



NOAA Teacher at Sea
Mary Anne Pella-Donnelly
Onboard NOAA Ship *David Starr Jordan*
September 8 – 22, 2008

NOAA Teacher at Sea: Mary Anne Pella-Donnelly

NOAA Ship: *David Starr Jordan*

Mission: LUTH Survey (Leatherback Use of Temperate Habitats)

Date: September 11, 2008

Geographical area of cruise: Pacific Ocean –San Francisco to San Diego

Weather Data from the Bridge

Latitude: 3647.6130 W

Longitude: 12353.1622 N

Wind Direction: 56 (compass reading) NE

Wind Speed: 25.7 knots

Surface Temperature: 15.295

Science and Technology Log

One important piece of equipment on many NOAA research ships is the CTD (Conductivity and Temperature with Depth). This eight chambered water collection device is attached to electronic sensors. When the CTD is deployed below the ocean's surface, it is dropped carefully to a predetermined depth; today's was 500 m. All water collection chambers are open for water to flow through. After the oceanographer in charge of deployment examines a computer readout of the CTD after it has been lowered to its' maximum depth, it is decided at which depths water samples will be collected as the CTD is brought back up.

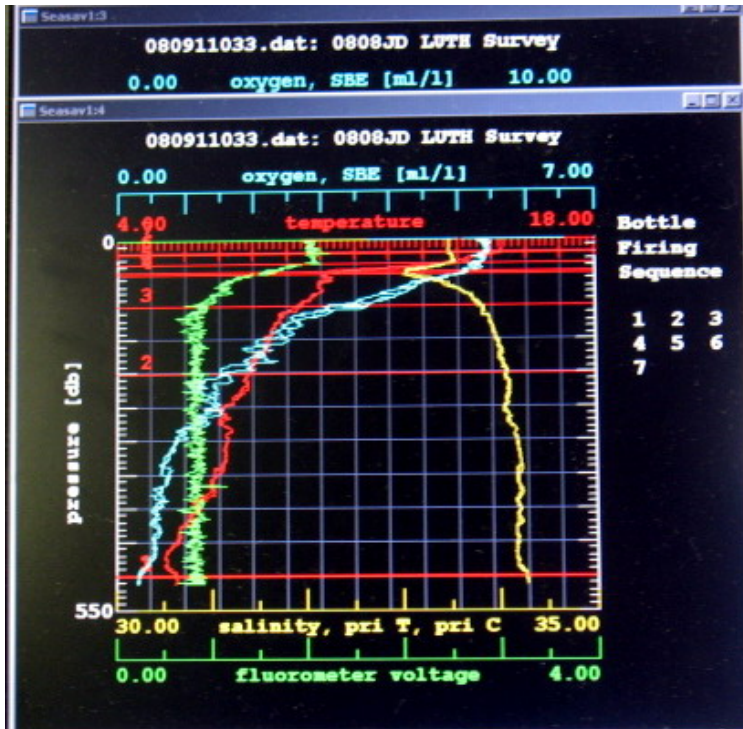
At these intervals, water sample collectors (Niskin bottles) are closed and water collected. Up to eight samples are collected as it rises to the surface. After the CTD has been secured on deck, each sample is carefully extracted into collection bottles. Each water sample is filtered through a vacuum system in order to extract chlorophyll from that water sample. The extracted chlorophyll is later run through a fluorometer,



CTD deployment

which calculates the volume of chlorophyll a and chlorophyll b which indicates the intensity of

photosynthetic microorganisms in that layer. Lots of chlorophyll indicates a rich biological region, which may support many types of marine life. In addition, the CTD collects samples that will be analyzed for the amount of salts they contain in order to confirm the sensors values. Values that change to the left are decreasing. The reading on the top right shows how the temperature, in red, changes very quickly from the surface down to 500 m. The green indicates some chlorophyll until it drops significantly below 100 m, where light no longer penetrates well. Oxygen levels are in blue, also decreasing with depth.



CTD reading; salinity, oxygen, pressure, and fluorometer voltage

Questions of the Day

1. What is the importance of chlorophyll to marine mammals and amphibians?
2. Why is an understanding of how pressure and depth below the ocean's surface are related critical to marine sciences?



Water samples being filtered through a vacuum system to extract chlorophyll.