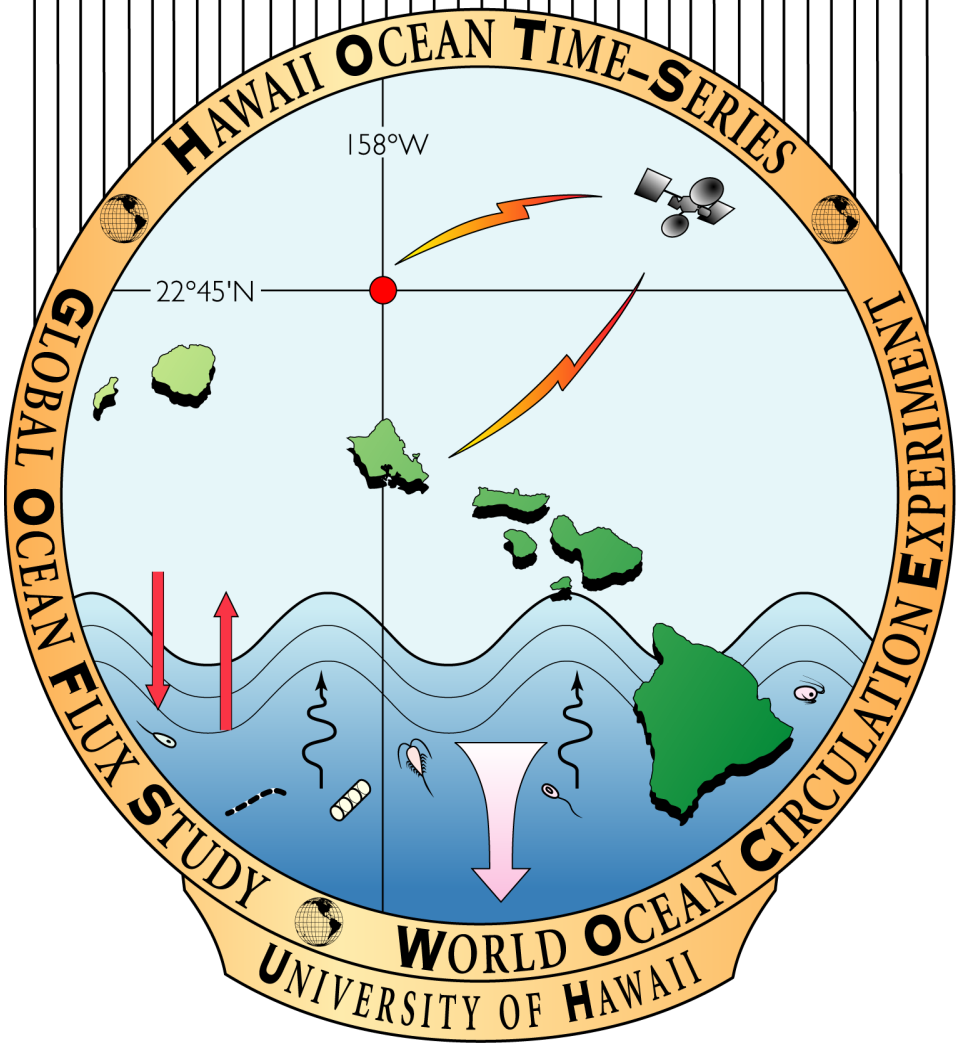
Hawaii Ocean Time-series Program

HOT-174



HOT-174 R/V KM

Cable #	Initial Sensor Configuration		w/ Calibration Date	
20	T1	2700	8/31/05	
96	C1	2725	11/11/04	t_0 = 2578.387
-	P	51412	8/2/01	
74	T2	2242	8/27/05	
118	C2	2541	1/14/05	t_0 = 2602.727
STBD	F_L	2440	12/11/01	
103	O_1	43325	7/26/04	
104	O_2	43262	8/13/05	
	Alt.	958		
16	P_1	052459		
	P_2	053219		
47	Molan / Carousel	0223	24 Bottles positions fired in LAB	
	CTD	92859		
	Deck Box	111361		
	GPS	9600 Baud, GGA		
Custom	ISUS	057 on transmissometer channel	8/29/05	(Plscalib.xms)
	Bucket Thermometer			

note — John Ballisters broken Spigot is in the pencil holder. we replaced his with a New Gd. Spigot w/ Viton o-rings.

Spigot broken accidentally during loading

HOT-174 oct 6, 2005

Cruise Participants

F.S. Manducjano
L. Fujieki
S. Tottori
E. Grabowski
Ken. Doggett
M.F. Chung
P. Lethaby
J. Shacat
T. Gregory
S. Curless
D. Sadler
A. Harlan
Justin Smith
B. Watkins
K. Björkman
C. Mahaffey
M. Church
J. Bullister
D. Wisegarver
Lucas Stal
Jef Huisman
Maayke Stomp
Mark Rognstad
S. Laney
T. McGovern
G. Foreman

1900

Springs replaced

1930

Bottle	old Spring	New Spring
14	28	32
5	5	31
6	6	30

2015

2145

2200

Rosette welded befor cruise for damage during previous cruise.

2220

2230

Replaced o-rings in top and bottom caps all bottles 3-

2300

16th 2327 Using PORT 10 ON cyclades box on the KM SIMRAD GPS 9600-8-N-1
Deck box set up for 9600 GGA.
IN the past we used ADU5 GPS SIGNAL but that one is not working at the moment,
17th 0052 NOW ADU5 IS WORKING — GPS IS NOW hooked up to Physical port #15.

0857

0918

0923

0926

HOT-174 6-Oct-2005

1900 Depart from Snug

1930 Safety briefing, science meeting

2015 Fire/abandon ship drill

2145 Arrives at Kahe Sta.

2200 Weight cast to 500 m

2220 End of cast

2230 Ramses cast

2300 PRR cast

2327 Start Sta 1 cast 1

7-Oct-2005

0052 End of cast. 24 marks OK
Bottle 20 leaking on recovery

0857 Arrive Station ALOHA

0918 Start Stn 2 Cast 1

0923 Winch stopped @ 40dbar - Engineers investigating noise from winch

0926 CTD descent continued.

09

10

11

12

12

14

14

14

15

HOT-174 7 October 2005

Mixed layer 75 dbar.

Winch stopped @ 163 dbar. - intermittent noise from winch.

