HOT-130: Chief Scientist Report

Chief Scientist: D. HEBEL

HOT 130 Cruise Report
R/V Kaimikai O Kanaloa
30 Sept. - 4 Oct., 2001

Personnel List

WOCE group:		
Fernando Santiago-Mandujano*	Research Associate	UH
Mark Valenciano	Electronic Technician	UH
Jeremiah Johnson	Research Associate	UH
Noel Larson	Research Associate	UH
JGOFS group:		
Dale Hebel	Chief Scientist	UH
Anne Gasc	Scientist	UH
Lance Fujieki	Computer Specialist	UH
Paul Morris	Research Associate	UH
Karin Bjorkman*	Scientist	UH
Tom Gregory	Research Associate	UH
Associated projects:		
Colleen Allen	Research Associate	UH
Cecelia Sheridan	Graduate Sudent	UH
STAG:		
Steve Poulos	Electronic Technician/STAG mgr	UH-UMC
Dave Gravatt	Deck Technician	UH-UMC

*Watch Leader

Event log (approximate HST):

Sunday, 30 Sept.

0900	Departed Snug Harbor
0930	Fire/abandon ship drill, science meeting
1155	Arrived Kahe Pt. (Sta. 1)
1210	Weight cast (1000 m)
1300	PRR cast
1335	s1c1
1430	Departed Kahe

Monday, 1 Oct.

0050 Arrived Sta. ALOHA (sta. 2)
0050 Net tow
0140 Began sediment trap deployment
0215 Completed trap deployment (22° 45.1N, 158° 00.3W)
0240 s2c1 (WOCE deep, 4805 db, fluorometer removed)
0610 s2c1 on deck
0810 s2c2 (start 36 hr/3 hr interval CTD casts)
1000 Net tow
1110 s2c3 (fluorometer reinstalled)
1140 Sun photometer measurements
1230 PRR-600 cast (no TSRB)
1300 Net tow
1400 s2c4
1500 Net tow (C.S.)
1700 s2c5
2000 s2c6 (large sensor pair differences due to ship roll)
2145 Net tow
2225 Net tow
2300 s2c7

Tuesday, 2 Oct.

0100 Net tow
0200 s2c8
0350 O2 array deployed (22° 45.3' N, 158° 00.3' W)
0500 s2c9 (large sensor pair differences due to ship roll)
0630 Primary productivity array deployed (22° 45.5' N, 157° 58.4' W)
0805 s2c10 (40 m/min in upper 350 m due to ship roll)
1000 Net tow
1105 s2c11
1230 PRR-600 cast (no TSRB)
1255 Net tow
1400 s2c12 (surface accumulations of Tricos;
        large sensor pair differences due to ship roll)
1700 s2c13 (surface accumulations of Tricos)
1850 Retrieved PP array (22° 42.4' N, 157° 56.7' W)
2000 s2c14
2155 Net tow
2300 s2c15 (second WOCE deep cast, 4781 db; fluorometer removed)

Wednesday, 3 Oct.

0225 Rosette on deck
0530 Transit O2 array (5.5 nm SE ALOHA)
0620 O2 array retrieved
0750 Retrieved sediment trap array (22° 38.0' N, 157° 57.6' W;
        7 nm SSE ALOHA)
0750 Transit HALE ALOHA
1010 Arrived HALE ALOHA
1135 s8c1 (large sensor pair differences due to ship roll;
        Sea-Bird Seacat installed)
1230 Transit station 6 (Kaena)

1605   s6c1 (cast aborted due to altimeter failure)
1655   s6c2 (2420 db; installed STAG's altimeter)
1910   s6c3
2030   s6c4
2140   Transit Snug Harbor

Thursday 4 Oct.

0725   Arrived Snug Harbor

Narrative:

HOT 130 was conducted aboard the R/V Kaimikai O Kanaloa (KOK), 30 Sept. - 4 Oct., 2001. Captain Robert Hayes was the master of the vessel and Dale Hebel chief scientist. There was a total of 14 participants in the scientific party composed of 4 WOCE, 7 JGOFS, 1 ancillary and 2 STAG. We departed Snug on Sunday 30 Sept. 2001, occupying stations at Kahe Pt. (sta. 1), Station ALOHA (sta. 2), HALE ALOHA (sta. 8), and Kaena Pt. (sta. 6). During this cruise we observed a surface accumulation of Tricodesmium on Tuesday 2 Oct., primarily consisting of the sawdust colonial variety (fusiform morphology or tufts with tricomes aligned parallel), and less numerous spherical colonies (puffs, with tricomes aligned radially). The tufts (especially) and puffs were concentrated in bands and (generally) on the lee side of the ship where we were able to get a couple of bucket samples for various analyses and pictures.

