

April 6, 2010 – Week #4: CLIVAR 13.5 Update

We are presently at about 12 degrees south and 1 degree east and so far have completed 83 of our planned 129 stations. We have had steady easterly winds during the last week, and it has become even more humid, if possible, and low persisting stratus clouds gave us company. Sailing continues to be smooth but we hit some rough spots with our sampling. We had problems with the CTD package and the winch wire at station 72, and then again at stations 79 and 80. While some worked really hard to make the repairs, most of us were idle for a while on Easter Sunday, which was an unusual break to the normal 24-hour work-rhythm of the ship. Even though the repairs took some time and put us a bit behind schedule we are staying optimistic: we are now catching up again as we are heading north marking off our stations.

This week, we will discuss some of our measurements of the physical properties of the ocean: temperature, salinity, and flow velocities of the ocean currents. We obtain temperatures and salinities from the CTD (Conductivity Temperature Depth) profiler and we use an upward- and downward-looking LADCP (Lower Acoustic Doppler Current Profilers) to measure absolute horizontal velocities. In a nutshell, the LADCP sends out an acoustic wave and estimates velocity from the backscattered signal. A complex processing algorithm involving CTD data, GPS ship location, bottom tracking, and the ship-mounted ADCP translates measured velocities into ocean velocities. You find attached an example of the preliminary results of the LADCP measurements: the figure shows currents from west to east along the section we have covered so far. With the many different features which can be seen (we marked two of them as examples) you get an impression of how complex the ocean is. The drifters and floats we mentioned last week also measure physical properties and together with the other thousands of these devices in the world's oceans significantly contribute to a better coverage of oceanic measurements. The data we collect will contribute to better understanding of physical and biological processes as well as their interactions and their role in the cycle of carbon and other constituents in the ocean. As we cover this repeat section, we hope to get a glimpse of how the ocean has changed in the past 25 years and provide a data base for future studies.

FIGURE 2: LADCP attached to the CTD rosette

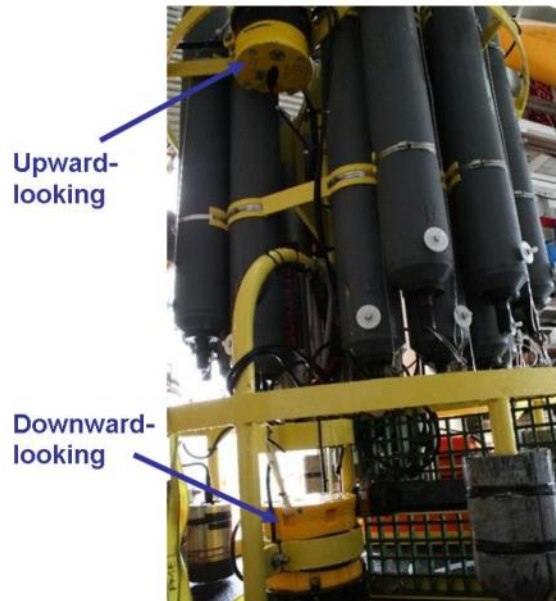


FIGURE 1: CTD package

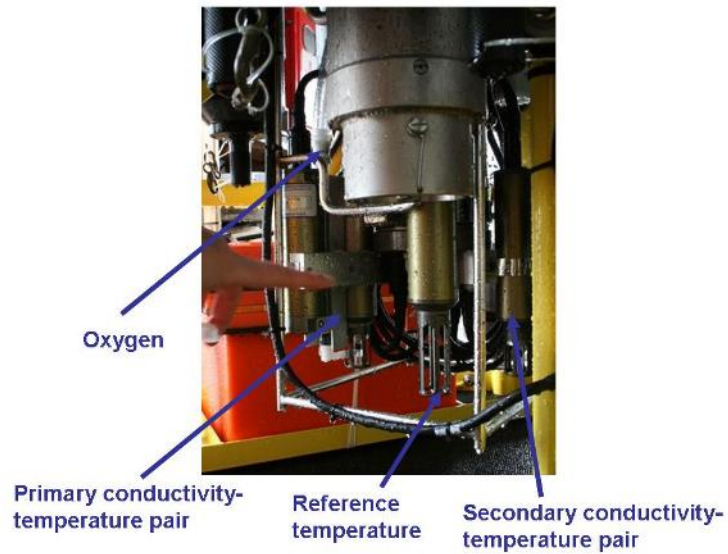


FIGURE 3: West to East Velocity from LADCP

