

HOT-100: Chief Scientist Report

Chief Scientist: D. HEBEL

HOT 100 Cruise Report
R/V Moana Wave (MV 98-26)
7-11 Dec., 1998

Personnel List

HOT 100:

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
Louie Tupas*	Scientist (co-PI JGOFS)	UH
Terrence Houlihan	Research Associate	UH
Lance Fujieki	Computer Specialist	UH
Dan Sadler	Research Associate	UH
Markus Karner	Post-Doc	UH
Karen Bjorkman	Research Associate	UH
Scott Nunnery	Research Associate	UH
Claudia Benitez-Nelson	Post-Doc	UH

Associated projects

Albert Calbet	Post-Doc	UH
John Albrough	Observer	USCG

STAG

Steve Poulos	Electronic Technician	UH-UMC
Dave Gravatt	Deck Technician	UH-UMC

* Watch Leader

Itinerary (approximate HST):

Monday, 7 Dec.

0900	Departed Snug Harbor
0930	Fire/abandon ship drill, science meeting
1155	Arrived Kahe Pt. (Sta. 1)
1205	Weight cast (1020 m)

1300 PRR/TSRB casts
1340 slc1
1445 Departed Kahe

Tuesday, 8 Dec.

0120 Arrived Sta. Aloha (Sta. 2)
0250 Completed sediment trap deployment (22° 45.1N, 157° 55.8W)
0405 s2c1 (WOCE deep)
1010 s2c2 (WOCE shallow)
1115 Plankton net tow
1200 Plankton net tow
1230 PRR/TSRB casts
1300 s2c3
1210 PRR-600/TSRB cast
1400 Plankton net tow
1425 Plankton net tow
1600 s2c4
1900 s2c5
2200 s2c6
2310 Plankton net tow
2400 Plankton net tow

Wednesday, 9 Dec.

0020 Plankton net tow
0100 s2c7
0235 Go-Flo cast
0410 s2c8
0630 Deployed primary productivity array (22° 44.8N, 157° 59.8W)
0700 s2c9
1005 s2c10
1105 Plankton net tow
1215 PRR-600/TSRB cast
1300 s2c11
1325 Port main engine off line
1330 Restarted port main engine but died when engaged
1345 Port main engine shut down
1400 Visual confirmation of net caught in port propeller
1510 Recovered primary productivity array
1530 Transit Kaena Pt. starboard main engine only

Thursday, 10 Dec.

0300 Passing Kaena Pt.
0545 Off Maili Pt.
0730 Divers in the water to clear net
0815 Transit sediment traps
1900 Recovered floating sediment traps (23° 07.0N, 158° 42.0W)
1905 Transit Honolulu

Friday, 11 Dec.

0900 Arrived Snug Harbor
1130 Completed limited offloading (HOT 100) and onloading (HOT 100B) operations

Narrative:

HOT 100 was conducted aboard the R/V Moana Wave 7-11 Dec. 1998. Captain Stahl was the master of the vessel and Dale Hebel chief scientist. There were a total of 17 participants in the scientific party composed of 4 WOCE, 9 JGOFS, 2 Ancillary (1 USCG observer from the USCG ship Healy) and 2 STAG. We departed Snug on 7 Dec. occupying stations at, Kahe Pt. (sta. 1) and Station ALOHA (sta. 2) although all operations were not completed, at Station ALOHA due to a drifting net which became fouled in the port propeller during CTD cast s2c11. This necessitated returning to the lee of Oahu for diving operations to remove the net. It was feared that the net may also entangle in the starboard propeller totally disabling the vessel.

CTD operations were conducted at stations 1 & 2. One CTD cast was conducted at station 1 and eleven CTD casts at Station ALOHA in addition to 3 light casts, 8 net tows, 1 Go-Flo cast, and usual floating sediment traps and productivity operations. All operations were routine with the exception of additional net tows for C. B. Nelson and a rosette Go-Flo primary productivity experiment comparison. All underway measurement systems (thermosalinograph, ADCP, meteorological instruments, and fluorometer) were operable (except pCO₂) and functioned normally. The seas were moderate-rough with moderate-high winds and mostly cloudy skies. Due to the rough seas a number of spikes were recorded in some of the continuous measurement data streams and due to the overcast skies no noon sun photometer measurements were conducted. Due to the net problem we were unable to complete the 36 hr 'burst' sampling period, the HPLC cast, 3 net tows and experiments for A. Calbet and K. Bjorkman in addition to the CTD operations at Station 8 (HALE ALOHA).