The WOCE component experienced large CTD differences between sensor pairs during some casts due to unusual ship roll. and the 36-hr period was completed on schedule and without interruptions. CTD operations were conducted at stations 1, 2, 6, & 8. One ~1000 m CTD cast was conducted at stations 1 & 8. At Station ALOHA, 13 ~1000 m and 2 ~4800 m CTD casts were completed, while one ~2500m and 3 shallower CTD casts were completed at Kaena Pt. (sta.6). The ~1000 m casts at station 6 were for instrument testing (fluorometer, cables, pylon, etc.), including a Seacat (SBE19) tested for David Murphy of Sea Bird and two Seapoint fluorometers were tested for STAG. On two casts the STAG fluorometers were compared to the JGOFS Seatech fluorometer. The WOCE altimeter failed on the second deep cast, but the pinger functioned properly. The STAG's altimeter was installed before the deep cast at Kaena. Other over-the-side operations included 3 light casts (PRR only), 10 net tows, oxygen flux, floating sediment traps and primary productivity deployments. All arrays were retrieved successfully although the stem on the base-plate of the sediment trap spar buoy parted before deployment but we were able to make adequate field repairs. Upon retrieval of the oxygen flux array the 5 and 25 m cubes were missing.

The underway/continuous thermosalinograph, ADCP, and fluorometer were operable and functioned properly. Before logging data, Steve Poulos tested one of the external thermosalinograph sensors (that just came back from Sea-Bird after inspection), after failing in a previous

cruise, however, it still gave problems. He is currently trying to find the problem with the sensor. Steve also started logging the wind data from the K-O-K's anemometer as a regular procedure during cruises. WOCE met. obs and limited ship met. data were collected as well as sun photometer measurements on Monday 1 Oct. Overall the weather was mostly sunny (although we did experience brief periods of rain), with very calm seas (after 1 Oct.), and generally light Trade winds.

Daily activities are listed above under Events Log.

Weather

The weather started out mostly sunny with moderate winds in the lee of the island which increased during the transit to ALOHA. While on station (ALOHA) the winds decreased and the sea surface became very calm (especially 2 Oct.). However, the swell increased with heights to 8'. Below is listed the cruise bridge log descriptions with 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, swell in feet, barometer in inches of Hg, temp °F (dry bulb), and clouds in tenths.

Day Date	Wind	Sea	Swell	Barometer	Temp	Clouds
Sun 30 Sept.	010-060, 10-25	050-350, 2-4	120-340, 2	29.90-29.98	76-90	3-7
Mon 1 Oct.	030-060, 15-25	030-060, 3-4	010-050, 4-8	29.91-29.97	75-83	2-9
Tues 2 Oct.	020-100, 4-17	020-100, 1-3	010-040, 6-8	29.90-29.97	74-83	3-9
Wed 3 Oct.	calm-090, 4-17	075-090, 1-3	000-020, 5-6	29.95-30.03	75-82	3-8
Thur 4 Oct.*	070-080, 3-7	070-080, 1-2	110-330, 1	30.02-30.03	75-76	5-7

*two entries (0200 & 0600 hrs)

Equipment and methods:

All standard equipment functioned properly except the TSRB which experienced a hardware problem. In addition the CTD experienced large sensor pair differences in some casts due to large ship roll and a problematic altimeter. We lost two cubes (with associated samples) from the oxygen flux array and the sediment spar buoy base broke.

Sub component programs:

Investigator:	Project:
John Dore	carbon dynamics/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
John Porter	aerosols/UH
Abbott/Letelier	optical measurements/OSU
Claudia Benitz-Nelson	phosphorus isotopes,Th234/UH
Karin Bjorkman	phosphorus dynamics
Dale Hebel	EOC
Students:	
Celcelia Sheridan	Zooplankton/UH (Landry)

Notable events:

1. Suface accumulation of Tricos
2. Calm seas
3. Large swell
4. Fluorometer comparison
5. Logging of winds
6. No TSRB data
7. Leaking bottle statistics
8. CTD testing