HOT-90: Chief Scientist Report

Chief Scientist: D. HEBEL

HOT 90 Cruise Report
R/V Moana Wave
17-21 Feb.,1998

Personnel List

HOT 90:

WOCE group:

Fernando santiago-Mandujano	Research Associate	UH
Craig Nosse*	Research Associate	UH
Hans Ramm	Research Associate	UH
Don Wright	Research Associate	UH
Mark Valenciano	Research Associate	UH

JGOFS group:

Dale Hebel	Chief Scientist (co-PI JGOFS)	UH
Louie Tupas*	Scientist (co-PI JGOFS)	UH
Lance Fujieki	Computer Specialist	UH
Pat Driscoll	Research Associate	UH
Markus Karner	Post-Doc	UH
Ursula Magaard	Research Associate	UH

Ancillary projects

Roberta Baldwin	Research Associate	SIO
Ken Smith	Scientist	SIO
Robert Glatts	Research Associate	SIO
Alfred Uhlman	Research Associate	SIO
Stephanie Christensen	Graduate Student	UH/Zooplankton
Mai Lopez	Scientist	SIO

STAG

Will Hervig	Electronic Technician	UH-UMC
Dave Gravatt	Deck Technician	UH-UMC

* Watch Leader

Itinerary (approximate local time):

Tuesday, 17 Feb. 1998
0900 Departed Snug Harbor
0930 Fire and Abandon ship drill
1040 Arrived Kahe Pt. (Sta. 1)
1200 Weight cast (1000m)
1300 PRR-600/TSRB cast
1345 s1c1
1510 Departed Kahe
2400 Arrived FVGR deployment site (22° 50.1 N, 158° 00.2W)

Wednesday, 18 Feb.
0005 Plankton net tow
0125 FVGR deployed
0215 Arrived Station ALOHA
0250 Completed sediment trap deployment (22° 50.5N,158 00.9W)
0405 s2c1 (WOCE deep)
0930 Began 36 hr "burst sampling" (s2c2)
1105 Plankton net tow
1200 Plankton net tow
1240 PRR-600/TSRB cast
1305 s2c3
1600 s2c4
1900 s2c5
2200 s2c6
2300 Plankton net tow
2400 Plankton net tow

Thursday, 19 Feb.
0105 s2c7
0210 Go-Flo cast
0550 s2c8
0700 Deployed primary productivity array (22° 45.2N, 157° 59.6W)
0740 s2c9
1005 s2c10
1115 Plankton net tow
1205 PRR-600/TSRB cast
1310 s2c11
1600 s2c12
1840 Retrieved primary productivity array (not recorded on bridge log)
1915 s2c13
2200 s2c14

Friday, 20 Feb.

0005 Prepared for OPC deployment
0310 OPC deployment cancelled (electrical problems)
0345 Reterminated CTD wire
0630 s2c15 (second WOCE deep cast)
1110 FVGR recovered
1520 Sediment trap recovery (22° 28.2N, 158° 13.4W)
1655 s8c1
1755 Trace metal sampler deployed
1830 Trace metal sampler recovered
1835 Departed station 8

Saturday, 21 Feb.
0800 Arrived Snug Harbor
1000 Completed offloading operations

Narrative:

HOT 90 was conducted aboard the R/V Moana Wave 17-21 February 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, 6 JGOFS, 6 ancillary and 2 STAG. In addition to our routine cruise schedule we had aboard Ken Smith and his group from SIO to deploy and retrieve their FVGR for calibration of their deployed benthic ROVER. Four stations were occupied during HOT 91at Kahe Pt. (sta. 1), Station ALOHA (sta. 2), FVGR deployment site and the surface mooring location (sta. 8).

During the cruise all underway measurement systems (thermosalinograph, ADCP, meteorological instruments, pCO2 and fluorometer) were operable and functioned normally. Although we were able to collect all core samples and complete the 36 hr burst CTD work we did experience some problems with the CTD cable. In addition, continued electrical problems plagued the OPC preventing deployment, however we were able to use the time for a second WOCE deep cast. The weather was generally moderate with <20 kt Trades, swells 3-6 feet and skies mostly cloudy.

