HOT-49: Chief Scientist Report

Chief Scientists: D. Karl (leg 1), D HEBEL (leg 2)

HOT 49 Cruise Report
R/V Moana Wave
9-17 Sept. 1993

Personnel List:

Leg 1	Dave Karl	Chief Scientist	UH
	JGOFS group:		
	Dale Hebel	Scientist	UH
	Louie Tupas	Scientist	UH
	Terry Houlihan	Technician	UH
	Jim Christian	Graduate Student	UH
	Stuart Reid	Graduate Student	UH
	Rich Muller	Technician	UH
	Lance Fujieke	Graduate Student	UH
	Ancillary projects:		
	Charles Holloway	Graduate Student	UH - J. Cowen
	Observers:		
	Selima Siddique	Student	UH
	Dave Copson	ESF	UH
Leg 2	Dale Hebel	Chief Scientist	UH
	WOCE group:		
	Jeff Snyder	Technician	UH
	Rich Muller	Technician	UH
	Fred Bingham	Scientist	UH
	Fernando S.-Mandujano	Scientist	UH
	JGOFS group:		
	Chris Winn	Scientist	UH
	Louie Tupas	Scientist	UH
	Ricardo Letelier	Graduate Student	UH
	Terry Houlihan	Technician	UH
	Jim Christian	Graduate Student	UH
	Stuart Reid	Graduate Student	UH
	Ancillary projects:		
	Lisa Campbell	Scientist	UH
	Hongbin Liu	Graduate Student	UH - L. Campbell
	Charles Holloway	Graduate Student	UH - J. Cowen
	Jinchun Yuan	Graduate Student	UH - C. Measures
	Chuck Stump	Scientist	UW - S. Emerson
	Roberta Hamme	Graduate Student	UW - S. Emerson

Itinerary (approximate local time):

Thursday, 9 Sept. 1993

1500 Departed Snug Harbor (Leg 1), steaming to trap drop-off point

Friday, 10 Sept.

0200 Arrived trap drop-off point
0450 Completed trap deployment enroute moored trap location
0630 Arrived moored trap location
0720 Array relesed and shallow buoy sighted
0850 Retrieval begun
1300 Retrieval completed
1800 Continuous Water Sampler (CWS) wt. test
1845 CWS-CTD and pump tests

Saturday, 11 Sept.

0800 Began moored sediment trap deployment
1150 Completed moored sed. trap deployment
1640 Visual inspection of floating trap array enroute Snug
1750 Winch wt. cast
1900 Pylon test cast

Sunday, 12 Sept.

0810 Arrived Snug Harbor
0930 Departed Snug Harbor (Leg 2)
1210 Arrived station Kahe
1530 Completed PNF and 1000 m CTD cast, underway station ALOHA
2240 Visual fix floating sediment traps

Monday, 13 Sept.

0030 Arrived ALOHA, commenced net tows
0140 WOCE deep cast
0520 Commenced 36 hr. CTD "burst" sampling

Tuesday, 14 Sept.

0130 Go Flo cast
0510 Primary productivity array deployed
1230 Steaming to dump holding tanks
1440 Resumed CTD operations
1900 Retrieved primary productivity array, completed 36 hr "burst" sampling

Wednesday, 15 Sept.

0230 Second WOCE deep cast
0640 Completed deep cast
0750 Surface net tow
1620 Surface net tow
2140 Completed station ALOHA CTD ops

Thursday, 16 Sept.

0030 Departed station ALOHA for station 3
0450 Station 3 CTD cast
0600 Began 158 degree transect
1250 Departed from transect line to recover floating sediment traps
1300 Sighted traps
1500 Completed trap recovery
1610 CWS tests
1940 Continued 158 transect
2120 Arrived station 4

2230 Departed station 4
2330 Arrived station 5

Friday, 17 Sept.

