HOT-55: Chief Scientist Report

Chief Scientist: D. HEBEL

HOT 55
Cruise Report
R/V Moana Wave
23-28 July 1994

Personnel List:

Dale Hebel	Chief Scientist	UH
WOCE group:		
Jefrey Snyder	Technician	UH
Debra Schulman	Graduate Student	UH
Fernando S-Mandujano	Scientist	UH
Bill Weber	Visiting Engineer	ASA
JGOFS group:		
Dale Hebel	Scientist	UH
Ursula Magaard	Technician	UH
Jim Christian	Graduate Student	UH
Terry Houlihan	Technician	UH
Louie Tupas	Scientist	UH
Lance Fujieki	Technician	UH
Renate Scharek	Postdoc	UH
Karen Casciotti	REU	UH
Ancillary projects:		
Christopher Winn	Scientist	UH-Carbon Progam
Mike Landry	Scientist	UH-Zooplankton Program
Karen Selph	Technician	UH-Zooplankton Program
Brian Popp	Scientist	UH-Isotope Biogeochemistry
Payal Parekh	REU	UH-Isotope Biogeochemistry
STAG		
Luigi Pozzi	Technician	UH-UMC
Ken Shultis	Technician	UH-UMC

Itinerary (approximate local time):

Saturday, 23 July
  0900 Departed Snug Harbor
  1200 Arrived Kahe Pt. (Sta. 1-1)
  1300 PNF cast

1600 Departed Kahe
1900 Arrived Kaena Pt. (Sta 1-2)
2200 Departed Kaena Pt.

Sunday, 24 July
0300 Arrived Aloha (Sta. 2) trap deployment site
0600 Completed sediment trap deployment
0800 Arrived Aloha (center of circle), WOCE deep cast
1300 PNF cast
1400 Emergency medical evacuation
1430 Start 36 hrs 'burst sampling'
2300 Net tow

Monday, 25 July
0130 Go-Flo cast
0700 Deployed primary productivity array
1130 Net tow
1300 PNF cast
1900 Retrieved primary productivity array
2300 Net tow

Tuesday, 26 July
0300 Completed "burst" sampling
0400 Began ancillary work
1200 Net tow
1300 PNF cast
2400 Capstan incident

Wednesday, 27 July
0100 Second WOCE deep cast
1000 Recovered sediment traps
1430 Arrived station 3
1600 Departed station 3

Thursday, 28 July
0700 Arrived Snug Harbor
1100 Offloaded

Narrative:

HOT 55 was conducted 23-28 July 1994 aboard the R/V Moana Wave (full 5 days at sea) with Capt. Stan Winslow as master. The cruise was postponed one day due to the uncertainty in the projected course of hurricane Emilia which, at one time, was rated as a category 5 hurricane (the most powerful). There was a number of events that were atypical of routine HOT cruises. These included 1) Fernando's eye injury, 2) medivac of crew member, 3) minimal sediment trap travel, and 4) capstan incident. Irrespective of these events all core samples were collected and all CTD operations completed.

We departed Snug Harbor 23 Jan. after a one day delay due to hurricane Emilia followed by the routine lifeboat and fire drill. A short science meeting followed to delineate the cruise plan, watches, core work and ancillary projects. At Kahe we conducted a weight cast to 500m followed by a PNF cast and 1000 m CTD cast. Jeff also requested that we do a bottom depth determination prior to each CTD cast. The idea was to generate detailed bathymetry of station ALOHA

over time. I do not know if this was adhered to since, later in the cruise, Fernando made the point that we return to the center of the circle prior to each cast (except during the primary productivity day when we follow the array). Therefore, most of the data would be at the center of the circle.

At Kaena Fernando sustained an injury above his left eye when his hands slipped off the bottom water bottle cap, while cocking the rosette, throwing him off balance and into the bottle spigot. Following the Kaena Point station we steamed to station ALOHA and deployed the sediment traps near the center of the circle. We had 9 crosses with 86 traps between the depths of 80-520 m. The array traveled approximately 6 nm in 75 hrs (straight line from deployment to retrival point), in a SW direction and was periodically sighted by the bridge during CTD operations. I understand that, at times, they manuvered the ship to avoid a possible encounter.

