HOT-187 Chief Scientist's Cruise Report
R/V Kilo Moana
November 7-11, 2006
Cruise ID: KM0630
Departed: November 7, 2006 at 0900 (HST)
Returned: November 11, 2006 at 0730
Vessel: R/V Kilo Moana
Operator: University of Hawaii
Master of the Vessel: Captain Bryon Wilson
Chief Scientist: Fernando Santiago-Mandujano
OTG Electronics/Deck Operations Technicians: Dan Fitzgerald, Gabe Foreman

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 November 7 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 from November 8 to 10.

3) Station 51, is the site of the MOSEAN Mooring, located at 22 46.009'N, 158 5.533'W was to be occupied on November 10 for about 30 minutes.

4) Station 50, is the site of the WHOTS Mooring, located at 22 46.1 N, 157 53.4 W was to be occupied on November 10 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 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. After these operations, the ship was to transit to Station ALOHA.

Upon arrival at Station ALOHA, the free-drifting sediment trap array was to be deployed. The sediment trap array was to stay in the water for about 52 hours. This was followed by two 200 m CTD casts to collect water for incubation experiments. After this, an array with incubation experiments (gas array)was to be deployed for 24 hours. A full-depth CTD cast was to be conducted afterwards, followed by 1000-m CTD casts at strict 3 hour intervals 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 incubation

experiments on November 9.

A plankton net was to be towed near noon and midnight for 30-min intervals on November 8 and 9 at Station ALOHA.

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

After recovering the sediment traps, the ship was to transit to Sta. 51 to conduct a 200-m CTD cast, and then back to Station ALOHA to conduct one more 1000-m CTD cast, and light casts (PRR, AC9/FRRf). After this the ship was to transit to Sta. 50 to conduct a 200-m CTD cast.

After operations at station ALOHA ended, the ship was to transit to Station 6 (Kaena).

A near-bottom CTD cast (~2500 m) was to be conducted at Station 6 including salinity samples for calibration, after which the ship was to transit back to Snug Harbor.

A Profiling Reflectance Radiometer (PRR) was to be deployed for half-hour periods near noon time on November 7, 9 and 10.

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 at noon time on November 9 and 10, and in the early morning on November 10.

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

2. SCIENCE PERSONNEL

BEACH group:

Cruise Participant	Title	Affiliation
Karin Bjorkman	Research Specialist	UH
Tracy Campbell	Graduate Student	UH
Susan Curless (Watch Leader)	Research Associate	UH
Ken Doggett	Research Associate	UH
Lance Fujieki	Computer Specialist	UH
Eric Grabowski	Research Associate	UH
Adriana Harlan	Technician	UH
Katherine Mackey	Graduate Student	Stanford
Dan Sadler (Watch Leader)	Research Associate	UH
Blake Watkins	Marine Engineer	UH
Doug White	Technician	UH

PO group:

Paul Lethaby	Research Associate	UH
Fernando Santiago-Mandujano	Chief Scientist (Res. Assoc.)	UH
Jefrey Snyder	Marine Technician	UH
John Yeh	Graduate Student	UH

Others:

Jingchuan Ahou Scientist UH

3. GENERAL SUMMARY

Operations during the cruise were conducted as planned.

One 1000-m CTD cast was conducted at Kahe station. Twelve 1000-m CTD casts, two deep casts, two 200-m and one 50-m CTD casts were conducted at Station ALOHA. One 250-m CTD cast was conducted near the MOSEAN mooring (station 51), and one 200-m cast was conducted near the WHOTS mooring (station 50). One 2400-m CTD cast was conducted at Station Kaena.

The array of floating sediment traps, the gas array, and the primary productivity incubation array were deployed and recovered without incidents, with the exception of the primary productivity array, which was lost during recovery. The arrays drifted SW.

Three net tows were conducted at night and three during the day.

The AC9/FRRf was deployed at noon three times, and once at night.

The PRR was deployed three times at noon.

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

Winds were easterlies between 15 and 20 kt during the first days of the cruise, turning southeasterlies at 15-20 kt the last day.

John Yeh triangulated the location of his benthic camera near Kaena Station the last day of the cruise.

