

HOT-61: Chief Scientist Report

Chief Scientist: L. TUPAS

Loading: March 1, 1995

Departed: March 2, 1995 at 0900

Returned: March 7, 1995 at 0730

Vessel: R/V Moana Wave

Operator: University of Hawaii

Chief Scientist: Dr. Louie Tupas

Master: Captain John Stahl

Deck Operations: Mr. Luigi Pozzi

Electronics Technician: Mr. Steve Poulos

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 22°45'N, 158°W. 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 6 hour deployment. Three other stations were planned to be occupied during this cruise; Kahe Point Station (21°20.6'N, 158°16.4'W), Kaena Point Station (21°50.76'N, 158°21.84'W), and Station 3 (23°25'N, 158°W). The secondary objective of the cruise was to deploy a moored optical array near Station ALOHA, however the instrument was damaged during transport thus removing this operation from the schedule. Ricardo Letelier of Oregon State University subsequently did not participate in this cruise. A towed optical plankton counter (OPC) was planned for use whenever the ship was in transit between stations. ADCP measurements will be made throughout the cruise. Other research objectives such as the collection of water samples for ancillary investigations and experiments were to be conducted as time permitted.

2. SCIENCE PERSONNEL

Dale Hebel - UH, JGOFS

Luis Tupas - UH, JGOFS

David Pence - UH, JGOFS

Terrence Houlihan - UH, JGOFS

Renate Scharek - UH, JGOFS

Jefrey Snyder - UH, WOCE

Craig Nosse - UH, WOCE

Terri Navarro-Perez - UH, WOCE

Jinchun Yuan - UH, WOCE

Daniel Sadler - UH, Carbon Project

Angela Adams - UH, Cabon Project
Karen Selph - UH, Zooplankton Project
Suzanna Vink - UH, Trace Metal Project
Kristi Hanson - UH, Pigment Project
Mark Huntley - SIO, OPC/ADCP
Mai Lopez - SIO, OPC/ADCP

3. GENERAL SUMMARY

All objectives of the JGOFS and WOCE programs were accomplished. Only Stations Kahe, Kaena and ALOHA were occupied. All core samples were taken but the 36 hour CTD burst sampling period was disrupted at 2 instances (approximately 3 hours each) when the cable was twisted and needed to be reterminated. All samples for ancillary projects were taken. During the floating sediment trap deployment, the spar buoy broke and the whole array had to be retrieved. This experiment was not performed. The primary production array was successfully deployed and recovered, no samples were lost during the in-situ incubation. Aside from the reterminations of CTD cable, there were no other equipment failures. The optical plankton counter was towed from Stations Kaena to ALOHA without any problem. After all work at Station ALOHA was accomplished (February 5 @ 1830 HST), the ship was preparing to move to the location of the old sediment trap site when it received a distress call from a sinking fishing vessel. After several communications with Coast Guard Group Honolulu, the ship proceeded to the location of the "Red October". The Moana Wave arrived on the scene and 2300 and the Coast Guard cutter Washington arrived at 2330. The Moana Wave was instructed to stand-by as the Coast Guard took over the rescue. The Moana Wave was released at 0300 on February 6. The ship proceeded to the morring site where it did survey work for the remains of the sediment trap. After the survey the ship proceed to Station ALOHA to conduct an areal study of the station with the OPC/v-fin. After the transect the ship proceeded to Honolulu still towing the v-fin which was retrieved just before the ship entered Honolulu harbor.

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. Even as the program continues to expand its range of activities, the ship is still able to accommodate our operational demands. The officers and crew were most helpful and accommodating. They showed enthusiasm and concern for our work and were very flexible in receiving changes in our operational schedule. 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 1, 1995; 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 and the OPC/v-fin. All lab equipment were stowed away and secured. All

instruments were tested and appeared functioning. No problems were encountered.

March 2, 1995

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 1130. Conducted weight cast, PNF cast and 1000 m CTD cast. All operations and sampling accomplished by 1500. Transit to Station Kaena. Arrive Station Kaena at 1800. Conduct CTD to near bottom, completed at 2000, slowly started transit to Station ALOHA while sampling. V-fin towed from Kaena to Station ALOHA. Weather and seas becoming increasingly rough.

March 3, 1995

Arrive at the center of Station ALOHA at 0215 and commenced sediment trap depolyment. Rough sea state. During the deployment of the spar buoy, the lower half hit against the gate and broke off the weighted end. The array was retrieved and accomplished at 0845. No decisions were made to redeploy the array. After the recovery the ship transited to center of station and commenced WOCE deep cast at 0930. PNF cast at 1200. CTD burst sampling commenced at 1430. CTD casts maintained at 3 hour intervals. Sea state heavy. Passing showers encountered.

March 4, 1995

CTD cast continued at 3 hour intervals. Zooplankton net tow at 0100, Go-Flo cast conducted at 0130, finished at 0300. Primary production array deployment commenced at 0600. CTD casts continued at 3 hour intervals. PNF cast and zooplankton tow conducted at 1200. Retrieval of primary production array commenced at 1930. No samples were lost. CTD casts continued at 3 hour intervals. During this period the CTD cable was reterminated due to kinks in the wire. Zooplankton tow at 2245. Continue CTD casts.

March 5, 1995

Burst sampling period finished at 0200. Ship transits outside the circle to pump out holding tanks. CTD casts continue for special projects at 0530. The CTD cable was again reterminated at 0800 because of several kinks in the wire. Extra weight was added to the package and CTD casts continued. Zooplankton tow, large volume pump sampling and PNF cast conducted at noon. CTD worked continues with final cast accomplished at 1730. Preparations for transit to the sediment trap mooring site at 1800 when distress call from sinking fishing vessel received. Coordinates from Coast Guard Group Honolulu showed we were 85 miles away and were too far. At 2000 distress signal was received again which showed the vessel to be only 35 miles away. Ship proceeded to assist the vessel "Red October". Arrived on scene at 2300 but was told by Coast Guard cutter Washington to stand-off while it arrived half an hour later to conduct the rescue. Moana Wave stands-by ready to assist.

March 6, 1995

Moana Wave released release from stand-by at 0300 and proceeded to the location of the moored sediment trap. Survey conducted at 0730. Transit to Station ALOHA at 1100. V-fin deployed at Station ALOHA and towed across the circle before transiting to Honolulu.

March 7, 1995

V-fin retired at 0600. Proceed to Snug Harbor and arrive at 0700. Commenced off loading, all equipment and personnel cleared from ship at 1130.

ANCILLARY INVESTIGATIONS AND SPECIAL PROJECTS

1. Zooplankton sampling - K. Selph,
2. Trace metal sampling and analysis - S. Vink
3. DIC sampling - D. Sadler
4. Optical Plankton counts - M. Huntley, M. Lopez

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