Stan notified me after the trap deployment, in passing, that one of the crew members (Brian) was passing some blood when he urinated. He contacted medical personnel and one possibility was a rupture blood vessel which is not a life threatening condition. Louie woke me at ~1100 hrs and told me the same story and that we were going to head in to Kahuku where he was to be evacuated. I spoke with Stan and at that time he was making arrangements for an air evac with the Coast Guard. This all transpired during the deep cast. When Louie awoke me it was on the way up. There was also some electrical problem with the winch when the chief engineer (Bill Lefleur) started up the stern capstan. It appears that we cannot operate the capstan and winch simultaneously. Prior to the helicopters arrival (about 45 min-1 hr transit) we mustered on the 02 deck to watch the evacuation operations. Many 35 mm still pictures were taken and Fernando and Bill Weber took some videos although condensation developed on Fernando's camera and he doesn't know how much he captured.

We deployed the primary productivity array with the net haul line since we discovered that the regular line was not aboard. The spreader bars and dark bags were attached by means of two tie wraps attached at the three points at the appropriate depth. We recovered the PP array without difficulty, however, the bag containing the dark bottles at 5 m was missing with all three bottles. Fortunately, all light bottles were still secured. At all other depths all samples were accounted for. We split all the light bottle samples into 0.2 um and GF/F fractions (dark bottles were not split). One hundred ml was subsampled for the 0.2 um and the remainder filtered thru GF/F as in HOT 46.

At approximately 2400 hrs on Tuesday 7/26/94 the capstan was powered up for the scheduled net tow. The capstan must have been engaged since at power up it pulled the 1 ton (?) lead weight which supports and secures the block into the capstan. In the process it ran into the stainless steel electrical housing and then into the electrical motor crushing the electrical box. This shorted out the electrical motor but maybe not before it fried itself. I understand Bill Weber was the first to notice it and called the bridge. This all occurred when no one was on deck which is fortunate. Karen and Mike were in the process of preparing the data logger for their net tow when the

incident occurred. This incident resulted in the loss of 2 net tows. Six had been scheduled and 4 were completed, 2 during the day and 2 at nite. Mike and Karen made the decision to forego additional net tow efforts. There should be an on/off switch located on the capstan (now it is located somewhere else) in additon to the forward/reverse controls to avoid a recurrence of this dangerous problem.

After completing all scheduled work (except for net tows) at station ALOHA we steamed to station 3. We conducted a 1000 m CTD cast and immediately departed steaming directly to Snug Harbor. There was not enough time to make the return 158 Kahuku transit.

Weather:

The weather was mostly overcast the first three days with typical 20 kt NE trades and 2-4 m seas. Skies cleared a bit on the final 2 days but wind and seas did not improve.

Equipment and methods:

All equipment was standard for regular HOT cruises although we did bring Dave's lab van. We lost the use of the stern capstan at the end of day 4 and lost one go- flow bottle (#8) during removal from the line.

Sub component programs:

Investigator:	Project:
Christopher Winn (UH)	DIC, pH, Alk., pCO2
Bob Bidigare (UH)	HPLC pigments
Michael Landry (UH)	Zooplankton dynamics

Ancillary programs:

Investigator:	Project:
Charles Keeling (SIO)	CO2 dynamics and inter calibration
Paul Quay (UW)	DIC and 13C
Hans Thierstein (Zurich)	Calcareous plankton dynamics
George Luther (UD)	Iodine speciation

Students:

Jim Christian	Role of bacteria in biogeochemical cycling and fluxes
Karen Selph	Zooplankton dynamics
Karen Casciotti	Dissolved RNA studies

Others:

Brian Popp	Isotope geochemistry studies
Karen Selph for Chris Measures	Trace metal samples
Karen Selph for Lisa Campbell	Picoplankton time-series (?)
Renate Scharek	Biogeochemistry of silica