



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 13, 2008

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

Weather Data from the Bridge

Latitude: 3645.9407 N

Longitude: 12501.4783 W

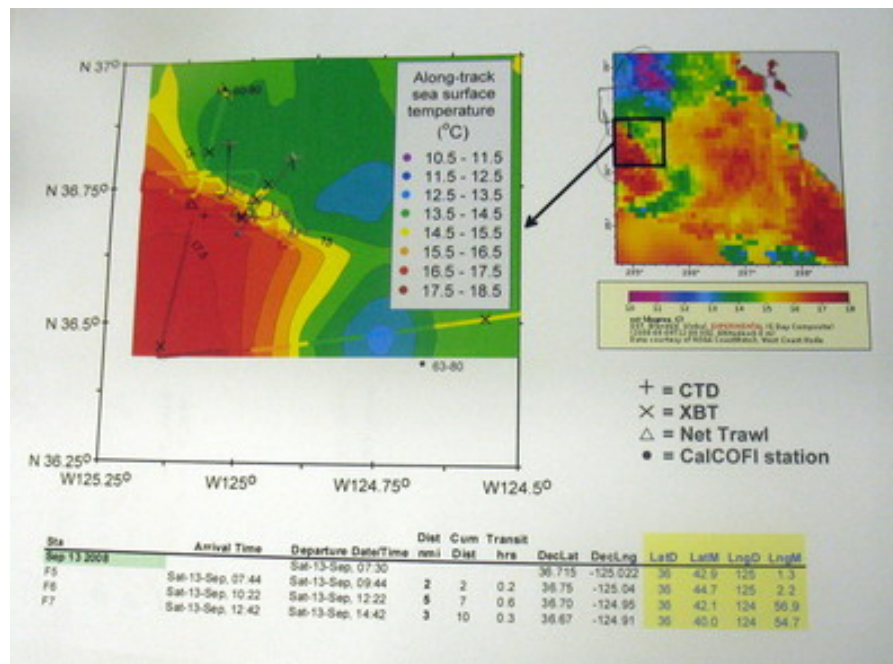
Wind Direction: 344(compass reading) NE

Wind Speed: 13.5 knots

Surface Temperature: 14.197

Science and Technology Log

As the scientific team conducts its research locating areas where jellyfish congregate, they have determined that samples need to be taken along both sides of a warm water/cold water boundary. The charts below comprise a computer-generated chart of water temperature in the area we are focusing on. The chart on the right was created from remotely sensed data obtained from a satellite, and a small square of that is enlarged on the left. The chart on the left is produced from a computer model that smoothes out the lines and includes data taken continuously from the ship and integrated into the chart. Although hard to read at this resolution, the legend shows where CTD's have been deployed, along with XBT's, which record temperature. It also marks where upcoming deployments will take place. Net trawls were also deployed to collect samples of jellyfish that might be in the region.



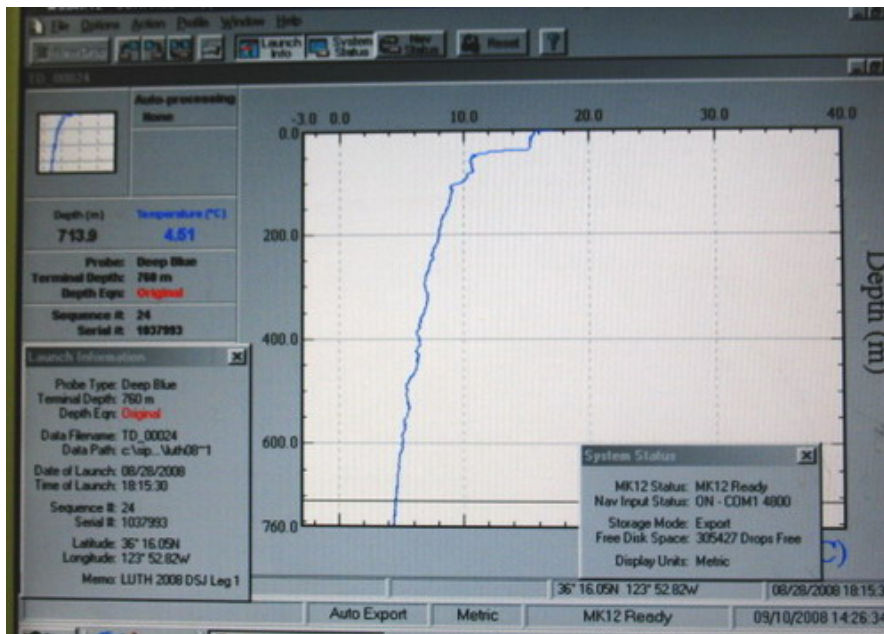
Computer generated map of sampling area using satellite and in situ data. The satellite image on the right includes land (white) on the right edge, of the area between San Francisco and San Luis Obispo.

