

HOT-125: Chief Scientist Report

Chief Scientist: F. SANTIAGO-MANDUJANO

HOT-125 Chief Scientist's Cruise Report

R/V Ka'Imikai O Kanaloa

April 16-20, 2001

Departed: April 16, 2001 at 0900 (HST)

Returned: April 20, 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 April 16 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 April 17 to April 19.

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 April 19 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 April 19 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. Another free-drifting array was to be deployed for 12 hours for a primary production experiment on April 18. A plankton net was to be deployed near noon and midnight on April 17 and 18 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) were to be deployed for half-hour periods near noon time on April 16, 17 and 18.

An In Situ pump for C. Benitez-Nelson's experiment was to be deployed for 1.5 hr on April 17 and 18.

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:

Noel Larson	Research Associate	UH
Jeremiah Johnson (Watch Leader)	Research Associate	UH
Mark Valenciano	Electronics Technician	UH
Lal Ratnapala	Research Assistant	UH
Fernando Santiago-Mandujano	Chief Scientist (Res. Assoc.)	UH

JGOFS group:

Colleen Allen	Research Associate	UH
Karin Bjorkman	Research Associate	UH
Anne Gasc	Research Associate	UH
Ursula Magaard	Technician	UH
Lance Fujieki (Watch Leader)	Computer Specialist	UH
Paul Morris	Technician	UH
Dale Hebel	Scientist	UH

Ancillary projects:

Claudia Benitez-Nelson	Scientist	UH
Roberta Hamme	Graduate Student	UW

3. GENERAL SUMMARY

Operations were conducted as planned without major interruptions. Thirteen 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 CTD wire was reterminated for regular maintenance before starting work at station HALE-ALOHA.

The array of floating sediment traps and the primary productivity array were deployed and recovered without incidents. The primary productivity array drifted northwest to the edge of the ALOHA circle, and the

sediment traps drifted 16 nm northwest from Station ALOHA.

C. Allen and C. Benitez-Nelson completed successfully 6 plankton net tows. The In situ pump was successfully deployed as planned, as well as the PRR.

On April 17 during deployment of the TSRB, its cable got caught around the ship's propeller. A crew member had to SCUBA dive under the ship and cut the cable to untangle the buoy, the buoy and cable were recovered but were damaged and unusable for the rest of the cruise. This operation only affected one scheduled net tow, which was rescheduled for a later time.

Winds were easterlies at 20 kt, and 4-5 ft swells.

The ADCP ran without interruption throughout the cruise, as well as the fluorometer, and the ship's anemometer. The ship's gyro interface had problems three times during the cruise, affecting some of the ship's navigation data logging.

We arrived back at Snug Harbor on April 20 at 0700. Off-loading of samples and of the JGOFS van 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)

April 12, 2001; Loading Day

Equipment loaded on this day. Tested CTD system.

April 16, 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) and Tethered Spectral Radiometer Buoy (TSRB) were deployed.

The CTD cast was conducted at 1400, after which the ship headed towards station ALOHA.

Problems with the ship's gyro system between 1930 and 2040

Winds were 20 kt easterlies and 5 ft seas.

April 17, 2001

We arrived at station ALOHA at 0000 and proceeded to conduct a net tow, followed by the deployment of the sediment traps. The deep WOCE cast started at 0300 and was followed by the shallow WOCE cast, which started the 36-hr CTD cast period. A total of six 1000-m CTD casts were conducted this day.

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

The PRR and TSRB were deployed at 1230. While the TSRB was deployed, its cable went under the ship and got tangled with the propeller. One of the crew members had to dive under the ship to cut the cable to recover the buoy. Both the cable and the buoy were damaged and unusable for the rest of the cruise.

The In situ pump was deployed at 1500

Problems with the ship's gyro system for about 30 min at 0800

Winds were 20 kt easterlies and 4-6 ft seas.

April 18, 2001

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

The primary productivity array was deployed at 0600 and was retrieved at 1900, the array drifted 6 nm northwest from Station ALOHA.

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

The PRR was deployed at 1230.

The In situ pump was deployed at 1500.

Winds were easterlies 20 kt, 4-5 ft swells.

April 19, 2001

The second deep CTD cast that started at 2300 on 4/18 was completed by 0300.

The sediment trap array was recovered between 0700 and 0735. The array drifted 16 nm northwest from Station ALOHA.

After finishing the CTD work at station ALOHA M. Valenciano reterminated the CTD wire after cutting about 50 m as a regular maintenance procedure.

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

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

Problems with the ship's gyro system between 0950 and 1040

Winds were easterlies 20 kt, 4-5 ft swells.

April 20, 2001

Arrived at Snug Harbor at 0700. Off-loading of samples and of the JGOFS van took place immediately.

Sub component programs:

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

Ancillary programs:

Investigator:	Project:
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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

Others:	
Hebel, Dore, Karl	EOC, 1° prod. comparison/UH
Karin Bjorkman	phosphorus experiments/UH