Activity 12: “How Did It Get Here?”

Maine Geological Survey

Objectives:

To have the students realize that ALL surface features on the earth were formed by some type of process. To have students attempt to visualize what some of these processes look like.

Time:

This activity is designed to last 20 - 40 minutes.

Background:

This is an excellent introductory activity at the beginning of the year as well as at the start of different portions of the course. It activates the student's current knowledge and gives the teacher an idea of where the students are in terms of their thinking and experiences. You may also wish to use it at the end of a unit to give students an opportunity to apply their new knowledge.

Procedure:

Select a small piece of land or geologic feature (you may wish to define the boundaries with yellow engineers' tape) and ask the students to observe it, and, on the basis of their observations, explain "how" this piece of terrain "got" there. Suitable spots include sloped fields, swamps, ledges, small streams or ponds, exposed gravel banks, levees,

dunes, marshes, and so on. Students can inspect the area and make observations for a limited period of time.

It is generally more effective if the teacher refrains from answering specific questions. This forces the students to make observations ON THEIR OWN, and come up with explanations for their observations ON THEIR OWN which are two activities students often prefer to avoid. After a certain amount of time each student, or group of students (larger classes), explains how and why they think this piece of land came to be. It is best if this discussion occurs on site so all students can see the parcel of land as their peers may have seen it. All student responses should be considered as valid possibilities at this point (refrain from labeling any response as wrong), but questions such as "How long do you think it would take this to happen?" (in reference to a student response) are fine and encourage the students to analyze their own explanations.

An alternative approach, with more structure, is to have the teacher point out exact features, without naming them, for the students to observe. Teachers may wish to write specific questions in advance about the site to direct the student's inquiry and observations.

Attached below are photos and questions. The questions accompanying each photo are the type of questions you might have students consider when they are looking at some geological structure in an actual field situation.

Follow-Up:

If the spot is local and somewhat unique you may want to repeat this activity, after studying a certain topic, so the students can see changes in their knowledge and perspective. In areas with a varied number of land forms this activity can be used as an introduction to a variety of course topics. Ask the students to repeat this activity with a similar feature near their home; is the second feature exactly like the one the class studied and did it form in the same way?

References:

Activity developed by Duane Leavitt.

Figure 1. A large boulder sits alone at the edge of a field; the tree behind it is approximately 50 feet in height. There are no similar boulders in the woods behind the field. *How did this rock get here? Why is it all alone? How did the rock become cracked?*

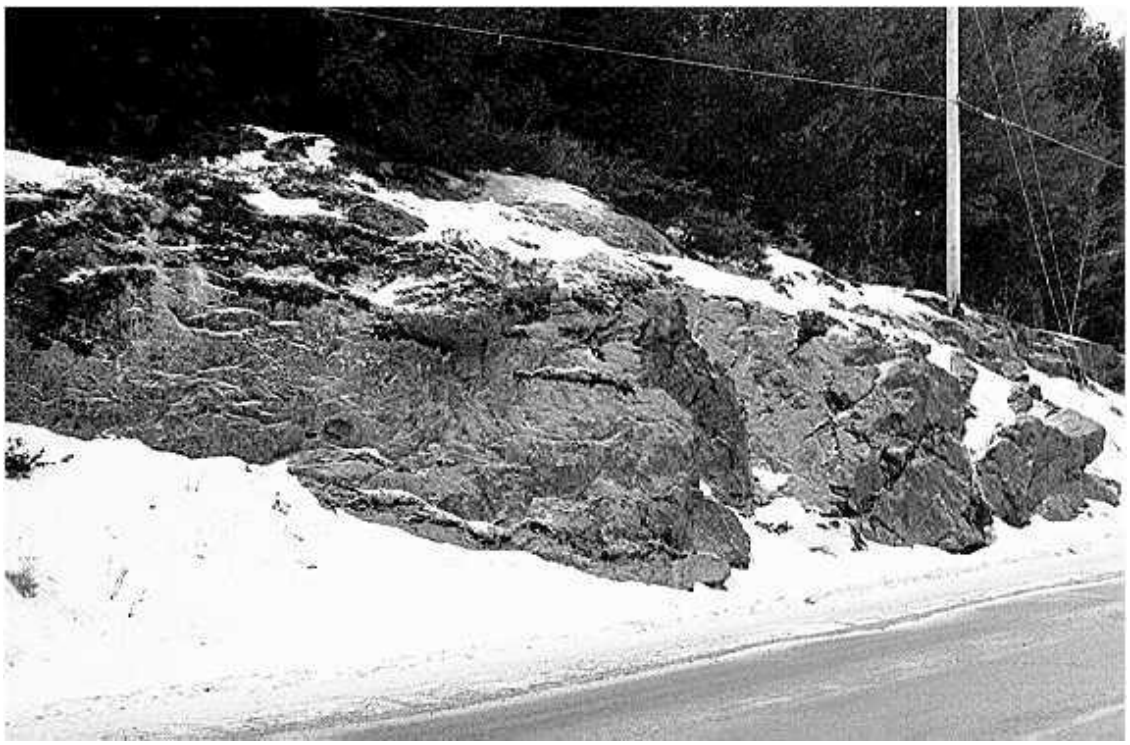

Figure 2. A typical Maine road cut. *Does that rock have any particular orientation? Was it emplaced straight up and down? What is the rock type? How can you tell?*

Figure 3. Maine is dotted with small, domed hills and ridges that are not bedrock. They are most visible in the fall and winter. *Where did they come from?*

Figure 4. A small stream (frozen) has cut through and exposed a mass of bedrock. *Why didn't the stream go around or "choose" an easier path?*

Name_____

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Student Sheet

Purpose:

In this field trip activity, you will observe features of the land and speculate about their origin. This will lead to an appreciation of how the land on which you tread has been shaped by a variety of geological processes.

Materials:

Notebook and pen

Procedure:

Your teacher will show you a piece of land or a geologic feature. You will have a limited amount of time to observe this piece of land. Make as many observations as you can in the time allowed; "How big is it? Of what is it made? Does it have different textures? How does it look?" All of the answers to these questions make good observations to record. Observations:

After you have made your observations write an explanation describing how YOU think this piece of land came to be. How was it formed?

Discussion Questions:

1. Does any piece of land just "happen" or are there always processes involved that shape the land? Explain.

2. Can more than one process have an impact on how a piece of land forms? If you answer "Yes" give an example, if you answer "No" explain why not.

3. Can a specific land form be created in more than one way? If you answer "Yes," give an example. If you answer "No," explain why not.

4. Explain why it is important to understand how various parts of the earth form.

5. List several areas of human activities that would benefit from understanding how a particular piece of land was formed.