

# HOT-124: Chief Scientist Report

Chief Scientist: J. JOHNSON

## HOT-124 Chief Scientist's Cruise Report

R/V Ka'Imikai O Kanaloa

March 19-23, 2001

Departed: March 19, 2001 at 0930 (HST)

Returned: March 23, 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 March 19 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 March 20-22.

3) Station 8, referred to as HALE-ALOHA is the location of the deep ocean mooring (22o 27.5'N, 158o 7.9'W). It was to be occupied on March 23 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 March 23 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 performed, followed by the deployment of a free-drifting sediment trap array. After deployment, the JGOFS-2 CTD cast was conducted, followed by a deep WOCE cast. Station 2 cast 3 was to be the beginning of 36 hours of continuous and discrete data collection by CTD casts at strict 3 hour intervals. Brian Popp's group deployed an array on March 21 for 30 hours. Also on March 21, another

free-drifting array was to be deployed for 12 hours for a primary production experiment . A plankton net was to be deployed near noon and midnight on March 20 and 21 at Station ALOHA.

After work at Station ALOHA was accomplished, the ship was to transit to recover the Popp array and then transit to recover the sediment trap array. After the sediment traps were recovered, the ship was to transit to Station 8, to conduct one CTD cast.

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) were to be deployed for half-hour periods near noon time on March 19, 20 and 21.

An In Situ pump for C. Benitez-Nelson's and Brian Popp's experiments were to be deployed for 1.5 hr on March 20, 21 and 22.

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	Chief Scientist (Res. Assoc.)	UH
Noel Larson	Research Associate	UH
Mark Valenciano	Electronics Technician	UH
Lal Ratnapala	Research Assistant	UH
Petter Haagaas	Student Volunteer	UH
Joergen Olsen	Student Volunteer	UH

### JGOFS group:

Karin Bjorkman	Research Associate	UH
Ann Gasc	Research Associate	UH
Matt Church	Graduate Student	UH
John Dore (Watch Leader)	Research Associate	UH
Lance Fujieki (Watch Leader)	Computer Specialist	UH
Matthew Erickson	Research Associate	UH

### Ancillary projects:

Tom Gregory	Research Associate	UH
Colleen Allen	Research Associate	UH - M. Landry
Chuck Stump	Scientist	UW
Brian Popp	Scientist	UH
Frd Prah	Scientist	UH
Marian Whestley	Graduate Student	UH

## 3. GENERAL SUMMARY

All scientific objectives were met with the schedule being shifted to fulfill the WOCE deep and Shallow cast requirements. The deep WOCE cast and the immediately following shallow WOCE cast were not sampled properly which made repeating these casts at the end of the cruise necessary. Fourteen 1000-m CTD casts and two deep casts were obtained at station ALOHA. One 1000-m CTD cast was obtained at each of stations Kahe and HALE-ALOHA. One near-bottom cast (~2500 m) was obtained at station 6.

The primary productivity array and the B. Popp array were deployed and recovered without problems. The array of floating sediment traps was deployed and recovered without incidents.

C. Allen and T. Gregory successfully completed 6 plankton net tows.

Weather conditions during the cruise were excellent with variable winds and fairly calm seas

The ADCP ran without interruption throughout the cruise, as well as the thermosalinograph, the fluorometer, and the ship's anemometer. The thermosalinograph recorded noisy salinity data during the transit to station ALOHA, apparently due to bubbles introduced in the system because of the rough ride.

We arrived back at Snug Harbor on March 23 at 0700. Off-loading of samples 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)

March 16, 2001; Loading Day

Reterrmination, CTD test and Equipment loaded on this day.

march 19, 2001

The ship departed from Snug harbor at 0930. Fire and abandon ship drills conducted at 1000, followed by a short science meeting during which the cruise schedule was reviewed, and safety issues were addressed.

We arrived at Kahe station at 1130 and a weight cast (400 lbs) to 1000 m was conducted during which M. Valenciano inspected the CTD wire. At 1230 the Profiling Reflectance Radiometer (PRR) and Tethered Spectral

Radiometric Buoy (TSRB) were deployed.

The CTD cast was conducted at 1320. The ship then headed towards station ALOHA. The thermosalinograph recorded noisy data during the transit to ALOHA, probably due to bubbles introduced in the system because of the rough ride.

March 20, 2001

We arrived at station ALOHA at 0130 and proceeded to conduct a net tow followed by the deployment of the sediment traps. We then did the JGOFS-2 cast followed by the deep WOCE cast at 0600 and was followed by the shallow WOCE cast, which started the 36-hr CTD cast period. The deep WOCE cast and the shallow WOCE cast were incorrectly sampled by the WOCE personnel, forcing us to reschedule these casts at the end of the cruise. A total of five 1000-m CTD casts were conducted this day.

Two daytime net tows were conducted at 1000 and 1300 and one night tow at 2200.

The PRR and TSRB were deployed at 1230.

We also deployed an in situ pump for Claudia Benitez-Nelsen's experiments at 1500.

Winds were light and variable

March 21, 2001

Operations continued as scheduled. Eight 1000-m CTD casts were conducted during this day.

The B. Popp array was deployed at 0000.

The PP array was deployed at 0600 and recovered at 1800.

One net tow was conducted at 1300 and two at night.

The PRR and TSRB were deployed at 1230.

Winds were light and variable.

March 22, 2001

A second WOCE deep CTD cast was conducted at 0030, followed by a second shallow WOCE cast, after which we headed to recover B. Popp's array and sediment traps.

Sediment trap and B. Popp's array retrieval proceeded without incident

A 1000-m CTD cast was conducted at the HALE-ALOHA station(8) at 1500.

A near bottom cast was conducted at Kaena station(6) at 2030.

March 23, 2001

We arrived at Snug Harbor at 0700. Off-loading of samples took place immediately.

## 6. SUB COMPONENT PROGRAMS AND SPECIAL PROJECTS

B. Bidigare (UH)	HPLC pigments
M. Landry (UH)	Zooplankton community structure
B.Popp (UH)	Alkenone content

## 7. SAMPLES TAKEN FOR OTHER INVESTIGATORS

Charles Keeling	CO2 dynamics and intercalibration/SIO
Paul Quay	DIC and 13C/UW
Steve Emerson	O2, N2, Ar, dynamics
John Porter	aerosols/UH
Abbott/Letelier	optical measurements/OSU
Claudia Benitez-Nelson	phosphorus isotopes, Th234/UH
Andy Grahm (UH)	CH4 concentrations

### Others:

Hebel, Dore, Karl	EOC, 1° prod. comparison/UH
Karin Bjorkman	phosphorus experiments/UH
John Dore	phycoerythrin distributions, nitrification rates/UH