Earth Science   Name:

                                                           Partner(s):

Modeling Mass Movements

Introduction

        Loose materials covering more solid bedrock often move suddenly downslope. They can pose serious threats to people and buildings below them. In this activity, you can make models of some of these processes to learn why they are hazardous and what can be done to alleviate the danger.

First, explain the important characteristics of each type of mass movement:

- Rockfall

- Slides

- Slumps

- Flows

- Creep

Procedure

1. Obtain a 1000-mL plastic beaker and a protractor.

Fill it about ¼-full with marble chips.

Turn it on its side and let it stabilize.

Slowly tilt the beaker from the rear and measure the angle when the chips first begin to move:

2. Return the beaker to the upright position and pour 100 mL of water into it.

Place it on a paper towel in an aluminum tray to avoid spillage.

Repeat the tilting process, and compare it with the "dry run."

What do you conclude from these activities?

2. Repeat the activity with beach sand.
Record your observations and conclusions.

3. Repeat the activity with potting soil.
Record your observations and conclusions.

4. Design an experiment in which you start again with dry materials and simulate the effects of an earthquake in the region. Describe what you do , what you observe, and give your conclusions.

Questions:

1) You've probably seen signs along highways that warm about "Falling Rocks." What is the most likely reason for rockfalls along roads?

2) Why is it dangerous to build homes on the sides of steep hills or mountains?

Questions cont'd.)

    3) What catastrophe occurred in Colombia in 1988? Could anything have been done about this?

    4) How do plants help stabilize slopes?

Enrichment:

1) Look for examples of these mass movements in your neighborhood, and make an annotated digital image album. If you can't find any, you can still make an album from online images. (Be sure to include your source urls.)

2) Read about "Hyde vs. Morgan – The Great Landslide Case" in Mark Twain's *Roughing It*. (Online at http://futureboy.homeip.net/twain/roughing/rough34.html). Write about it from the viewpoint of a newspaper reporter covering the story.