

STARS Cruise on HOT 260 – February 13-17, 2014
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C-MORE's Science Teachers Aboard Research Ships (STARS) Program afforded me the amazing opportunity to experience life at sea collecting data for the Hawaii Ocean Time Series. As a science teacher with a background in marine biology, I find this type of work particularly interesting and hope to instill an interest in this field in my students. The knowledge and experiences I gained while on board the ship (Kilo Moana - pictured below) are things that I can bring back to my students. Of particular relevance, I have a better understanding of data collection techniques as well as how to use the data collected through the Hawaii Ocean Time Series (HOTS). Here are a few data collection techniques and devices I used during my time on the Kilo Moana. See also the website I constructed for my class:

<https://sites.google.com/a/kiheicharter.org/ms-ehrich-at-sea/>



Kilo Moana

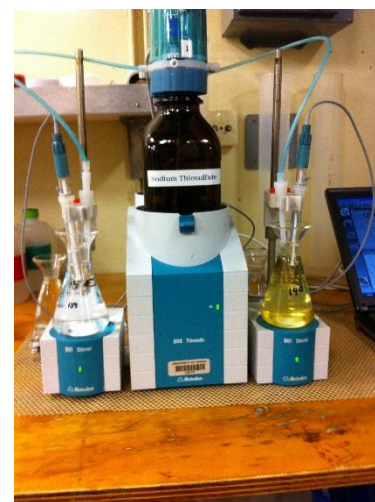


CTD

CTD stands for conductivity, temperature, and depth, which are the items that the device measures. The CTD itself is surrounded by a “carousel” of Niskin bottles; the Niskin bottles collect water samples at specific depths as the CTD is returning to the surface (this is controlled through a computer by a scientist on the ship). The samples are then analyzed for factors such as: temperature, pH, oxygen, and chlorophyll to name a few.

Oxygen Profiles

Amounts of oxygen can be measured in water samples through several steps. When the sample is collected, all air bubbles must be removed from the sample, and some chemicals must be added to “fix” the oxygen present in the sample. When it is time to analyze the sample, additional chemicals are added, causing a chemical reaction which creates a color change in the water sample (yellowish color). The sample can then be hand-titrated or titrated using an auto-titrator (slowly adding sodium thiosulfate) to determine the amount of oxygen present in the sample.



Plankton Tows



Special nets (with a very fine mesh) can be deployed into the water to collect samples of plankton at various depths. These samples can be further filtered, often separating phytoplankton (plant-like plankton) from zooplankton (animal-like plankton). These samples can be analyzed through observation under a microscope. Individual plankton can not only be observed, but identified through this process.