

HOT-63: Chief Scientist Report

Chief Scientist: D. HEBEL

HOT 63 Cruise Report

R/V Moana Wave

5-10 May, 1995

Personnel List:

WOCE group:

Jefrey Snyder (Watch Leader)	Electronics Technician	UH
JinChun Yuan	Research Associate	UH
Craig Nosse	Scientist	UH
Patrick Goda	Graduate Student	UH

JGOFS group:

Dave Karl	Scientist (PI JGOFS)	
Dale Hebel	Chief Scientist (co-PI JGOFS)	UH
Ursula Magaard	Research Associate	UH
David Pence	Research Associate	UH
Terry Houlihan (Watch Leader)	Research Associate	UH
Louie Tupas	Scientist (co-PI JGOFS)	UH
Dan Sadler	Graduate Student	UH-T. Li
Renate Scharek	Scientist	UH

Ancillary projects:

Chuck Stump	Scientist	UW-S. Emerson
Bob Miller	Graduate Student	UH-M. Landry
Sue Vink	Scientist	UH-C.Measures
Jim Richman	Scientist	OSU
Mai Lopez	Scientist	SIO-M. Huntley

STAG:

Steve Poulos	Electronic Technician	UH-UMC
Luigi Pozzi	Deck Technician	UH-UMC

Itinerary (approximate local time):

Friday, 5 May

0900 Departed Snug Harbor
 1150 Arrived Kahe Pt. (Sta. 1)
 1400 Departed Kahe
 1720 Arrived Kaena Pt. (Sta. 6)
 1930 OPC deployed
 1945 Underway 8 kts sta. ALOHA

Saturday, 6 May

0400 Arrived Aloha (Sta. 2), recovered OPC
 0620 Deployed sediment traps with spectroradiometer
 0700 Arrived Aloha (center of circle), WOCE deep cast
 1145 Plankton net tow
 1220 PNF cast
 1300 Began 36 hr "burst" sampling
 2320 Plankton net tow

Sunday, 7 May

0310 Go-Flo cast
 0540 Deployed primary productivity array
 1130 Plankton net tow
 1210 PNF cast
 1910 Retrieved primary productivity array
 2340 Plankton net tow

Monday, 8 May

0100 Completed "burst" sampling, pumped tanks
 0210 Plankton net tow
 0250 Began ancillary work
 1130 Began Optical Mooring Buoy recovery
 1700 Completed recovery
 1830 Began moored sed. trap deployment
 2100 Completed deployment
 2130 Began second WOCE deep cast

Tuesday, 9 May

0350 OPC deployed
 0930 Recovered OPC
 1030 Began sediment trap recovery
 1210 Plankton net tow
 1330 CWS testing
 1640 AC-3 cast
 1740 OPC deployed, transit Snug Harbor

Wednesday, 10 May

0300 Recovered OPC
 0740 Arrived Snug Harbor
 1200 Offloading completed

Narrative:

HOT 63 was conducted 5-10 May, 1995 aboard the R/V Moana Wave with Capt. Hayes as Master. All over-the-side operations were completed and all samples collected. Jim Richman (OSU) recovered the moored optical buoy (MOB) deployed on HOT 62, while Dave Karl and company deployed a single moored sediment trap. Bob Miller completed all allocated plankton net tows and the optical plankton counter (OPC) was deployed on the Kaena-ALOHA, ALOHA-sediment trap, and sediment trap-Snug Harbor

transits. In addition testing was conducted on the continuous water sampler and AC-3 instruments.

We departed Snug Harbor 5 May, 1995 at 0900 hrs. Once outside the mile buoy the First Mate (John Stahl) conducted the routine fire and abandon ship drills. 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. All equipment operated properly. After all samples were collected we departed Kahe for Kaena Point. Upon arrival at station 6 (Kaena Point) a CTD cast to 2483 db was conducted with 15 bottles tripped and selected samples taken for DO, Chla, and LLN.

Following the Kaena Point station we deployed the OPC for the transit to station ALOHA at 8 kts. Once on station we deployed the sediment traps (with spectroradiometer), and initiated CTD operations. Routine sampling ensued throughout the 36 hr burst sampling period.

