HOT-71: Chief Scientist Report

Chief Scientist: D. HEBEL

HOT 71 Cruise Report
R/V Moana Wave
22-26 April, 1996

Personnel List

HOT 71:

WOCE group:		
Jefrey Snyder*	Research Associate	UH
Craig Nosse	Research Associate	UH
Molly Lucas	Graduate Student	UH
Fernando Santiago-Mandujano*	Research Associate	UH
JGOFS group:		
Dale Hebel	Chief Scientist (Co-PI JGOFS)	UH
Terry Houlihan	Research Associate	UH
Louie Tupas	Scientist (Co-PI JGOFS)	UH
Daniel Sadler	Graduate Student	UH
Lance Fujieki	Computer Specialist	UH
Albert Colman	Casual Hire	UH
Luigi Pozzi	STAG	UH
Kendra McDonough	Graduate Student	UH
Ancillary projects		
John Rooney	Graduate Student	UH
Slyvia Pinca	Post Doc.	SIO
STAG		
Steve Poulos	Electronic Technician	UH-UMC
Dave Gravett	Deck Technician	UH-UMC

* Watch Leader

Itinerary (approximate local time):

Monday, 22 April
- 0900 Departed Snug Harbor
- 0930 Fire, safety, abandon ship drill/science meeting
- 1120 Arrived Kahe Pt. (Sta. 1)
- 1130 Wt. cast
- 1300 S1C1
- 1410 Departed Kahe
- 2300 Arrived Station ALOHA

Tuesday, 23 April

0040 Floating sediment trap deployment
0120 Plankton net tow
0240 S2C1 (deep cast)
0800 S2C2
1000 Plankton net tow
1100 S2C3
1300 Plankton net tow
1410 S2C4
1700 S2C5
2000 S2C6
2200 Plankton net tow
2300 S2C7

Wednesday, 24 April

0000 Plankton net tow
0110 Primary productivity go-flo cast
0240 S2C8
0420 Deployed primary productivity array
0500 S2C9
0800 S2C10
1000 Plankton net tow
1100 S2C11
1400 S2C12
1700 S2C13
1930 Recovered primary productivity array
2010 S2C14
2350 Triangulated lost equipment

Thursday, 25 April

0250 S2C15
0510 S2C16 (deep cast)
1140 Recovered floating sediment traps
1430 Deployed OPC
2130 Retrieved OPC
2150 Depart Station ALOHA

Friday, 26 April

0740 Arrived Snug Harbor
1200 Completed offloading

Narrative:

HOT 71 was a 4 day cruise conducted 22-26 April, 1996 aboard the R/V Moana Wave with Capt. Hayes as Master. Final aspects of loading were conducted on 19 April since most of the large pieces of deck equipment were left onboard after HOT 70. All over-the-side operations were completed and all samples collected. The ship continues to provide a good operational platform for our work and as usual the captain, crew and STAG members made every effort to help us attain the established cruise goals.

19 April (all times local unless noted)

Loading was completed for most participants by 1400 hrs, however, tests with the new pump on 18 April for the CWS were unsuccessful. Dave Harris (ESF) was notified and a number of diagnostic tests were performed without resolution of the problem. Dave arrived later that

morning (18 April) and Terry and Dave continued the troubleshooting process. Various solutions to the problem were tried on loading day without success which included the replacement of one of the "chokes" (which was shorting out) with a hand-made replacement and the replacement of the motor controller box with a variac. The CWS "sipper" tube was filled with a 0.02% solution of NaN3 on 22 April.

22-23 April

Departed Snug Harbor on schedule enroute Kahe Pt. with all personnel on board. Mustered for routine fire and abandon ship drill followed by regular science meeting. Arrived Kahe Pt approx. 1100 hrs, conducted weight cast followed by 1000 m CTD cast. All equipment functioned properly and all samples were collected. At this time all other scientific equipment appears to be functioning normally with the exception of the new pCO2 system which is experiencing a problem with a bad thermistor located in the equilibrator. Dan is cross-correlating these readings with a mercury thermometer. The weather at Kahe was good with a slight south wind (~5-10 kts) and 1-2 swells. Skies were mostly clear. Departed Kahe approx. 1430 hrs enroute Station ALOHA.

