

# HOT-101: Chief Scientist Report

Chief Scientist: D. HEBEL

## HOT 101 Cruise Report R/V Moana Wave (MV 99-01) 11-15 Jan., 1999

### Personnel List

HOT 101:

#### WOCE group:

Fernando Santiago-Mandujano*	Research Associate	UH
Craig Nosse	Research Associate	UH
Mark Vlenciano	Electronic Technician	UH
Don Wright	Research Associate	UH

#### JGOFS group:

Dale Hebel	Chief Scientist (co-PI JGOFS)	UH
Lance Fujieki*	Computer Specialist	UH
Dan Sadler	Research Associate	UH
Karen Bjorkman	Research Associate	UH
Scott Nunnery	Research Associate	UH
Claudia Benitz-Nelson	Post-Doc	UH
Ursula Magaard	Research Associate	UH
Stephanie Christensen	Research Assistant	UH

#### Associated projects:

Ken Smith	Scientist	SIO
Roberta Baldwin	Scientist	SIO
Robert Glatts	Scientist	SIO
Jim Carlson	Research Engineer	Seabird
Terri Rust	Research Associate	UH
Eileen McCusker	Technician	MSU

#### STAG

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

\* Watch Leader

#### Itinerary (approximate HST):

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Monday, 11 Jan.

0900	Departed Snug Harbor
0935	Fire/abandon ship drill, science meeting
1205	Arrived Kahe Pt. (Sta. 1)

1215	Weight cast (1000 m)
1250	PRR/TSRB casts, aerosol measurements
1355	slc1
1500	Departed Kahe

Tuesday, 12 Jan.

0000	Arrived Sta. Aloha (Sta. 2)
0010	Net tow
0030	Net tow
0100	Transit FVGR deployment site
0150	Arrived deployment site
0215	FVGR deployed (22° 53.6'N,157° 58.7'W)
0225	Transit station ALOHA
0320	On station
0510	Completed sediment trap deployment (22° 46.18'N,157° 59.78'W)
0605	s2c1 (WOCE deep)
1000	Net tow
1030	Net tow
1105	s2c2
1245	PRR-600/TSRB cast, aerosol measurements
1315	Net tow
1340	Net tow
1405	s2c3
1700	s2c4
2000	s2c5
2200	Net tow
2230	Net tow ???
2300	s2c6

Wednesday, 13 Jan.

0005	Net tow
0030	Net tow
0200	s2c7
0345	Go-Flo cast
0505	s2c8
0655	Deployed primary productivity array (22° 45.06'N, 157° 59.97'W)
0805	s2c9
1105	s2c10
1215	PRR-600/TSRB cast
1330	Net tow
1405	s2c11
1705	s2c12
1845	Recovered PP array
2000	s2c13
2300	s2c14

Thursday, 14 Jan.

0035	Pump tanks
0300	s2c15 (second WOCE deep cast)
0610	CTD on deck
0745	Arrived FVGR recovery site

0815 FVGR on deck  
0830 Transit sediment traps  
1145 Recovered floating sediment traps (22° 45.0'N, 158° 21.2'W)  
1425 Arrived HALE ALOHA mooring (22° 24.94'N, 158° 09.57'W)  
1615 s8c1  
1830 Transit Snug

Friday, 15 Jan.

0730 Arrived Snug Harbor

#### Narrative:

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HOT 101 was conducted aboard the R/V Moana Wave 11-15 Jan. 1999. Captain Hayes was the master of the vessel and Dale Hebel chief scientist. There were a total of 20 participants in the scientific party composed of 4 WOCE, 8 JGOFS, 6 Ancillary and 2 STAG. We departed Snug on 11 Jan. occupying stations at, Kahe Pt. (sta. 1), FVGR site, Station ALOHA (sta. 2) and station 8 (HALE ALOHA). All routine operations were carried out without problems and the FVGR (Ken Smith - SIO) was deployed and retrieved successfully. Seabird research engineer Jim Carlson tested a prototype dissolved oxygen sensor with good results.

CTD operations were conducted at stations 1, 2 and 8. One CTD cast was conducted at station 1 and 8 while 15 CTD casts were completed at Station ALOHA in addition to 3 light casts, 11 net tows, 1 Go-Flo cast, and usual floating sediment traps and productivity measurements. All operations were routine with the exception of additional net tows for C. B. Nelson, rosette Go-Flo primary productivity comparison, prototype dissolved oxygen testing and deployment/retrieval of the FVGR. All core samples were collected. All underway measurement systems (thermosalinograph, ADCP, meteorological instruments, and fluorometer) were operable (except pCO<sub>2</sub>) and functioned normally. The seas were moderate with increased winds throughout the cruise. Sun photometer (aerosol) measurements were made only on the first two days of the cruise with cloudy conditions thereafter during the noon satellite overpass.

