HOT-91: Chief Scientist Report

Chief Scientist: D. HEBEL

HOT 91 Cruise Report
R/V Moana Wave
16-20 March, 1998

Personnel List

HOT 91:

WOCE group:		
Fernando S-Mandujano*	Research Associate	UH
Craig Nosse	Research Associate	UH
Mark Vlenciano	Electronic Techician	UH
Don Wright	Research Associate	UH
Eric Firing	Scientist (PI WOCE)	UH
JGOFS group:		
Dale Hebel	Chief Scientist (co-PI JGOFS)	UH
Stuart Donachie	Post-Doc	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
Stephanie Christensen	Graduate Student	UH
Scott Nunnery	Research Associate	UH
Ancillary projects		
Daryl Slocum		Sontek
John Porter	Scientist	UH
Leslie Cotton	Undergraduate	UH
STAG		
Sharon Stahl	Electronic Technician	UH-UMC
Dave Gravatt	Deck Technician	UH-UMC

* Watch Leader

Itinerary (approximate local time):

Monday, 16 March

0940 Departed Snug Harbor (departure delayed due to auto-pilot malfunction)
1020 Fire and Abandon ship drill, science meeting

1230 Arrived Kahe Pt. (Sta. 1)
1250 Weight cast
1340 TSRB cast
1410 PRR-600 cast
1505 s1c1 (LADCP deployed as part of rosette package)
1630 Departed Kahe

Tuesday, 17 March

0000 Arrived Aloha (Sta. 2)
0110 Plankton net tow
0220 Completed sediment trap deployment (22° 42.26N, 157° 59.32W)
0330 s2c1 (WOCE deep)
0900 s2c2 (WOCE shallow)
1020 Plankton net tow
1120 s2c3
1130 s2c3 aborted (sensor problems)
1200 s2c3
1300 PRR-600/TSRB cast
1330 Plankton net tow
1400 LADCP removed from rosette
1420 s2c4
1700 s2c5
2000 s2c6
2200 Plankton net tow
2300 s2c7
2310 s2c7 aborted (cable twist problems)
2330 s2c7
2340 s2c7 aborted (sensor spikes/bottle firing problems)
2350 s2c7
2400 s2c7 aborted (CTD errors)

Wednesday, 18 March

0010 CTD cable reterminated
0020 Plankton net tow
0040 Tow aborted
0050 Plankton net tow
0340 Go-Flo cast
0550 Deployed primary productivity array (22° 44.96N, 157° 59.87W)
0810 s2c8
1000 Plankton net tow
1100 s2c9
1250 PRR-600/TSRB cast
1400 s2c10
1610 LADCP lowered to 225 m (DSE winch and starboard crane)
1630 LADCP retrieved
1710 s2c11
1900 Retrieved primary productivity array (22° 53.0N, 158° 02.3W)
2000 s2c12
2110 Transit to pump tanks
2300 s2c13 (IES site; 22° 49N, 158° 00W)

Thursday, 19 March

0050 LADCP deep cast (LADCP and pinger only on 'new' rosette,

winch cable lubricated)
0530 LADCP 1000m cast
0830 Floating sediment trap recovery (23° 10.4N, 158 08.2W)
0920 Sediment trap recovery complete
0930 Transit station 8
1250 PRR-600/TSRB cast (coordinated with satellite pass)
1330 Continued transit station 8
1520 Zodiac operations (mooring inspection)
1530 s8c1 (with 'new' rosette plus bottles)
1630 Zodiac operations complete
1650 Trace metal sampler deployed
1730 Trace metal sampler recovered
1810 E. Firing's LADCP tests
1910 Science operations complete
1920 Departed station 8

Friday, 20 March

0700 Arrived Snug Harbor
1130 Completed offloading operations

Narrative:

HOT 91 was conducted aboard the R/V Moana Wave 16-20 March 1998. Captain Hayes was the master of the vessel and Dale Hebel chief scientist. There were a total of 19 participants in the scientific party composed of 5 WOCE, 9 JGOFS, 3 Ancillary and 2 STAG. We departed Snug on 16 March 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 two at station 8 in addition to 4 light casts, 6 net tows, 1 Go-Flo cast, and usual floating sediment traps and productivity operations. During the cruise the LADCP was fitted to the rosette package and depending on the circumstances either used on the new or old rosette. LADCP tests were conducted on routine hydrocasts as well as dedicated casts. All underway measurement systems (thermosalinograph, ADCP, meteorological instruments, pCO2 and fluorometer) were operable and functioned normal. The seas were calm with light winds and skies mostly clear.

