Module 5: Sedimentation

Topic 2 Application: Sedimentation of the Shelf Scientific Investigation

Before you begin the scientific investigation, make sure to download the Sedimentation of the Shelf Scientific Investigation Report. As you complete this scientific investigation, fill in any needed information on the report template. If you need more information about each section of the report, please visit the Developmental Module.

Introduction

There are a number of forces and factors that determine what types of sediments make up the continental shelf in different areas of the world. Large grained terrigenous sediment usually settles near the coast and smaller grained sediments do so further into the ocean.

Objectives

In this scientific investigation, you will:

- observe how turbidity currents form.
- observe how sediment moves down the continental shelf.

Hypothesis

Using the Procedure and Data Collection section below, read through the procedural information for this scientific investigation. Based on your understanding of the procedure, develop your own hypotheses which describe what you think you will see when you drop a sediment sample containing several different sized items into water. Hypothesize about which items you think would fall faster or slower and why. Record these hypotheses in the Hypothesis section of your Sedimentation of the Shelf Scientific Investigation Report.

Equipment and Materials

- One large jar with a lid
- Unsorted sample of sediment of various different sizes - to obtain this you may need to collect small amounts of dirt, pebbles, rocks, and other items by digging a small hole in the ground outside
- Water
- Stopwatch or timer
- Spoon

Procedure and Data Collection

1. Fill the jar 3/4 full with water.
2. Analyze your sediment sample by looking at it closely. Sketch the sediment sample in the space provided in the Data section of your Sedimentation of the Shelf Scientific Investigation Report. Make observations about your sample using the following questions as a guides: Do the items in the sample have smooth edges or round edges? What is their relative size to one another?
3. Add one spoonful of your sediment sample to your jar and, in the Data section of your Sedimentation of the Shelf Scientific Investigation Report, record the time it takes your entire

sediment sample to reach the bottom, along with any observations. If you are unable to observe what is happening, repeat Step 3 until you can see the sediment falling.

Data

Use the spaces provided in the Data section of your Sedimentation of the Shelf Scientific Investigation Report to record your data from this scientific investigation.

Data Analysis

In the Data Analysis section of your Sedimentation of the Shelf Scientific Investigation Report, provide responses to the following questions:

- What happened to the sediment, based on sediment size?
- Which sediment fell the slowest? Why?
- Which sediment fell the fastest? Why?
- How do you think your results would have changed if you were stirring the water in the jar while the sediments were falling?

Conclusion

Using the Conclusion section of your Sedimentation of the Shelf Scientific Investigation Report, compose three to four sentences describing an overall conclusion based on your data. Were your hypotheses true or false, and how do you know? Use the data and notes that you collected from your investigation to form your conclusion. Make sure that you include information that you gained from data analysis to support your conclusion.

Experimental Sources of Error

On your Sedimentation of the Shelf Scientific Investigation Report, provide responses to the following questions: Are there any sources of error? If so, what are they, and what could be done to minimize error?

Once you have completed the Sedimentation of the Shelf Scientific Investigation Report, please submit your work to the dropbox.