

HAWAII OCEAN TIME-SERIES
HOT- 122 General Cruise Plan

VESSEL: R/V Kaimikai O Kanaloa, University of Hawaii
MASTER OF THE VESSEL: Captain Ross Barnes
CHIEF SCIENTIST: Dale Hebel, University of Hawaii
STAG Deck Technician: Dave Gravatt
STAG Electronics Technician: Steve Poulos
Load: Jan. 15, 2001
Departure: Jan. 15, 2001; 0900 HST
Return: Jan. 19, 2001; 0800 HST

1.0. SCIENTIFIC OBJECTIVES

The objective of HOT 122 is to maintain collection of hydrographic and biogeochemical data at the Hawaii Ocean Time-series (HOT) Station ALOHA, our near shore station Kahe Point, surface mooring HALE ALOHA and Kaena Pt. station. Kahe Point (21°20.6'N, 158°16.4'W) and Kanea Point (21°50.8'N, 158°21.8'W) is occupied enroute to Station ALOHA to test equipment and collect nearshore data. Station ALOHA is defined as a circle with a 6 nautical mile radius centered at 22°45'N, 158°W, and HALE ALOHA (20° 20'N, 158° 10.6'W), is the site of our deep ocean mooring

1.1 SCIENTIFIC OPERATIONS

<u>Station</u>	<u>Activities</u>
Underway/continuous	ADCP, thermosalinograph, fluorometry, meteorology
Kahe (sta. 1)	Wt. Cast, PRR/TSRB cast, CTD cast
Kaena Pt. (sta. 6)	CTD op's (2500 m)
ALOHA (sta. 2)	Sediment traps, net tows, CTD op's, PRR/TSRB casts, primary productivity measurements, misc experiments, in situ pumping
HALE ALOHA (sta. 8)	CTD op's (1000 m)

2.0. SCIENCE PERSONNEL

Allen, Colleen*	UH/Zooplankton
Bjorkman, Karin*	UH/JGOFS
Breitbart, Mya*	UH/JGOFS
Christensen, My*	UH/JGOFS
Dore, John	UH/JGOFS
Gasc, Ann*	UW/JGOFS
Gravatt, Dave	UHMC/STAG
Gregory, Tom	UH/JGOFS
Hebel, Dale	UH/JGOFS
Johnson, Jerimiah	UH/WOCE
Mandujano, Fernando-Santiago	UH/WOCE
Larson, Noel*	UH/WOCE
Poulos, Steve	UHMC/STAG
Ratapala, Lal	UH/WOCE
Olsen, Jorgen	UH/WOCE

20/09/24

Valenciano, Mark
Hamme, Roberta*

UH/WOCE
UW/JGOFS

3.0. SUMMARY SCHEDULE

15 Jan.	Load HOT 122
15 Jan.	Depart HOT 122
15 Jan.	Station 1 Kahe Pt. Operations
15 Jan.	Station 6 Kaena Pt. Operations
16-18 Jan.	Station ALOHA operations
18 Jan.	Sediment trap retrieval, station 6 & 8 CTD op's
19 Jan.	ETA 0800 hrs, offload

4.0. OPERATIONAL PLANS

4.1. Kahe Point Station (21°20.6'N, 158°16.4'W) and Kaena Point station (21°50.8'N, 158°21.8'W)

Operations at Kahe station include an initial weight cast to 1000m, a simultaneous floating TSRB and hand-lowered light cast (PRR-600), and CTD cast to 1000 m. After all operations have been completed the ship shall proceed Kaena Point station before continuing to Sta. ALOHA for a 2500 m CTD cast.

4.2. Station ALOHA (22°45'N, 158°W with 6 nmile radius)

Upon arrival at Station ALOHA we will do a net tow followed by deployment of our floating sediment traps. Following the trap deployment we will resume our regular routine with 2 near bottom CTD casts, 36 hr 3 hr interval CTD 'burst' sampling, PRR/TSRB casts, primary production cast/array deployment/retrieval, additional plankton net tows, midday aerosol measurements and in situ pumping.

Following these activities we will transit to the floating sediment traps, retrieve them and transit to HALE ALOHA for one 1000 m CTD cast. After operations are complete at station 8 (HALE ALOHA), we will return to Snug Harbor.

4.2.1. Sun Photometer and Aerosol Measurements (tentative)

We may be doing aerosol measurements at about noon on those days with good satellite angle and minimal cloud cover. We would like to coordinate our PRR/TSRB light measurements (see 4.2.6.) with the aerosol measurements and, if possible, move the ship to a clear sky area if necessary.

4.2.2. Floating Sediment Trap deployment

The floating sediment traps will be deployed from the center of Station ALOHA. The array will be deployed from the starboard side using the ship's starboard crane and the JGOFS DSE winch. Power requirements for the winch is 440 VAC, three phase at 10 amps. After deployment we would like to return to the center of Station ALOHA and commence with CTD operations.

The array will drift for approximately 60 hours before recovery. The array is equipped with 2 ARGOS satellite transmitters (platform # 1325 & 03028), 2 strobe lights, and 2 radio transmitters (channel 74, 156.725 MHz). Daily positions of the array shall be transmitted by email directly to the ship. Assistance from the bridge is requested in plotting the drift track of the array. We request the use of the ship's radio direction finder for locating the array.

4.2.3. Water column measurements

Vertical profiles of temperature, conductivity, dissolved oxygen, and flash fluorescence will be made with a Seabird CTD with associated sensors attached to a 24 place rosette with 12 liter sampling bottles. We request the use of the ships CTD winch for this operation. Water samples for biogeochemical measurements will also be collected on each cast. The first cast, at Station ALOHA will be a shallow cast to collect biological samples for incubation followed by a deep cast (approximately 4800 m). We will do two near bottom casts.

