HOT-123: Chief Scientist Report

Chief Scientist: D. HEBEL

HOT 123 Cruise Report
R/V Kaimikai O Kanaloa
12-16 Feb., 2001

Personnel List

WOCE group:		
Fernando Santiago-Mandujano*	Research Associate	UH
Lal Ratnapala	Graduate Assistant	UH
Mark Valenciano	Electronic Technician	UH
Jeremiah Johnson*	Research Associate	UH
Noel Larson	Research Associate	UH
Adam Phillips, Cathrine	Graduate Student	UH
Peter Haagaas	Graduate Student	UH
JGOFS group:		
Dale Hebel	Chief Scientist (co-PI JGOFS)	UH
Anne Gasc	Scientist	UH
My Christensen	Research Associate	UH
Mathew Erickson	Research Associate	UH
Lance Fujieki	Computer Specialist	UH
Associated projects		
Claudia Benitz-Nelson	Scientist	UH
Chuck Stump	Scientist	UW
Matt Church	Graduate Student	UH
Colleen Allen	Research Associate	UH
STAG		
Steve Poulos	Electronic Technician	UH-UMC
Dave Gravatt	Deck Technician	UH-UMC

*Watch Leader

Event log (approximate HST):

Monday, 12 Feb.

0900	Departed Snug Harbor
0940	Fire/abandon ship drill, science meeting
1150	Arrived Kahe Pt. (Sta. 1)
1225	Weight cast (1000 m)
1250	PRR/TSRB cast
1330	s1c1
1445	Depart Kahe
1730	Arrive sta. 6 Kaena

2350 Arrived Sta. ALOHA (sta. 2)

Tuesday, 13 Feb.
0005 s2c1 (100 db)
0030 Net tow
0100 Net tow
0140 Began sediment trap deployment
0215 Completed trap deployment (22° 45.2N, 15° 57.7W)
0305 s2c2 (WOCE deep, 4778 m)
0640 Notification of crew medical problem
0645 Underway Barbers Pt.
1625 Arrived Barbers Pt.
1640 Departed Barbers Pt.

Wednesday, 17 Feb.
0340 Arrived Station ALOHA
0405 s2c3 JGOFS-2
0630 s2c4 PC/PN
0905 s2c5 Phycoerthrin (cable kinked, reterminated)
1125 PRR-600 cast (no TSRB due to sea state)
1220 Transit sediment traps
1340 Hooked trap array
1420 Completed sed. trap recovery (22° 45.0N, 158° 00.0W)
1555 s2c6 P.PO4
1900 s2c7 WOCE shallow (cable kinked, reterminated)
2240 s2c8 HPLC

Thursday 15 Feb.
0205 s2c9 ATP & P. Si
0600 Transit sta. 6
1230 Arrived sta. 6
1235 PRR cast
1325 s6c1 (2500 m)
1525 Cast completed
1530 Transit Snug Harbor
2110 Standing off Honolulu harbor for traffic
2230 Inbound Honolulu
2255 Arrived Snug Harbor

Friday 16 Feb.
Commenced offloading

Narrative:

HOT 123 was conducted aboard the R/V Kaimikai O Kanaloa (KOK), 12-16 Feb., 2001. Captain Robert Hayes was the master of the vessel and Dale Hebel chief scientist. There was a total of 18 participants in the scientific party composed of 7 WOCE, 7 JGOFS, 2 ancillary and 2 STAG. We departed Snug on 12 February occupying stations at Kahe Pt. (sta. 1), Station ALOHA (sta. 2), and Kaena Pt. (sta. 6).

This cruise was very unusual in the aspect that we experienced a medical problem which required transport back to Oahu and the combination of high winds and large swells. These latter conditions prevented our usual 36 burst CTD operations and deletion of TSRB, net

tows, primary productivity, in situ pumping and station 8 CTD operations. from the cruise schedule. In addition, the sediment trap deployment was cut short due to the rising sea state and the captain's concern that we may not be able to recover the traps at the scheduled time.