0030 Departed station 5
0050 Began 300 m isobath ADCP bottom tracking enroute Snug Harbor
0800 Arrived Snug Harbor

Narrative:

HOT 49 was conducted 9-17 September 1993 aboard the R/V Moana Wave with Capt. Stahl as Master. The cruise was organized into two legs. The primary goal of the first leg (9-12 Sept., chief scientist - Dave Karl), was to recover, sample, and redeploy the moored time-series (T-S) ediment traps and if time permitted to test the CWS. The primary goal of the second leg (12-17 Sept., chief scientist - Dale Hebel) was the collection of routine HOT samples and CTD data. Both legs of the cruise were successful and all samples and data collected. In addition to the routine data and sample collection on leg 2 a transect was run down the 158 degree line encompassing statins 3, 4 and 5. CTD casts were conducted at transect stations and the 300 m isobath followed on the return to Snug Harbor. The ADCP ran continuously throughout the cruise with no apparent problems.

Leg 1 departed Snug Harbor approximately 1500 hrs 9 Sept. 1993. We steamed directly to the southeast quadrant of the circle defining station ALOHA for the floating array deployment. Enroute a fire and abandon ship were conducted followed by a science meeting. On station (see itinerary), the ship drift was southeasterly while the ADCP (upper 100m ?) indicated a southwesterly current. The chief scientist made the decision to deploy the floating array although there were concerns the array may enter the Kauai Channel during the 7 day deployment period. Following a successful deployment we steamed to the moored sediment traps (see ship's log HOT 49 JGOFS cruise binder for all coordinates), actuated the acoustic release successfully and retrieved the array in calm seas. During sampling and reconfiguration of the array the new Continuous Water Sampler was weight tested followed by a full test of CTD sensors and pumping ability. It was discovered that the pump could not be run in conjunction with CTD data

Leg 2 departed Snug Harbor 12 Sept 1993 after dropping off a subset of Leg 1 participants and boarding additional Leg 2 personnel. The customary fire and abandon ship drill were performed followed by a science meeting. It was at the science meeting that the previously run 158 degree transect would be desirable time and conditions permitting. Since the floating sediment traps were deployed on Leg 1 we steamed to the center of the circle and began CTD operations following a brief net tow operation. CTD operations were concluded without major equipment malfunctions and all data and samples collected during or following the 36 hr "burst" CTD operations. All JGOFS and ancillary investigator samples were collected at station ALOHA.

We departed station ALOHA for station 3 early Thursday 16 Sept. to begin the 158 transect. The 158 transect was completed deviating only for the recovery of the floating sediment trap array and additional tests of the CWS. The sediment traps have been drifting at approximately 0.2 kts almost due south slightly off 158 degrees. The 158 transect was completed 0030 hrs 17 Sept. 1993. The return course followed the 300 m isobath from Kahuku to Snug Harbor arriving at 0800.

Weather:

The weather was good throughout the cruise with light-moderate trades (10-20 kts), mostly sunny skies, and 1-2 m seas.

Equipment and methods:

All equipment used on HOT 49 was standard for past HOT cruises with the exception of the CWS. The CTD related equipment functioned properly, however, the CWS was unable to pump water and transmit CTD data simultaneously due to current leakage. The JGOFS incubators could not hold the requied temperature due to a malfunction of the refrigeration component The PNF had an intermittent short which was resolved (at least for the short-term) on board.

Ancillary programs:

Investigator:	Project:
Charles Keeling (SIO)	CO2 dynamics and inter calibration
Lisa Campbell (UH)	Picoplankton studies
Steve Emerson	Phytoplankton respiration experiments
Paul Quay	DIC dynamics
Hans Thierstein	Coccolithophore studies

Students (UH):

Ricardo Letelier	Tricodesmium studies
Jim Christian	Exoenzyme studies
Chuck Holloway	Th-U disequilibria and marine snow dynamics
Jinchun Yuan	Trace metal studies
Honbin Liu	Picoplankton studie

Others:

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