Arrived ALOHA ~2300 hrs and began deployment of the floating sediment trap array. Deployment complete by 0045 hrs with 4 traps for Landry deployed at ~165 m and 12 traps (JGOFS) at ~150 m. The Mer 2020 (spectraradiometer) was deployed on the trap line at ~25 m and 2 additional yellow hard hats were added (total 7) to provide additional buoyancy. The first net tow followed the trap deployment using the large white capstan with the rope wrapped completely on the capstan. First deep cast deployed at 0240 hrs followed by shift change. Seas are relatively calm with variable winds ENE-WNW <15 kts.

23-24 April

Day shift completed WOCE-1, WOCE-2, PC/PN, and deployed PPO4 cast. Weather remains nice and all equipment is functioning properly. Night shift completed PPO4, JGOFS-1, JGOFS-2, and go- flo casts. Work is progressing according to schedule. All samples have been collected with the exception of the primary productivity sample at 150 m. This go-flo failed to trip after 2 tries. The go-flo at 175 m was leaking upon retrieval. WOCE collected 50 l of 1000 m water for salinity secondary standards and additional experimental work by Albert Coleman is progressing. Four net tows were also completed.

24-25 April

All net tows were completed by the end of the day shift in addition to H2O2, ATP and Thierstein/CH4 N2O casts. The primary productivity array was recovered following the late afternoon H2O2 cast and the remainder of casts completing the 36 hr burst sampling were completed on schedule. Following the last burst sampling cast we steamed to the lost equipment site and successfully interrogated the acoustic release. The equipment was fixed by triangulation before returning to Station ALOHA to do the final 1000 m HPLC cast and second WOCE deep cast. The CTD cable was lubricated during the retrieval of the WOCE deep cast. Following the deep cast we steamed to the floating sediment

traps which drifted almost due west, retrieve the traps and deploy the OPC for our return transit. We expect to arrive Snug Harbor 0800 hrs on Friday. The weather continues good although the winds have increased to 15-25 kts from the NE.

25-26 April

Weather has continued favorable. The HPLC and second WOCE deep cast were completed and all samples were collected. The CTD winch cable was lubricated on the ascent from the deep cast. Following the deep cast we steamed to the floating sediment traps, retrieved the traps (~20 nm), and returned to the Station ALOHA to begin OPC operations. The OPC was towed for ~7 hrs within the circle confines before retrieval for the return leg to Snug Harbor. We depart Station ALOHA ~2200 hrs arriving Snug Harbor ~0800 hrs. All equipment and personnel were off loaded by ~1200 hrs.

Weather:

HOT 71:
The weather was mostly sunny with light-moderate winds and seas. Below is listed the cruise log bridge descriptions and the various values represent the range for that day. Under wind, sea, and swell there will be two designations, the first is the direction (in degrees), the second for wind is in kts, for sea in Beauford force, for swell in feet, and clouds in tenths.

Day	Date	Wind	Sea	Swell	Clouds
Monday	22 April	045-200, 10-19	045-200, 2-4	050-140, 2-5	3-6
Tuesday	23 April	075-090, 14-20	075-090, 3	070-090, 4	2-3
Wednesday	24 April	065-090, 14-20	065-090, 3-4	080, 4-6	4-9
Thursday	25 April	080, 17-22	080, 3-4	080-100, 4-6	3-7
Friday*	26 April	095, 20	095, 4	090, 4	1

*Only one entry (0200 hrs)

Equipment and methods:

All standard equipment used on HOT 71 functioned properly with the exception of two go-flo bottles which either leaked or did not trip. The new pCO2 system had problems with a bad thermistor and suspicous water pCO2 values. The CWS pump was inoperable from the beginning of the cruise. No equipment was lost.

Sub component programs:

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

Ancillary programs:

Investigator:	Project/Samples
Charles Keeling (SIO)	DIC
Paul Quay (UW)	DIC isotopes
Hans Thierstein (ETH Zurich)	Calcareous plankton studies
Albert Colman (UH)	Phosphorus experiments
Edward Laws (UH)	Surface seawater