

HOT-169: Chief Scientist Report

Cruise ID: KM0508

Departed: May 16, 2005 at 0700 (HST)

Returned: May 20, 2005 at 1030

Vessel: R/V Kilo Moana

Operator: University of Hawaii

Master of the Vessel: Captain Carl Christensen

Chief Scientist: Thomas K. Gregory

STAG Electronics/Deck Operations Technicians: Gabe Foreman, Kuhio Vellalos

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. Three 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 May 16 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 50, is the site of the WHOTS Mooring, located at 22 46.1 N, 157 53.4 W was to be occupied on the 4th day of the cruise for about 30 minutes.

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 the first deep cast and then two 200 m CTD casts to collect water for the gas array. 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 May 19.

A hand-held plankton net was to be deployed for 20-min intervals several times during the cruise by C. Mahaffey.

Another hand-held plankton net was to be deployed by C. de Vargas and J. Young several times during the cruise for coccolithophore collection.

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

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

After recovering the sediment traps, the ship was to transit to Sta. 50 to conduct a 200-m CTD cast.

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.

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

2. SCIENCE PERSONNEL

BEACH group:

Cruise Participant	Affiliation	Title
Bjorkman, Karin	UH/BEACH	Research Specialist
Bullister, John	PMEL/PO	Scientist
Chung, Mung Fa	UH/PO	Volunteer
Church, Matt	UH/BEACH	Research Oceanographer
Clemente, Tara	UH/BEACH	Research Associate
Curless, Susan	UH/BEACH	Research Associate
De Vargas, Colomban	Rutgers/BEACH	Scientist
Drewry, Gray	UHMC	Port Operations Manager
Foreman, Gabe	UH/STAG	Marine Tech
Fujieki, Lance	UH/BEACH	Research Associate
Gregory, Tom	UH/BEACH	Chief Scientist
Guest, Cooper	UH/BEACH	Volunteer
Harlan, Adrianna	UH/BEACH	Technician
Lethaby, Paul	UH/PO	Research Associate
Mahaffey, Claire	UH/BEACH	Postdoctoral Researcher
Meier, Sebastian	NHM/BEACH	Scientist
Rosbrugh, Damion	UH/PO	Volunteer
Sadler, Dan	UH/BEACH	Research Associate
Santiago - Mandujano, Fernando	UH/PO	Research Associate
Shacat, Joseph	UH/PO	Research Associate
Simmons, Melinda	SIO/BEACH	Graduate Student
Valenciano, Mark	UH/PO	Electronics Technician
Vellalos, Kuhio	UH/STAG	Marine Tech
Watkins, Blake	UH/BEACH	Marine Engineer
Wisegarver, Dave	PMEL/PO	Scientist
Young, Jeremy	NHM/BEACH	Scientist

3. GENERAL SUMMARY

All objectives for HOT 169 were successfully completed. Thirteen 1000 m casts, two 4740 m casts, and two 200 m casts were conducted at ALOHA; one 1000 m cast at Kahe, and one 250 m cast at Station 50. The 200 m CTD cast planned for Station 50 at the end of the cruise was moved to the beginning due to a faster than expected fueling operation at Pearl Harbor.

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. STAG personnel were available at any time to assist in our work and made things much easier for us.

5. DAILY REPORT OF ACTIVITIES (HST)

May 13, 2005; Loading Day

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

May 16, 2005

The ship departed from Snug harbor at 0700 bound for Pearl Harbor for fueling. Science meeting as conducted at 1100 while docked at Pearl Harbor, in which cruise activities were briefly reviewed, and safety issues were addressed. We departed Pearl Harbor at 1330 and conducted fire and boat drills enroute to Station Kahe.

Arrived at Station Kahe at 1620. Weight casts were conducted to assess winch performance. All was determined to be in good apparent working order. A 1000 m CTD cast was performed after which we steamed to Station 50.

May 17, 2005

We arrived at Station 50 at 0345 and conducted a 250 m CTD cast after which we steamed to Station ALOHA.

The sediment trap array was deployed at 0625 2 nmi. N of center.

C. de Vargas conducted net tows at 1623 and 1645.

C. Mahaffey conducted a net tow at 0540.

M. Simmons conducted net tows at 1403, 2204 and 2241.

The gas array was deployed at 2034.

One 4800 m, two 200 m and two 1000 m CTD casts were performed at ALOHA on this day. The 36 hour period began at 2300.

Northeasterlies at 10-20 kts, with some partly cloudy skies today.

May 18, 2005

Eight 1000-m CTD casts were conducted on this day as scheduled.

The gas array was recovered at 2010 and had drifted northeast.

C. de Vargas conducted net tows at 0046 and 1625.

C. Mahaffey conducted a net tow at 0619.

M. Simmons conducted net tows at 0144, 1300, 1330 and 2240.

AC9/FRRf casts were conducted at 0400, 0840 and 0945 and the PRR was deployed at 1241.

Northeasterlies at 10-20 kts, with some partly cloudy skies today.

May 19, 2005

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

One AC9/FRRf casts was conducted at 1000 and one PRR cast was performed at 1100.

The primary production array was deployed at 0600 and recovered at 1929.

The sediment trap array was recovered at 2320 The array drifted southeast.

C. de Vargas conducted one net tow at 0036.

Northeasterlies at 10-20 kts, with some partly cloudy skies today.

May 20, 2005

Arrived at Snug Harbor at 1030 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:
-----	-----
Claire Mahaffey	Assessment of Nitrogen Fixation Rates/UH
Matthew Church	Bacterial production and dynamics/UH
Colomban de Vargas	Coccolithophore dynamics/Rutgers
Jeremy Young/Sebastian Meier	Coccolithophore dynamics/NHM