

# HOT-40: Chief Scientist Report

Chief Scientist: D. HEBEL

HOT 40 Cruise Report

R/V Moana Wave

20-25 Sept. 1992

## Personnel List:

Dale Hebel	Chief Scientist	UH
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### WOCE group:

Fred Bingham	Scientist	UH
Sean Kennan	Graduate Student	UH
Rich Muller	Technician	UH

### JGOFS group:

Ricardo Letelier	Graduate Student	UH
John Dore	Graduate Student	UH
Terry Houlihan	Technician	UH
Chris Carrillo	Technician	UH
Dan Sadler	Graduate Student	UH

### Ancillary projects

#### Emerson's O2 project:

Chuck Stump	Technician	UW
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#### Campbell's Picoplankton project:

Hector Nolla	Technician	UH
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### STAG:

Ken Shultis	Elect. Tech.
Bradley Tolivar	Deck Tech.

## Itinerary (approximate local time):

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### Sunday, 20 Sept.

0900	Departed Snug Harbor
1130	Arrived Kahe Pt. (Sta. 1)
1600	Departed Kahe
1230	Arrived Aloha (Sta. 2) trap deployment site

### Monday, 21 Sept.

0200	Completed sediment trap array deployment
0400	Arrived Aloha (center of circle), began CTD time series

### Wednesday, 23 Sept.

0500	Completed Sta. 2 CTD operations
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0900 Arrived Sta. 3 (23 25' N 158 W), conducted deep cast  
1430 Departed Sta. 3, began Sean's CTD transect  
Thursday, 24 Sept.  
0330 Began tow-yos  
1100 Completed sediment trap retrieval and resumed CTD  
transect profiling  
2100 Completed CTD transect profile  
Friday, 25 Sept.  
0700 Arrived Snug Harbor

Narrative:

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All aspects of the cruise went well with the exception of intermittent albeit persistent pylon problems. All samples were collected and we were able to maintain the cruise schedule.

Just outside the harbor, during the abandon ship drill, we happened upon what appeared to be a surface accumulation of trichodesmium. The extent was not large and no obvious surface accumulation was present at Kahe. At Kahe we experienced problems with the transmissometer and fluorometer which necessitated aborting the first cast. The problem was found to be in the new transmissometer therefore we switched to the old one. We used this throughout the cruise however we need to determine what the problem is with new unit.

We deployed the sediment traps in the usual location and headed for the center of the circle. Initial problems with the pinger temporarily delayed deployment of the deep cast. After retrieval it was noted that bottle S7 was missing both end caps and spring and that only 20 of the 23 bottles fired. We took a series of split samples for silica (refrigerated), spiked some other samples and took a large number of replicates from ~1400 m. These samples will be used to help resolve the nutrient problems observed periodically since HOT 33.

All sampling has been going according to scheduling except for the interruption of the 3 hr CTD intervals due to the necessity to pump the ship's holding tanks. This caused a six hour hiatus since we needed to deploy the primary productivity array before daylight once we were back on station. I am unaware of a similar problem on other Wave cruises, therefore, we should ask the Captain if this type of operation can be completed before we arrive on station (center of circle), where the CTD time series takes place. I am assuming that if the tanks are empty they should have enough capacity for the 40-48 hrs we are on station.

We continue to experience sporadic multiple bottle trips and general pylon problems. This resulted in a number of casts being repeated. Fortunately, water demand was not high on this cruise and there were enough casts to supply our needs. We have also ran a time course taking samples for low level phosphorus (llp), low level nitrate and nitrite (NOx), dissolved organic carbon (DOC) and pH from the 5 m niskin on all casts (at least those where we were reasonably confident that the bottle tripped at 5 m). In addition we took NOx samples at Kahe, ALOHA and station 3. It will be interesting to see if we observe

any inshore-offshore gradient with the low level technique.

The remainder of the cruise was occupied by Sean Kennan's CTD profiling and trap retrieval. We had been monitoring the drift track of the traps and uncharacteristically they traveled in a southwesterly direction. We had to curtail Sean's tow-yoing when we learned that the traps were nearing the middle of the Kauai channel. Fortunately, the tow-yoing was less interesting than anticipated so that activity was not resumed after the trap retrieval. However, Sean continued his profiling to just off Kahuku followed by a leisurely steam back to Snug Harbor.

#### Weather:

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The weather was good throughout the cruise with light winds, mostly sunny skies and calm seas during the first few days of the cruise. Toward the end the winds picked up to normal trades (10-20 kts) with concomitant seas. Skies remained relatively clear.

#### Equipment and methods:

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All equipment used on HOT 40 was standard for past HOT cruises. All equipment function properly with the exception of the rosette pylon and new transmissometer. The only equipment lost was 2 end caps and teflon coated spring from one 12 l niskin on s2c1.

#### Ancillary programs:

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#### Investigator:

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Steve Emerson (UW)  
Charles Keeling (SIO)  
Paul Quay (UW)

Lisa Campbell (UH)

#### Project:

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O2, respiration, and DO intercalibration  
CO2 dynamics and intercalibration  
DIC13 dynamics (new production estimates)  
Picoplankton studies

#### Students:

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Ricardo Letelier  
John Dore  
Sean Kennan  
Dan Sadler

Tricodesmium studies  
NH4, NO2 and NO3 dynamics  
Intrusive salinity features  
Time series pH measurements

#### Others:

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Amy Baylor (student)  
  
Ted Walsh (Prj Mgr Anly Svc)  
Taro Takahashi

Seawater collection for Loihi plume comparison studies  
Seawater diluent collection  
pCO2 intercalibration (C. Winn P.I.)