HOT-117: Chief Scientist Report

Chief Scientist: L. TUPAS

Vessel: R/V Ka'Imikai O' Kanaloa
Loading: July 21, 2000
Departed: July 24, 2000 at 0900
Returned: July 28, 2000 at 0800

Chief Scientist: Dr. Louie Tupas
Master: Captain Ross Barnes
Deck Operations: Mr. Dave Gravatt
Electronics Technician: Mr. Steve Poulos

1. SCIENCE PERSONNEL

Luis Tupas - UH, scientist
John Dore UH, scientist
Karin Bjorkman UH, scientist
Terry Houlihan UH, research associate
Lance Fujieki - UH, computer specialist
Ursula Magaard - UH, research associate
Don Wright - UH, research associate
Fernando Santiago-Mandujano - UH, research associate
Mark Valenciano UH, marine technician
Lal Ratnapala UH graduate student
Colleen Allen UH, research associate
Caludia Benitez-Nelson UH, scientist
Jennifer Brum HPU, undergraduate student
Lal Ratnapala UH, graduate assistant
John Waterbury - WHOI, scientist
Pati Turner UCSC, research associate
Joseph Montoya Georgia Tech, scientist
Roberta Hamme - UW, graduate student

2. GENERAL SUMMARY

All objectives of the JGOFS and WOCE programs were completed. All planned stations were occupied. Weather and sea conditions were good. All core samples were taken. The 36 hour CTD burst sampling period was interrupted twice to reterminate the CTD package. The second deep cast was aborted due to concerns with the CTD cable. All samples for ancillary projects were taken. Guest scientists and students were able to accomplish their work. Floating sediment trap array and primary production array deployed and recovered successfully. No samples were lost during the in-situ incubations. ADCP measurements were made throughout the cruise. A CTD cast and asmples were taken at the recently deployed HALE ALOHA mooring.

3. R/V Ka Imikai O Kanaloa, OFFICERS AND CREW, TECHNICAL SUPPORT

Ship's crew gave excellent support and showed enthusiasm and concern for our work and were very flexible in receiving changes in our operational schedule and logistical support. 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. During the cruise, email was not reliable but the skyphone made it possible for us to retrieve the satellite positions of the sediment trap. Best wishes for AB Wes Hinau who is moving on and did his last cruise with us.

4. DAILY REPORT OF ACTIVITIES

Cruise planning

This was one of the more difficult cruises to plan and execute because of the large number of scientists participating in the cruise. Aside from the already large complement from the JGOFS and WOCE staff, there were four visiting scientists from different institutions. A lot of coordination was necessary as each of the visiting scientists had separate scientific goals and logistical requirements. It was necessary to plan very carefully for wire time and sample volume. The visiting scientists also needed access to the marine center over the weekend. Gate keys were obtained for this purpose. Furthermore, the group of Montoya, Zehr and Waterbury were going to continue their experiment after the cruise at HIMB. All visitors needed storage space for their equipment as well as had to ship stuff out of the marine center after the cruise. Because of the large number of participants, permission was sought from the captain to berth scientists with the female cook and the electronics technician.

July 21, 2000; Loading Day

Loading commenced at 7:30 A.M. The ship's main deck was configured for HOT equipment. The main lab van and the rope winch were secured inside the submarine hangar. The equipment van and second radiation van were secured on the O-2 deck. All deck and lab equipment were loaded and secured within the ship's labs. All electrical and electronic connections were made for the CTD. During the termination of the wire, WOCE marine technician Mark Valenciano noted that the CTD cable appeared to have been weakened. He was concerned about the quality of the cable at this point. The cable was at least five years old and a significant amount had already been cut away for each new termination of the CTD package. All other equipment and containers were stowed away and secured. All laboratory instruments were tested and appeared functioning. No problems were encountered. Joe Montoya and John Waterbury arrived in the late afternoon and was assisted by Dave Karl to get to the ship. Louie Tupas and Dave Karl lent their gate passes to them. Roberta Hamme and Pati Turner would arrive on Sunday and were each given a gate key to enter the marine center compound. Space on the ship was tight for all investigators. We eventually used the mezzanine room as a science laboratory for Montoya and Waterbury. Dore and Brum were accommodated in the lab van. Turner and Hamme got the clean lab

and Allen shared space with Benitez-Nelson. Viton o-rings were used in the first eight bottles to compare their closure properties with the existing silicon o-rings. A toxicity test of the viton o-rings for biological experiments was also done on this cruise.

