



Plotting Ocean Water Temperatures: Large Scale Sampling vs. Fine Scale Sampling



Teacher Guide

Background: The concept of large scale vs. fine scale sampling is important in ocean research for a variety of reasons. The size of the study area, the properties being studied, and the feasibility of the research are all factors that influence the decisions of the scientist as they plan the details of their research projects. The scale of sampling will greatly affect the ability of the scientist to see the details of the dynamic ocean system.

The purpose of this activity is to give students an opportunity to learn how different sampling scales will reveal different levels of detail about the ocean temperatures within a study area. Temperature data for this activity has been taken from satellite imagery of the Northeast Pacific. While the data and sampling grid have been generalized from actual ocean water temperature measurements, the graphs represent an accurate picture of the water temperature patterns for the day that the data was obtained. The modern methods of sampling and generating the temperature graphs different, but the concepts the students will learn are the same.

Grade level: This activity is appropriate from grades 6-12 in both integrated and earth science courses.

Materials List: Pencil, 3 x 5 index card, map of Oregon coastal area (included with activity). Optional: overhead of at least one of the Oregon coastal area maps.

Length of activity: Two class periods. Day one: Introduction of the activity and in-class work on mapping data on the large scale sampling map. Day two: Mapping data on the fine scale sampling map and complete the activity questions.

Teaching suggestions: Preparation activity topics could include mapping, contour lines, and oceanography tools and equipment. While knowledge of latitude and longitude is not required for this activity, basic graphing skills would be very helpful. Students may find this activity easier if they have had some experience with the concept of contour lines on a land map.

If available, an overhead of one of the maps would aid the day one lesson on plotting the temperatures at each sampling station and then drawing the isotherm lines.