The quest is on for good turtle habitat.

After examining these charts above, please answer the following questions:

1. What can you tell about the temperature of the water just off the coastline for most of that area of California?
2. What range temperature of water does it appear that the LUTH survey is currently sampling in?
3. Would you expect to find the same organisms in each of the samples? Why or why not?
4. What might cause temperatures to be different in some parts of the ocean?

The Expendable Bathy Thermograph (XBT), consists of a long copper wire shot into the water down to 760 m. When kept in the water for 2 minutes, the cable registers a signal to a dedicated computer, giving temperature readings along the wire, which are immediately plotted onto a graph.



After looking at this graph, answer the following questions:

1. What temperature is measured at the surface?
2. At what depth below the surface does the temperature start to drop dramatically? How many degrees Celsius is the drop?
3. How many more degrees does the temperature drop, after the initial quick decrease? In how many meters does this gradual drop occur?

Computer generated graph of XBT data from 8/28/08 at 18:15:30 (6:15 pm)

The LUTH survey is very interested in finding out whether jellyfish are found in the colder water (yellow and green), and how the distribution changes through the changing temperature of the water. Their questions surround what conditions would allow leatherbacks to travel along certain routes to and from the California coast, and how to identify areas of productivity so that commercial fishing can occur without harming protected species. Every jellyfish caught, either by the net trawls or the bongo net, and oceanographic data collected at the same time, provides more insight into where favorable conditions might exist.

Personal Log

It is a very different lifestyle to have a profession that involves living for periods of time aboard a ship. Most of us land-based folks get up, wander through the house, eventually rounding up

food and heading off to school or work. For me, after a day full of movement all over Chico Junior High's large school grounds, I may go to the store, run errands and then return home to read the paper, clean house, and prepare dinner. My family will eventually arrive home and we will go over the day's events. Here, the crew spends up to 23 days in this home, office and recreational area, away from their families. Two cooks prepare, serve buffet-style and clean up after all meals; serving at 7am, 11am and 5pm. During off hours, I have observed T.V. or movie watching, card games in action and some gym use. Many people have iPods and in some areas music is broadcast. Personal computers with satellite internet capabilities are used, I assume, to communicate with friends and family on land. It is interesting that the 'living room', which is also the mess hall, may have 10 colleagues in it sometimes watching a show. I am used to cooking when I choose, or just making cookies if I want or heading outside to jog with my dog after school. No such activities like that happen here. Every one in the crew seems to get along, is extremely polite to each other, and is also very pleasant. It takes a very flexible person to enjoy living on a ship and a certainly love for the ocean. I am enjoying this very different way of living, and will also enjoy when I can run a few miles through the park again.

Animals Seen Today

Sea nettle jellies *Chrysaora fuscescens*

Comb jellies *Kiyohimea* spp.

Sea gooseberry *Pleurobrachia bachei*

Common dolphins *Delphinus delphis*

Jackmackerel *Trachurus symmetricus*

Wilson's warbler *Wilsonia citrine*

Yellow-rumped warbler *Dendroica coronata*

Questions for the Day

1. What part of your regular pattern would be easiest to give up, if you were to live aboard a ship? Which parts would be hardest?