

Beaufort Gyre Exploration Project: Dispatch 26: X-CTD

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Because the parameters of conductivity, temperature and depth are so important in oceanographic study, scientists are constantly testing ways to measure these parameters and more accurately.

One interesting technique uses the X-CTD. This is a small CTD sensing device that is "shot" from the ship into the water. As the sensor sinks into the water, it sends readings back up a very thin line to a computer on board.

Shigeto loads the "gun" and records the number of the X-CTD to be dropped into the water.

Shigeto checks out what has been caught in the Bongo net. He is interested in correlating water type with what might be living in it.

The X-CTD project on board is run by Shigeto Nishino of JAMSTEC in Japan. The goal of his project is to map the distribution of different water masses in the Beaufort Sea Basin in order to understand the general ocean circulation here. He is especially interested in the nutrient-rich water that moves along the continental shelf, which is essential for biological activity. More information about his project can be found here: <http://www.jamstec.go.jp/arctic/>

X-CTDs have the advantage of being quick so they can be done quite frequently and while the ship is moving. For example, as the ship steams along the continental shelf where the bottom drops off very quickly as it does at the edge of the continental shelf, X-CTDs can be deployed almost continuously, allowing measurements to be taken often as every 15 minutes.

Once the computer is told what is going on, the X-CTD can be "shot" off the stern. In about 2 minutes, the sensor sinks to 1100 meters, taking measurements along the way.

Shigeto aims the X-CTD into the water over the stern of the ship.

In about 2 minutes, a CTD profile is obtained through 1100 meters of water. This profile has similar characteristics to the CTD profile obtained by water sampling at specific depths with the Rosette.

Waldeck is ready to launch the ship.

This profile looks quite similar to the one obtained from water sampling with the Rosette. The red line is temperature and the blue is salinity. Note that the temperature maximum is reached just above 400 meters depth (depth is on the right). These data are similar to the Rosette data and help complete the "oceanographic picture".

Waldeck Walczowski is helping Shigeto collect his X-CTD data. He is the deputy!

We are well-covered, both with CTD data and sheriff protection.

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