With the completion of the core and ancillary work at station ALOHA we steamed NNE (~050 T) just outside the ALOHA circle to the recovery site of the MOB deployed by Ricardo on HOT 62. Jim Richman from OSU was in charge of this operation and all components of the array were successfully recovered. Following the recovery we remained in the same general local and deployed a single Mark IV sediment trap with associated hardware. This operation was directed by Dave Karl. After the deployment the position was fixed by triangulation.

The combination of the protracted recovery of the MOB and the fast drift rate of the floating sediment traps necessitated a reevaluation of the lost equipment recovery operation. It was concluded that the time frame available was insufficient and that a second deep cast would be substituted. Following the second deep cast we departed station ALOHA for the last known location of the floating sediment traps. During HOT 63 we experienced a strong and consistent SSW current with velocities up to and exceeding 1 kt. Because of this the primary productivity array drifted outside the circle before the dusk recovery and the sediment traps traversed a distance in excess of 50 nm. When we finally intercepted the array we were in visual distance of Kauai.

We remained in the vicinity of the sediment trap recovery to continue tests of the CWS and AC-3 instruments. The CWS testing went fine until a series of error messages was received by the deck box. These errors continued and troubleshooting suggested a problem with either the termination and/or the slip ring assembly. However, we did not experience a repeat of the current leakage into the sample stream which occurred during HOT 62 tests. The AC-3 test was limited to a single 500 m cast due to protracted instrument setup. The instrument was mounted on the 12 place rosette using the STAG CTD, pylon and 5 five liter water bottles. This was the first deployment of the complete CTD/rosette system and the assembly took longer than anticipated. Results of this test are currently in the data archiving/processing stage.

The final over-the-side science operation was the the deployment of the OPC for the return transit to Snug Harbor. The fish was towed between 8-8.5 kts and retrieved at 0300 hrs the following morning to assure our

arrival at the schedule time. We arrived at Snug Harbor 10 May @ 0740 hrs and immediately commenced offloading of all science gear. Offloading was completed by 1200 hrs.

Weather:

The weather was generally partly cloudy with moderate winds and low to moderate seas. 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, swell in feet, and clouds in tenths.

Day	Date	Wind	Sea	Swell	Clouds
Friday	5 May	160-345, 3-16	160-340, 1-2	200, 3	7-10
Saturday	6 May	020-355, 17-25	020-345, 3-4	300-330, 3-5	7-10
Sunday	7 May	015-060, 10-22	015-060, 2-3	350-355, 4-8	2-9
Monday	8 May	065-080, 14-21	065-080, 3-4	030-350, 4-5	5-9
Tuesday	9 May	065-085, 16-28	065-085, 3-5	350, 4-5	2-7
Wednesday*	10 May	075, 23	075, 5	350, 4	3

*Only one entry @ 0200 hrs.

Equipment and methods:

All standard equipment used on HOT 63 functioned properly. No equipment was lost. Tests were conducted with CWS, STAG CTD equipped with AC-3 and LSS, and the spectroradiometer deployed on the trap line. No data was collected with the spectroradiometer due to a possible programing error.

Sub component programs:

Investigator:

Telu Yuan-Hui Li (UH)
Bob Bidigare (UH)
Michael Landry (UH)

Project:

DIC, pH, Alk., pCO2
HPLC pigments
Zooplankton dynamics

Ancillary programs:

Investigator:

Chris Measures

Steve Emerson

Charles Keeling (SIO)

Paul Quay (UW)

Hans Thierstein (Zurich)

George Luther (UD)

Project:

Trace metal studies

Oxygen/Argon/Helium measurements

CO2 dynamics and inter calibration

DIC and 13C

Calcareous plankton dynamics

Iodine speciation

Students:

Hongbin Liu

Picoplankton cultures (not on cruise)

Others:

Renate Scharek

Terri Rust/Frank Sansone

Jim Richman (OSU)

Mark Huntley/Mai Lopez

Diatom studies

Methane and DIC profiles (neither on cruise)

Optical oceanography

Optical plankton counting