

HOT-30: Chief Scientist Report

Chief Scientist: C. WINN

Personnel List

Chris Winn, Chief Scientist

Dale Hebel

Terrence Houlihan

Jef Snyder

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Cheryl McCarthy

Will Hervig

Chris Busing

Terri Rust

Chris Carrillo

Chris Sabine

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Hans Thierstein

Soma

Elaine Kotler

Walt

Brian Popp

Omar Carvalio-Martinez

Summary

HOT-30 departed Snug Harbor on the R/V Moana Wave on Monday the 16th of September at 09:00. Departure was delayed for approximately one hour due to ship traffic. Both Station Aloha and the Kahe point station were visited on this cruise. HOT-30 returned to Snug Harbor at 13:00 on Friday the 20th. The sea-state was calm during on the first two days at Station ALOHA. We noticed that *Trichodesmium* sp. were relatively abundant in the upper water column (see below).

WOCE and GOFs Sampling

All chemical sampling was completed on this cruise at both Kahe point and Station Aloha. The WOCE deep cast was obtained and the WOCE CTD burst sampling was accomplished without significant problems. The GOFs sediment trap collections and the GOFs primary production work was also completed without significant problems. On HOT 30 we divided the standard GOFs 0 to 1000 decibar sampling into three back-to-back casts on the first night at Station ALOHA, instead of the usual two. This strategy worked very well. Using this approach, we were able to hold to the three hour CTD sampling schedule without difficulty. At the same time, we were able to collect, process and deploy samples for primary productivity in between 3 hour CTD casts. I recommend that we follow this strategy for all future GOFs hydrographic work.

Continuous Profiling

CTD operations also went extremely well on this cruise, and there are

no significant problems to report. The bottom o-rings were changed on a few of the sampling bottles in order to prevent leaking. In addition to the regular CTD sampling, the transmissometer was included on most of the CTD casts. This is third cruise in a row on which transmissometer profiles were obtained to 1000 decibar. The Biospherical optical profiler was also deployed at Kahe Point and at mid-day on all three on the days at Station ALOHA. Typically, least 2 back-to-back light profiles were obtained. On this cruise, the capstan on main hydrographic winch was used to recover the optical profiler. The device was deployed as quickly as possible by allowing it to free-fall. In this way we were able to maximum depth in spite of ship drift. The package was then recovered at about 20 meters per minute using the capstan. This was a significant improvement over our usual hand-over-hand method of obtaining optical profiles. In addition to being much easier on the science party, this strategy improved data quality by reaching well below the 0.01% light level, and by obtaining good resolution on the upcast. I recommend that this strategy be employed whenever possible on future HOT cruises. The new cage and mounting system for attaching the transmissometer to the optical profiler was tested on the last day at station ALOHA. This system worked well, although the addition of the transmissometer to the optical profiler makes the package too heavy to recover easily by hand.

Sediment Trap and Primary Production

The sediment traps were deployed and recovered without serious problems on HOT-30. The traps drifted approximately 25 kilometers to the southwest. A new filtration system, on loan from Ed Parnell, was used on this cruise to filter the sediment trap samples. This pressure filtration system reduced to time required to process these samples from the approximately 18 hours on most recent cruises to approximately 8 hours. I recommend that we construct a modified version of this system for use on future HOT cruises. The primary production experiment was also successful. However, several light bottles were lost. This appeared to be due primarily to the poor condition of the lanyards on the light bottles. I recommend that all of these lanyards be replaced before the next HOT cruise.

Trichodesmium sp.

During the calm weather encountered on the first two days at Station Aloha, we noticed an accumulation of Trichodesmium sp. in spherical colonies at the surface. Net tows were done at several depths above 100 m in an attempt to get some idea of the vertical distribution of these colonies. In addition, 10 liter samples were collected at several depths with the rosette sampler. Unfortunately, few colonies were observed in the 10 liter samples at any depth. Also, opening and closing nets were not available on this cruise, and the interpretation of the net tow data is therefore problematic.

Ancillary Work

A number of ancillary projects were supported on HOT-30. A list of these follows:

Investigator -----	Project Description -----
HOTS	Methods Evaluation <ul style="list-style-type: none"> a. (T.Houlihan) Evaluation of freezing for storage of nutrient samples b. (D.Hebel) rate of particulate phosphate dissolution in traps c. (C.Sabine) rate of calcium carbonate dissolution in traps
Dr. Dave Keeling	Inorganic carbon species in the mixed layer
Dr. Paul Quay	Delta 13C samples to 1000 decibars
Dr. Brian Popp	DOC sampling using both discrete samples and sediment traps
Dr. Hans Theirstein	Water column sampling for coccolithophores
Dr. Lisa Campbell	Picoplankton studies
Dr. Katsumi	Phosphorus dynamics
Dr. Omar Calvario	Dissolved oxygen as a measure of primary productivity

Samples for Graduate Students

Soma Krohapalli

Jim Christain

Ricardo Letelier

Return to Cruise Summaries. (Tables)

Return to Cruise Summaries. (No tables)

Last modified: January 00, 1998