

10 August Ship's Log



Photo 1: You are looking at Torch Ginger blossoms that we have seen throughout visit to Hawai'i.

Good morning from the *USNS Pathfinder*. The Sea Scholars have been divided into three teams. We will spend the next few days in classes with our instructors and competing with each other as we conduct oceanography experiments. Our instructors will be:

Jay Walmark: Acoustics

Tom Best: Bathymetry

Misty Savell: Geology

A.J. Pearson: Physical Oceanography

Shelia Brown: Biological Oceanography

Navy Lt. Liz Crapo: Meteorology, she's going to NOAA after this trip

AG1 Lakeisha Walker: Meteorology

Each team has selected a name for the competitions. We are looking forward to the challenges that face us.

| Team Name: <i>Makoa Wahine</i> | Team Name <i>GEWS</i> | Team Name <i>Kaatn Predators</i> |
|--|--|---|
| Mary Ruch Carol Ann Drane Joan Turner Ruthie Hollis | Regina Summer Tami Wells Lois Eppich Greg Graeber | Dr. Sharon Walker Dr. Sam Aceil Rita Kaplan Saralee Lamb |

The schedule for our classes will be 0830-11:30 and 1300-1600.

Team *Makoa Wahine* spent the morning in **Tom Best's** class for **Bathymetry**. In the afternoon, they studied **Geology** with **Misty Savell**.

Team *GEWS* spent the morning studying with **A.J. Pearson** for **Physical Oceanography**. In the afternoon, the **GEWS** visited with **Tom Best** for **Bathymetry**.

Team *Kaatn Predators* spent the morning at **Misty Savell's Geology** laboratory. In the afternoon, they studied with **A.J. Pearson** for **Physical Oceanography**.

Topics of information the Sea Scholars from **Tom Best's Bathymetry** class include the following: Did you know that in the Greek language, *Bathy* means deep and *metry* means measure? This discipline measures the topography of the ocean floor. We were surprised to realize that so little of the ocean floor has been officially measured. For example, if you take a regular piece of notebook paper and put a quarter in the middle of the paper, the quarter represents the amount of ocean floor that has been measured and mapped to date.

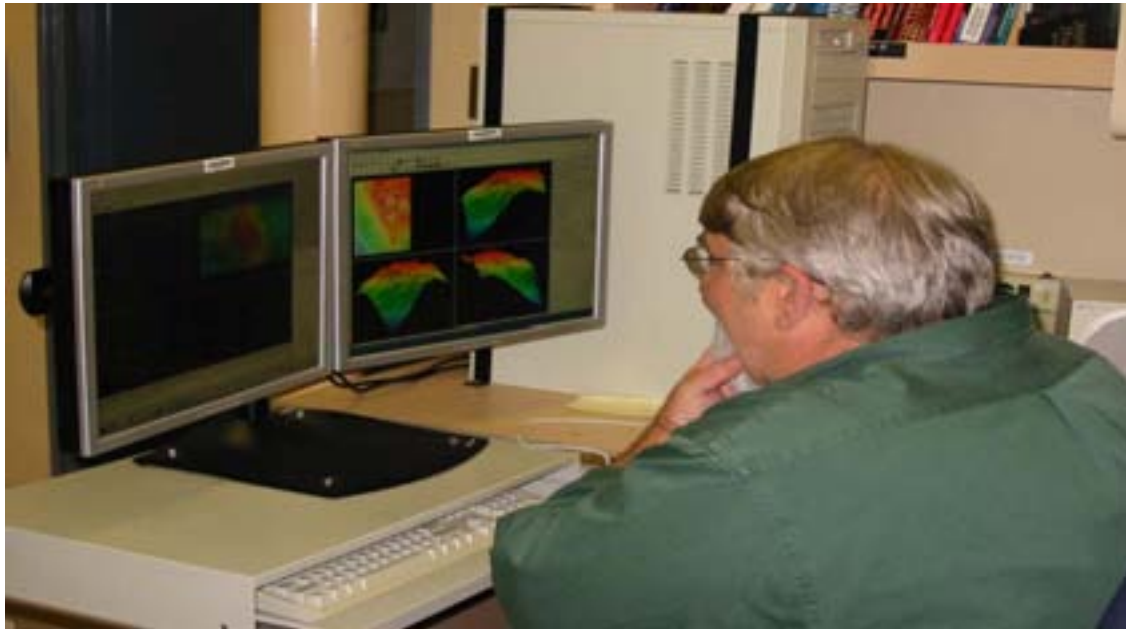


Photo 2: Tom Best is busy at work monitoring the computers scanning and mapping of Loihi volcano.

We also learned more about the process of yesterday's mapping project measuring the newly forming volcano Loihi, located SE of the Big Island of Hawai'i. Today's mapping of Loihi was to measure the amount of the volcano's growth. The ship's computers showed Loihi's development since the last US Navy measurement two years ago.

