

Chief Scientist: F.SANTIAGO-MANDUJANO

HOT-165 Chief Scientist's Cruise Report
R/V Ka'Imikai-O-Kanaloa
November 26 - 30, 2004

Cruise ID: KOK0428

Departed: November 26, 2004 at 0900 (HST)

Returned: November 30, 2004 at 0800

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: Daniel Fitzgerald

STAG Deck Operations: Dave 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 21 20.6'N, 158 16.4'W and was to be occupied on November 26 for about 2 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 November 27 to 29.
- 3) Station 50, is the site of the Ocean Reference Station Mooring, located at 22 45'N, 157 54'W was to be occupied on November 29 for about 1/2 hour.
- 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 29 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 1000 m CTD cast was to be conducted to collect water for K. Bjorkman's experiment, followed by a net tow, and by the subsequent 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 November 28.

A plankton net was to be deployed near noon and midnight on November 27 and 28 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 transit to Sta. 50 to conduct a 200-m CTD cast and then to return to Sta. ALOHA to continue light cast operations. At the end of these operations, 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) was to be deployed for half-hour periods near noon time on November 26, 28 and 29.

A package including a Wet Labs AC9, a Chelsea Fast Repetition Rate Fluorometer (FRRf), and a SeaBird Seacat was to be used to profile the upper 200 m at Sta. ALOHA at noon time on November 28 and 29.

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

2. SCIENCE PERSONNEL

BEACH group:

Cruise Participant Title Affiliation

Karin Bjorkman Research Specialist UH
Matt Church Research Oceanographer UH
Tara Clemente Research Associate UH
Lance Fujieki Computer Specialist UH
Eric Grabowski Research Associate UH
Marcie Grabowski Graduate Student UH
Tom Gregory (Watch Leader) Research Associate UH
David Nichols Volunteer
Melinda Simmons Graduate Student SIO

PO group:

Paul Lethaby (Watch Leader) Research Associate UH
Andrea Rivera Undergrad. Student UH
Damion Rosbrugh Undergrad. Student UH
Alejandro Sanchez-Barba Graduate Student UH
Fernando Santiago-Mandujano Chief Scientist (Res. Assoc.) UH
Mark Valenciano Electronics Technician UH
Carolyn Wells Undergrad. Student UH

Others:

Rachel Foster Scientist UCSC

3. GENERAL SUMMARY

Operations during the cruise were conducted as planned, with minor delays in the schedule for the first two CTD casts at ALOHA Sta.

One 1000-m CTD cast was conducted at Kahe station. Thirteen 1000-m CTD casts and two deep casts (~4740 m) were conducted at Station ALOHA. One 200-m CTD cast was conducted near the ORS mooring (Station 50). One near-bottom cast (~2400 m) was conducted at station Kaena (Station 6).

The array of floating sediment traps and the primary productivity incubation array were deployed and recovered without incidents. Both arrays drifted northeast.

M. Simmons completed successfully 6 plankton net tows.

The PRR and AC9/FRRf were deployed as planned.

The ADCP ran without interruption throughout the cruise, as well as the thermosalinograph, and the ship's two anemometers. No continuous fluorometer data were collected because the sensor was being calibrated at Turner.

Winds were easterlies of about 10 kt early in the cruise, increasing to 25 kt by the end of the cruise. A swell from NE of up to 10 ft was also present by the end of the cruise.

We arrived back at Snug Harbor on November 30 at 0800. 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)

November 24, 2004; Loading Day

Equipment loaded during the afternoon on this day. CTD wire was re-terminated and CTD system tested.

November 26, 2004

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

Arrived to Kahe Station at 1200. A weight cast (400 lb) to 500 m was

conducted at 1205.

At 1230 the Profiling Reflectance Radiometer (PRR) was deployed.

A 1000-m CTD cast was started at 1335 and ended at 1448. After the cast ended, the ship headed towards Station ALOHA.

November 27, 2004

Arrived at Station ALOHA at 0000 and conducted a 1000-m CTD cast starting at 0010.

After the 1000-m CTD cast, a net tow was conducted, followed by the deployment of the sediment traps array. The array was deployed 3 nm north from the center of ALOHA, to prevent it from drifting into the ORS mooring. Mooring's buoy coordinates showed that the buoy was leaning towards the northeast, indicating a drift in this direction.

The deep CTD/PO cast started at 0305 and ended at 0633. This cast was followed by the shallow CTD/PO cast at 0825, which marked the beginning of the 36-hr CTD burst period. A total of six 1000-m CTD casts were conducted this day as part of the CTD burst period.

Two net tows were conducted between 1000 and 1400.

Easterly winds up to 10 kt.

November 28, 2004

Seven 1000-m CTD casts were conducted on this day, which completed the 36-hr CTD burst period. A deep cast followed.

The primary productivity array was deployed at 0650, 1.7 nm north from the center of ALOHA station, and recovered at sunset (1800).

One PRR cast and one AC9/FRRf casts were conducted at noon time.

Two net tow were conducted at night and one during the day

Easterly winds 20-25 kt.

November 29, 2004

The sediment trap array was retrieved at 0730, 12 nm NE from the center of station ALOHA.

One 200-dbar CTD cast was conducted at 0926 near the ORS mooring (Sta. 50). One near-bottom cast was conducted at station Kaena at 2047.

One AC9/FRRf cast was conducted at 0300, and two more at noon time. One PRR cast was conducted at noon.

Easterly winds up to 25 kt, with swell from NE of up to 10 ft.

November 30, 2004

Arrived at Snug Harbor at 0800. Full off-load took place immediately.

Sub component programs:

Investigator: Project/Institution:

Bob Bidigare HPLC pigments/UH
Mike Landry Zooplankton dynamics/UH
John Dore CO2 dynamics/UH
Marcie Grabowski Controls on nitrogen fixation/UH
Karin Bjorkman Nutrient Enrichment/UH

Ancillary programs:

Investigator: Project/Institution:

Charles Keeling CO2 dynamics and intercalibration/SIO
Mark Abbott/Ricardo Letelier Optical measurements/OSU
Paul Quay DI13C and O isotopes/UW
Penny Chisholm Prochlorococcus population dynamics/MIT

Ancillary research during this cruise:

Investigator: Project/Institution:

Rachel Foster Planktonic Symbioses: the abundance and
diversity at Station Aloha/UCSC
