HOT-93: Chief Scientist Report

Chief Scientist: D. HEBEL

HOT 93 Cruise Report
R/V Moana Wave (MV 9812)
11-15 May, 1998

Personnel List

HOT 93:

WOCE group:

Fernando Santiago-Mandujano	Research Associate	UH
Craig Nosse*	Research Associate	UH
Mark Vlenciano	Electronic Techician	UH
Don Wright	Research Associate	UH

JGOFS group:

Dale Hebel	Chief Scientist (co-PI JGOFS)	UH
Louie Tupas*	Scientist (co-PI JGOFS)	UH
Terrence Houlihan	Research Associate	UH
Lance Fujieki	Computer Specialist	UH
Pat Driscoll	Research Associate	UH
Markus Karner	Post-Doc	UH
Karen Bjorkman	Research Associate	UH
Scott Nunnery	Research Associate	UH

Ancillary projects

Jasmine Bartlett	Research Associate	OSU
Michael Laline	Volunteer	HPU

STAG

Steve Poulos	Electronic Technician	UH-UMC
Dave Gravatt	Deck Technician	UH-UMC

* Watch Leader

Itinerary (approximate HST):

Monday, 11 May

0900 Departed Snug Harbor
0920 Fire/abandon ship drill, science meeting
1140 Arrived Kahe Pt. (Sta. 1)
1150 Weight cast (1020 m)

1250 PRR/TSRB casts (1 light and 1 dark PRR profile)
1340 s1c1
1500 Departed Kahe

Tuesday, 12 May

0010 Arrived Sta. Aloha (Sta. 2)
0035 Plankton net tow (aborted capstan brake problems)
0150 Completed sediment trap deployment (22° 45.58N,157° 59.38W)
0240 s2c1 (WOCE deep)
0810 s2c2 (WOCE shallow)
1000 PRR-600 cast
1020 Plankton net tow (aborted capstan brake problems)
1100 s2c3
1210 PRR-600/TSRB cast
1230 Plankton net tow (net fouled)
1320 Plankton net tow
1400 s2c4
1500 PRR-600 cast
1700 s2c5
2010 s2c6
2210 Plankton net tow
2300 s2c7

Wednesday, 13 May

0000 Plankton net tow
0030 Plankton net tow
0100 Go-Flo cast
0200 s2c8
0430 Deployed primary productivity array (22° 45.3N, 157° 59.8W)
0500 s2c9
0630 Reterminated CTD cable
1010 Plankton net tow
1030 Plankton net tow
1100 s2c10
1230 PRR-600/TSRB cast
1240 Plankton net tow
1310 Plankton net tow
1450 s2c11
1700 s2c12
1900 Retrieved primary productivity array (22° 46.10N, 157° 58.59W)
2000 s2c13
2200 Plankton net tow
2300 s2c14

Thursday, 14 May

0040 Reterminated CTD cable
0100 Transit to pump tanks
0350 s2c15 (second WOCE deep cast)
0930 Floating sediment trap recovery (22° 43.95N, 157° 56.37W)
1040 Transit station 8
1300 PRR-600/TSRB cast
1350 Zodiac operations (mooring inspection)

1410 Zodiac operations complete
1430 s8c1
1500 Trace metal sampler deployed
1610 Departed station 8

Friday, 15 May

0740 Arrived Snug Harbor
1130 Completed offloading operations

Narrative:

HOT 93 was conducted aboard the R/V Moana Wave 11-15 May 1998. Captain Hayes was the master of the vessel and Dale Hebel chief scientist. There were a total of 16 participants in the scientific party composed of 4 WOCE, 8 JGOFS, 2 Ancillary and 2 STAG. We departed Snug on 11 May occupying stations at, Kahe Pt. (sta. 1), Station ALOHA (sta. 2), and HALE ALOHA mooring location (sta. 8). CTD operations were conducted at stations 1, 2 & 8. Fifteen CTD casts were conducted at Station ALOHA and one at station 8 in addition to 7 light casts, 6 net tows, 1 Go-Flo cast, and usual floating sediment traps and productivity operations. All operations were routine with the exception of the extra light casts requested by Jasmine Bartlett of OSU. All underway measurement systems (thermosalinograph, ADCP, meteorological instruments, pCO2 and fluorometer) were operable and functioned normal except for a period when it was discovered that the attitude feed for the ADCP was off-line. The seas were generally rough with high winds and mostly cloudy skies. Due to the rough seas a number of spikes were recorded in some of the continuous measurement systems.

Daily Activities (HST)

6 May, 1998
HOT 93 pre-cruise meeting MSB 315 at 1130 hrs.

8 May, 1998
Ship loading day.

11 May, 1998
Departed Snug Harbor 0900 hrs. After departure at about the mile buoy we had the routine fire/abandon ship drill followed by a short science meeting. Arrived Kahe about 1140 hrs and conducted a 1000 m weight cast, 2 PRR casts (1 light 1 dark), TSRB cast and final 1000 m CTD cast. All equipment functioned properly and all samples collected.