Daily Activities (HST)

11 Feb. 1998
Pre-cruise meeting MSB 315 at 1130 hrs.

13 Feb. 1998
All equipment and supplies were loaded on the R/V Moana Wave.

17 Feb. 1998
All science personnel were aboard by 0830 hrs and the ship

departed on schedule (0900 hrs.). Shortly after passing the mile buoy the usual fire & abandon ship drill were conducted followed by a science meeting. Arrived Kaphe ~1140 hrs conducted weight cast to 1000m, PRR/TSRB cast and 1000 m CTD cast. All equipment functioned normally. We departed Kahe ~1530 hrs. Seas were moderate with a 2-8' NNE swell, wind 9-20 kts from the E and skies generally clear.

Arrived northern end of Sations ALOHA ~2350 hrs.

18 Feb. 1998
Conducted net tow then proceeded north to 22° 53' N to deploy FVGR vehicle. After the successful deployment of the FVGR by Ken Smith's group we proceeded to just inside the northern end of circle perimeter to deploy sediment traps. Both ship drift and ADCP indicated a southernly current. The sediment trap deployment also was successful.

Following the sediment trap deployment we repositioned to the circle center and conducted CTD cast s2c1. The 36 hr "burst sampling" began 0930 hrs and by the end of the day we had completed 5 net tows and 6 CTD casts along with a noon PRR/TSRB cast.

Seas were out of the east at 2-3' with a 6' swell, winds were light at <10kts also from the east and skies mostly cloudy. All underway systems functioned normally and all personnel were well.

19 Feb. 1998
According to Fernando the CTD data started showing spikes (glitches) particularly during casts 6 and 7.
The CTD cable termination was inspected and re-sealed after finding that water had leaked into the
contacts, causing the spikes in the previous casts. The CTD worked properly after this repair. Cast 14 was
conducted at the IES site (4 nm north of the center). The IES signal was observed on the 12 KHz receiver.

After cast 14 a kink developed in the CTD wire close to the package. This was most likely due to the bad
rolls experienced during this cast. A section of the wire was removed and the cable reterminated At the end of the day 8 CTD and one noon PRR/TSRB cast were completed along with an additional net tow, go-flo cast and primary productivity array deployment and retrieval. The seas and swell were light with variable winds 8-16 kts and mostly cloudy skies.

20 Feb. 1998
Although the ADCP and the thermosalinograph worked correctly during the cruise we found that there was a 30 sec delay in the time of the workstation retrieving the thermosalinograph, fluorometer and met data compared to the GPS time. Will Hervig wasn't able to find the reason for

this delay.

Due to a problem with the OPC a second WOCE deep cast was conducted prior to the recovery of the FVGR. These operations were followed by the recovery of the sediment traps and a final 1000 m CTD cast at station 8. The MIT trace metal sampler was successfully deployed at station 8. We departed station 8 at 1835 hr. enroute to Honolulu Harbor.

Weather and sea conditions remained favorable.

20 Feb. 1998
We arrived at Snug Harbor 0800 hrs and completed offloading operations by 1000 hrs. since most of the deck equipment was left on the ship for HOT 91.

Weather

HOT 90:
The weather was generally good throughout the cruise. 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
Tues. 17 Feb.	060-125, 9-20	060-125, 2-3	090-310, 2-8	30.04-30.17	72-79	2-5
Wed. 18 Feb.	060-110, 8-20	060-110, 2-3	320, 3-6	30.13-30.17	72-80	3-6
Thurs. 19 Feb.	light-150, 8-16	110-150, 1-3	320, 3-4	30.16-30.22	73-78	2-8
Fri. 20 Feb.	calm-140, 6-12	130-140, 1-2	330, 3	30.20-30.28	73-79	2-8
Sat.* 21 Feb.	010-040, 12-21	010-040, 3	320, 3	30.18-30.19	72-74	2-6

*Only two entries (0200 & 0600 hrs)

Equipment and methods:

All standard equipment functioned normally although there was a data delay problem with the underway logging system which was not resolved at sea and there were recurrent problems with the CTD cable kinking. In addition, Ken Smith from SIO deployed and successfully retrieved his Free Vehicle Grab Respirometer (FVGR). Unfortunately, the OPC experienced electrical problems and the vehicle was not

deployed.

Sub component programs:

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

Ancillary programs:

Investigator:	Project:
Charles Keeling (SIO)	CO2 dynamics and intercalibration
Paul Quay (UW)	DIC and 13C
Ed Boyle (MIT)	Trace metals
Ken Smith (SIO)	Benthic respiration

Others:

Mark Huntley/Mai Lopez (SIO)	Optical plankton counting
Dale Hebel (UH)	EOC measurement
Markus Karner (UH)	Molecular probe samples