

HOT-168: Chief Scientist Report

Chief Scientist: D. Sadler

Cruise ID: WO503C
Departed: March 3, 2005; 0900(HST)
Returned: March 7, 2005; 0800(HST)
Vessel: R/V Wecoma
Operator: Oregon State University
Master of the Vessel: Captain Danny Arnsdorf
Chief Scientist: Dan Sadler
Marine Technician: Daryl Swensen

1. SCIENTIFIC OBJECTIVES

The objective of this cruise was to continue building 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 March 3 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 March 4 through March 6.
3. Station 50: Located on the eastern edge of Station ALOHA, Station 50 is a surface mooring with its anchor position at 22° 45'N, 157° 54'W. This station was to be occupied on March 6.

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 planned followed by a 1000 m CTD cast and deployment of the floating sediment trap array. Next, a full-depth CTD cast was to be conducted followed by CTD casts at 3-hour intervals for 36 hours of continuous and discrete data collection. Plankton net tows were to be conducted near noon and midnight on March 4 and 5. A floating primary production experiment was to be deployed and recovered on March 5. Following recovery of the sediment traps on March 5, the ship was scheduled to return to Station ALOHA to inspect the surface mooring, Stations 50, followed by optical casts. A bottom moored sediment trap was to be recovered just NE of Station ALOHA at 22° 50.451' N, 157° 52.430' W. The ship was to return to SNUG Harbor for an 0800 arrival March 18 and unload. The following instruments were to collect data throughout the cruise: a shipboard ADCP, a thermosalinograph, a fluorometer and an anemometer.

2. SCIENCE PERSONNEL

| | | |
|--------------------------------|-----------|------------------------|
| Bjorkman, Karin | UH/BEACH | Research Specialist |
| Clemente, Tara | UH/BEACH | Research Associate |
| Corno, Guido | OSU/BEACH | Graduate Student |
| Curless, Susan | UH/BEACH | Research Associate |
| Fujieki, Lance | UH/BEACH | Research Specialist |
| Grabowski, Eric | UH/BEACH | Research Associate |
| Grabowski, Marcie | UH/BEACH | Graduate Student |
| Hannides, Cecelia | UH/BEACH | Graduate Student |
| Lethaby, Paul | UH/PO | Research Associate |
| Rosbrugh, Damien | UH/PO | Undergraduate Student |
| Sadler, Dan | UH/BEACH | Chief Scientist |
| Santiago - Mandujano, Fernando | UH/PO | Research Associate |
| Shacat, Joseph | UH/PO | Research Associate |
| Valenciano, Mark | UH/PO | Electronics Technician |
| Watkins, Blake | UH/BEACH | Marine Engineer |

3. GENERAL SUMMARY

All planned operations were completed. Thirteen 1000 m, one 4800 m and one 100 m CTD casts were obtained at Station ALOHA. A 1000 m cast was obtained at Station Kahe. Also, three PRR casts were performed at Station ALOHA.

C. Sheridan successfully completed six plankton net tows.

The AC9/FRRf was deployed four times at Station ALOHA.

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

Weather during the cruise was mostly overcast with trade winds and occasional light rain. This was interrupted by some weather and wind out to the west on March 4 and 5.

We returned to Snug Harbor on March 7 at 0800. A complete off-load took place immediately.

The bottom moored sediment traps were recovered.

4. R/V Wecoma, OFFICERS AND CREW, TECHNICAL SUPPORT

The R/V Wecoma and her crew delivered excellent ship support for our work. The officers and crew were most helpful and accommodating and are to be commended for maintaining high standards. They were particularly responsive to minimizing excessive ship motion during CTD cast off of the rear A-frame that caused large changes in the wire tension.

Technical support during this cruise was excellent. D. Swensen was available at any time to assist in our work and made things much easier for us. Daryl is one of the top Marine Techs we work with.

5. DAILY REPORT OF ACTIVITIES (HST)

March 2, 2005; Loading Day

All equipment was loaded, set-up, tested and secured. The CTD cable was re-terminated, followed by a test of the CTD system. A tarp was rigged to protect rosette sampling during any rain.

March 3, 2005

The ship departed from Snug harbor at 0910. Fire and abandon ship drills were conducted followed by a science meeting to review the objectives and schedule for the cruise. We arrived at Station Kahe at 1300 and conducted a weight cast (300 lb) to 500 m followed by a 1000 m CTD cast. The ship departed Station Kahe at 1315 and proceeded to Station ALOHA.

We arrived at Station ALOHA at 2230 and conducted a 100 m CTD followed by a net tow at 2317.

Weather was cloudy with rain during the transit to ALOHA. Winds from the south.

March 4, 2004

The sediment trap was deployed at 0051 followed by a 4875 m CTD cast at 0139. The 36 hour "burst" CTD sampling began at 0803 and continued throughout the day. Five 1000 m casts were completed. Net tows were completed at 1207, 1306 and 2210. The CTD had to be re-terminated due to a kink in the wire. A PRR cast was conducted at 1202 followed by an AC9/FRRf.

Weather was overcast with some rain and drizzle. Winds were 10 - 20 knots from the west.

March 5, 2005

Eight 1000 m CTD casts were completed. Net tows were completed at 0100 and 0953. The primary production array was deployed at 0651 and recovered at 1853. A PRR cast was completed at 1146. AC9/FRRf casts were completed at 1207, 1306 and 2210. The CTD had to be re-terminated due to a kink in the wire.

Weather continued to be overcast with occasional rain. Winds were from the west at 10-20 knots.

March 6, 2005

The floating sediment trap array was recovered at 0425. It had drifted approx. 15.8 nm NW from ALOHA. The ship proceeded to Station 50 for visual inspection of the wind instruments. Both anemometers appeared to be in good working order. The Wecoma then proceeded to the NE to the site of the bottom moored traps. Recovery was begun at 0815 and successfully completed at 1430. Transit back to Snug Began at 1300.

Weather during the day was sunny with light trade winds.

March 7, 2005

The Wecoma arrived at Snug Harbor at 0800. A full offload took place.

Sub component programs:

| Investigator: | Project: |
|---------------|-----------------------------|
| ----- | ----- |
| Bob Bidigare | HPLC pigments/UH |
| Mike Landry | zooplankton dynamics/UH |
| John Dore | CO ₂ dynamics/UH |

Ancillary programs:

| Investigator: | Project: |
|------------------------------|---|
| ----- | ----- |
| Charles Keeling | CO ₂ dynamics and intercalibration/SIO |
| Paul Quay | DI ¹³ C and O isotopes/UW |
| Mark Abbott/Ricardo Letelier | Optical measurements/OSU |
| Sallie Chisholm | Prochlorococcus population dynamics/MIT |

Graduate programs:

| Investigator: | Project: |
|------------------|---|
| ----- | ----- |
| Marcie Grabowski | Controls on Community Nitrogen Fixation Rates |