HOT-146: Chief Scientist Report

Chief Scientist: T. GREGORY

HOT-146 Chief Scientist's Cruise Report

CRUISE ID: KM 0306
Departed: March 27, 2003 at 1100 (HST)
Returned: March 31, 2003 at 0800 (HST)
Vessel: R/V KILO MOANA
Operator: University of Hawaii
Master of the Vessel: Captain Gray Drewry
Chief Scientist: Thomas Gregory
STAG Electronics Technicians: Steve Poulos and Kuhio Vellalos
STAG Deck Technician: Dave Gravatt

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 27 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 28 to March 30.

3) 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 March 30 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, the deployment of a free-drifting sediment trap array was to be conducted. 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 March 29 for 12 hours. PRR, TSRB and FRRf operations were to be done around noon March 29 and 30 and a nighttime FRRf cast was to be executed at 0300 on March 30. The drifting sediment trap array was to be recovered near dawn and the ATE sampler was to be deployed just before noon on March 30.

Following Station ALOHA 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 return to Snug Harbor.

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

2. SCIENCE PERSONNEL

PO Group:		
Shimi Rii	Research Associate	UH
Daniel Fitzgerald	Research Associate	UH
Mark Valenciano	Electronics Technician	UH
Fernando Santiago-Mandujano (Watch Leader)	Research Associate	UH
Jediah Bishop	Volunteer	HPU
Colleen McGee	Volunteer	HPU
JGOFS Group:		
Thomas Gregory (Chief Scientist)	Research Associate	UH
Lance Fujieki	Computer Specialist	UH
Tara Clemente (Watch Leader)	Research Associate	UH
Dan Sadler	Research Associate	UH
Eric Grabowski	Research Associate	UH
Evgeny Dafner	Research Associate	UH
Cecilia Sheridan	Graduate Student	UH
Jason Sperling	Volunteer	UH
Karin Bjorkman	Research Specialist	UH

3. GENERAL SUMMARY

Most operations at Stations Kahe and Station ALOHA were conducted as planned. The PRR and TSRB deployments at Station Kahe were cancelled due to time constraints. One open cast at Station Aloha was cancelled due to CTD wire problems caused by the complex yet inadequate CTD launch and recovery system aboard the Kilo Moana. Thirteen 1000 m and one 4800 m CTD casts were completed at Station ALOHA. The planned second deep cast at Station ALOHA was cancelled to prevent possible equipment damage due to the inadequate CTD winch/crane system. Both free-floating arrays were deployed and recovered without incident. The 2500 m cast scheduled for Station Kaena was aborted due to deck box errors caused by problems in the CTD wire.

Weather conditions were favorable throughout the cruise although rain was heavy at times.

The thermosalinograph and the ship's anemometer ran without interruption throughout the cruise.

We arrived back at Snug Harbor on March 31 around 0800. A complete off-load took place immediately.

4. R/V KILO MOANA, OFFICERS AND CREW, TECHNICAL SUPPORT

The R/V KILO MOANA 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.

5. DAILY REPORT OF ACTIVITIES (HST)

March 26, 2003; Loading Day

Equipment loaded on this day. The CTD was terminated however we were not able to test the system because the rosette was not loaded until just before departure on the following day. Also, a new CTD wire had been installed on the drum on the previous day.

March 27, 2003

The ship departed from Snug harbor at 1100, two hours late due to last minute loading and Honolulu harbor ship traffic. A short science meeting was held at 1200 during which the cruise schedule was reviewed and safety issues were discussed.

We arrived at Station Kahe at 1345 and immediately conducted a weight cast (400 lbs.) to 1000 m during which M. Valenciano inspected the CTD wire and the new routing of the wire. This was followed by a 1000 m CTD cast. The package was back on deck at 1647 and we then began transit to Station ALOHA.

March 28, 2003

We arrived at Station ALOHA around 0030 and immediately executed a plankton net tow. Following the tow, we deployed the sediment trap array. The deep PO cast started at 0239 and was back on deck at 0607. The CTD wire developed five kinks near the package during the deep cast. M. Valenciano reterminated prior to the next cast which caused a one hour delay for the shallow PO cast. Minor cast delays resulting from the retermination continued through S2C4, after which we were back on schedule. We conducted six 1000 m casts this day.

Plankton net tows were conducted at 0040, 1046, 1326 and 2201.

March 29, 2003

The primary productivity array was deployed at 0632 and recovered at 1830.

Plankton net tows were conducted at 0055, 1006 and 2307. The tow initiated at 0055 came back twisted so we perform an extra night tow at 2307 to replace the compromised tow.

The PRR and TSRB were deployed at 1230. One FRRf cast was conducted at 1311. The MPAK for the AC-9 had been sent back to Wet Labs for service and had not arrived in time for this cruise so we did not deploy the AC-9 this cruise.

At the beginning of S2C13 the CTD wire was drawn into the wrong groove on the traction winch as the wire was tensioned. This caused a kink in the wire and forced us to cancel the cast which was scheduled as an open cast. M. Valenciano reterminated the package and the next cast (S2C13, the HPLC cast) was initiated at 1954. The next scheduled cast was to be the second deep cast. However, F. Santiago-Mandujano determined that a full-ocean depth cast was not necessary given the hydrography noted during S2C1 combined with the less than ideal CTD deployment/recovery system currently in use on the Kilo Moana. It was decided that a 1000 m cast (S2C14) would be performed instead of the deep cast.

March 30, 2003

S2C14 was recovered at 0053 and concluded CTD operations at Station ALOHA.

The sediment trap array was recovered at around 0800. The array had drifted 10.5 nmi. to the south It was raining heavily during the recovery however this did not compromise the operation. Following recovery we steamed back to Station ALOHA.

Upon arrival at Station ALOHA, the ATE sampler was deployed at 1100.

The PRR and TSRB were deployed at 1200 and FRRf casts were performed at 0308 and 1254.

Following the 1254 FRRf cast, we experimented with the Sheepscot Machine Works sampling winch to determine the feasibility of using this winch to conducted FRRf casts during the upcoming COOK BOOK Honolulu-Alaska transect cruise. We determined that it is indeed possible to use this winch at 10 m/min. for this operation but that a regular line should be used in place of the sipper tube line currently installed on the winch.

We attempted to conduct a 2500 m cast at Station Kaena. However, deck box errors (caused by problems in the CTD wire near the package) unable to be fixed given our time constraints caused the cancellation of this cast.

March 31, 2003

We arrived at Snug Harbor at around 0800. 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
Penny Chisholm/Erik Zinser	Prochlorococcus ecotype dynamics/MIT