediment trap array was recovered at 0708.

The PRR was deployed at 1310.

AC9/FRRf casts were conducted at 0348 and 1331.

April 4, 2006

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

Sub component programs:

Investigator:

Bob Bidigare
Mike Landry
John Dore

Project/Institution:

HPLC pigments/UH
Zooplankton dynamics/UH
CO2 dynamics/UH

Ancillary programs:

Investigator:	Project/Institution:
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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:
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Jennifer Hughes-Martiny	Spatial microbial dynamics/Brown University
Stuart Donachie/Mana Taylor	Marine fungi/UH