

HOT-148: Chief Scientist Report

Chief Scientist: F. SANTIAGO-MANDUJANO

HOT-148 Chief Scientist's Cruise Report

Cruise ID: KOK0308

Departed: May 19, 2003 at 0900 (HST)

Returned: May 23, 2003 at 0730

Vessel: R/V Ka'Imikai-O-Kanaloa

Operator: University of Hawaii

Master of the Vessel: Captain Ross Barnes

Chief Scientist: Fernando Santiago-Mandujano

STAG Electronics Technician: Steve Poulos

STAG Deck Operations: Steve Tottori

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. Three 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 May 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 22 45'N, 158W. This is the main HOT Station and was to be occupied for 3 days from May 20 to May 22.

3) 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 May 22 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.

One free-drifting array was to be deployed for 12 hours for incubation experiments on May 21.

A plankton net was to be deployed near noon and midnight on May 20 and 21 at Station ALOHA.

After CTD work at Station ALOHA was accomplished, the ship was to transit to recover the floating sediment trap array. After recovering the

sediment traps, the ship was to return to Sta. ALOHA to continue light cast operations, 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 each day.

A package including a Wet Labs AC9, a Fast Repetition Rate Fluorometer (FRRf), and a SeaBird Seacat was to be used to profile the upper 200 m at Sta. ALOHA for one-hour periods on May 21 and 22.

The following instruments were to collect data throughout the cruise: shipboard ADCP, thermosalinograph, fluorometer, and two anemometers.

2. SCIENCE PERSONNEL

JGOFS group:

Karin Björkman	Research Specialist	UH
Tara Clemente	Research Associate	UH
Anne Gasc	Research Associate	UH
Eric Grabowski (Watch Leader)	Research Associate	UH
Lance Fujieki	Computer Specialist	UH
Tom Gregory	Research Associate	UH
Dan Sadler	Research Associate	UH
Valerie Franck	Scientist	UH
Colleen Allen	Technician	UH

PO group:

Marion Bandet	Graduate Student	UH
Yoshimi Rii	Research Associate	UH
Daniel Fitzgerald (Watch Leader)	Research Associate	UH
Mark Valenciano	Electronics Technician	UH
Jediah Bishop	Undergraduate Student	HPU
Fernando Santiago-Mandujano	Chief Scientist (Res. Assoc.)	UH

3. GENERAL SUMMARY

Operations were conducted as planned, with an interruption during the CTD cast at Kahe Station due to communication problems between the CTD and the bottle sampler, apparently caused by a faulty cable.

Fourteen 1000-m CTD casts and two deep casts (~4740 m) were conducted at Station ALOHA. Two 1000-m CTD casts were conducted at station Kahe. One near-bottom cast (~2500 m) was conducted at Station 6.

The array of floating sediment traps and the incubation array were deployed and recovered without incidents. The sediment traps array drifted northwestward, and the incubation array drifted westward.

C. Allen completed successfully 6 plankton net tows.

The PRR, TSRB and AC9/FRRf were deployed as planned, but the AC9 did not work due to problems with its battery pack.

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

Winds were easterlies at 10-12 kt, and sea state 2-3.

We arrived back at Snug Harbor on May 23 at 0730. Full 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)

May 16, 2003; Loading Day

Minor equipment loaded on this day. Major equipment was already on board, since it was not unloaded from the previous HOT cruise. Terminated CTD wire and tested CTD system.

May 19, 2003

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

Arrived to Kahe Station at 1200 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.

A 1000-m CTD cast was started at 1400, but failed to fire bottles due to problems communicating with the water sampler. Aborted cast at 1000-m, brought package on board and troubleshooted. The problem was solved after replacing the cable between the carousel and CTD. Conducted a second 1000-m cast without problems, after which the ship headed towards Station ALOHA.

Winds were easterlies at 12 kt. Sea state 3.

May 20, 2003

Arrived at Station ALOHA at 0200, and proceeded to deploy the sediment traps, immediately followed by the deep PO cast, which ended at 0700 without any problems. This cast was followed by the shallow PO cast at 0900, which started the 36-hr CTD cast period. A total of six 1000-m CTD casts were conducted this day.

Two net tows were conducted between 1000 and 1400 on May 20. Three net tows were conducted between 2200, May 20 and 0200, May 21.

Winds were 10 kt easterlies, and 2 sea state.

May 21, 2003

Seven 1000-m CTD casts were conducted during this day, ending the 36-hr CTD cast burst 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 west of the center of ALOHA Sta.

One net tow was conducted at 1000.

PRR and TSRB were deployed at 1200, followed by a AC9/FRRf cast. Only the FRRf functioned correctly, as the AC9-fluorometer-Seacat package did not function due to problems charging its battery pack.

Winds were easterlies at 12 kt, and 2 sea state.

May 22, 2003

The second deep CTD cast that started at 2300 on May 21 was completed by 0215.

The floating sediment trap array was recovered at 0600. The array drifted 11.5 nm northwest from the center of Station ALOHA.

One AC9/FRRf cast was conducted at 0300 at ALOHA Sta. Only the FRRf functioned properly. PRR/TSRB and FRRf measurements were conducted between 1100 and 1300 at ALOHA.

A near-bottom cast (~2500 m) was conducted at 1900 at Station Kaena (Stn. 6), after which the ship headed back to Snug harbor.

Winds were easterlies at 12 kt and sea state 2.

May 23, 2003

Arrived at Snug Harbor at 0730. Full off-load took place immediately.

Sub component programs:

Investigator:

Bob Bidigare
Mike Landry
John Dore

Project/Institution:

HPLC pigments/UH
zooplankton dynamics/UH
CO2 dynamics/UH

Ancillary programs:

Investigator:

Charles Keeling

Mark Abbott/Ricardo Letelier

Penny Chisholm/Erik Zinser

Project/Institution:

CO2 dynamics and intercalibration/SIO

optical measurements/OSU

Prochlorococcus ecotype dynamics/MIT

Others:

Karin Björkman

Valerie Franck

phosphorus cycling/UH

silicon cycling and diatom productivity/UH

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