HOT-37: Chief Scientist Report

Chief Scientist: D. HEBEL

HOT 37 was conducted in two stages within the period June 5-11, 1992 aboard the RV Moana Wave with John Stahl as Captain. The first phase of the cruise, June 5-7, was to deploy Steve Shiswell's IES, Dave Karl's long-term sediment traps and JGOFS free-floating Particle Interceptor Traps (PITS). The second phase of HOT 37, June 7-11, was a standard HOT cruise with the exception of proposed ADCPO transect work (Eric Firing) and CTD tow-yoing (Sean Kennan) appended to the end of the cruise. Dave Karl las the Chief Scientist for leg one (HOT 37A) and D. Hebel for leg two (HOT 37).

HOT 37A departed Snug Harbor ~0800 hrs 5 June 1992. We steamed to the first IES deployment location arriving at ~1900 hrs. All four IES units were deployed by ~0800 hrs 6 June 1992. Deployment of 4 Honjo type long-term sediment traps immediately followed. This operation was completed by ~1530 hrs which was longer than anticipated due to the slow speed of the ship's capstan used in the deployment of the ~4000 m array. The free-floating sediment traps were the final array to be deployed on leg one. This was completed by 1900 hrs and HOT 37A ended ~0600 hrs 7 June 1992 on our return to Snug Harbor.

HOT 37 leg two began with departure of HOT 37A scientific personnel and the boarding of leg two personnel. We departed Snug Harbor at ~0900 hrs and steamed to Kahe pt. During the transit we had the usual fire drill and science meeting which discussed our routine cruise plan and additional work of Steve Emerson/Rebecca Schudlich, Chris Measures/Jinchu Yuan, Elaine Kotler and Shean Kennan. At Kahe Pt. we conducted a weight cast to 500 m followed by a PNF cast. The 1000 m cast soon followed, however, a problem with oxygen sensor developed and the cast was aborted. Jeff and Rich spent the next 2-3 hrs troubleshooting the system and although the problem had still not been fully resolved by 1530 it was decided to conduct the cast and continue the troubleshooting during the transit to ALOHA. Shortly after departing station (1700 hrs.), Captain Stahl notified me that they had lost the starboard main engine. This prompted a series of calls from Captain Stahl to Captain Coste for instructions and I called D. Karl for Argos locations. We were instructed to continue our transit to ALOHA and conduct our routine work. We were asked to curtail any additional work which would necessitate additional steaming especially if it was further north. Therefore, the ADCP transect was dropped and Shean's tow-yoing would be conducted in a manner which would intercept the traps at the end of the deployment period.

We were able to make ~7 kts with the one engine in the lee of the island but once outside our speed dropped to 5-6 kts with lively seas. We picked up the trap RDF signals ~5 miles away and got a visual fix at ~0530 hrs. The array looked good and is drifting southwest at ~0.5 kts.

Once on station (8 June @ 0730 hrs) the work progressed satisfactorily and all core samples were collected. The problem with the oxygen

sensor turned out to be a software configuration file problem which, once identified, was solved. Another problem developed with the transmissometer. Just before departure the fluorometer quit working and the "y" cable, which is used to interface both the fluorometer and transmissometer to the CTD, was left behind. Another cable was used in its place and initial results indicated a problem, however, later in the cruise the problem appeared to have been resolved.

We departed station ALOHA 10 June @ ~1300 hrs on a heading to intercept the sediment traps. Shean scheduled CTD casts every 5 nm along the route traversing the water column at 90 m/min. This was possible due to the small size and appropriate weight of the modified tow-yoing CTD package. To verify that the data collected was in accord with normal CTD operations, the downcast data c ollected at 90 m/min was compared to same area of the water column on the upcast traversed at the regular 50 m/min. I was later told that there was no difference.

After recovering the traps Shean continued his CTD transect at 8 nm intervals. He discovered an interesting salinity anomaly on 11 June @ ~0300 hrs. His transect work began 10 June @~1300 hrs and lasted until 11 June @~0300 hrs at which time he began his tow-yoing for an addition ~1.5 hs. At this point we began our 6-8 kts transit to Snug Harbor. Chris Measures requested 6 additional trace metal pole sample points enroute which necessitated slowing to 2 kts. We arrive at Snug Harbor 11 June @ ~1430 hrs.

Summary:

1). Deployed 4 IES's, 4 long-term Honjo type sediment traps and free floating sediment traps on HOT 37A.

2). Completed all core work.

3). Collected additional water and samples for:

John Dore
Bob Mitiguy
Martha Sykes
Lisa Campbell/Craig Moyer

4). Additional experiments conducted by:

S. Emerson/R. Schudlich - DO, Ar, respiration. exp

C. Measures/ Jinchu Yuan - trace metal (Fe)

L. Campbell/Honbin Liu - picoplankton

D. Sadler/C. Carrillo - spec. & electrode pH

J. Christian - exoenzyems

General sea conditions:

10-30 kt trades with 3-8' swells

General atmospheric conditions:

Mostly sunny with periodic rain squalls.

Cruise highlights:

1). Evidence of eddy at station ALOHA during first leg of HOT 37.

2). No fluorometer and limited transmissometer data.

3). First tow-yo work.

4). Lost starboard engine after Kahe Pt. station during second leg of HOT 37.