HOT-139: Chief Scientist Report

Chief Scientist: T. GREGORY

HOT-139: Chief Scientist Report
Chief Scientist: T. Gregory

Departed: Aug. 26, 2002 at 1000 (HST)
Returned: Aug. 30 at 0830 (HST)
Vessel: R/V Wecoma
Operator: Oregon State University
Master of the Vessel: Captain Danny Arnsdorf
Chief Scientist: Thomas Gregory
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. 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 Aug. 26 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 Aug. 27 to Aug. 29.

3) Station 8, referred to as HALE-ALOHA, is the location of our deep ocean mooring (20° 20'N, 158° 10.6'W). The mooring is no longer deployed. This station was to be occupied on Aug. 29 for about 2 hours.

4) Station 6, referred to as Station Kaena, is located off Kaena Point at 21° 50.8'N, 158° 21.8'W and was to be occupied on Aug. 29 for about 4 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. PRR and TSRB measurements were also to be made.

Upon arrival at Station ALOHA, net tows were 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. The primary production array was to be deployed on Aug. 28 for 12 hours. Plankton net tows were to be conducted near noon and midnight on August 27 and 28 at Station ALOHA. PRR, TSRB and AC-9/FRRf operations were to be done around noon Aug. 27 and 28. The final

operation at Station ALOHA was to be the recovery of the drifting sediment trap array.

Two Argo-style floats (Steve Riser, UW) were to be deployed at the end of operations at Station ALOHA by D. Swift.

Following Station ALOHA operations, the ship was to transit to Station 8 to conduct one 1000 m CTD cast and then 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.

The following instruments were to collect data throughout the cruise: a shipboard ADCP, a thermosalinograph and fluorometer, and an anemometer.

2. SCIENCE PERSONNEL

PO Group:

Shimi Rii	Research Associate	UH
Daniel Fitzgerald (Watch Leader)	Research Associate	UH
Mark Valenciano	Electronics Technician	UH
Fernando Santiago-Mandujano	Research Associate	UH

JGOFS Group:

Thomas Gregory (Chief Scientist)	Research Associate	UH
Karin Björkman	Research Specialist	UH
Lance Fujieki	Computer Specialist	UH
Paul Morris	Technician	UH
Tara Clemente	Research Associate	UH
Cecilia Sheridan	Graduate Student	UH
Jennifer Brum	Graduate Student	UH
Dan Sadler (Watch Leader)	Research Associate	UH
Andrew Hansen	Graduate Student	UH
Ricardo Letelier	Associate Professor	OSU
Guido Corno	Graduate Student	OSU

Ancillary Projects:

Dana Swift	Technician	UW

3. GENERAL SUMMARY

All operations at Stations Kahe, ALOHA, HALE ALOHA and Kaena were conducted as planned. However, many of the CTD casts at Station ALOHA were initiated later than scheduled. This was because we were required to run the hydro winch at a slower speed than normal, sometimes as slow as 20 m/min during downcasts, in order to maintain adequate tension on the wire. Since design constraints of R/V WECOMA required CTD deployment off the stern, the pitching motions of the ship would create slack in the wire to a greater extent than what is experienced on other ships when the CTD is deployed off the side. We would get behind schedule on casts with many bottles fired and longer duration water sampling and then make up time on casts with fewer bottles fired and

less time-consuming water sampling. Thirteen 1000 m and two 4800 m CTD casts were completed at Station ALOHA. One 1000 m cast at both Stations Kahe and HALE-ALOHA and one 2500 m cast at Station Kaena were obtained. Both free-floating arrays were deployed and

C. Sheridan successfully completed six plankton net tows.

R. Letelier and G. Corno successfully completed four optical package casts.

D. Swift successfully deployed two Argo-style profiling floats at the end of operations at Station ALOHA.

Weather conditions were favorable throughout the cruise.

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

We arrived back at Snug Harbor on August 30 at around 0830. A complete off-load took place immediately.

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

The R/V WECOMA and her crew delivered exceptional ship support for our work. The officers and crew were most helpful and accommodating and are to be commended for maintaining high standards. They showed enthusiasm and concern for our work and were very flexible in receiving changes in our operational schedule. The marine technician ensured that all operations ran smoothly and helped orient us to a vessel with which we were not familiar.

5. DAILY REPORT OF ACTIVITIES (HST)

August 25, 2002; Loading Day

Equipment loaded on this day. The CTD had been used on the previous (non-HOT) WECOMA cruise so termination was not necessary.

August 26, 2002

The ship departed from Snug harbor at 1000. Fire and abandon ship drills were conducted at 1210, followed by a short science meeting during which the cruise schedule was reviewed and safety issues were discussed.

We arrived at Station Kahe at 1315 and immediately conducted PRR and TSRB operations. A weight cast was not necessary since the CTD had been used on the previous cruise. A 1000 m CTD cast was begun at 1419 and the package was back on deck at 1551. We began transit to Station ALOHA at 1605.

August 27, 2002

We arrived at Station ALOHA on schedule and immediately performed a net

tow followed by deployment of the sediment trap array. The deep PO cast started at 0225 and was back on deck at 0503. Three bottles did not fire so the STAG carousel was installed. This carousel performed well the rest of the cruise. Following the deep cast we performed the shallow PO cast, which initiated the 36-hr CTD cast period. We conducted six 1000 m casts this day.

Net tows were conducted at 0030, 1029, 1331 and 2203.

The PRR and TSRB were deployed at 1245.

August 28, 2002

Seven 1000 m CTD casts were conducted this day. The second deep cast was begun at 2324.

Net tows were performed at 0146 and 1000.

The PRR and TSRB were deployed at 1220. Four AC-9/FRRf casts were conducted at 0027, 1252, 1352 and 2143.

The primary production array was deployed at 0512 and recovered at 1920.

August 29, 2002

The deep cast was recovered at 0331 after which we steamed to the sediment trap array and prepared for a recovery at dawn.

D. Swift successfully deployed two Argo-style floats this day at 0416 and 0727.

Upon arriving at the vicinity of the sediment trap array, the ATE sampler was deployed at 0538.

The sediment trap array was recovered at around 0700. The array had drifted to the northwest. After the sediment trap array had been recovered we steamed to Station HALE ALOHA.

We conducted a 1000 m cast at Station HALE ALOHA then transited to Station Kaena. A 2500 m cast was successfully performed at Station Kaena. This cast was recovered at 2314 at which time we began transit to Snug Harbor.

August 30, 2002

Arrived at Snug Harbor at around 0830. A full offload took place immediately.

Sub component programs:

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

John Dore	CO2 dynamics/UH

Ancillary programs:

Investigator:	Project:
Charles Keeling	CO2 dynamics and intercalibration/SIO
Mark Abbott/Ricardo Letelier	optical measurements/OSU

Others:

Investigator:	Project:
Karin Björkman	phosphorus cycling/UH
Steve Riser	deployment of Argo-style profiling floats/UW