A21 Clock 10 hours slow. It was set to Hawaii time, Set to GMT

0952 End of Cast 21 marks OK.
4000+ processing errors.

1048 Start Stn 2 Cast 2

1113 End of Cast. 21 marks OK
4000+ processing errors

1209 Start Stn 2 Cast 3
Package broke surface after soak.

1251 End of Cast. 24 marks OK

Bottles 4 & 20 leaking on recovery.
Bottle 18 did not close. Lanyard got caught on stanchion
No salinities sampled
4135 Processing errors.

1400 Deployed gas array

1425 Start Sta 2 cast 4
Delayed start due to winch problems.

1453 Stopped Seasave, dealing with winch problems.

1549 Solved winch problem. Cable was not damaged, only some strands unraveled in a short section, but not mechanically affected.

S-Bottle 579 broke during last cruise, needs to be replaced. Using bottle SN 980 instead

1609

1647

1816

1854

1930

1944

2202

2300

HOT-174 7 Oct 2005

1609 Restart station cast 4

1647 End of cast, 19 marks OK.

over 6000 processing errors.
Rosette hit the side of the ship during recovery, at the bottom rail, near the welding. Apparently sensors were not effected, rosette did not bend.

1816 start station cast 5

Salinity glitch near 600 dbar downcast

1854 Stopped winch at 950 dbar upcast to check for winch noises

Rough cast, lots of CTD up and down

1930 End of cast. 17 marks OK
Over 10,000 processing errors

1940 Ramses cast

ATE, RRR

2200 Acq / Err f

2300 Replaced bottles 2, 3, 5, 7, 8, & 23 with John Bollister's bottles (see bottle config sheet for Bottle SN)

0004

0050

0211

0448

0624

0818

1120

1400

1537

HOT-174 8-Oct-2005

0040 Raining on station

0050 Start Sta 2 cast 6

Overshot 500 dbar by 30 dbar. Ctd lowered back down to bottle stop depth.

0211 End of Cast. 23 marks OK
Bottle 19 was leaking on recovery.

~6800 processing errors.

Ramses cast. (hand held optical profiler)

RVS removed prior to deep cast.

0448 Start Stn 2 Cast 7

0624 8m off the bottom. 22° 45·0'N 157° 59.9'W
Potential temp 1.11°C.

0818 End of Cast. 24 marks OK

4997 processing errors.

1120 Sediment traps deployed. 22°44.9'N 157° 59.8'W

1400 Recovering gas array
22° 41.07'N, 158° 8.5'W

1537 Start Sta 2 cast 8
GPS Kaeuna config. G-5000 display

170 c

191.

210

222.

0036.

014

HOT-174 8 Oct 2005

Deep mixed layer, almost 90 dbar

Noisy fluorescence signal below 1000 dbar

1709 8 m off the bottom
22° 45.02'N, 158° 0.0'W

1912 End of cast.

Bottle 18 didn't close again. It got caught on the right hand stanchion

2101 Start Sta 1 cast 9

2208 End of cast. 24 marks OK.

Ramsey, PRR, ACQ

Replaced J. Bullister's bottles in Rosette 1, 2, 6 and 23 for bottle config. sheet.
9 Oct 2005

0036 Start Stn 2 Cast 10

0143 End of Cast. 24 marks OK

Bottles 20 + 21 were leaking on recovery

6651 processing errors.

Wire Count

0008159.0

Thermosal salinity bottle SN 516
broken during sampling
Replaced w/ bottle SN 956

0443

0550

0620

0742

0904

1009

120

1308

HOT-174 9 October 2005

Reterminated CTD cable. Kinked during descent.
8159 m left on drum.

0443 Start Stn 2 Cast 11

0550 End of Cast 22 marks OK
5643 processing errors.
Bottle # 11 leaking on recovery.

0629 Start Stn 2 Cast 12
light rain

0742 End of Cast 14 marks OK
6923 processing errors.

0904 Start Stn 2 Cast 13.

1009 End of Cast 11 marks OK
6476 processing errors

Net tow

1203 Start Stn 2 Cast 14

1308 End of cast, 24 marks OK.

Small bend in CTD cable, about 5m from Rosette. Reterminatioin not required according to Tim and Steve's assessment.

Outer Rosette frame section is bent slightly upwards.

Could not identify the bag with new Silicon o-rings for spigots. Need to reseal it properly.

145

161

163

175

190

205

HOT-174 9-Oct-2005

Bottles 12 and 13 leaking on recovery.

Transit to pump ship's sewage tanks.

Bottles 11 and 22, replaced spigot orings, they were sticky.

1457 Start Sta 2 cast 15

1610 End of cast

Bottle 9 leaking on recovery

5600 processing errors

1630 Deployed PP array 21°45N, 157°59.9W

Raining near the station

1756 Begin Sta 2 cast 16

1904 End of cast, 23 mrks OK

7000 processing errors.

Replaced spigot orings in bottles 13 and 17

2054 Start Sta 2 cast 17
Floorescence glitch at 320 dbar downcast

HOT-174 9 Oct 2005

2201 End of cast, 18 marks OK

Reterminating wire to get rid of bend in cable. Cut about 5 m

2300 Raining on station

10 Oct 2005

0020 Start Sta 2 cast 18

ISUS battery appears to be dead at 320 dbar on the upcast. Voltage dropping to zero and spiking back up as temperature increases

0138 End of Cast. 23 marks OK

Bottles # 9, 12, 19, 23 leaking during recovery.
13 vent not closed.

ISUS battery confirmed dead on recovery.

5804 processing errors.

ISUS Removed from rosette.

0301 Start Stn 2 Cast 19

0407 End of Cast. 22 marks OK

0440 Primary Production recovered. 22° 43.8'N 158° 4.0'W

0620

0734

0910

1058

1204

1306

HOT - 174 10 October 2005

0620 Start Stn 2 Cast 20

0734 End of Cast. 24 marks OK

11 + 22 leaking on recovery.
14 did not close properly.

5642 processing errors.

Raining on Station.
Replaced J. Ballister's bottles before cast,
0910 Start Stn 2 Cast 21 | see Bottle carrier sheet.

