HOT-129: Chief Scientist Report

Chief Scientist: F. SANTIAGO-MANDUJANO

HOT-129 Chief Scientist's Cruise Report
R/V Ka'Imikai O Kanaloa
August 6-10, 2001

Departed: August 6, 2001 at 0900 (HST)
Returned: August 10, 2001 at 0700
Vessel: R/V Ka'Imikai O Kanaloa
Operator: University of Hawaii
Master of the Vessel: Captain Robert Hayes
Chief Scientist: Fernando Santiago-Mandujano
STAG Electronics Technician: Steve Poulos
STAG Deck Operations: David Gravatt

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 21o 20.6'N, 158o 16.4'W and was to be occupied on August 6 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 22o 45'N, 158oW. This is the main HOT station and was to be occupied for 3 days from August 7 to August 9.

3) Station 8, referred to as HALE-ALOHA is the location of the deep ocean mooring (22o 20.0'N, 158o 10.6'W). It was to be occupied on August 9 for about 2 hours.

4) Station 6, referred to as Station Kaena , is located off Kaena Point at 21o 50.8'N, 158o 21.8'W was to be occupied on August 9 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, a net tow was to be conducted, 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. Two other free-drifting arrays were to be deployed on August 8: an oxygen balance experiment (O2) for 24 hours, and a primary production experiment for 12 hours. A plankton net was to be deployed near noon

and midnight on August 7 and 8 at Station ALOHA.

After work at Station ALOHA was accomplished, the ship was to transit to recover the sediment trap array. After the sediment traps were recovered, the ship was to transit to Station 8, to conduct one 1000-m CTD cast, after which the ship was to transit to station 6.

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 August 6, 7 and 8.

An In Situ pump for C. Benitez-Nelson's experiment was to be deployed for 1.5 hr on August 7 and 8.

The following instruments were to collect data throughout the cruise: a shipboard ADCP, a thermosalinograph and fluorometer, and an anemometer.

2. SCIENCE PERSONNEL

WOCE group:		
Jeremiah Johnson (Watch Leader)	Research Associate	UH
Noel Larson	Research Associate	UH
Rebekah Moore	Volunteer	UCD
Lal Ratnapala	Research Assistant	UH
Fernando Santiago-Mandujano	Chief Scientist (Res. Assoc.)	UH
Mark Valenciano	Electronics Technician	UH
JGOFS group:		
Colleen Allen	Research Associate	UH
Jennifer Brum	Graduate Student	UH
John Dore	Scientist	UH
Lance Fujieki (Watch Leader)	Computer Specialist	UH
Anne Gasc	Research Associate	UH
Dale Hebel	Scientist	UH
Paul Morris	Technician	UH
Ancillary projects:		
Tom Gregory	Technician	(C. Benitez-Nelson, UH)
Andrew Hansen	Technician	(J. Zehr, UCSC; J. Montoya, Georgia Inst. Technol.)

3. GENERAL SUMMARY

All scientific objectives were met. Fourteen 1000-m CTD casts and one deep cast were obtained at station ALOHA. One 1000-m CTD cast was obtained at station Kahe and two at HALE-ALOHA. One near-bottom cast (~2500 m) and one 300 cast were obtained at station 6. Two shallow casts (< 600 m) were conducted at stations Kahe and ALOHA to troubleshoot problems encountered with the CTD.

The array of floating sediment traps, the primary productivity array, and P. Morris' O2 array were deployed and recovered without incidents. The sediment traps array drifted 10 nm southwest from Station ALOHA.

C. Allen and T. Gregory completed successfully 6 pairs of plankton net tows.
The In situ pump was successfully deployed as planned, as well as the PRR.

The ship's port generator had problems during transit to stations Kahe and ALOHA. This delayed the arrival to station ALOHA until 0200 (August 7).

Winds were easterlies at 20 kt, and 5-6 ft seas.

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

We arrived back at Snug Harbor on August 10 at 0700. Complete off-load took place immediately.

4. R/V KA'IMIKAI O KANALOA, OFFICERS AND CREW, TECHNICAL SUPPORT

The R/V Ka'Imikai O Kanaloa 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)

August 3, 2001; Loading Day

Equipment loaded on this day. Reterminated CTD wire and tested CTD system.

August 6, 2001

The ship departed from Snug harbor at 0900. Fire and abandon ship drills conducted at 0930, followed by a short science meeting during which the cruise schedule was reviewed, and safety issues were addressed.

Arrived to Kahe station at 1130, and a weight cast (400 lb) to 1000 m was conducted during which M. Valenciano inspected the CTD wire. At 1300 the Profiling Reflectance Radiometer (PRR) was deployed.

Troubleshooting of the ship's port generator took place before the CTD cast.

A CTD cast was conducted at 1400 but was aborted at 580 dbar due to glitches in the data. The cast was repeated and the ship headed towards station ALOHA.

Winds were 15 kt easterlies and 3 ft seas.

August 7, 2001

Arrived at station ALOHA at 0200 due to problems with the ship's generator. Proceeded to deploy the sediment traps. The deep WOCE cast started at 0300 but was aborted at 170 m due to data glitches. After troubleshooting the CTD, it was decided to re-schedule the deep cast after the end of the 36-hr CTD period. The 36-hr CTD cast period started at 0900. A total of six 1000-m CTD casts were conducted this day.

Two pairs of net tows were conducted during the day and another pair at night.

The PRR was deployed at 1230 and the In situ pump was deployed at 1500

Winds were 20 kt easterlies and 6 ft seas.

August 8, 2001

Seven 1000-m CTD casts were conducted during this day, ending the 36-hr CTD cast period at 2100. The WOCE deep cast was started at 2300.

The O2 array was deployed at 0400. The primary productivity array was deployed at 0600 and was retrieved at 1900.

One pair of net tows was conducted in the day and two pairs at night.

The PRR was deployed at 1230, and the In situ pump was deployed at 1500.

Winds were easterlies 20 kt, 6 ft seas.

August 9, 2001

The deep CTD cast that started at 2300 on August 8 was completed by 0300.

The O2 array was recovered at 0530.

The sediment trap array was recovered at 0700. The array drifted 10 nm southwest from Station ALOHA.

A 1000-m CTD cast was conducted at the HALE-ALOHA station at 1000, and a second 1000-m cast was conducted at 1300 to test some of the CTD equipment.

A near-bottom CTD cast (~2500 m) was conducted at 1900 at station 6. A 300-m CTD cast was conducted afterwards to test STAG's new SeaPoint fluorometer. Operations ended at 2130.

Winds were easterlies 18 kt, 5 ft seas.

August 10, 2001

Arrived at Snug Harbor at 0700. Complete off-load took place immediately.

Sub component programs:

Investigator:	Project:
Bob Bidigare	HPLC pigments/UH
Michael Landry	zooplankton dynamics/UH

Ancillary programs:

Investigator:	Project:
Charles Keeling	CO2 dynamics and intercalibration/SIO
Paul Quay	DIC and 13C/UW
Abbott/Letelier	optical measurements/OSU
Claudia Benitez-Nelson	phosphorus isotopes, Th234/UH
Peter J. LeB. Williams	oxygen balance/U Wales Bangor
Jon Zehr	Nif genes, N2 Fixation/UCSC
Joe Montoya	15N/N2 Fixation/Georgia Inst. Technol.

Others:	
Hebel, Dore, Karl	EOC/UH
John Dore	P15N/UH
Jennifer Brum	dissolved DNA, viruses/UH
Paul Morris	oxygen balance/UH