

# HOT-114: Chief Scientist Report

Chief Scientist: F. SANTIAGO-MANDUJANO

## HOT-114 Chief Scientist's Cruise Report R/V Ka'Imikai-O-Kanaloa 24-27 April 2000

Departed: April 24, 2000 at 0900 (HST)  
Returned: April 27, 2000 at 2000  
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: Wil Hervig  
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. Two 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 April 24 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 22° 45'N, 158°W. This is the main HOT station and was to be occupied for 3 days from April 25 to 27.

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 plankton net tow would be conducted. Afterwards a free-drifting sediment trap array was to be deployed for about 52 hours to measure sedimentation rates of particulate matter. After deployment, CTD casts at strict 3 hour intervals were to be conducted continuously for at least 36 hours for continuous and discrete data collection. The ship was to be requested to remain on station during this sampling period. Another free-drifting array was to be deployed for 12 hours for a primary production experiment on April 26. A plankton net was to be deployed near noon and midnight on April 25 and 26 at Station ALOHA.

After work at Station ALOHA was accomplished, the ship was to transit to recover the sediment traps, after which the ship was to transit back to Snug Harbor.

The following instruments were to collect data throughout the cruise: a

shipboard ADCP and a thermosalinograph.

## 2. SCIENCE PERSONNEL

### WOCE group:

Fernando Santiago-Mandujano	Chief Scientist (Res. Assoc.)	UH
Don Wright (Watch Leader)	Research Associate	UH
Mark Valenciano	Electronics Technician	UH
Michelle Eich	Graduate Student	UH
Lal Ratnapala	Student Assistant	UH

### JGOFS group:

Karin Bjorkman	Research Associate	UH
Terrence Houlihan	Research Associate	UH
Louie Tupas (Watch Leader)	Scientist (co-PI JGOFS)	UH
Dale Hebel (Watch Leader)	Scientist (co-PI JGOFS)	UH
Lance Fujieki	Computer Specialist	UH
Daniel Sadler	Research Associate	UH
Matt Church	Graduate Student	UH

### Ancillary projects:

Coleen Allen	Research Associate	UH - M. Landry
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## 3. GENERAL SUMMARY

Operations were conducted as planned without any incidents. All the primary JGOFS and WOCE objectives were accomplished. One 1000 m CTD cast was obtained at Station Kahe, and a total of 15 were conducted at Station ALOHA including two deep casts.

One 8-bottle go-flo cast was successfully obtained at station ALOHA, and the primary productivity array was deployed for 12 hr and recovered without problems. The array of floating sediment traps was also deployed for about 52 hr and recovered without incidents. C. Allen completed successfully 6 plankton net tows.

A strong near-surface northwestward current of about 1 kt was present during the cruise as indicated by the ADCP and by the drift of the primary productivity array and the sediment traps. This strong current caused some difficulties during the deployment of the primary productivity array and during the recovery of the sediment traps. The difficulties were resolved and in the future measures will be taken to adjust deployment procedures when strong currents are present.

Conditions were slightly rough during the transit to Station ALOHA due to the big swell, but improved afterwards.

The ADCP ran without interruption throughout the cruise, as well as the thermosalinograph. Some tests were conducted by the WOCE group on the continuous water supply system to investigate their effect on the thermosalinograph.

We arrived back at Snug Harbor on April 27 at 2000. Off-loading of

all the equipment took place on April 28.

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

The R/V Ka'Imikai-O-Kanaloa provided appropriate 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 very good. STAG personnel were available at any time to assist in our work and made things much easier for us.

During the last two days of the cruise solvent fumes (apparently caused by painting in some area of the ship) went into the Rock Lab (CTD Lab) through the AC system, making it difficult for the science personnel to work in the Lab. This was communicated to the bridge.

#### 5. DAILY REPORT OF ACTIVITIES (HST)

April 17, 2000; Loading Day

A full equipment load was conducted by the JGOFS and WOCE groups and ancillary investigators. M. Valenciano made a CTD cable re-termination in the evening of April 16.

April 24, 2000

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 1145 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 was deployed.

A 1000 m CTD cast was conducted at 1400, after which the ship departed to Station ALOHA. The transit to ALOHA was rough because of the swell (6-8 ft from 70 deg). Seas were 3 ft from 90 deg, and winds were 20 kt from 80 deg.

April 25, 2000.

Arrived at station ALOHA at 0030 and conducted a net tow, followed by the deployment of the sediment trap array. A deep CTD cast started at 0400). The 36-hour CTD cast period started at 0900 with the shallow WOCE cast. A total of five 1000 m CTD cast were conducted this day.

Two net tows were conducted during the day and one at night.

Winds were 17 kt from 90 deg, swell was 5 ft from 95 deg, and sea was 3 ft from 90 deg.

April 26, 2000.

Operations continued as scheduled. A total of eight 1000 m CTD casts were conducted, completing the 36 hour period. An 8 bottle go-flo cast was conducted at 0200. Problems with one of the bottle's firing mechanism and with a messenger hung up along the line caused a one our delay on this cast. The JGOFS group is taking measures to prevent this type of delays in future cruises.

The primary productivity array was deployed at 0530. Some difficulties were encountered during this deployment due to the strong currents. One of the floats got entangled with the top most spreader bar just before releasing the array, and had to be partially recovered after unsuccessfully trying to untangle it using one of the ship's boat hooks. The array was recovered at 1900 after drifting 10 nm northwestward.

One net tow was conducted during the night and one more during the day.

Swell 5 ft, 95 deg; Seas 3 ft, 70 deg; Winds 19 kt, 70 deg

April 27, 2000

A second deep CTD cast was conducted starting at 0000, after which we transited to the location of the sediment trap array as indicated by the ARGOS positions transmited via e-mail. The array had drifted 23 nm northwest. Recovery operations took place from 0600 to 0700 with some difficulties due to the strong current. It was not possible to retrieve the array's floats and balls without using the ship's crane, an operation that is usually conducted by hand.

Transited back to Honolulu, arriving to Snug Harbor at 2000.

Swell 6 ft, 80 deg; Seas 4 ft, 80 deg; Winds 25 kt, 90 deg

April 28, 2000

Unloading of all the equipment completed by 1200.

## 6. SUB COMPONENT PROGRAMS AND SPECIAL PROJECTS

B. Bidigare (UH)	HPLC pigments
M. Landry (UH)	Zooplankton community structure
K. Bjorkman (UH)	Phosphorus dynamics
D. Hebel (UH)	Organic matter exudates
L. Tupas (UH)	Primary production intercomparison

## 7. SAMPLES TAKEN FOR OTHER INVESTIGATORS

1. DIC water samples for Charles Keeling, SIO-UCSD
2. DIC water samples for Paul Quay, UW
3. Phosphorus experiments by Karin Bjorkman, UH
4. Microbial sampling and experiment by Matt Church, UH