1058 8m off the bottom 22° 45.0'N 157° 59.98'W

Bot Temp 1.112°C

1204 Long line wrapped around CTD wire. 685 dbar.
Removed hooks attached to CTD wire, but line still around
1306 End of cast 24 marks OK | CTD wire

- Long line removed after CTD was brought on board. Had to disconnect CTD wire from rosette. No damage to sensors or equipment.
- Secondary fluorescence max at 10 m and slowly decreasing to a min at 70 m during downcast, but upcast only shows sharp increase at 10 m. Same behavior seen during S2C20 and S2C21

143

153

170

183

196

198

200

HOT-174 10 Oct, 2005

1430 Acq / Frrf

1500 Transit to recover sed. traps.

1700 Recovered sed. traps.
22° 36.5N, 158° 16.5W

1830 Arrived at Sta 5r
A fishing boat, apparently a long liner, is hanging near the MOSEAN mooring.

1900 C. Mahaffey's net tow

1907 Start Sta 5r cast 1

Large fluorescence ~ 0.8 downcast in upper 150 dbar, large values also during upcast, but not matching the downcast. Will conduct another cast with different fluorometer sensor

2008 End of cast, 24 marks OK

Bottle 21 leaking on recovery
" 19 " " "
Bottle 24 leaking when vent opened

Replaced fluorometer sensor with SN 2487

21

22

24

22

HOT-174 10 Oct 2005

The fluorometer bulkhead connector on the CTD side had water and showed slight corrossion, also the CTD bulkhead connector. S. Tottori cleaned them
Fluorometer SN 2487 installed with a different cable.
Ran updcon on IBM acquisition computer A21
Added sensor SN to p1scal1s.flr file.

2100 Acq/Frrf cast

2205 Start Sta 51 cast 2
Fluorometer not working. Bring CTD back on board from 10 dbar.

Replaced fluorometr cable with original one used in previous casts

2251 Restard Sta 51 cast 2.

Fluorometr workes fine. Previous casts had probably bad fluorometr signal near the surface.

2252 End of cast. No bottles fired.

Transit to Sta 50

HOT-174 11 Oct 2005

0049 Start Stn 50 cast 1

0049 End of cast. No bottles fired.

0520 Replaced CTD with SN 9136 1 pressure SN 75434 for testing, after p-sensor was checked at Sea-Bird

Ran updcon in IBM acquisition computer ATI

Replaced bottle from rosette position 15 with V102

0658 Start Stn 6 Cast 1

0756 8m of the bottom 21°50.8'N 158°21.8'W

0902 End of Cast. 1 extra mark at 2448 dbar.

Bottle # 1 did not fire. Tested @ surface and trigger mechanism functioned correctly.

Bottle 11 was leaking on recovery.

10 min hydrophone test with no propulsion.

0940 Transit to Snug.

Hawaiian Ocean Time-Series

HOT-**174**

KAHE Station Data Sheet

Station # 1 Date: 10/6/2005 (HST)

Cast # 1 Time: 1345 (HST)

Operator(s): KD,LF,SC,TG,AH,DS

Rosette Position	Desired Depth	Oxygen	Sample Temp.	Nuts	DIC/ Alk	pH	DOC	LLN/ LLP	Chl *a*	FCM	Extra oxygen
1	**1000**	1	9.1	1							126
2	**900**	2	8.9	2							127
3	**800**	3	9.6	3							128
4	**750**	4,5,6	9.8	4A-B							129
5	**700**	7	10.2	5							130
6	**600**	8	10.6	6							131
7	**500**	9	11.8	7			7				132
8	**400**	10	12.4	8							133
9	**350**	11	13.7	9A-B			9				134
10	**300**	12	14.6	10							135
11	**250**	13	16.1	11							136
12	**225**	14	16.9	12							137
13	**200**	15	18.9	13			13				138
14	**175**	16	20.2	14			14		14	14A-B	139
15	**150**	17	21.4	15			15	15	15	15A-B	140
16	**125**	18	21.7	16A-B			16		16	16A-B	141
17	**115**	19	22.3	17							142
18	**100**	20,21, 22	23.4	18			18	18	18A-B	18A-B	143
19	**75**	23	24.1	19			19		19	19A-B	144
20	**60**	24	25.2	20							145
21	**45**	25	26.2	21	21	1	21	21	21	21A-B	146
22	**25**	26	26.2	22	22	2	22		22A-B	22A-B	147
23	**5**	27	26.3	23	23	3,4,5	23	23	23	23A-B	148
24	**5**	QC	26.3								

Notes: EXTRA OXYGEN SAMPLES WILL BE TAKEN FROM EVERY DEPTH FOR NEW SYSTEM CHECK

Hawaiian Ocean Time-series

HOT- **174**

Gas Array Experiment Data Sheet

Station # 2 Date: 10-06-05 (HST)

Cast # 1 Time: 2330 (HST)

Operator(s): TG,DS,AH,SC,EG,CM

Rosette Position	Desired Depth	O2	15N2				
1	**45**	X					
2	**45**	X					
3	**45**	X					
4	**45**		X				
5	**45**		X				
6	**45**		X				
7	**45**		X				
8	**25**	X					
9	**25**	X					
10	**25**	X					
11	**25**		X				
12	**25**		X				
13	**25**		X				
14	**25**		X				
15	**5**	X					
16	**5**	X					
17	**5**	X					
18	**5**		X				
19	**5**		X				
20	**5**		X				
21	**5**		X				
22							
23							
24							

Notes:

Hawaiian Ocean Time-series

HOT- **174**

Gas Array Experiment Data Sheet

Station # 2 Date: 10-07-05 (HST)

Cast # 2 Time: 0100 (HST)

Operator(s): TG,SC,DS,AH,EG,CM

Rosette Position	Desired Depth	O2	15N2				
1	**125**	X					
2	**125**	X					
3	**125**	X					
4	**125**		X				
5	**125**		X				
6	**125**		X				
7	**125**		X				
8	**100**	X					
9	**100**	X					
10	**100**	X					
11	**100**		X				
12	**100**		X				
13	**100**		X				
14	**100**		X				
15	**75**	X					
16	**75**	X					
17	**75**	X					
18	**75**		X				
19	**75**		X				
20	**75**		X				
21	**75**		X				
22							
23							
24							

Notes:

Hawaiian Ocean Time-series

HOT- **174**

Mixing Experiment Data Sheet

Station # 2 Date: 10-07-05 (HST)

Cast # 3 Time: 0200 (HST)