After departure on Monday (Feb. 12), the ship's officers conducted the usual fire/abandon ship drills followed by our regular science meeting. We arrived at Kahe Pt. (sta. 1) on schedule and conducted all scheduled operations and sample collection. After completing sta. 1 we steamed directly to Sta. ALOHA and conducted a shallow cast for incubation experiments, two net tows and the WOCE deep cast. At this time the weather and sea state were typical for this time of year. It was after the deep cast was completed that the bridge was notified that the chief engineer was experiencing a medical problem involving low blood pressure. Apparently, the chief engineer was under treatment for colitis. The captain discussed the problem with the chief engineer's doctor whom recommended immediate shore-side treatment. Therefore, we returned to Oahu berthing at Barber's Point Harbor to transfer the chief engineer to a waiting ambulance. Following the transfer we began our return transit to Sta. ALOHA. During this period the weather deteriorated rapidly and on the return transit experience winds in excess of 30 kts.

Once on-station the winds were sustained at ~ 30 kt with periodic increases to 35 kts. The seas had increased to 10-12' range with an overall sea state of 5-6. All over-the-side operations were aborted with the exception of limited CTD operations to collect core JGOFS samples. The sea state and large swell caused the tension on the CTD package to go negative periodically even at the relatively slow rate of 30 m/min. On the final cast at Sta. ALOHA samples for both ATP and P. Si were collected. The ATP was processed before sampling the P. Si water bottles.

On Wednesday (Feb. 17), we broke off the CTD work to get a visual on the sediment traps (see Event log above) and assess the sea state. The captain was concerned that if the sea state increased we would not be able to retrieve the traps at the scheduled time. After locating the traps the captain decided to retrieve them. The traps and array was recovered without incident although one trap was missing and another the contents lost (came up sideways due to broken collar) at 150 m. All four traps at 165 m were o.k.

Following the final CTD cast at Sta. ALOHA (s2c9) we steamed to sta. 6 and conducted one final CTD cast to ~2500 m. After completing sta. 6 we steamed to Honolulu Harbor arriving at ~2300 hrs after waiting for ~1.5 hrs for barge traffic. We offloaded hand-carry items the following morning since the large ship crane was still inoperable. The vans and other heavy equipment were offloaded.

All scheduled work was completed and all samples collected. CTD operations were conducted at stations 1, 2, 6, 8-19. One ~1000 m CTD cast was conducted at stations 1 & 8-19. At Station ALOHA 12 ~1000 m and one ~4800 m CTD casts were completed while one ~2500m CTD cast was

done at Kaena Pt. (sta.6). Other over-the-side operations at Station ALOHA included 3 light casts (PRR only), 10 net tows, 2 in situ pumping operations, floating sediment traps and primary productivity measurements. All operations followed previous cruise routines with the exception of no TSRB casts and a spacial survey (stations 9-19), of an anomalous salinity/oxygen feature at about 400m. The underway/continuous thermosalinograph, ADCP, and fluorometer were operable and functioned properly. WOCE met. obs and limited ship met. data were collected as well as discrete aerosol measurements on 15,16 &18 Feb. Overall the weather was mostly sunny (although we did experience periods of light rain), with generally calm seas and light Trade winds. Daily activities are listed above under Cruise Events.

Weather

The weather started out mostly cloudy with light winds in the lee of the island and typical winds at Sta. ALOHA. Following our return to Sta. ALOHA the weather deteriorated rapidly with high winds, swell and sea state. Below is listed the cruise bridge log descriptions and the various values representing 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 °F (dry bulb) and clouds in tenths.

Day Date	Wind	Sea	Swell	Barometer	Temp	Clouds
Mon 12 Feb.	075-290,5-18	075-290,1-3	050-140,2-4	29.88-29.96	72-82	7-9
Tues 13 Feb.	060-330,8-27	060-330,2-5	00-,090,2-6	29.93-30.04	72-76	7-10
Wed 14 Feb.	060-080,25-35	060-080,5-6	090,5-12	30.05-30.14	72-76	4-8
Thur 15 Feb.	050-080,18-33	060-080,3-6	090-150,2-12	30.03-30.11	72-76	3-9

Equipment and methods:

All standard equipment functioned properly except for the underway fluorometer which experienced numerous spikes due to rough sea conditions. Twice, due to the large swell, a kink formed in the CTD cable requiring retermination.

Sub component programs:

Investigator:	Project:
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
John Porter	aerosols/UH (ck to see if this was done)

Abbott/Letelier	optical measurements/OSU
CBN	phosphorus isotopes,Th234/UH
Steve Emerson	O2/N2/Ar dynamics

Notable events:

1. Medical evacuation
2. High winds, large swell and sea state
3. Disruption of 36 hr burst CTD casts
4. Elimination, due to weather, of numerous routine operations
5. Shortened sediment trap deployment due to weather
6. Elimination of station 8 due to weather and equipment operational concerns