#### Daily Activities (HST)

7 Jan., 1999

HOT 101 pre-cruise meeting MSB 315.

8 Jan., 1999

Ship loading day.

11 Jan., 1999

Departed Snug Harbor 0900 hrs. After departure at about the mile buoy

we had the routine fire/abandon ship drill followed by a short science meeting. Arrived Kahe about 1200 hrs and conducted a 1000 m weight cast, PRR/TSRB casts, aerosol measurements and final 1010 m CTD cast (s1c1). All equipment functioned properly and all samples collected.

Skies were mostly sunny with calm seas, 5' nnw swell and light winds. Departed Kahe ~1500 hrs.

12 Jan., 1999

Arrived Station ALOHA ~0000 hrs conducted two net tows before proceeding to FVGR deployment site. The FVGR (Ken Smith - SIO) was successfully deployed approximately 2.5 nm north of the circle perimeter. After arriving at the center of Sta. ALOHA we deployed the floating sediment traps and initiated CTD operations. Six CTD casts were completed including s2c1 (WOCE deep), s2c2 (WOCE shallow), s2c3 (PC/PN), s2c4 (PPO4), s2c5 (JGOfS-1), and s2c6 (JGOfS-2). One PRR/TSRB cast was completed at about noon and 5-6 additional net tows conducted. Aerosol measurements were made from the 02 deck in conjunction with the satellite overpass. The IES signal was detected with the 12 khz receiver and dissolved oxygen hysteresis problem were noted for the primary sensor on various casts.

Skies were mostly sunny with moderate Trades at 12-18 kts, and sea/swell 3-5'.

13 Jan. 1999

All work progressed without problems and according to schedule. Weather was good with light trades and relatively flat seas. Conducted 8 CTD casts collecting samples for primary productivity rosette/go-flo comparison (s2c7), ATP (s2c9), P. Si (s2c11) and HPLC pigments (s2c14). Also deployed/retrieved PP array, conducted 3 net tows, 1 PRR/TSRB cast and 1 Go-Flo cast. No aerosol measurements were made due to overcast skies.

14 Jan. 1999

The weather remained favorable although we did have a period of extended cloudiness the previous day as a front passed. Work progressed according to schedule and all equipment functioned properly. Jim Carlson has gotten good/excellent results with his prototype oxygen sensor and a wealth of data. Terri and Eileen were very busy making the most of every sampling opportunity for their N20 work while Karin and Claudia conducted additional sample collection/experiments related to their research interests. In addition, Scott and Stephanie conducted a number of zooplankton grazing experiments.

After completing the 36 "burst" sampling we ended CTD work at Station ALOHA with a second WOCE deep cast (s2c15) prior to the successful recovery of the FVGR by Ken Smith's group. Following retrieval of the floating sediment traps (drifted almost due west), we steamed to HALE ALOHA (station 8) for our final CTD cast (s8c1) before returning to Honolulu.

15 Jan. 1999  
Arrived Snug Harbor 0730 hrs.

Weather  
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HOT 101:

The weather was variable with light-moderate winds and seas with generally clear skies at the beginning of the cruise with increasing cloudiness thereafter. 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	11 Jan.	080-085,1t-24	080-085,3-4	120-330,5	30.07-30.14	72-78	1-4
Tues	12 Jan.	085-120,12-18	085-120,3	330,2-5	30.12-30.14	71-80	3-7
Wed	13 Jan.	080-090,12-14	070-090,3	330,3-4	30.12-30.15	73-78	3-9
Thur	14 Jan.	080-100,18-22	080-100,4	330,3-4	30.13-30.19	73-74	3-8
Fri*	15 Jan.	065-070,5-14	065-070,1-3	110-330,3	30.13-30.14	74	0-3

\*Only two entries (0200 & 0600 hrs)

Equipment and methods:  
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All standard equipment functioned properly

Sub component programs:  
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Investigator:	Project:
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Christopher Winn (UH)	DIC, pH, Alk., pCO <sub>2</sub> /UH
Bob Bidigare (UH)	HPLC pigments/UH
Michael Landry (UH)	zooplankton dynamics/UH

Ancillary programs:  
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Investigator:	Project:
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Charles Keeling (SIO)	CO <sub>2</sub> dynamics and intercalibration/SIO
Paul Quay (UW)	DIC and <sup>13</sup> C/UW
Ed Boyle	trace metals/MIT
John Porter	aerosols/UH
Ken Smith	benthic respiration studies
Popp/Holstrom	NO <sub>2</sub> dynamics

Abbott/Letelier	optical measurments
Claudia Benitz-Nelson	phosphorus natural abundance

Students:

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Karin Bjorkman	phosphorus experiments/UH
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Others:

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Dale Hebel	EOC measurements, PP comparison/UH
Nunnery/Christensen	zooplankton feeding/UH