Following the deep cast, a series of ~1000 m casts shall be made continuously every 3 hours for a 36 hour period. We request that this 'burst' sampling be done without interruption **within the circle perimeter which describes Station ALOHA.**

4.2.4. Primary production experiment

We will collect our primary productivity samples from the rosette (S2C8). Before or at dawn a second free drifting array will be deployed from the starboard side. We request the use of the starboard crane for this operation. The array is equipped with a strobe light and a radio transmitter (channel 72, 156.625 MHz). The ship shall keep within sight of the array while performing CTD operations for the approximately 12 hour duration the array will be in the water. The array will be recovered after sunset (about 1800 hrs). CTD operations shall continue after recovery.

4.2.5. Plankton net tows

A series of 9 hour plankton net tows will be conducted from the stern using a capstan and the starboard crane. Hour periods are scheduled at around noon and midnight (see day-hour schedule) in excess of the six required in the event of equipment problems and/or rough sea conditions.

4.2.6. Profiling Reflectance Radiometer (PRR) and Tethered Spectral Radiometric Buoy (TSRB)

Around noon on each day a profiling reflectance radiometer will be deployed from the main deck using the starboard crane. The tethered spectral radiometric buoy will be deployed and recovered during this during this period as well.

4.3. Floating Sediment Trap recovery

Following operations at Sta. ALOHA the ship shall transit to the floating sediment trap array and recover the equipment. The ship's starboard crane will be needed for this operation.

4.4. HALE ALOHA (station 8)

After the sediment traps have been recovered we will transit to the HALE ALOHA mooring site (20° 20'N, 158° 10.6'W), and conduct one 1000 m CTD cast before our transit to Snug Harbor.

5.0 EQUIPMENT

5.1 The HOT science party shall bring the following:

1. Seabird CTD system, all sensors, deck boxes and computer CTD acquisition systems.

20/09/24

2. 24-place rosette with 12-l water sampling bottles, all spare parts
3. Two laboratory vans (main and 02 deck) with assorted laboratory equipment for radioisotope and sample processing work
4. All required sampling bottles
5. Type I and Type II water and all required chemicals and isotopes
6. Storage van with assorted equipment (02 deck)
7. Large vacuum waste container
8. Liquid nitrogen dewers
9. Drifting sediment trap array with lights, satellite and radio transmitters, floats, weights, etc.
10. DSE winch (440VAC, 3 phase at 10 amps) and Kevlar line
12. Drifting primary productivity array with light, radio transmitter, floats, weights, polypro. line etc.
14. Go-Flo bottles, teflon messengers, trace-metal free block
15. Plankton nets and towing lines
16. Dissolved oxygen measurement system
17. Desktop and laptop personal computers
18. PRR/TSRB & other optical measuring instruments
19. Deck incubation system (Note: re-circulating chiller unit requires clean 220 VAC)

6.2. We will need from the ship the following:

1. Port and starboard cranes
2. A-frame block assembly
3. Winch with conducting wire for CTD and boom extension
4. Electric power for winches, vans, and incubators
5. Radio direction finder
6. Empty freezer in wet lab
7. Space on the main deck for 1 van, DSE winch
9. Hand-held VHF transceivers
10. Precision depth recorder
11. Shackles, hooks and lines
12. Shipboard Acoustic Doppler Current Profiler
13. Space on the 03 deck for equipment van and laboratory van
14. Underway/on-station data acquisition system for met. instrument, ADCP, thermosalinograph, fluorometer
15. Grappling hooks and line
16. Running fresh water and seawater hoses
17. Electronic mail system
18. GPS system
19. Navlink2 PC or equivalent
20. Uncontaminated seawater supply

WATCH SCHEDULE

0300-1500

Fernando Santiago-Mandujano - Watch leader

Mark Valenciano

Dale Hebel

Ann Gasc

20/09/24

My Christensen

1500-0300

John Dore - Watch leader

Lal Ratapala

Jerimiah Johnson

Mya Breitbart

Karin Bjorkman

At-large

Dave Gravatt.

Steve Poulos

Tom Gregory

Colleen Allen

Roberta Hamme

Noel Larson

Jorgen Olsen

SHIP R/V Kaimikai O Kanaloa HOT 122 DATE 15-19 Jan., 2001

TIME	Mon. 1/15	Tues. 1/16	Wed. 1/17	Thurs. 1/18	Fri. 1/19
0000					
0100		Arrive ALOHA Net tow	Net tow	Net tow	

20/09/24

0200		Deploy sed. traps	S2C8	PP	S2C15 WOCE-3	
0300		S2C1 WOCE-1				
0400						
0500			S2C9	Open		
0600			Deploy PP array Log PRR Light		Transit sed. traps Pump tanks	
0700						
0800	On Board	S2C2 WOCE-2 (start 36 hrs)	S2C10	PE		Arrive Snug
0900	Depart Snug Log Licor light				Recover sed. traps	
1000		Net tow	Net tow			
1100	Arrive Kahe	S2C3 Open	S2C11	Open		
1200	Weight cast PRR/TSRB	PRR/TSRB	PRR/TSRB		Transit sta. 8	
1300	S1C1	Net tow	Net tow			
1400	Transit Kaena	S2C4 PC/PN	S2C12	ATP		
1500		in situ pump	in situ pump			
1600					S8C1	
1700	S6C1 (2500 m)	S2C5 P.PO4	S2C13	Open		
1800			Recover PP array End PRR Light			
1900	Transit ALOHA				Transit Snug	
2000		S2C6 JGOFS-2	S2C14	HPLC (end 36 hrs)		
2100						
2200		Net tow	Net tow			
2300		S2C7 P. Si				

20/09/24

20/09/24