

HOT-58: Chief Scientist Report

Chief Scientist: D. HEBEL

HOT 58 Cruise Report
R/V Moana Wave
13-22 Oct. 1994

Personnel List:

HOT 58A:

WOCE group:

Jefrey Snyder	Electronics Technician	UH
Fernando S-Mandujano	Scientist	UH
Jin Chun Yuan	Research Associate	UH
Helmut Duerrast	Visiting Graduate Student	UH
Craig Nosse	Scientist	UH

JGOFS group:

Dale Hebel	Chief Scientist(co-PI JGOFS)	UH
Karen Bjorkman	Visiting Graduate Student	UH
Christopher Winn	Scientist (Carbon Subcomponent)	UH
David Pence	Research Associate	UH
Lance Fujieki	Computer Specialist	UH
Terry Houlihan	Research Associate	UH

Ancillary projects

Chuck Stump	Scientist	UW
Mikel Latasa	Postdoc	UH-B. Bidigare
Karen Selph	Graduate Student	UH-M. Landry
Heather Anderson	Technician	UW
Sue Vink	Scientist	UH

STAG

Dave Gravatt	Technician	UH-UMC
Ken Shultis	Technician	UH-UMC

HOT 58B:

Dave Karl	Chief Scientist (PI JGOFS)	UH
Dale Hebel	Scientist (co-PI JGOFS)	UH
Terry Houlihan	Research Associate	UH
Lance Fujieki	Computer Specialist	UH
David Pence	Research Associate	UH
Peter Hacker	Scientist, ADCP project, WOCE	UH
Kalpana Kallianpur	Scientist, ADCP project, WOCE	UH

Itinerary (approximate local time):

Thursday, 13 Oct.

0900 Departed Snug Harbor
1145 Arrived Kahe Pt. (Sta. 1-1)
1400 Departed Kahe
1800 Arrived Kaena Pt. (Sta 1-2)
2100 Departed Kaena Pt.

Friday, 14 Oct.

0300 Arrived Aloha (Sta. 2) trap deployment site
0500 Completed sediment trap deployment
0600 Arrived Aloha (center of circle), WOCE deep cast
1100 Began 36 hr "burst sampling"

Saturday, 15 Oct.

0015 Plankton net tow
0230 Commenced Go-Flo cast
0530 Deployed primary productivity array
1200 Plankton net tow
1830 Retrieved primary productivity array
2330 Plankton net tow

Sunday, 16 Oct.

0130 Completed "burst" sampling
0200 Pumped tanks
0400 Began ancillary work
1200 Plankton net tow
2100 Second WOCE deep cast

Monday, 17 Oct.

0100 Plankton net tow
0200 Completed Sta. 2 operations, departed for station 3
0600 Arrived station 3
0930 Departed station 3
1300 Recovered sediment traps
1600 All over-the-side science operations completed

Tuesday, 18 Oct.

0700 Arrived Snug Harbor
0930 Offloaded
1000 AQUASHUTTLE test cruise
1600 Arrive Snug

Wednesday, 19 Oct.

1000 Departed Snug

Thursday, 20 Oct.

0300 Arrived bottom moored trap site
0740 Sediment trap released
0830 Searching for traps
1500 Discontinued search, lowered ADCP work
1830 Resumed search
2400 Discontinued search

Friday, 21 Oct.

0900 Resumed lowered ADCP work
1200 Continuous water sampler tests
1730 Departed station, transite Snug Harbor
1900 Sighted sediment trap array

1930 Initiated recovery
Saturday, 22 Oct.
0130 Completed recovery
1430 Arrived Snug Harbor

Narrative:

HOT 58 was staged in two legs (H58A and H58B), the first was the regular HOT cruise while the second was the bottom moored sediment trap recovery and redeployment cruise. HOT 58A was conducted 13-18, Oct. and HOT 58B 19-22, Oct. 1994 aboard the R/V Moana Wave with Capt. Hayes as Master. On the routine HOT cruise all over-the-side operations were completed and all samples collected. One accident occurred when acid splashed into the eyes of Sue Vink during the setup and cleaning stage of her instrument (see enclosed accident report). She immediately and repeatedly flushed her eyes with tap water, neutralizer laboratory eye wash, followed by tap water. She reported no complications and appeared normal during the remainder of the cruise.

We departed Snug Harbor 13 Oct. 1994, 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. After all samples were collected we departed Kahe for Kaena Point. During transit the above accident occurred. Upon arrival at station 3 a CTD cast to 2480 db was conducted with 15 bottles fired for DO, Chla, and LLN samples.

Following the Kaena Point station we steamed to station ALOHA. Once on station we deployed the sediment traps and initiated CTD operations. All over-the-side activities were completed without incident in addition to 2 WOCE deep casts and the 36 hr. burst sampling on 3 hr intervals. Following station ALOHA operations we transited to station 3, conducted a 1000 m CTD cast. We experienced problems with an underwater connector during the first CTD cast which necessitated repeating the cast. We departed station 3 enroute to the last sediment trap location. The traps were located without difficulty and all samples collected despite rough sea conditions.

