HOT-53: Chief Scientist Report

Chief Scientist: R. LUKAS (summary written by L. TUPAS)

Loading: March 5, 1994
Departed: March 7, 1994 at 0900
Returned: March 12, 1994 at 0630
Vessel: R/V Moana Wave
Operator: University of Hawaii
Chief Scientist: Dr. Roger Lukas
Master: Captain Robert Hayes
Deck Operations: Mr. Winston Warr
Electronics Technician: Mr. Will Hervig
Computer Technician: Ms. Sharon Stahl

1. SCIENTIFIC OBJECTIVES

The primary objective of the cruise was to maintain the collection of hydrographic and biogeochemical data at the Hawaii Ocean Time-series (HOT) station. The HOT station, also known as Station ALOHA (A Long Term Oligotrophic Habitat Assessment) is defined as a circle with a 6 nautical mile radius centered at 22o45'N, 158oW. Free- drifting sediment traps were planned for deployment for approximately 72 hours from the site to measure sedimentation rates of particulate matter. CTD casts at three hour intervals were planned to obtain temperature, salinity, dissolved oxygen, flash fluorescence and beam attenuation profiles. Water samples for analysis of dissolved nutrients, gases, and biomass were to be collected with the CTD casts. Another free-drifting array to conduct a primary production experiment was planned for a 12 hour deployment. Three other stations were planned to be occupied during this cruise; Kahe Point Station (21o20.6'N, 158o16.4'W), Kaena Point Station (21o50.76'N, 158o21.84'W), and Station 3 (23o25'N, 158oW). Other research objectives such as the collection of water samples for ancillary investigations and experiments were to be conducted as time permitted. Throughout the cruise underway data from sensors mounted on the bow shall be collected.

2. SCIENCE PERSONNEL

Roger Lukas - UH WOCE
Jefrey Snyder - UH, WOCE
Fernando Santiago-Mandujano - UH, WOCE
Richard Muller - UH, WOCE
Luis Tupas - UH, JGOFS
Dale Hebel - UH, JGOFS
Terrence Houlihan - UH, JGOFS
David Pence - UH, JGOFS
Karin Bjorkmann - UH, JGOFS
Daniel Sadler - UH, Carbon Project
Karen Selph - UH, Zooplankton Project
Christopher Measures - UH, Trace Metal Project
Alexander Soloviev - Shirshov Inst. Oceanol.
Anatoliy Arjannikov - Shirshov Inst. Oceanol.

3. GENERAL SUMMARY

All objectives of the JGOFS and WOCE programs were accomplished. Stations Kahe, Kaena, ALOHA and Station 3 were occupied. Cast at Kahe was aborted due to errors in temperature sensor and was accomplished on way back to Honolulu. All core samples were taken within the 36 hour CTD burst sampling period. All samples for ancillary projects were taken. The floating sediment trap and primary production experiment was conducted. Zooplankton net tows were conducted. A free rising profiler was deployed and retrieved as time permitted. All planned activities were conducted successfully.

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

The R/V Moana Wave continues to maintain the excellent ship support for our work. The assistance in preparing the bow frame sensors was most commendable. The officers and crew were most helpful and constantly concerned about the success of our work. 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

March 5, 1994; Loading Day

All equipment was moved from either SNUG Harbor labs or UH that day. All electrical and electronic connections were made for the CTD. All lab equipment were stowed away and secured. All instruments were tested and appeared functioning. The bow frame and associated sensors were also installed. No problems were encountered. A day of rest in between loading and departure is most welcome.

March 7, 1994

All hands arrived on ship at 0830. Ship departed at 0900. Fire and emergency drills conducted at 0945 followed by safety briefing by first mate. Arrived Kahe Point Station at 1200. Conducted weight cast, PNF cast and 1000 m CTD cast. Problems encountered with CTD cast, cast aborted and ship proceeds to Kaena. Bow sensors deployed, all systems functioning. Surface water sampler towed to station. Arrive Station Kaena at 1700. Conduct CTD to near bottom, completed at 2000, slowly started transit to Station ALOHA while sampling. Surface sampler towed from Kaena to Station ALOHA.

March 8, 1994

Arrive at the center of Station ALOHA at 0130. Begin with shallow cast to determine position of water transfer system (WTS). Sediment trap deployment at 0230. After deployment ship transit to center. Commence with deep cast followed by 36 hour burst sampling.

March 9, 1994

CTD casts continue at 3 hour intervals throughout the day. Go-Flo cast conducted and primary production array successfully deployed. CTD casts continued at 3 hour intervals. PNF cast and zooplankton tow also conducted. Primary production array successfully recovered in the evening.

March 10, 1994

Burst sampling continued at 3 hour intervals. Zooplankton net tows accomplished at different time intervals. After last CTD cast, proceeding to sediment trap site. Sediment trap array recovered without incident. Zooplankton net tow conducted after which ship proceeds to Station 3 at 2345.

March 11, 1994

Arrive at Station 3 at 0500. CTD cast conducted successfully. Proceeding to Kahe point station. Arrive Kahe Station at 22000 to conduct CTD cast. Proceeded directly to Honolulu after cast and sampling.

March 12, 1994

Continue steaming to Honolulu. Arrive Snug Harbor at 0630. Commence unloading.

ANCILLARY INVESTIGATIONS AND SPECIAL PROJECTS

1. Trace metal sampling and analysis - C. Measures, R. Reitmeyer
2. Pigment experiments - M. Latasa
3. DIC sampling - D. Sadler
4. Zooplankton net tows - K. Selph

SAMPLES TAKEN FOR OTHER INVESTIGATORS

1. DIC samples for C.D. Keeling, SIO-UCSD
2. DIC samples for P. Quay, UW
3. Silica samples for H. Thierstein, Zurich
4. Iodine samples for G. Luther