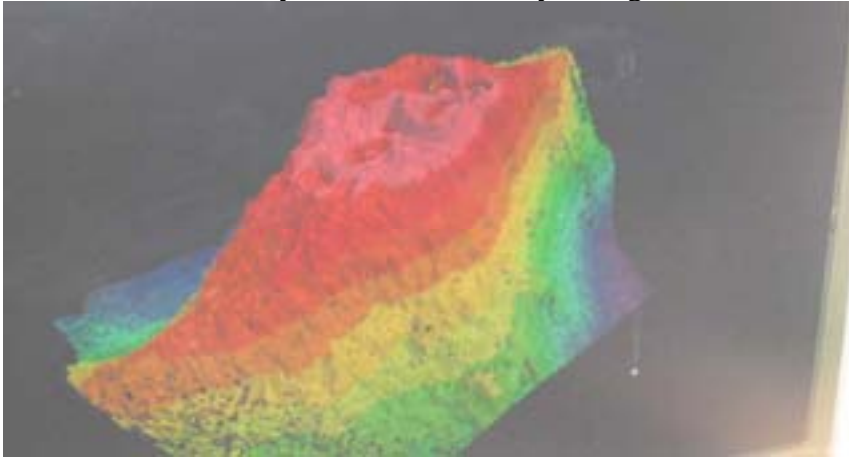


Photo 3: An image of the elevation of Loihi seamount as seen on the ship's computer.

Topics of information for the Sea Scholars from **A.J. Pearson's** class for **Physical Oceanography** includes the following: **A.J.** Explained the "Properties of Water," and why the ocean water we see is the color blue. It is blue because the water absorbs all colors of the spectrum except for the blue band. **A.J.** also discussed salinity, dissolved salts, the *Law of Constant Proportions*, the global surface current system, sea surface temperatures, and water currents surrounding the Hawaiian island chain.



Photo 4: Instructor **A.J. Pearson** is explaining Physical Oceanography to the Sea Scholars.

We conducted an interesting experiment with the Acoustic Doppler Current Profiler to measure the temperature of the water. We went out on the fantail of the ship and launched a XBT also known as the Expendable Bathymetry Thermograph. The XBT measured water temperature and the speed of sound. The first experiment, T-10 shallow water probe, went to a depth of 200 meters. The second experiment, T-7 Deep Blue, a deep water probe went to a depth of 900 meters. The probe reported decreasing temperatures from 25.7°C or 78°F at water level to 6.15°C or 37°F .



Photo 5: Sea Scholar, **Sam Aceil**, with instructor, **A.J. Pearson**, launching the XBT probe from the fantail area of the *USNS Pathfinder*.

At the conclusion of class, we had a series of trivia pursuit questions. Test yourself; do you know the answers to the following questions? If not, ask your Sea Scholar teacher.

1. Name the country with the longest coastline.
2. Name the deepest ocean.
3. Name the four major basins in the world's ocean.
4. What is the average depth in the Pacific Ocean?
5. Where is the longest coral reef in the world?
6. What is the deepest point on the ocean's floor?
7. Name the largest island in the world.
8. Name the deepest lake in the world.
9. What is the longest mountain range?
10. What is the tallest mountain in the world?
11. Name the longest fish found in the ocean.
12. If all the ice caps melted, how high would the water level rise?

Topics of information for the Sea Scholars from **Misty Savell's Geology** class included the following: three fantastic PowerPoint programs that introduced us to the Basics of Geology and Plate Tectonics, types of volcanoes, types of lava flows, and types of magma. Misty explained the composition of the volcanoes of Hawai'i, and types of sediment found throughout the world. She showed us beautiful maps for the current geographical activity in the Pacific Ocean.