Daily Activities (HST)
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13 March, 1998
Ship loading day. Mai Lopez was unable to get the necessary cable supplies for the OPC before sailing so her position was reassigned to Leslie Cotton an undergraduate working with Bob Bidigare.

16 March, 1998
Departed Snug Harbor about 1 hr late due to a problem with the autopilot. After departure at about the mile buoy we had the routine fire/abandon ship drill followed by a short science meeting. Arrived Kahe about 1300 hrs and conducted a 1000 m weight cast, PRR cast and

final 1000 m CTD cast. Difficulties were encountered with the TSRB and due to the late hr on the mainland we were unable to contact customer service. The lowered ADCP also experienced a problem which negated data collection. All underway systems appear to be funcitoned properly. Departed Kahe ~1700 hrs for Station ALOHA. The weather was mostly sunny with calm seas and light winds.

17 March, 1998
Arrived Station ALOHA sometime around midnight. Conducted a net tow followed by the deployment of the floating sediment traps. No problems were experienced with either activity. Completed the first WOCE deep cast (s2c1), followed by WOCE shallow (s2c2), 2 day & 2 night plankton tows and one PRR- 600/TSRB cast. Completed CTD casts through s2c6 however experienced problems on s2c3(sensors) and s2c7 (sensors and bottle firing) causing aborted casts and delays. The lowered ADCP was removed from the rosette for serious troubleshooting since the unit was still not operating properly. Fortunately, the TSRB began working prior to the satellite overpass. It appears appeared that the problem may have something to do with heat. I initialized the unit at about 0400 hrs and let it run for ~ 6hrs on deck. When Terry tried to restart it the problem reappeared. It would not load the correct calibration file causing erroneous outputs. John Porter suggested that it may have something to do with the heat so it was put in the lab van. After a period of time it again worked. The seas remained calm with winds at 10 kts from the NE and skies mostly clear.

18 March 1998
Removing the ADCP caused the cable to twist and after two casts the cable needed to be reterminated. It was decided that the old rosette should be used for the remainder of the casts. These activities put us behind schedule by 2 casts. The LADCP troubleshooting was successful and later in the day the unit was deployed using the DSE winch and starboard crane to 225 m. Afterward, it was mounted on the 'new' rosette for further tests. We completed CTD casts through s2c13, completed 1 day & 1 night plankton tow, Go-Flo cast, primary productivity in situ incubation, and midday PRR/TSRB cast. The seas were calm, winds light and skies mostly clear.

19 March 1998
The 225 m LADCP cast was successful and the final cast at Station ALOHA was the LADCP deep cast. mounted on the 'new' rosette with the pinger and the winch cable attached via a swivel. At this point all samples have been collected and all operations completed at Station ALOHA, however, we did conduct another shallow (1000 m) LADCP cast while enroute to the sediment traps and light cast (PRR/TSRB) enroute to station 8. The sediment traps have drifted almost due north and the calm sea conditions made for a good recovery.

At station 8 we deployed the zodiac to assess the damage to the buoy antenna. This group consisted of D. Hebel, E. Firing and T. Houlihan. Sea conditions were very calm and following the inspection a number of the scientific party had the opportunity to view and photograph the ship from the zodiac perspective. During the transit to station 8 the SIO sampling bottles, CTD, pylon, etc., were again transferred to the 'new' rosette. It was this rosette that was used for the 1000 m cast (s8c1) and subsequent rosette spin related tests.

20 March 1998
We departed station 8 at 1920 hrs arriving Snug Harbor 0700 hrs the following morning. Offloading was completed before noon.

Weather

HOT 91:
The weather was mostly sunny with very calm 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*	16 Mar.	018-350,9-12	018-350,2	340, 3	30.03-30.09	75-79	2
Tues	17 Mar.	030-090,5-11	030-090,1-2	330,4-6	30.01-30.08	74-81	1-5
Wed	18 Mar.	060-100,7-10	060-100,2	320,4-6	30.00-30.08	74-80	1-7
Thur	19 Mar.	light-100,0-6	light-100,1	320, 4-6	30.02-30.09	74-80	1-4
Fri**	20 Mar.	light airs	light airs	320,4	30.02	71	4

* Only two entries (1800 & 2200 hrs)
**Only one entry (0200 hrs)

Equipment and methods:

With the exception of the winch cable and CTD sensors (same problem?) all standard equipment functioned properly. A lowered ADCP (LADCP) was tested this cruise by E. Firing (UH) and Darryl Slocum (Sontek) with a reasonable degree of success. Rosette spin experiments were carried out by E. Firing.

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:

Stuart Donachie	Ectoenzyme activities/UH
Karin Bjorkman	EOC experiments
Dale Hebel	EOC measurements/UH
Markus Karner	molecular probe samples