

# HOT-132: Chief Scientist Report

Chief Scientist: J. JOHNSON

## HOT-132 Chief Scientist's Cruise Report

R/V Ka'Imikai O Kanaloa

November 15-19, 2001

Departed: November 15, 2001 at 0900 (HST)

Returned: November 19, 2001 at 0700

Vessel: R/V Ka'Imikai O Kanaloa

Operator: University of Hawaii

Master of the Vessel: Captain Robert Hayes

Chief Scientist: Jeremiah Johnson

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 November 15 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 2 days from November 16 and 17.

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 November 18 for about 2 hours.

4) 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 November 18 for about 3 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 November 17: 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 November 16 and 17 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) and a Tethered Spectral Radiometer Buoy (TSRB) was to be deployed for half-hour periods near noon time on November 15, 16 and 17.

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 (Cheif Scientist)	Research Associate	UH
Noel Larson (Watch leader)	Research Associate	UH
John Hargrove	Volunteer	UH
Tara Clemente	Research Associate	UH
Fernando Santiago-Mandujano	Research Associate	UH
Mark Valenciano	Electronics Technician	UH

JGOFS group:

Cecilia Sheridan	Graduate Student	UH
Mya Iriondo-Simek	Graduate Student	UH
Karin Bjorkman	Scientist	UH
Lance Fujieki	Computer Specialist	UH
Anne Gasc	Research Associate	UH
Dale Hebel	Scientist	UH
Paul Morris	Technician	UH
Dan Drown	graduate Student	UH
Tom Gregory (Watch Leader)	Research Associate	UH
Rodrigo Gonzales	Scientist	WHOI

3. GENERAL SUMMARY

All scientific objectives were met. Thirteen 1000-m CTD casts and two deep casts were obtained at station ALOHA. One 1000-m CTD cast was obtained at station Kahe and one at HALE-ALOHA. One near-bottom cast(~2500 m) was obtained at station 6.

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 20 nm North from Station ALOHA.

C. Sheridan completed successfully 6 pairs of plankton net tows.

The PRR and TSRB we successfully deployed.

Winds were light and variable.

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 November 19 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)

November 14, 2001; Loading Day

Equipment loaded on this day. Tested CTD system.

November 15, 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 1000m was conducted during which M. Valenciano inspected the CTD wire. At 1300 the Profiling Reflectance Radiometer (PRR) and the Tethered Spectral Radiometer Buoy (TSRB) were deployed.

A CTD cast was conducted at 1400. We then transited to ALOHA.

Winds were light from the east.

November 16, 2001

Arrived at station ALOHA at 23:30 (Nov 15). We then did a net tow and then deployed the sediment traps. The deep WOCE cast started at 0200. The STAG fluorometer failed on the deep cast. We used the JGOFS fluorometer for the remainder of the cruise. The primary oxygen sensor failed during the WOCE deep cast. It was replaced and the replacement failed on s2c2. We then installed another oxygen sensor on the primary channel which functioned properly for the rest of the cruise. The secondary oxygen sensor worked for the entire cruise. The 36-hr CTD cast period started at 0800. 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.

At 1200 the Profiling Reflectance Radiometer (PRR) and the Tethered Spectral Radiometer Buoy (TSRB) were deployed.

Winds were light from the east with a large ground-swell.

November 17, 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 1800. The PP array drifted 10nm north of the circles center.

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

At 1200 the Profiling Reflectance Radiometer (PRR) and the Tethered Spectral Radiometer Buoy (TSRB) were deployed.

Winds were light from the southeast, with a large ground-swell.

November 18, 2001

The deep CTD cast that started at 2300 on November 17 was completed by 0300 on November 18.

The O2 array was recovered at 0630.

The sediment trap array was recovered at 0900. The array drifted 20 nm North from Station ALOHA.

A 1000-m CTD cast was conducted at the HALE-ALOHA station at 1400.

A near-bottom CTD cast (~2500 m) was conducted at 1900 at station 6.

Winds were light from the south with a little less groundswell.

November 19, 2001

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

Sub component programs:

Investigator:

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Bob Bidigare

Michael Landry

John Dore

Project:

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HPLC pigments/UH

zooplankton dynamics/UH

CO2 dynamics/UH

Ancillary programs:

Investigator:

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Charles Keeling  
Paul Quay  
Abbott/Letelier  
Claudia Benitez-Nelson  
Peter J. LeB. Williams

Project:

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CO2 dynamics and intercalibration/SIO  
DIC and 13C/UW  
optical measurements/OSU  
phosphorus isotopes, Th234/UH  
oxygen balance/U Wales Bangor

Others:

Hebel, Dore, Karl  
John Dore  
Paul Morris  
Karin Bjorkman  
R. Gonzales  
P. Morris, T. Gregory

EOC/UH  
P15N/UH  
oxygen balance/UH  
Phosphorus dynamics/UH  
Electron transfer system