HOT-45: Chief Scientist Report

Chief Scientist: L. TUPAS

Cruise dates: February 15-20, 1993
Vessel: R/V Thomas G. Thompson, University of Washington
Master: Captain Ray Womack
Chief Marine Technician: Bill Martin
Marine Technician: Floyd Makrowski

Scientific Personnel List:

Luis Tupas - UH Scientist
Dale Hebel - UH Scientist
Marlin Atkinson -UH Scientist
Steve Emerson - University of Washington Scientist
Terrence Houlihan - UH Technician
Richard Muller - UH Technician
Desmond Walsh - UH Technician
John Dore - UH Student
James Christian - UH Student
Daniel Sadler - UH Student
Sean Kennan - UH Student
Hongbin Liu - UH Student
Jinchun Yuan - UH Student
Paul Troy - UH Student
Charles Holloway - UH Student
Daniel Hoover - UH Student
Steven Evans - UH Student

General Summary

All objectives of JGOFS and WOCE programs were accomplished. Additionally the cruise supported related and unrelated scientific projects which were also successfully accomplished. Students were able to obtain the water samples they needed and perform their experiments on ship without affecting the required core sampling. There were no injuries or illnesses to science personnel. All equipment functioned properly. We did, however, damage the cap of 1 and lose 4 Scripps bottles attached to the rosette during Cast 2-12. This was caused by the swinging of the package inboard during the upcast just before it was brought on deck. It is not certain whether this was due to negligence on the part of the winch operator or mate on watch or an unavoidable circumstance which none of those on ship could correct fast enough to avoid the accident. In an unrelated incident one Scripps bottle was found cracked after cast 1-1. It is uncertain whether the bottle was damaged prior to any operation of this cruise or during the cast itself. In general, however, the cruise was successful in all aspects and there were no major problems. For those interested, a copy of the ship's log and data gathered by the ship marine technicians can be obtained from the chief scientist

R/V Thomas G. Thompson, officers, crew members and technicians

The ship was more than adequate to support the operations. There was no shortage of laboratory space and all science personnel found more than enough space to do their work. The laboratory vans and deck incubator were well situated at the stern with sufficient electrical power. Winches and cranes were able to handle the planned CTD, box core and water sampling operations and the deployment and retrieval of floating arrays.

The ship personnel were very helpful during loading and offloading of our equipment and providing technical and operational support to our activities. They showed genuine concern for our personal safety and the successful accomplishment of our objectives. They cooperated with the science party in all scientific and logistical aspects of the cruise. The science party in return complied with all ship rules and regulations.

Daily report of activities

February 15, 1993

All personnel arrived between 0600 and 0630 H to avoid the closing of Nimitz Highway due to the ALOHA Run which took place that early morning. Some personnel stayed overnight at the ship. Scheduled depature was 0800 H but due to traffic in the waterway, we departed at 0830 H. A science meeting with the ship marine technicians was held in the library at 0800 H. After personal introductions and short descriptions of the core and other projects, the science party was briefed on rules regarding science and living operations. All those who brought hazardous chemicals filled out the necessary ship forms.

We arrived at Kahe Station (21 deg. 20.6'N, 158 deg. 16.4'W) at 1100 H. The test weight cast, PNF cast, and CTD cast 1-1 were successfully conducted. One Scripps bottle was found to have a crack and was replaced. We left Kahe Station at 1500 H. A meeting with the captain was held at 1500 H and we were given more specific guidelines for working on ship. A fire drill was held at 1600 H.

We arrived at the northeast portion of Station ALOHA (22 deg. 51.498'N, 157 deg. 54.146'W) at 2130. Sediment trap array was immediately deployed and accomplished at 0015 H, Feb. 16.

February 16, 1993

Immediately following sediment trap deployment Niskin bottle casts using the Kevlar line was done for Steve Emerson at 0015 H. We proceeded to the center of the circle at 0105 H and arrived at 0230. CTD cast 2-1 commenced at 0240. Succeeding CTD casts were conducted as scheduled. At 1515 H we left ALOHA and travelled east about 2 nautical miles from the edge of the circle to dump garbage. We returned to the center of Station ALOHA and continued scheduled CTD operations at 1730 H. All WOCE and GOFS water sampling were accomplished today.

February 17, 1993

The Go-Flo cast was conducted at 0100 H and accomplished at at 0230 H. CTD operations continued as scheduled while primary production experiment and array was being prepared. Primary production array was deployed at 0430 and accomplished at 0530 H. Ship remained within site of array. CTD operations continued as scheduled. On CTD cast 2-12, Scripps bottles were lost during the return of the package (see general summary). Package is inspected and bottles adjusted. CTD casts continue as scheduled without delay. After cast 2-13 primary production array retrieval begins and ends at 1900 H. All bottles retrieved. Ship transects to center of circle to continue CTD operations.

February 18, 1993

CTD casts continue. An extra cast (2-17) is conducted to make up for the water samples lost during cast 2-12. We proceed to area of sediment trap array at 0400 and catch sight of it at 0630 H. The sediment trap array drifted northeast from the point of deployment. We proceed with Marlin Atkinson's first deep CTD cast. This is followed by a box core (23 deg. 06.70'N, 157 deg. 42.05'W). Second of Atkinson's cast conducted at 1545 followed by second box core (23 deg. 12.63'N, 157 deg. 37.68'W). Box coring finished at 2345 H. Ship manuevers to retrieve sediment trap.

February 19, 1993

Sediment trap retrieval begins at 0030 H and accomplished at 0300. All traps retrieved. Single bottle Niskin cast for Steve Emerson conducted. We proceed with Sean Kennan's CTD survey at his specified locations. CTD survey starts at 0415 and ends at 2230. Single bottle cast for S. Emerson conducted as final ship scientific operation. We proceed to Honolulu at 2300 H.

February 20, 1993

Arrive and secure at snug Harbor at 0730 H. Offloading of equipment proceeds immediately and smoothly. Offloading complete and all equipment at University of Hawaii at 1230 H.

Other projects conducted

1. Marlin Atkinson; calibration of new oxygen sensor for CTD.

2. Steve Emerson; inorganic carbon and oxygen isotopic measurements in seawater, microbial respiration experiments.

3. Desmond Walsh, Daniel Hoover; benthic biology studies of deep-sea sediments using box core.

4. John Dore; denitrification studies at Station ALOHA

5. James Christian; microbial enzymatic studies at Station ALOHA.

6. Hongbin Liu; bacterial growth inhibition experiments.

7. Jinchun Yuan; dissolved iron measurments at Station ALOHA.

8. Paul Troy; carbonate dissolution experiments, used and extended sediment trap line.

9. Charles Holloway; thorium measurements in the water column and sediment trap material, additional sediment traps deployed on GOFS lines.

10. Sean Kennan; spatial CTD survey of Hawaiian waters.

11. Luis Tupas, Dale Hebel, Terrence Holihan; bacterial production experiments using radiolabelled leucine, ultraviolet light photolysis of dissolved organic phosphorous compounds.

12. Daniel Sadler; inorganic carbon, pH and pCO2 measurements at Station ALOHA

Samples taken for ancillary and other projects

1. Paul Quay, Univ. of Washington; water samples for DIC measurements.

2. Charles Keeling, Scripps, UCSD; water sampples for DIC measurements.

3. Lisa Campbell, Univ. of Hawaii; samples for flow cytometric analysis of microorganisms, collected by H. Liu.

4. Brian Midson, Univ. of Hawaii, HURL; 1000 m water.