Operator(s): SC,TG,DS,AH

Rosette Position	Desired Depth	KB					
1	**700**						
2	**30**						
3	**30**						
4	**30**						
5	**30**						
6	**30**						
7	**30**						
8	**30**						
9	**30**						
10	**30**						
11	**30**						
12	**30**						
13	**30**						
14	**30**						
15	**30**						
16	**30**						
17	**30**						
18	**30**						
19	**30**						
20	**30**						
21	**30**						
22	**30**						
23	**30**						
24	**30**						

Notes: BOTTLE 14 & 20 LEAKERS, BOTTLE # 18 DID NOT FIRE

Hawaiian Ocean Time-series

HOT- **174**

OPEN CAST Data Sheet

Station # 2 Date: 10/7/2005 (HST)

Cast # 4 Time: 0430 (HST)

Operator(s): KB,MC,CM

Rosette Position	Desired Depth	JH/MS	PP	MIXING			
1	**175**	X					
2	**150**	X					
3	**135**	X					
4	**125**	X					
5	**115**	X					
6	**100**	X					
7	**85**	X					
8	**75**	X					
9	**60**	X					
10	**45**	X					
11	**30**			X			
12	**30**			X			
13	**30**			X			
14	**30**			X			
15	**30**			X			
16	**30**			X			
17	**25**		X				
18	**25**	X					
19	**5**	X					
20							
21							
22							
23							
24							

Notes:

Hawaiian Ocean Time-series

HOT- **174**

Particulate Silica Data Sheet

Station # 2 Date: 10/7/2005 (HST)

Cast # 5 Time: (HST)

Operator(s): EG,LF,BW,KD Pre-screen mesh size: none

Blank # **B1,B2,B3**

Rosette Position	Desired Depth	Carboy #	Total Volume	Sample #	MC	**STAL**	
1	**1000**				X		
2	**700**				X		
3	**500**				X		
4	**300**				X		
5	**200**				X		
6	**175**	7	4	6			
7	**150**	8	4	7			
8	**125**	9,10	4,4	8A-B			
9	**125**					X	
10	**100**	11	4	10			
11	**75**	12	4	11			
12	**75**					X	
13	**50**					X	
14	**45**	13	4	14			
15	**25**	14,15	4,4	15A-B			
16	**25**					X	
17	**5**	16	4	17			
18							
19							
20							
21							
22							
23							
24							

Notes: BOTTLE #13 LEAKING UPON RECOVERY AND ONLY SAMPLED ~6L

Hawaiian Ocean Time-series

HOT-**174**

Phycoerythrin Data Sheet

Station # 2 Date: 10/7/2005 (HST)

Cast # 6 Time: 1500 (HST)

Operator(s): SC,TG,AH,DS Pre-screen mesh size: None

Rosette Position	Desired Depth	Carboy #	Total Volume	10um	5um	.4um	
1	**1000**						
2	**1000**						JB
3	**800**						JB
4	**800**						
5	**600**						JB
6	**500**						
7	**400**						JB
8	**200**						JB
9	**175**	1	10	1	2	3	
10	**150**	2	10	4	5	6	
11	**125**	3	10	7	8	9	
12	**100**	4	10	10	11	12	
13	**75**	5	10	13	14	15	
14	**60**	6	10	16	17	18	
15	**45**	7	10	19	20	21	
16	**35**	8	10	22	23	24	
17	**35**	9	10	25	26	27	
18	**25**	10	10	28	29	30	
19	**15**	11	10	31	32	33	
20	**5**	12	10	34	35	36	
21	**5**						
22	**5**						
23	**5**						JB
24							
Blanks				37	38	39	

Notes: #19 leaking upon recovery

Hawaiian Ocean Time-series

HOT-**174**

HPLC & Chl *a*. Bottle Data Sheet

Station # 2 Date: 10-07-05 (HST)

Cast # 7 Time: 1830 (HST)

Operator(s): SC,DS,TG,AH

Rosette Position	Desired Depth	Carboy #	Total Volume	HPLC	Chl *a*.		
1	**4800**						MC
2	**4000**						MC
3	**3500**						MC
4	**3000**						MC
5	**2500**						MC
6	**2000**						MC
7	**1500**						MC
8	**1000**						CM
9	**Sal min**						
10	**175**	1	10	10	10		
11	**150**	2	10	11	11		
12	**135**	7	4	12	12A-B		
13	**125**	8,9	4,4	13A-B	13		
14	**115**	10	4	14	14		
15	**100**	11	4	15	15		
16	**85**	12	4	16	16		
17	**75**	13	4	17	17		
18	**60**	14	4	18	18A-B		
19	**45**	15,16	4,4	19A-B	19		
20	**30**						CM
21	**30**						CM
22	**30**						CM
23	**25**	3	10	23	23		
24	**5**	4	10	24	24		

Notes: DO NOT PRE-SCREEN
19,20,24 LEAKING UPON RECOVERY

Hawaiian Ocean Time-series

HOT-**174**

WOCE Deep Data Sheet

Station # 2 Date: 10/8/2005 (HST)

Cast # 8 Time: 0550 (HST)

Operator(s): EG,LF,KD

Rosette Position	Desired Depth	Oxygen	Sample Temp.	Nutrient	Refridg. Si	DOC	DIC/ Alk	pH	JB
1	**4800**	30	5.1	1	1				
2	**4600**	31	4.3	2	2				X
3	**4500**	32,33, 34	4.7	3A-B	3A-B	3A-B	3A-B	3A-B-C	X
4	**4400**	35	4.8	4	4				
5	**4200**	36	4.4	5	5				X
6	**4000**	37,38 39	5.9	6A-B	6A-B	6A-B			
7	**3800**	40	4.2	7	7				X
8	**3600**	41	4.3	8	8				X
9	**3400**	42	4.9	9	9				
10	**3200**	43	4.8	10	10				
11	**3000**	44,45 46	5.6	11A-B	11A-B	11A-B	11	11	X
12	**2800**	47	5.4	12	12				
13	**2600**	48	5.2	13	13				
14	**2400**	49	5.4	14	14				
15	**2200**	50	5.3	15	15				
16	**2000**	51,52 29	6.6	16A-B	16A-B	16A-B	16	16	X
17	**1800**	54	5.7	17	17				
18	**1600**	55		18	18				
19	**1400**	56	6.2	19	19				
20	**1200**	57	6.5	20	20				
21	**1000**	58	7.3	21	21				
22	**750**	59	7.4	22	22				
23	**500**	60	8.4	23	23				X
24	**5**	61	25.0	24					

