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. Five 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 the first day of the cruise 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, 158°W. 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 4th day of the cruise for about 30 minutes.

4) Station 50 is the site of the WHOTS Mooring, is located at 22° 46.1’N, 157° 53.4’W and was to be occupied on the 4th day of the cruise for about 30 minutes.

5) Station 6, referred to as Station Kaena, is located off Kaena Point at 21° 50.8’N, 158° 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 and other experiments and assays following the deployment of the sediment trap array. Optics work was to be performed on the second day of the cruise. The 36 hour period was to begin on the second day of the cruise.

Three free-drifting arrays 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 B. Watkins 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.
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, thermsalinograph, and two anemometers.

2. SCIENCE PERSONNEL

Bjorkman, Karin
Curless, Susan
Defelice, Suzanne
Doggett, Ken
Foreman, Gabe
Fujieki, Lance
Gregory, Thomas
Harlan, Adriana
Huey, Teh Soo
Lennon, Jay
Lethaby, Paul
Martiny, Jennifer
Menviel, Laurie
Poulos, Steve
Sadler, Dan
Santiago - Mandujano, Fernando
Smith, Justin
Taylor, Mana
Tottori, Steve
Watkins, Blake

UH/BEACH  Research Specialist
UH/BEACH  Research Associate
UH/PO  Research Associate
UH/BEACH  Research Associate
UH/BEACH  Research Associate
UH/BEACH  Research Associate
UH/BEACH  Chief Scientist
UH/BEACH  Research Associate
UH/PO  Undergraduate Student
Brown/BEACH  Postdoctoral Researcher
UH/PO  Research Associate
Brown/BEACH  Assistant Professor
UH/PO  Graduate Student
UH/OTG  Marine Technician
UH/BEACH  Research Associate
UH/PO  Research Associate
UH/PO  Undergraduate Student
UH/BEACH  Graduate Student
UH/PO  Marine Technician
UH/BEACH  Marine Engineer

3. GENERAL SUMMARY

Nearly all objectives for HOT 180 were successfully completed. We had trouble with the battery on the AC9 and so we cancelled the second optics on the last day. We also cancelled the MOSEAN mooring CTD cast to save time for work at Station Kaena.

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 OTG 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)

March 30, 2006; Loading Day

Equipment loaded during this day.

March 31, 2006
The ship departed from Snug harbor at 0900. We began Station Kahe operations around noon and performed a weight cast, PRR cast and then a 1000 m CTD cast after which we steamed to Station ALOHA.

We arrived at Station ALOHA at 2230 and deployed the sediment trap array at 2353.

**April 1, 2006**

We performed two 200 m, five 1000 m and one full-depth CTD casts. The 36 hour period started at 1130.

The gas array was deployed at 0540.

The ATE was deployed at 1300.

B. Watkins performed plankton net tows at 1024, 1322 and 2225.

**April 2, 2005**

Seven 1000 m CTD casts were conducted on this day.

The gas array was recovered at 0740.

The primary production array was deployed at 0555 and recovered at 1923.

The PRR was deployed at 1234.

AC9/FRRf casts were conducted at 1307.

B. Watkins performed plankton net tows at 0106, 1006 and 2225.

**April 3, 2006**

The second deep cast was initiated at 0010 and ended the 36 hour period. Three shallow casts were performed: one each at ALOHA, WHOTS and Kaena. The regular 2500 m cast was performed at Station Kaena at 2116.

The sediment trap array was recovered at 0708.

The PRR was deployed at 1310.

AC9/FRRf casts were conducted at 0348 and 1331.

**April 4, 2006**

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

Sub component programs:

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Project/Institution</th>
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<tbody>
<tr>
<td>Bob Bidigare</td>
<td>HPLC pigments/UH</td>
</tr>
<tr>
<td>Mike Landry</td>
<td>Zooplankton dynamics/UH</td>
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<tr>
<td>John Dore</td>
<td>CO2 dynamics/UH</td>
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</tbody>
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Ancillary programs:

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<tr>
<th>Investigator</th>
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</thead>
<tbody>
<tr>
<td>Charles Keeling</td>
<td>CO2 dynamics and intercalibration/SIO</td>
</tr>
<tr>
<td>Mark Abbott/Ricardo Letelier</td>
<td>Optical measurements/OSU</td>
</tr>
<tr>
<td>Paul Quay</td>
<td>D13C and O isotopes/UW</td>
</tr>
<tr>
<td>Penny Chisholm</td>
<td>Prochlorococcus population dynamics/MIT</td>
</tr>
</tbody>
</table>

Ancillary research during this cruise:

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Jennifer Hughes-Martiny</td>
<td>Spatial microbial dynamics/Brown University</td>
</tr>
<tr>
<td>Stuart Donachie/Mana Taylor</td>
<td>Marine fungi/UH</td>
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