

ACTIVITY 3: EROSION EXPEDITION

In this activity, students will experiment with different factors to see the effects they have on shoreline erosion.

Materials

- Aluminum quarter-sheet baking trays
- Soil
- Sand
- Pebbles
- Watering cans or spray bottles

First, inform students that they will be simulating shoreline erosion. Discuss with them some factors that they think might affect shoreline erosion and what effect each might have. Generate a class list of these factors. Partner students up and have them obtain the materials for the experiment.

Next, have students fill the trays with different materials (soil, sand, and pebbles) to represent various types of shorelines. Each group can represent multiple types of shorelines by repeating the experiment with consecutive trials that each have different materials. Have them make predictions as to how shorelines made of each material will withstand water.

Then, have students simulate rainfall by using watering cans or spray bottles to apply water to the trays directly onto the material they used to form their shorelines. Be sure to have some variation among the groups as to how much water they expose their shoreline to during their experiments. Students should observe and document how each type of shoreline responds to the simulated rainfall and various amounts of water.

Last, facilitate a class discussion on the differences in erosion rates among their different shorelines and how the choice of materials affects erosion. Help them to make connections to the amount of water and the erosion rate, as some shorelines may have remained intact with little water exposure; however, with lots of water exposure they may have eroded. Based on their results, have them discuss how they could create protections, e.g., revetments, for shorelines that eroded more easily. If time permits, have the groups test their idea of a protective wall that could help maintain the shoreline.



Discussion Starters

- *Hypotheses:* Can you share some of the predictions your group made about how each type of shoreline would respond to water exposure?
- *Observations:* Were there noticeable differences in erosion rates among the various materials used for shorelines?
- *Trends:* How do you think the type of material impacts the erosion rate?
- *Application:* where might a strong understanding of erosion patterns be crucial for environmental planning or construction near coastlines?
- *Extension:* Based on your observations, are there any additional factors you would explore in future experiments related to shoreline erosion?
- *Relationships:* How did the amount of water exposure affect the erosion of the shorelines?