Education and Research: Testing Hypotheses

What's REALLY Under the Ocean?
Ocean Floor Mapping

Summary

Students will be exposed to, learn about, and demonstrate basic understanding of ocean floor features and mapping using near time data.

National Science Standards

- Lithospheric plates on the scales of continents and oceans constantly move at rates of centimeters per year in response to movements in the mantle. Major geological events, such as earthquakes, volcanic eruptions, and mountain building, result from these plate motions.

- Land forms are the result of a combination of constructive and destructive forces. Constructive forces include crustal deformation, volcanic eruption, and deposition of sediment, while destructive forces include weathering and erosion.

Objectives

- Observe, Identify, Classify, and Map ocean floor features

Materials

Introduction:

- *Introduction to Bathymetry* presentation from EARTH website
- *Drain the Ocean* YouTube Video (optional) http://www.youtube.com/watch?v=HVJNLSwCGHc

Ocean Floor Features:

- *Background Information*
- *Image Cards* (prepare one set per group)
- *Image Classification Sheets* (prepare one set per group)
- *Vocabulary Label Cards*
- *Assessment Page*

Procedure

Part I—Introduction

1. Show students the photos of Seward, AK and Monterey Beach, CA, as well as the short video clip in the introductory presentation
2. Have students draw what they predict the underwater landforms in each region will look like
3. After picture sharing and discussion, show students the bathymetric images for each region
4. Discuss comparisons, and ask if they recognized any features (mountain, canyon, etc.)

Part II—Ocean Floor Feature Activity

1. Review continental landform features from previous learning (valley, canyon, volcano, mountain, and plains)
2. Divide your class into small groups and give each group a set of image cards
3. Have students look at all the images on the cards and observe and discuss the characteristics of each image
4. Have students sort the images by oceanic features using the image classification sheets (one set per group)
5. After the students classify the images under the specific descriptions of the ocean floor features, use the vocabulary label cards to label each column
6. Identify sonar image cards with vocabulary cards. Use the Ocean Floor Features (teacher version, answer key) to check student work.

Extensions

1. Ocean Floor Charades
    a. Have a student select a card from their sonar image card set and act out the ocean floor features using their body movement
2. NOAA Mapping Activity
    a. http://oceanservice.noaa.gov/education/seafloor-mapping/welcome.html
3. NOAA Sounding Box Activity
    a. http://oceanservice.noaa.gov/education/seafloor-mapping/sounding_box_make1.html
    b. Extra requirement: students must represent at least three of the features they learned about in ***Ocean Floor Features*** activity
4. Underwater Map Dance (see EARTH website)

Assessment

Performance— Students label image of ocean floor features correctly / two thirds are correct / half or less are correct.