Daily Activities (HST)

2 Dec., 1998

HOT 100 pre-cruise meeting MSB 315 at 1330 hrs.

4 Dec., 1998

Ship loading day.

7 Dec., 1998

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. It was anticipated that we would experience rough seas due to previous high wind conditions and placed additional emphasis on safety procedures. Arrived Kahe about 1140 hrs and conducted a 1000 m weight cast, PRR/TSRB casts, and final 1000 m CTD cast. All equipment functioned properly and all samples collected.

Skies were mostly sunny with 2-4' seas, 3-4' south swell and winds 10-20 kts. Departed Kahe ~1500 hrs.

8 Dec., 1998

Arrived Station ALOHA ~0120 hrs. The transit was bumpy with the ship (and personnel) experiencing significant roll and pitch. From the ride it was doubtful that over-the-side work would be initiated, however, once on station and the ship positioned into the wind over-the-side operations were possible.

The sediment trap array was deployed without incident and CTD operations initiated. 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 net tows conducted.

Skies were mostly overcast with brisk Trades 13-25 kts, and sea/swell 3-8'.

9 Dec. 1998

Conducted 5 CTD casts, 3 net tows, 1 PRR/TSRB cast, 1 Go-Flo cast and deployment of primary productivity array before net became entangled in port propeller. During s2c11 the port engine died and although it could be started it continued to die when the propeller shaft was engaged. Following retrieval of the CTD the captain and crew visually determined that a drifting net had become entangled in the port propeller. They were successful in hooking the net with a grappling hook and hoisted aboard a portion of the net. This was secured to a cleat.

After discussions with the captain it was decided that we would curtail operations after picking up the floating primary productivity array and steam to the lee of Oahu for diving operations to remove the net. It was deemed too dangerous for diving operations on station due to the sea and swell conditions.

The primary productivity array was recovered without incident and we departed Station ALOHA for Kaena Pt. on one engine at about 1530 hrs.

The winds continued to blow Trades at 20-25 kts with 6-8' swells and overcast skies.

10 Dec. 1998

We arrived at the site of diver operations at about 0700 hrs and the net was cleared by about 0800 hrs. From previous Argos positions the drift track of the sediment traps was WNW at a rather rapid rate so we immediately departed after determining that the port propeller was operational and functioning normally. We steamed all day arriving at the trap location at about 1900 hrs and immediately conducted retrieval operations. The recovery went well and we departed for Honolulu shortly after 1900 hs.

Winds were Trades 25-28 kts, swell 8-12' and skies mostly cloudy with a clearing trend.

11 Dec. 1998

Arrived Snug Harbor 0900 hrs. Offloading for HOT 100 and onloading for HOT 100B was completed before noon.

Weather

HOT 100:

The weather was mostly cloudy with high winds and rough seas. 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 7 Dec.	075-105,18-24	075-105,3-5	090-120,4-8	30.05-30.14	72-79	10
Tues 8 Dec.	090-115,13-25	090-115,3-4	100,6-8	30.09-30.15	74-76	9-10
Wed 9 Dec.	085-090,20-25	080-090,3-4	100,6-8	30.08-30.14	74-76	9-10
Thur 10 Dec.	000-090,05-28	000-090,1-5	320-340,3-12	30.14-30.19	75-77	4-10
Fri* 11 Dec.	090,25	090,4	330,8	30.18	75	3

*Only one entries (0200 hrs)

Equipment and methods:

All standard equipment functioned properly

Sub component programs:

Investigator:

Christopher Winn (UH)

Bob Bidigare (UH)

Michael Landry (UH)

Project:

DIC, pH, Alk., pCO₂/UH

HPLC pigments/UH

zooplankton dynamics/UH

Ancillary programs:

Investigator:

Charles Keeling (SIO)

Paul Quay (UW)

Ed Boyle

John Porter

Ken Smith

Project:

CO₂ dynamics and intercalibration/SIO

DIC and ¹³C/UW

trace metals/MIT

aerosols/UH

benthic respiration studies

Students:

Karin Bjorkman

phosphorus experiments/UH

Others:

Dale Hebel

Markus Karner

Albert Calbet

EOC measurements/UH

molecular probe samples/UH

zooplankton feeding/UH