July 24, 2000

We departed Snug Harbor at 0900. Fire and abandon ship drills were held at around 0930. We arrived at Station Kahe at 1145. Weight cast was started at 1200. No problems were apparent on the wire after the cast. Light casts was completed by 1300. CTD cast started at 1400. Work at Station Kahe was accomplished by 1600 and the ship proceeded to Station ALOHA.

July 25, 2000

Ship arrived at Station ALOHA at 0100. Two net tows were successfully completed. During preparations for the sediment trap deployment, the star board HIAB crane ceased operating with the hardhats suspended in mid-air. Attempts were made to repair the crane but were unsuccessful due to lack of the necessary part. The Aurora crane was used but the array equipment still had to be laid out. The morning shift assisted with the operation and the floating sediment traps were successfully deployed at 0400. The deep CTD cast was made at around 0400 and the burst series commenced at 0900. Net tows and the light casts were accomplished around noon and night. During the 1200 CTD cast, the CTD operators noted a loss in signal after the package entered the water and ordered the package immediately retrieved. During retrieval the wire at the termination was badly frayed but the package was brought in safely. During the retermination period, activities were rescheduled so that the net tows and in-situ pumping was done during the CTD downtime. CTD casts were resumed at 1545 and was carefully monitored. CTD casts continued at the scheduled 3 hour intervals. Net tows were conducted at night.

July 26, 2000

CTD casts and net tows were conducted as scheduled. Primary production experiment was conducted using rosette collected water bottles with silicon o-rings. Water samples were also collected from the Go-Flo and new external closing niskins. Unfortunately this comparison experiment failed because the Go-Flo and Niskin water were not spiked with isotope. A separate experiment was conducted to determine the toxicity of viton o-rings. The test was successful and viton o-rings were found to be clean and non-toxic to organisms. The primary production array was successfully deployed at 0600. Prior to the 0630 cast the CTD cable was again found to be compromised. A second termination was made and tested. CTD casts continued at 0900 and continued as scheduled. Net tows and light casts were completed as scheduled. Primary production array recovery commenced at 1900 and completed by 1930. All samples were retrieved. CTD casts continued at 2100.

July 27, 2000

Work continues as scheduled. Last CTD cast at Station ALOHA completed

at 0630. The second deep cast was aborted because of concerns for the CTD cable. We received the ARGOS positions by email. Ship proceeded to the trap location and traps retrieved at 0930. We prepared to set sail for Station HALE ALOHA however the port shaft began to overheat and ground speed was reduced to 7 knots. We arrived at HALE ALOHA at 1300 and commenced with the CTD cast. Cast completed by 1330 and ship was underway at 1500. Travel was slow and bumpy because of the single engine propulsion.

July 28, 2000; Return and offloading

The ship docked at 0730. Unloading commenced and completed at 1200.

SAMPLES TAKEN FOR OTHER INVESTIGATORS

1. DIC water samples for Charles Keeling, SIO-UCSD
2. DIC water samples for Paul Quay, UW
3. Water samples for Jon Zehr, by Pati Turner, UCSC
4. Phosphorus experiments by Karin Bjorkman, UH
5. Aerosol and ozone measurements for J. Porter, UH
6. 15N sampling by Joe Montoya, GIT
7. Phosphorus sampling by Claudia Benitez-Nelson, UH
8. Nitrogen experiment by John Dore and Jennifer Brum, UH
9. Gas sampling by Roberta Hamme, UW
10. Microbial sampling by John Waterbury, WHOI
11. Primary production experiments by Louie Tupas, UH