We arrived back at Snug Harbor on November 11 at 0730.

4. R/V KILO MOANA, OFFICERS AND CREW, TECHNICAL SUPPORT

The R/V Kilo Moana continues to maintain the excellent ship support for our work. The officers and crew were most helpful and accommodating. 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. OTG personnel were available at any time to assist in our work and made things much easier for us.

5. DAILY REPORT OF ACTIVITIES (HST)

November 6, 2006; Loading Day

Equipment loaded during this day, and the CTD system was tested. Container vans and heavy equipment were loaded on October 31.

November 7, 2006

The ship departed from Snug harbor at 0900. Safety briefing by the Captain conducted at 0945, followed by a science meeting in which cruise activities were briefly reviewed, and safety issues were addressed.

Fire and abandon ship drills conducted at 1015.

Arrived at Kahe Station at 1150. CTD wire weight cast (400 lb) to 500 m, during which J. Snyder inspected the CTD wire.

The Profiling Reflectance Radiometer (PRR) was deployed at 1230.

A 1020-m CTD cast was conducted at 1300. After the cast ended, the ship headed to station ALOHA.

The ship arrived to Station ALOHA at 2235. The sediment traps array was deployed at 2327.

November 8, 2006

One 200-m CTD cast was conducted at 0009 after the sediment traps deployment. One 200-m CTD cast was conducted before the gas array deployment.

The gas array was deployed at 0400.

One deep CTD cast was conducted at 0454. The altimeter signal was intermittent near the bottom.

Four 1000-m CTD casts were conducted this day. The ISUS was installed in the rosette and connected to the CTD before these casts, and worked properly.

One net tow was conducted near noon, and one at night.

Easterlies at 15-20 kt.

November 9, 2006

Eight 1000-m CTD casts were conducted on this day, and the 36-hr CTD burst period ended with a second deep cast that started at 2300.

The gas array was recovered at 0720, at 22 36.9'N, 158 5.5'W, about 8 nm SW from ALOHA Station.

The primary productivity array was deployed at 0550, and recovered at 1900. The array drifted about 3nm SW from the center of ALOHA to 22 42.4'N, 158 1.8'W.

One AC9/FRRf cast was conducted at noon time.

One PRR cast was conducted at noon time.

Two net tows were conducted at night and one near noon.

Easterly winds at 20 kts.

November 10, 2006

One 250-m CTD cast was conducted near the MOSEAN mooring (Station 51),
and one 200-m CTD cast near the WHOTS mooring (Station 50).

The sediment traps array was recovered at 0645 at 22 32.3'N, 158 10.5'W.
The array drifted SW about 16 nm from ALOHA Station.

Once PRR cast was conducted at 1230.

One AC9/FRRf cast was conducted at 0400, and two more near noon time
at Station ALOHA.

One near-bottom cast was conducted at Station Kaena (Station 6).

John Yeh triangulated the location of his benthic camera lost
during the HOT-181 cruise.

Winds from the southeast at at 15-20 kt. Rainfall was observed near
the MOSEAN mooring in the morning.

November 11, 2006

Arrived at Snug Harbor at 0730. Full off-load.

HOT program sub-components

Investigator:	Project/Institution:
Dave Karl:	Core Biogeochemistry/UH
Roger Lukas:	Hydrography/UH
Bob Bidigare:	HPLC pigments/UH
Mike Landry:	Zooplankton dynamics/UH
Mark Abbott/Ricardo Letelier:	Optical measurements/OSU

Ancillary programs:

Investigator:	Project/Institution:
Charles Keeling:	CO2 dynamics and intercalibration/SIO
Paul Quay:	DI13C and O isotopes/UW
Penny Chisholm:	Prochlorococcus population dynamics/MIT
Zehr/Church/Montoya:	Diversity and activities of nitrogen-fixing microorganisms/UH

Ancillary research during this cruise:

Investigator:	Project/Institution:
Katherine Mackey/Adina Paytan:	Fluorescence characteristics of marine picocyanobacteria under oxic and anoxic conditions/Stanford University
Jingchuan Zhou/Antony Clarke:	Sea-salt Aerosol Fluxes from Breaking Waves and Bursting Bubbles/UH