We departed the sediment trap recovery site at 1600 hrs 17 Oct. 1994. We arrive at Snug Harbor 0700 hrs 18 Oct. 1994 and offloaded most of the equipment in preparation for the Aquashuttle test cruise off Waikiki.

HOT 58B:

The participants of HOT 58B departed Snug Harbor 1000 hrs on 19 Oct. 1994. The transit was structured to maximize the time in the lee of the island and minimize the rough water section. Shortly after dinner we powered up. Our transit was a rough one. Wind gusts up to

45 kts were recorded and the seas had built relative to H58A. At approximately 0300 hrs 10/20/94 Dave K. interrogated the bottom moored sediment trap and was successful in making contact. He decided to wait until after breakfast to initiate the recovery. The array was released from the mooring anchor at 0740 hrs. It was estimated that it would take 20-30 mins to reach the surface and within that time frame we were on the bridge scanning the seas. However, we could not locate the array. We did not pick up any RDF signal on channel 68 nor were we able to visually spot the array. We conducted a search of the immediate area and to the sw where the actual release point was located. The ship was positioned approximately 0.5 nm from this local. We continued to search most of the day doing an initial random search in the release point area and then a grid pattern extending to the east northeast along the current flow indicated by the ADCP and the drift track of the H58A floating sediment traps. This was against the prevailing NE trades. The weather had not improved with 15-30 kt winds, 6-10' seas and an overall force 5 seastate (Captain Hayes). The search was terminated somewhere around 3-4 pm so Peter Hacker could do some lowered ADCP work. However, during the search period Dave tried on 3 separate instances to make contact with the array at the release point in the event the initial release signal had been false. No contact was ever made indicating that the array had released. We continued the search at dusk until approximately 23-2400 hrs running a grid from ~2 nm above the release point repeating a 9 nm E-W and 0.5 nm N-S pattern to a position about 2 nm south of the release point. There was no sign of the strobe light or signal from the RDF.

The following morning (10/21/94) Dave again tried to make contact with the array with the same negative results. Dave decided to continue with the lowered ADCP tests, CWS tests and then return to Snug. We encountered a number of problems with the CWS. The pump would not operate properly and the pump head was leaking current into the sampling tube water stream. It was found that the power supply ground to the winch was hot as well as the power supply itself. All lowered ADCP and CWS work was concluded by 1800 hrs and we began our transit back to Snug. Shortly after our departure we were notified that the bridge had picked up the trap ADF signal and could see the strobe. Recovery operations were initiated at ~1900 hrs and completed by 0200 hrs (10/22/94). The array was missing a number of hard hats at various locals and the wire damaged at a number of points. Presumably due to the extended period the trap array floated on the surface in the heavy sea conditions. We arrived at Snug Harbor at 1430 hrs. and offloaded.

Weather:

HOT 58A:

The weather deteriorated throughout the cruise. 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. On Sunday 16 Oct. we experienced heavy rain.

Day	Date	Wind	Sea	Swell	Clouds
Thursday	13 Oct.	90-145,18-21	90-145,3	70-150,3-5	4-5
Friday	14 Oct.	110-130,13-19	110-130,2-3	105-120,4-6	3-4
Saturday	15 Oct.	105-120,10-17	105-125,2	100-105,4-5	3-8
Sunday	16 Oct.	80-110*,17-30	80-110,2-4	100-300,5-6	6-10
Monday	17 Oct.	90-110,14-35	90-110,2-6	100-115,6-8	5-10
Tuesday**	18 Oct.	170,10	170, 1	in lee	3

HOT 58B:

The weather continued to deteriorate with improvement towards the end of the cruise.

Day	Date	Wind	Sea	Swell	Clouds
Wednesday	19 Oct.	50-90,20-25	50-90,1-4	40-50, 8	9-10
Thursday	20 Oct.	85-95,23-28	85-95,4-5	50-90,7-12	6-10
Friday	21 Oct.	80-100,20-25	80-100,3-5	95-100,5-10	4-8
Saturday	22 Oct.	65-95,20	65-95,3-4	100,5-6	2-4

*Early periods of light and variable winds increasing in intensity throughout day

**Only one entry 0200 hrs.

Equipment and methods:

All equipment used on HOT 58A was standard for routine HOT cruises and all equipment functioned properly. No equipment was lost. On HOT 58B we tested the lowered ADCP and CWS instruments. Problems were encountered with the CWS and no water samples were collected. We also had various equipment associated with the moored sediment trap recovery/redeployment operations.

Sub component programs:

Investigator:	Project:
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Christopher Winn (UH)	DIC, pH, Alk., pCO ₂
Bob Bidigare (UH)	HPLC pigments
Michael Landry (UH)	Zooplankton dynamics

Ancillary programs:

Investigator:	Project:
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Chris Measures	Trace metal studies
Steve Emerson	Oxygen/Argon/Helium measurements

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:

Karen Bjorkman	Phosphorus assimilation studies
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Others:

Mikel Latasa (UH)	HPLC pigment studies
Karen Selph (UH)	Zooplanton sampling