Skies were mostly sunny with 2-4' seas, 3-4' south swell and winds 10-20 kts. Departed Kahe ~1500 hrs.

12 May, 1998

Arrived Station ALOHA ~0015 hrs. The transit was bumpy with the ship (and personnel) experiencing significant roll and pitch. From the ride it was doubtful that over-the-side work could be initiated , however, once on station and the ship positioned into the wind over-the-side operations were possible. The first operation a plankton tow was aborted due to a problem with the capstan. As is usually the case the capstan worked properly to the point where the net was in the water and being let out, then a pop was heard and the brake seized. We were able to retrieve the net but the cast could not be completed.

The sediment trap array was deployed, however, when the hard-hat tag line was released the hard-hats were pulled into the floating bobber line and under the spar buoy. It was feared that the hard-hats may have entangled the spar buoy but on closer examination from the ship's bridge it appeared that the spar buoy and bobber assembly were floating properly. During the recovery it was found that the line had entangled the spar buoy.

Seven CTD casts were completed including s2c1 (WOCE deep), s2c2 (WOCE shallow), s2c3 (PC/PN), s2c4 (PPO4), s2c5 (JGOFS-1), s2c6 (JGOfS-2), and s2c7 (salts). Three light casts were completed at
~1000hrs, 1230 hrs, and 1530 hrs. Due to rough seas the CTD hit the side of the ship on s2c3 (no damage resulted). The second net tow also experienced the same brake problem and was also aborted, again with the net in the water. At this point the brake was completely disabled for the next scheduled net tow. During the next tow (~1400 hrs), the net was deployed but when retrieved was fouled. Another tow was tried and was successful. The scheduled tow at ~2200 hrs was also successful.

Skies were mostly sunny with brisk Trades 15-25 kts, and seas 4-8'.

13 May 1998

Completed 7 net tows (most sucessful), Go-flo cast and 7 CTD casts through s2c14. Problems developed with another kink in the CTD cable due to twisting (??) which required retermination and removal of 300 m of CTD cable. This occurred just before s2c10 causing a delay in scheduled operations by one cast. After the retermination CTD operations continued without problems until the last 1000 m cast where another kink developed and retermination required before the second deep cast at Station ALOHA. During the recovery of s2c11 the bottom of the CTD frame hit the bottom board on the A-frame passage-way breaking the board but no

damage to CTD array. Other operations (net tows and light casts) have been completed without incident. The primary productivity array was successfully deployed and retrieved with no samples lost. Except for few lingering cases of seasickness all personnel were well and functioning.

The winds continued to blow Trades at 20-30 kts with 6-8' swells and mostly cloudy skies.

14 May 1998

After the second deep cast (s2c15) we transited to the sediment traps (slowly heading southeast), and recovered the traps without incident although the spar buoy was entangled and riding low in the water. En-route to station 8 for the final 1000 m cast we stopped around noon for a final light cast. At station 8 we conducted a zodiac operation (Houlihan and Barns) to inspect and secure some of the damaged components on the mooring resulting from the recent deployment. We departed station 8 approximately 1600 hrs for Honolulu after completing and sampling s8c1.

Weather conditions remain the same.

15 May 1998
Arrived Snug Harbor 0740 hrs. Offloading was completed before noon.

Weather

HOT 93:
The weather was mostly cloudy with high winds and rough seas. Below is listed the cruise bridge log 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, sea in Beauford force, and swell in feet, barometer in inches of Hg, temp °C (dry bulb) and clouds in tenths.

Day Date	Wind	Sea	Swell	Barometer	Temp	Clouds
Mon 11 Mar.	045-080, 12-28	045-080, 3-4	050-100, 3-8	30.09-30.16	72-84	5-7
Tues 12 Mar.	050-070, 22-25	050-070, 4	070-090, 4-8	30.08-30.14	72-77	5-7
Wed 13 Mar.	070-075, 21-28	070-075, 4	080, 6-8	30.06-30.13	71-75	4-10
Thur 14 Mar.	070-090, 20-30	070-090, 4-5	080, 8	30.08-30.14	73-77	8-10
Fri* 15 Mar.	070-080, 10-16	070-080, 2-3	080-100, 2-3			

30.05-30.06 73-74 7

*Only two entries (0200 & 0600 hrs)

Equipment and methods:

All standard equipment functioned properly. Two reterminations of the CTD cable were made and the CTD array hit the side of the ship on two occasions.

Sub component programs:

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

Ancillary programs:

Investigator:	Project:
Charles Keeling (SIO)	CO2 dynamics and intercalibration/SIO
Paul Quay (UW)	DIC and 13C/UW
Ed Boyle	trace metals/MIT
John Porter	aerosols

Students:

Others:

Karin Bjorkman	phosphorus experiments/UH
Dale Hebel	EOC measurements/UH
Markus Karner	molecular probe samples/UH
Jasmine Bartlett	optics/OSU