Notes: BOTTLE #18 DID NOT TRIP

Hawaiian Ocean Time-series

HOT-**174**

PO Shallow Data Sheet

Station # 2 Date: 10/8/2005 (HST)

Cast # 9 Time: 1100 (HST)

Operator(s): EG,LF,KD

Rosette Position	Desired Depth	Oxygen	Sample Temp.	Nutrient	Refridg. Si	DIC/ Alk	pH	DOC	JB
1	**1006**	62,63, 64	9.2	1A-B	1A-B	1	1	1	
2	**948**	65	7.4	2	2				X
3	**890**	66	7.3	3	3				
4	**820**	67	8.1	4	4				
5	**785**	68	7.7	5	5				
6	**750**	69,70, 71	9.3	6	6	6	6	6	
7	**713**	72	8.3	7	7				X
8	**675**	73	8.4	8	8				
9	**615**	74	9.5	9	9	9	9	9	
10	**560**	75	9.8	10	10				
11	**524**	76	10.3	11A-B	11A-B				
12	**490**	77	10.9	12	12	12	12	12	
13	**455**	78,79, 80	12.3	13	13				
14	**419**	81	12.3	14	14				
15	**382**	82	13.1	15	15	15A-B	15A-B	15	
16	**335**	83	13.9	16	16				
17	**290**	84	15.3	17	17				
18	**245**	85,86, 87	17.2	18	18	18	18	18	
19	**190**	88	19.3	19	19				
20	**140**	89	21.7	20A-B					
21	**115**	90	22.7	21					
22	**90**	91	24.2	22					
23	**50**	92	25.8	23					X
24	**10**	93	25.8	24					X

Notes: NUT #4=RAN OUT OF WATER

Hawaiian Ocean Time-series

HOT- **174**

OPEN CAST Data Sheet

Station # 2 Date: 10/8/2005 (HST)

Cast # 10 Time: 0240 (HST)

Operator(s): EG,LF,KD,

Rosette Position	Desired Depth	CM	MC	JB			
1	**900**			X			
2	**700**		X				
3	**700**			X			
4	**500**		X				
5	**500**			X			
6	**300**			X			
7	**250**			X			
8	**150**			X			
9	**150**		X				
10	**40**		X				
11	**30**	X					
12	**30**	X					
13	**30**	X					
14	**30**	X					
15	**30**	X					
16	**30**	X					
17	**30**	X					
18	**30**	X					
19	**30**	X					
20	**30**	X					
21	**30**	X					
22	**30**	X					
23	**30**	X					
24	**30**	X					

Notes: 20 AND 21 LEAKING UPON RECOVERY

Hawaiian Ocean Time-series

HOT- **174**

PC/PN Data Sheet

Station # 2 Date: 10-08-05 (HST)

Cast # 11 Time: 1800 (HST)

Operator(s): SC,TG,DS,AH Pre-screen mesh size: 202 um

Blank #'s **___B1___ ___B2___ ___B3___**

Rosette Position	Desired Depth	Carboy #	Total Volume	Sample #	**MC**		
1	**1000**						
2	**Sal min**						
3	**350**	1	10	3			
4	**350**	2	10	4			
5	**250**	3	10	5			
6	**200**	4	10	6			
7	**175**				X		
8	**175**	5	10	8			
9	**150**				X		
10	**150**	6	10	10			
11	**125**				X		
12	**125**	7,8	4,4	12A-B			
13	**100**	9	4	13			
14	**100**				X		
15	**75**	10	4	15			
16	**75**				X		
17	**45**	11	4	17			
18	**45**				X		
19	**25**	12,13	4,4	19A-B			
20	**25**				X		
21	**5**	14	4	21			
22	**5**				X		
23							
24							

Notes:

Hawaiian Ocean Time-series

HOT- **174**

Particulate Phosphorus Data Sheet

Station # 2 Date: 10-08-05 (HST)

Cast # 12 Time: 2030 (HST)

Operator(s): SC,TG,DS,AH Pre-screen mesh size: 202 um

Blank #'s **___B1___ ___B2___ ___B3___**

Rosette Position	Desired Depth	Carboy #	Total Volume	Sample #			
1	**1000**						
2	**Sal min**						
3	**350**	1	10	3			
4	**350**	2	10	4			
5	**250**	3	10	5			
6	**200**	4	10	6			
7	**175**	5	10	7			
8	**150**	6	10	8			
9	**125**	7,8	4,4	9A-B			
10	**100**	9	4	10			
11	**75**	10	4	11			
12	**45**	11	4	12			
13	**25**	12,13	4,4	13A-B			
14	**5**	14	4	14			
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							

Notes: #12 LEAKING UPON RECOVERY

Hawaiian Ocean Time-series

HOT- **174**

ATP Data Sheet

Station # 2 Date: 10-08-05 (HST)

Cast # 13 Time: 2300 (HST)

Operator(s): SC,TG,DS,AH Pre-screen mesh size: 202um

Blank #'s **28, 29, 30**

Rosette Position	Desired Depth	ATP Tube #'s	Volume Filtered	Carboy #	
1	**1000**				
2	**Sal min**				
3	**350**	1 - 3	3x2	1	
4	**250**	4 - 6	3x2	2	
5	**150**	7 - 9	3x1	7	
6	**125**	10 - 12	3x1	8	
7	**100**	13 - 15	3x1	9	
8	**75**	16 - 18	3x1	10	
9	**45**	19 - 21	3x1	11	
10	**25**	22 - 24	3x1	12	
11	**5**	25 - 27	3x1	13	
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

Notes: #12 WENT DRY; 27 LEAKED, PROBABLY LOST 100mL

Hawaiian Ocean Time-series

HOT-**174**

Primary Production Data Sheet

Station # 2 Date: 10-09-05 (HST)

Cast # 14 Time: 0200 (HST)