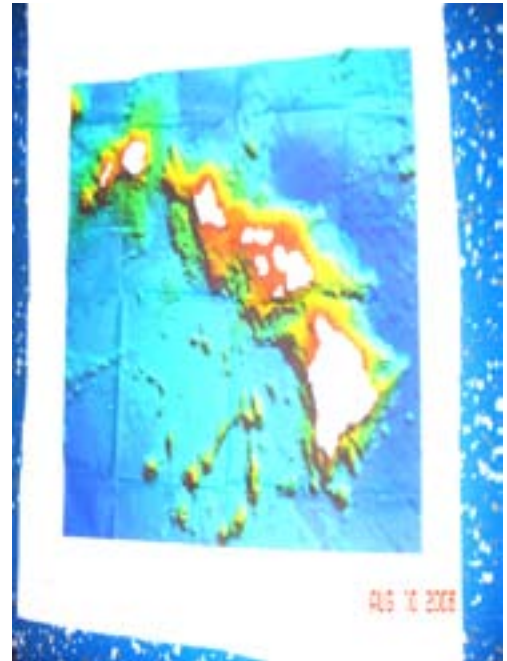
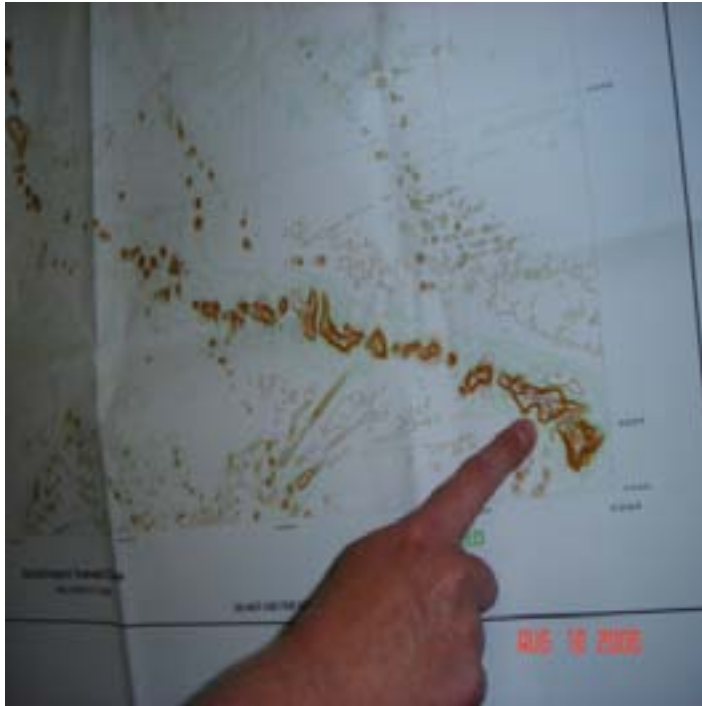


Photo 6: Instructor, **Misty Savell**, explains the development of the Hawaiian Islands



Photo 7: Instructor, **Misty Savell**, delineating the development of atolls and islands in the Pacific Ocean.

Tonight after dinner, Sea Scholars **Greg Graber** and **Joan Turner** delighted our group by demonstrating wonderful oceanography activities for teachers to use in their classrooms. Joan explained the properties of sand and then demonstrated two activities for use in our classrooms. Greg presented a program, "Fish Make Sense," and demonstrated how to see bioluminescence using a few ostracods and a few drops of water in the palm of our hands. The ostracods "lit-up" a bright blue, just as he said they would.



Photo 8: **Greg Graeber** is demonstrating a shark activity for the Sea Scholars

Last but certainly not least, our final activity of the day was to watch a video explaining bioluminescence before we adjourned to the fantail of the ship to take a night plankton tow. We had a full moon on the ocean. **Mark Jarrett** "pointed-out" the constellation for Scorpio; the star, Antearas; and the planet, Jupiter. **Mark** deployed the plankton net as the ship decreased its speed to one and one-half knots. **Regina** and **Sam** lowered the plankton net into the following sea and it was towed for 15 minutes. **Rita** helped to retrieve the plankton net and **Saralee** and **Mary** cleaned the net with salt water.

We left the fantail and went into the laboratory to observe our "marine harvest" under microscopes. The net yielded a wide variety of zooplankton, i.e., copepods, mysid shrimp, segmented worms, chaetognatha, jellies, and fish larvae. It was fascinating to see all the different shapes, sizes and colors of the living samples.



Photo 9: Sea Scholars in the lab looking at results from the plankton tow.



Photo 9: Polychaeta



Photo 10: Radiolaria

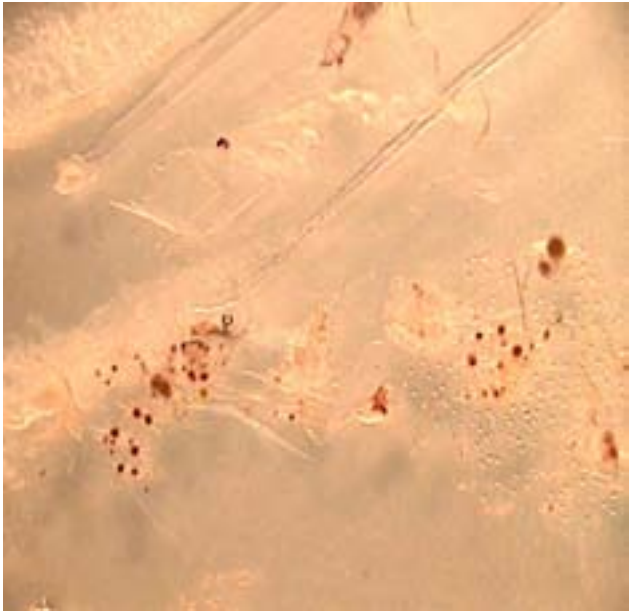


Photo 11: Polychaete



Photo 12: Shrimp



Photo 13: Unknown



Photo 14: Unknown Worm



Photo 15: A ship's sign to remind us to reset our watches.

We completed our busy day by setting our watches one hour ahead and turned in for the night.
What a great day!

Today's log was prepared by **Saralee Lamb** and **Regina Summer**