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Beaufort Gyre Exploration Project: Dispatch 8: Heading East

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The latest information has us finally receiving fuel on Friday, so the primary science work on the Louis continues to be CTD/Rosette casts in the southeast quadrant of our study area. Having completed stations along the 140° W meridian up to 73° N latitude, we now turn eastward to obtain as much of the section as we can along 73.5° N approaching Banks Island. Day or night the package is hoisted over the side and lowered to just meters above the ocean bottom, then hauled back up while triggering the Rosette water sampling bottles on the way.

The data from the CTD is electrically sent up the wire suspending the instrument package to a deck unit in the CTD vans where it is displayed and recorded on a computer.

On the way down, the CTD operator notes interesting features in the water column (such as maxima and minima in the seawater properties) where it is most desired to obtain the water samples, and radios the winch operator when it is time to stop the system near the bottom. On the way up, the operator radios to stop the system at the desired depths so that electrical signals can be sent down the wire to fire the Niskin bottles. This causes the spring loaded endcaps to release and capture the seawater in the bottle. A typical roundtrip cast takes approximately 2 hours in 3000 m deep water (followed afterwards by the water sampling discussed in Dispatch 4).

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To ensure that the electronic sensors mounted on the CTD are obtaining accurate data and not drifting from their calibrations, some of the water samples that are drawn from the Rosette bottles after the cast are chemically analyzed to compare to the electronic data. The technology of the temperature measurement has evolved to become very reliable, so while reversing thermometers were used in previous days to calibrate the thermistor data from the CTD, this is rarely done nowadays. However, conductivity cells and dissolved oxygen sensors can become fouled or shift, so these data are regularly compared to salinity and dissolved oxygen determined from the seawater samples using a salinometer and Winkler titration device.

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