Operator(s): SC,TG,DS,AH

Rosette Position	Desired Depth	Light Bottle	Chl *a*	FCM	**Size fractionated Chl a**	**Size fractionated 14C-PP**	
1	**1000**						
2	**Sal min**						
3	**175**		3A-B	3A-B	1		
4	**150**		4A-B	4A-B	2		
5	**125**	3-1	5	5	3	3T=0/3-4	
6	**125**	3-2	6	6		3-5	
7	**125**	3-3	7	7		3-6	
8	**100**	4-1	8	8	4	4T=0/4-4	
9	**100**	4-2	9	9		4-5	
10	**100**	4-3	10	10		4-6	
11	**75**	5-1	11	11	5	5T=0/5-4	
12	**75**	5-2	12	12		5-5	
13	**75**	5-3	13	13		5-6	
14	**45**	6-1	14	14	6	6T=0/6-4	
15	**45**	6-2	15	15		6-5	
16	**45**	6-3	16	16		6-6	
17	**25**	7-1	17	17	7	7T=0/7-4	
18	**25**	7-2	18	18		7-5	
19	**25**	7-3	19	19		7-6	
20	**5**	8-1	20	20	8	8T=0/8-4	
21	**5**	8-2	21	21		8-5	
22	**5**	8-3	22	22		8-6	
23							
24							

Notes: 7-5 0.2 Filtered 200 mL; Bottle 4-4 0.2 contains 150 mL of 4-6 0.2 filtrate; Bottle 4-5 0.2 contains 60 mL of 8-5 0.2 filtrate; Bottle 8-5 0.2 contains 190 mL of filtrate; Bottle 4-6 0.2 contains 100 mL of filtrate; Questions? Ask Dan.

Hawaiian Ocean Time-series

HOT- **174**

OPEN CAST Data Sheet

Station # 2 Date: 10/9/2005 (HST)

Cast # 15 Time: 0500 (HST)

Operator(s): EG,LF,KD

Rosette Position	Desired Depth	JH/MS					
1	**1000**						
2	**Sal min**						
3	**175**	X					
4	**150**	X					
5	**135**	X					
6	**125**	X					
7	**115**	X					
8	**100**	X					
9	**85**	X					
10	**75**	X					
11	**60**	X					
12	**45**	X					
13	**25**	X					
14	**5**	X					
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							

Notes:

Hawaiian Ocean Time-series

HOT- **174**

OPEN CAST Data Sheet

Station # 2 Date: 10/9/2005 (HST)

Cast # 16 Time: 0800 (HST)

Operator(s): EG,LF,KD

Rosette Position	Desired Depth	MC	KB/CM	STAL			
1	**1000**						
2	**Sal min**						
3	**175**	X					
4	**175**		X				
5	**150**	X					
6	**150**		X				
7	**125**	X					
8	**125**		X				
9	**125**		X				
10	**125**			X			
11	**100**	X					
12	**100**		X				
13	**75**	X					
14	**75**		X				
15	**75**			X			
16	**50**			X			
17	**45**	X					
18	**45**		X				
19	**25**	X					
20	**25**		X				
21	**25**			X			
22	**5**	X					
23	**5**		X				
24							

Notes:

Hawaiian Ocean Time-series

HOT- **174**

MIT Data Sheet

Station # 2 Date: 10/9/2005 (HST)

Cast # 17 Time: 1100 (HST)

Operator(s): EG,LF,KD

Rosette Position	Desired Depth	Sample #		MC			
1	**1000**						
2	**Sal min**						
3	**200**	3					
4	**175**	4					
5	**175**			X			
6	**150**	6					
7	**150**			X			
8	**125**	8					
9	**125**			X			
10	**115**	10					
11	**100**	11					
12	**100**			X			
13	**85**	13					
14	**75**	14					
15	**60**	15					
16	**45**	16					
17	**25**	17					
18	**5**	18					
19							
20							
21							
22							
23							
24							

Notes:

Hawaiian Ocean Time-series

HOT-**174**

BEACH Shallow Data Sheet

Station # 2 Date: 10-09-05 (HST)

Cast # 18 Time: 1430 (HST)

Operator(s): EG,LF,KD

Rosette Position	Desired Depth	Oxygen	Sample Temp.	Nutrient	Refridg. Si	DOC	LLN	LLP
1	**1000**	94	8.7					
2	**O_2 min**	95	9.5					
3	**Sal min**	96	10.0					
4	**200**	97	19.2	4	4	4		
5	**175**	98	19.3	5		5	5	5
6	**165**	99	20.1				6	
7	**150**	100	20.8	7		7	7A-B	7
8	**130**	101	21.8					
9	**125**	102	22.2	9A-B		9	9	9
10	**115**	103	22.7				10	10
11	**110**	104	23.1				11	
12	**100**	105,106, 114	23.6	12		12	12A-B	12
13	**90**	108	23.8				13	
14	**85**	109	24.1				14	14
15	**75**	110	25.1	15		15	15	15
16	**60**		25.8	16		16	16	16
17	**45**	111	25.9	17A-B		17	17	17
18	**35**		25.8	18		18	18	18
19	**25**	112	26.1	19		19	19	19
20	**25**		26.3					
21	**15**		26.1	21		21	21	21
22	**5**	113	26.2	22		22	22A-B	22
23	**5**							
24								

Notes: 9,12,19,23 LEAKING UPON RECOVERY
#13- vent was not closed
Keeling Samples: 20A 3:55pm 20B 3:57pm
23A 3:58pm 23B 4:02pm

Hawaiian Ocean Time-series

HOT-**174**

BEACH Carbon Data Sheet

Station # 2 Date: 10-09-05 (HST)

Cast # 18 Time: 1430 (HST)

Operator(s): EG,LF,KD

Rosette Position	Desired Depth	DIC/ ALK	pH	Quay DIC	Keeling DIC			
1	**1000**							
2	**O_2 min**							
3	**Sal min**							
4	**200**	4	1					
5	**175**							
6	**165**							
7	**150**	7	2					
8	**130**							
9	**125**							
10	**115**							
11	**110**							
12	**100**	12	3					
13	**90**							
14	**85**							
15	**75**	15	4					
16	**60**							
17	**45**	17	5					
18	**35**							
19	**25**	19	6					
20	**25**			20	20A-B			
21	**15**							
22	**5**	22A-B	7,8					
23	**5**			23	23A-B			
24								

Notes:

Hawaiian Ocean Time-series

HOT- **174**

OPEN CAST Data Sheet

Station # 2 Date: 10/9/2005 (HST)

Cast # 19 Time: 1700 (HST)

