

HOT-47: Chief Scientist Report

Chief Scientist: L. TUPAS

Cruise Dates: May 18-23, 1993

Vessel: R/V/ New Horizon

Operator: Scripps Institution of Oceanography, UCSD

Master: Captain John Manion

Resident Marine Technician: Seth Mogk

Ship Scheduling Office: Elizabeth Rios

Science Personnel:

Luis Tupas- UH Scientist, JGOFS

Dale Hebel- UH Scientist, JGOFS

Christopher Carillo- UH Technician, JGOFS

Jefrey Snyder- UH Technician, WOCE

Richard Muller- UH Technician, WOCE

Christopher Measures- UH Scientist

Florence Thomas- UH Scientist

Lance Fujieki- UH Graduate Student

Ricardo Letelier- UH Graduate Student

Daniel Sadler- UH Graduate Student

Charles Holloway- UH Graduate Student

Hongbin Liu- UH Graduate Student

Jinchun Yuan- UH Graduate Student

Reka Domokos- UH Graduate Student

Mike Mulroney- Univ. of Rhode Island, Scientist

General Summary

All objectives of the JGOFS and WOCE Programs were accomplished. All core samples were taken and the 36 hour CTD burst sampling was maintained without interruption. We were able to recover IES 1, 3 and 4. IES 2, which is located at Station ALOHA did not respond to repeated interrogations but the release code was transmitted anyway. A surface search was conducted, however, the IES did not transmit any transponder or VHF signal. We continued to monitor the radio frequency and kept watch for the strobe during the 36 hours we remained at ALOHA for core work. A final interrogation and search was conducted after the core work but the IES was not to be found. We maintained surveillance of IES 2 (if it had surfaced) even during the recovery of IES 3. We successfully deployed an IES at Station ALOHA and another at newly named Station Kaena. The cruise also supported ancillary investigations conducted by UH scientists and graduate students. In general, it was a very successful cruise with no major equipment failures and no injuries to personnel.

Daily reports

May 18, 1993, Tuesday

Although I had scheduled an assembly time of 0700, science personnel continued to report in until 0750. We departed promptly at 0800 for Station Kahe. At 0830, the resident marine technician, Seth Mogk, gave us the standard briefing on ship rules and safety procedures. Captain Manion joined the meeting later to conclude the briefing. A fire and abandon ship drill was held at 0900. We arrived at Station Kahe at 1130. We proceeded with a 300 m weight cast, a PNF cast, and a 1000 m cast. Sampling of the 1000 m cast was completed at 1500 and we proceeded to the location of IES 4 (22°45'N, 157°40'W). We arrived at IES 4 at 1130 hours. Mike Mulroney proceeded to interrogate the IES and we were able to establish its location. The release code was given and we waited for the IES to surface.

May 19, 1993, Wednesday

The IES surfaced and was located and brought on board at 0130. We then proceeded to the eastern boundary of Station ALOHA and arrived at 0500. Sediment traps were deployed upon arrival at 22° 46.6'N, 157°51.4'W and was finished at 0700. After deployment, the ship moved to the center of the circle (22° 45'N, 158°W). Upon arrival at 0730 Mike Mulroney began interrogation of IES 2, which did not respond. The IES did not respond despite all attempts to communicate with it. The release code was eventually transmitted and we conducted a surface search after a period of waiting. The surface search proved negative and we commenced with the deployment of a new IES. The new IES was deployed at 22°45.05'N, 158°00.08'W at 0930 and we waited until we received confirmation that it landed at the bottom and was properly transmitting. We then proceeded our standard time-series data collection. A PNF cast was conducted at 1100. The WOCE deep cast was conducted at 1130 and completed at 1530. We suspended work to proceed outside the circle to pump out the ship's sewage tanks. We then returned to the center and started the 36 hour burst sampling at 1800. This continued every 3 hours for 36 hours without interruption.

May 20, 1993, Thursday

The Go-Flo cast commenced at 0130 and was completed at 0300. The primary production array was deployed at 0600. CTD casts were continued throughout the day. PNF cast was conducted at 1200. The primary production array was retrieved at 2000. CTD casts continued throughout the day without interruption.

May 21, 1993, Friday

The last CTD cast of the burst sampling was completed at 0400. The ship then proceeded outside of the circle to pump out continued CTD casts at 0800. PNF cast was conducted at 1100. CTD casts continued throughout the day. One cast was aborted due to poor signal transmission. A new termination was made and the error was corrected. The final CTD cast for Station ALOHA was completed at 1900. We then proceeded with another attempt to communicate with IES 2 and a surface search was conducted. We left Station ALOHA at 2300 for IES 1.

May 22, 1993, Saturday

We arrived at IES 1 at 0130 and proceeded with a 4500 m cast for Flo Thomas. A surface net tow for Ricardo Letelier commenced at 0230 and completed at 0300. Mike Mulroney proceed to communicate with the IES at 0300. The IES was located and the release signal was transmitted. The CTD was brought onboard at 0500. The IES was recovered at 0545. We then proceeded to the location of the sediment traps. The sediment traps were recovered at 0945 at 22o41.64'N, 158o 41.91'W. After recovery we moved to the location of IES 3. A 4500m CTD cast was conducted at the IES 3 location for Flo Thomas at 1300 and was completed at 1700. Mike Mulroney proceed to communicate with IES 3, but was unsuccessful. The release signal was nevertheless transmitted and we conducted a surface search. We located and recovered the IES at 2100. We then proceeded to the possible deployment site near Kaena point for a new IES.

May 23, 1993, Sunday

We arrived at the designated deployment site (21o53'N, 158o15'W) and commenced a bathymetric survey at 0100. Station was designated as Waimea. We tried to locate a level area of a depth between 2000 to 3000 m but could not locate one within the 5 square mile area. We moved to 21o47'N, 158o25'W and conducted another bathymetric survey at 0400. A suitable site was located and the IES was deployed at 0630 at 21o50.76'N, 158o21.84'W, at a depth of about 2600 m. Station was designated Kaena. A CTD cast to the near bottom commenced at 0730 and completed at 0945. We confirmed the proper operation of the new IES and proceeded back to Honolulu at 1000. We arrived at 1630 hours.

Other work conducted

1. Chris Measures, Jinchun Yuan -Iron and aluminum analysis
2. Ricardo Letelier -Biology of Trichodesmium
3. Hongbin Liu -Bacterial growth experiments
4. Charles Holloway -Thorium measurements
5. Florence Thomas -Oxygen sensor calibration
6. Luis Tupas, Dale Hebel -Leucine uptake, chlorophyll extraction
7. Christopher Carillo, Daniel Sadler -Inorganic carbon analysis