Operator(s): SC,TG,DS,AH

Rosette Position	Desired Depth	CM	JB				
1	**1000**		X				
2	**1000**		X				
3	**1000**		X				
4	**1000**		X				
5	**1000**		X				
6	**1000**		X				
7	**1000**		X				
8	**1000**		X				
9	**450**	X					
10	**450**	X					
11	**400**	X					
12	**400**	X					
13	**350**	X					
14	**350**	X					
15	**300**	X					
16	**300**	X					
17	**250**	X					
18	**250**	X					
19	**200**	X					
20	**200**	X					
21	**150**	X					
22	**150**	X					
23							
24							

Notes:

Hawaiian Ocean Time-series

HOT- **174**

PUR Data Sheet

Station # 2 Date: 10-09-05 (HST)

Cast # 20 Time: 2000 (HST)

Operator(s): SC,DS,TG,AH

Rosette Position	Desired Depth	Carboy #	Total Volume	AFP	DS	CM/MC	AH
1	**1000**						
2	**Oxy min**				×		×
3	**Sal min**						
4	**175**	2	10	4			
5	**150**	4	10	5			
6	**135**	7	4	6			
7	**125**	8,9	4,4	7A-B			
8	**115**	10	4	8		×	
9	**100**	11	4	9			
10	**85**	12	4	10			
11	**75**	13	4	11			
12	**60**	14	4	12			
13	**45**	15,16	4,4	13A-B			
14	**25**						
15	**15**	10	10	15			
16	**15**						
17	**15**						
18	**15**						
19	**5**	11	10	19			
20							X
21						X	X
22						X	
23						X	
24						X	

Notes: #14 DID NOT FIRE PUR taken from #15 instead
#11 and #22 were leaking upon recovery

Hawaiian Ocean Time-series

HOT-**174**

WOCE Deep 2 Data Sheet

Station # 2 Date: 10-09-05 (HST)

Cast # 21 Time: 2300 (HST)

Operator(s): SC,TG,DS,AH

Rosette Position	Desired Depth	Oxygen	Sample Temp.	JB	KD	ZJ		
1	**4800**			X				
2	**4800**	133	6.8					
3	**4000**	134	7.2					
4	**3000**	135	6.7					
5	**3000**			X				
6	**3000**				X			
7	**3000**				X			
8	**3000**				X			
9	**3000**				X			
10	**3000**				X			
11	**2000**	136	8.4					
12	**2000**			X				
13	**1500**			X				
14	**1200**			X				
15	**1100**			X				
16	**1000**							
17	**O2 min**	137	8.3					
18	**Sal min**	138	10.1					
19	**O2 max**	139	24.3					
20	**5**	140	25.4					
21	**5**					X		
22	**5**					X		
23	**5**					X		
24	**5**					X		

Notes: ***ZJ bottles= please fill the Johnson carboy with the surface water from niskin.

Hawaiian Ocean Time-series

HOT- **174**

STATION 51 Data Sheet

Station # 51 Date: 10/10/2005 (HST)

Cast # 1 Time: (HST)

Operator(s): CM/MC

Rosette Position	Desired Depth	CM					
1	**200**						
2	**30**						
3	**30**						
4	**30**						
5	**30**						
6	**30**						
7	**30**						
8	**30**						
9	**30**						
10	**30**						
11	**30**						
12	**30**						
13	**30**						
14	**30**						
15	**30**						
16	**30**						
17	**30**						
18	**30**						
19	**30**						
20	**30**						
21	**30**						
22	**30**						
23	**30**						
24	**30**						

Notes:

Hawaiian Ocean Time-series

HOT- **174**

STATION 51 Data Sheet

Station # 51 Date: 10/10/2005 (HST)

Cast # 2 Time: _____ (HST)

Operator(s): CM/MC/KB

Rosette Position	Desired Depth	CM					
1	**30**						
2	**30**						
3	**30**						
4	**30**						
5	**30**						
6	**30**						
7	**30**						
8	**30**						
9	**30**						
10	**30**						
11	**30**						
12	**30**						
13	**30**						
14	**30**						
15	**30**						
16	**30**						
17	**30**						
18	**30**						
19	**30**						
20	**30**						
21	**30**						
22	**30**						
23	**30**						
24	**30**						

Notes:

Hawaiian Ocean Time-series

HOT-**174**

KAENA Data Sheet

Station # 6 Date: 10-10-05 (HST)

Cast # 1 Time: 2100 (HST)

Operator(s): SC,TG,DS,AH

Rosette Position	Desired Depth	Chl *a*.						
1	**2500**							
2	**2000**							
3	**1500**							
4	**1000**							
5	**500**							
6	**175**	6						
7	**150**	7						
8	**125**	8						
9	**100**	9						
10	**75**	10						
11	**45**	11						
12	**25**	12						
13	**5**	13						
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								

Notes: 11 LEAKED UPON RECOVERY

HOT-174: Chief Scientist Report

Cruise ID: KM 05-17
Departed: Oct. 6, 2005 at 0900 (HST)
Returned: Oct. 11, 2005 at 0800
Vessel: R/V Kilo Moana
Operator: University of Hawaii
Master of the Vessel: Captain Rick Myer
Chief Scientist: Thomas K. Gregory
STAG Technicians: Gabe Foreman and Tim McGovern

1. SCIENTIFIC OBJECTIVES

The objective of this cruise was to maintain a collection of hydrographic and biogeochemical data at the Hawaii Ocean Time-series (HOT) stations. Four stations were to be occupied during the cruise, in the following order:

1) Station 1, referred to as Station Kahe, is located at 21 20.6'N, 158 16.4'W and was to be occupied on October 6 for about 2 hours.

2) Station 2: ALOHA (A Long Term Oligotrophic Habitat Assessment) is defined as a circle with a 6 nautical mile radius centered at 22 45'N, 158W. This is the main HOT Station and was to be occupied for 3 days.

3) Station 51, is the site of the MOSEAN Mooring, is located at 22º 45'N, 158º 6'W and was to be occupied on the 5th day of the cruise for about 30 minutes.

4) Station 50 is the site of the WHOTS Mooring, is located at 22º 46.1'N, 157º 53.4'W and was to be occupied on the 5th day of the cruise for about 2 hours.

5) Station 6, referred to as Station Kaena, is located off Kaena Point at 21º 50.8'N, 158º 21.8'W and was to be occupied on the 4th day of the cruise for about 2 hours.

A single CTD cast was to be conducted at Station 1 to collect continuous profiles of various physical and chemical parameters. Water samples were to be collected at discrete depths for biogeochemical measurements.

Upon arrival at Station ALOHA, we were to perform CTD casts to collect water for the gas array other experiments and assays. Optics work was to be performed on the second day of the cruise. The 36 hour period was to begin on the third day of the cruise.

Three free-drifting array were to be deployed on this HOT cruise including the gas array, primary productivity array and sediment trap array.

Phytoplankton net tows were to be conducted by C. Mahaffey on several occasions throughout the cruise.

A Profiling Reflectance Radiometer (PRR) was to be deployed for half-hour periods near noon time on three days.

A package including a Wet Labs AC9, a Chelsea Fast Repetition Rate Fluorometer (FRRF), and a SeaBird Seacat was to be used to profile the upper 200 m at Sta. ALOHA on four separate occasions including one nighttime and three daytime casts.

A Ramses optical profiler was to be deployed by L. Stal, J. Huisman and M. Stomp several times during the cruise.

After CTD work at Station ALOHA was accomplished, the ship was to transit to recover the floating sediment trap array. Following this operation, we were to perform CTD casts at both MOSEAN and WHOTS mooring and then transit to Station Kaena.

The following instruments were to collect data throughout the cruise:
shipboard ADCP, thermosalinograph, and two anemometers.

2. SCIENCE PERSONNEL

Bjorkman, Karin	UH/BEACH	Research Specialist
Bullister, John	PMEL/PO	Scientist
Chung, Mung Fa	UH/PO	Volunteer
Church, Matthew	UH/BEACH	Research Oceanographer
Curless, Susan	UH/BEACH	Research Associate
Doggett, Ken	UH/BEACH	Research Associate
Foreman, Gabe	UH/STAG	Marine Technician
Fujieki, Lance	UH/BEACH	Computer Specialist
Grabowski, Eric	UH/BEACH	Research Associate
Gregory, Thomas	UH/BEACH	Chief Scientist
Harlan, Adriana	UH/BEACH	Research Associate
Huisman, Jef	NIOO/BEACH	Scientist
Laney, Sam	OSU/BEACH	Graduate Student
Lethaby, Paul	UH/PO	Research Associate
Mahaffey, Claire	UH/BEACH	Scientist
McGovern, Tim	UH/STAG	Marine Technician
Rognstad, Mark	UH/HMRG	Engineer
Sadler, Dan	UH/BEACH	Research Associate
Santiago - Mandujano, Fernando	UH/PO	Research Associate
Shacat, Joseph	UH/PO	Research Associate
Smith, Justin	UH/PO	Volunteer
Stal, Lucas	NIOO/BEACH	Scientist
Stomp, Maayke	NIOO/BEACH	Scientist
Tottori, Steve	UH/PO	Electronics Technician
Watkins, Blake	UH/BEACH	Marine Engineer
Wisegarver, Dave	PMEL/PO	Research Associate

3. GENERAL SUMMARY

All objectives for HOT 174 were successfully completed. We were able to make use of the extra day given to us to perform experiments not possible within the scope of normal HOT cruises.

4. R/V Kilo Moana, OFFICERS AND CREW, TECHNICAL SUPPORT

The R/V Kilo Moana maintained the excellent ship support for our work we have come to expect from other vessels in the UNOLS fleet. The officers, crew and STAG technicians were most helpful and accommodating. They showed enthusiasm and concern for our work and were very flexible in receiving changes in our operational schedule.

5. DAILY REPORT OF ACTIVITIES (HST)

Oct. 5, 2005; Loading Day

Equipment loaded during this day. CTD wire was re-terminated and CTD system tested.

Oct. 6, 2005

The ship departed from Snug harbor at 0900. We arrived at Station Kahe at 1140 and performed a weight cast, Ramses cast, PRR cast and then a 1000 m CTD cast after which we steamed to Station ALOHA.

We arrived at Station ALOHA at 2300 and immediately performed the first gas array cast.

Oct. 7, 2005

We performed three 200 m, one 700 m and three 1000 m CTD casts as scheduled.

The gas array was deployed at 0352

The ATE was deployed at 1025.

The Ramses was deployed at 0938 and 1620.

A PRR cast took place at 1158.

Back to back AC9/FRRF casts occurred at 1240 and 1342.

Oct. 8, 2005

Five 1000 m and one 4800 m CTD casts were conducted on this day.

The first deep cast was started at 0538 and the first 1000 m cast of the 36 hour period began at 1106.

The sediment trap array was deployed at 0124.

The gas array was recovered at 0407 and had drifted southwest.

The Ramses was deployed at 1239.

The PRR was deployed at 1302.

AC9/FRRf casts were conducted at 1335.

October 9, 2005

Seven 1000 m casts were conducted this day. The second deep cast was initiated at 2312

The primary production array was deployed at 0635, was recovered at 1901 and had drifted southwest.

C. Mahaffey performed a net tow at 0039 and 2141.

A Ramses cast was conducted at 1214

Oct. 10, 2005

During the second deep cast, a commercial fishing longline got wrapped around the CTD wire. We successfully recovered the package and freed the longline intact however this complication delayed recovery of the CTD.

One 500 m and one 200 m CTD cast were performed at MOSEAN, one 200 m cast was conducted at WHOTS and one 2500 m CTD cast was performed at Station Kaena.

The sediment trap array was recovered at 0718. The array drifted southwest.

AC9/FRRF casts were conducted at 0340 and 1104.

Oct. 11, 2005

Arrived at Snug Harbor at 0800 and completed a full offload.

Sub component programs:

Investigator:	Project/Institution:
Bob Bidigare	HPLC pigments/UH
Mike Landry	Zooplankton dynamics/UH
John Dore	CO2 dynamics/UH

Ancillary programs:

Investigator:	Project/Institution:
Charles Keeling	CO2 dynamics and intercalibration/SIO
Mark Abbott/Ricardo Letelier	Optical measurements/OSU
Paul Quay	DI13C and O isotopes/UW
Penny Chisholm	Prochlorococcus population dynamics/MIT

Ancillary research during this cruise:

Investigator:	Project/Institution:
Claire Mahaffey	Assessment of Nitrogen Fixation Rates/UH
Matthew Church	Bacterial production and dynamics/UH
Sam Laney	Optical characterization of photosynthetic parameters/OSU
Lucas Stal/Jef Huisman/Maayke Stomp	Plankton microbiology/optics
John Bullister	SF_6 and CFC geochemistry/PMEL