

Elementary Climate Change Unit: Lesson 2

Title of Lesson: How do earth materials move in watershed?

Grade Level: 2

Subject: How earth materials move in a watershed.

Source(s) of the lesson:(

http://www.iwla.org/docs/default-source/how-to/how_to_build_model_watershed.pdf?sfvrsn=4

<http://www.fossweb.com/moduledetail?dDocName=D564298> (Not necessary, but helpful. To view, you will need to create a free account with Fossweb.)

Essential Question(s):

Are you part of an ocean habitat?

Massachusetts Curriculum Frameworks Science Standards:

2-ESS2-3: Use examples obtained from informational sources to explain that water is found in the ocean, rivers and streams, lakes and ponds, and may be solid or liquid.

2-ESS2-4 (MA): Observe how blowing wind and flowing water can move Earth materials from one place to another and change the shape of a landform.

Content Objectives: Student will be able to:	Practice Objectives: Students will be able to:	Language Objectives: Student will be able to:
Define erosion and describe what causes it.	Use models of erosion (practice 2)	Describe their observations orally.
Describe how erosion can change landforms .	Analyze the effects of water and wind on a model (practice 4)	Describe scientific concepts orally and in writing.
	Communicating observations of change using spoken language and drawing (practice 8)	

Important Vocabulary: erosion, earth material, landform.

Materials Needed:

- Watershed models from lesson 1 (for each group)
- Copies of attached *Recording Sheet* (for each student)
- Soil

- Spray bottles with water (for each pair of students)
- Straws (for each student)
- From FOSS *Landforms* Kit:
 - Stream table
 - Earth material (mix of sand and clay)
 - Standard water source, ½ liter

Background Information for Teacher: **Erosion** is the movement of soil, sand, rocks, and other natural earth materials by water or wind. This usually very slow process changes the shape of landforms. In a watershed, the eroded earth material may be carried into bodies of water. This lesson is designed to build off the last one by having students explore how things besides water are transported in a watershed. At the same time, they are learning how erosion can change land.

Background Information the Student Needs to Access the Lesson: Students have been introduced to the concept of a watershed in the previous lesson. They should have some familiarity with earth materials and landforms. If you have taught *Pebbles, Sand, and Silt*, you may want to connect erosion to the lesson on weathering, and the article in FOSS Science Stories called *Rocks Move*.

Lesson Structure

Lesson Launch	
	Review the previous lesson with students. Ask what happens to

(Do Now)	rainwater when it falls outside. Discuss the meaning of watershed , and go over the model watershed landscape that they created.
Background Instruction (pre-activity)	<p>Tell students that water isn't the only material that moves in a watershed. Ask them what other materials they think move in a watershed. For each example, ask how they think it moves.</p> <p>Tell students that for this lesson they will be using their watershed models to explore how different materials move in a watershed. First, they will be using natural earth materials. Show students the soil.</p>
Activity	<p>Demonstrate how to responsibly use the soil to build model landforms on the landscape. Divide the class into groups of 4. Give them their watershed models and two small containers of soil, to be shared by each pair. Allow about 5 minutes for them to build the landforms.</p> <p>Distribute the <i>Recording Sheet</i> (see attached.) Direct students' attention to the first box, which says, "Before the Storm." Have them draw a picture of their model with landforms. Make sure they don't use the second box.</p> <p>Ask students to predict what will happen when a rainstorm hits. Some students will probably say that the earth material will move. Ask where they think it will move, and why it will move there.</p> <p>Some will probably say that the landforms will change. Ask how they will change, and why.</p> <p>Remind students about the expectations for the spray bottles. Distribute spray bottles and allow for a few minutes of "storming." Circulate, making sure students are sharing with their partners. Check to see that they are raining over the landforms as well as the clean areas. Collect the spray bottles. Ask students, "Besides wind, what other weather do you observe during a storm?" <i>Wind</i>.</p> <p>Ask, "How do you think we can model wind?" <i>Blowing on the earth materials</i>.</p> <p>Show students the straws. Explain that the straws will help them direct their "wind." Go over your expectations surrounding the use of the straws, emphasizing that they are not allowed to blow on their neighbors and that there will be no sharing of straws.</p> <p>Distribute one straw to every student. Allow for a minute or two of "wind." Once the children have added enough wind to their watershed models, collect the straws and throw them away.</p> <p>Direct students' attention to the <i>Recording Sheet</i>. Now is the time to draw a picture of the changes they noticed in the second box, labeled, <i>After the Storm</i>. Give them a few minutes to do this. Encourage them</p>

	<p>to talk about their observations with each other and examine each other's drawings. As you circulate, ask questions such as, "What happened to the landforms? How did they change? What made them change? Where is the earth material going? Why? What is happening to the river? To the ocean? Why?"</p> <p>Clean Up: Have a couple student helpers walk around with a basin to empty the dirty water from the models into. Have additional helpers collect to dry off and wipe off the remaining soil.</p>
<p>Discussion/ Debrief</p>	<p>Ask students, "What happened to your landforms?" <i>They changed shape, broke down, etc.</i></p> <p>"What caused the landforms to change?" <i>The wind and water.</i></p> <p>"What happened to the soil?" <i>It got carried away.</i></p> <p>"Where did the soil go?" <i>Other parts of the land, the river, the ocean.</i></p> <p>Explain that what students observed in their models is called erosion. Have them say the word and clap the syllables. Explain that erosion is when earth materials like soil move from one place to another by water or wind. Erosion changes the shape of landforms. Ask how erosion changed the shape of their soil landforms in the model.</p> <p>Show students the stream table. Position the students that everyone can see. Tell students that like the watersheds they created, the stream table is also a model to help them understand erosion. It is a model of a piece of land, made out of another type of earth material. Slowly pour water over the stream table. Have students observe how the landforms change and the movement of the earth materials.</p>
<p>Formative Assessment</p>	<p>EXIT TICKET: Answer each question with words and/or a picture.</p> <ol style="list-style-type: none"> 1. What is erosion? 2. What 2 natural forces cause erosion? _____ and _____ 3. How can water and wind change the shape of a landform?

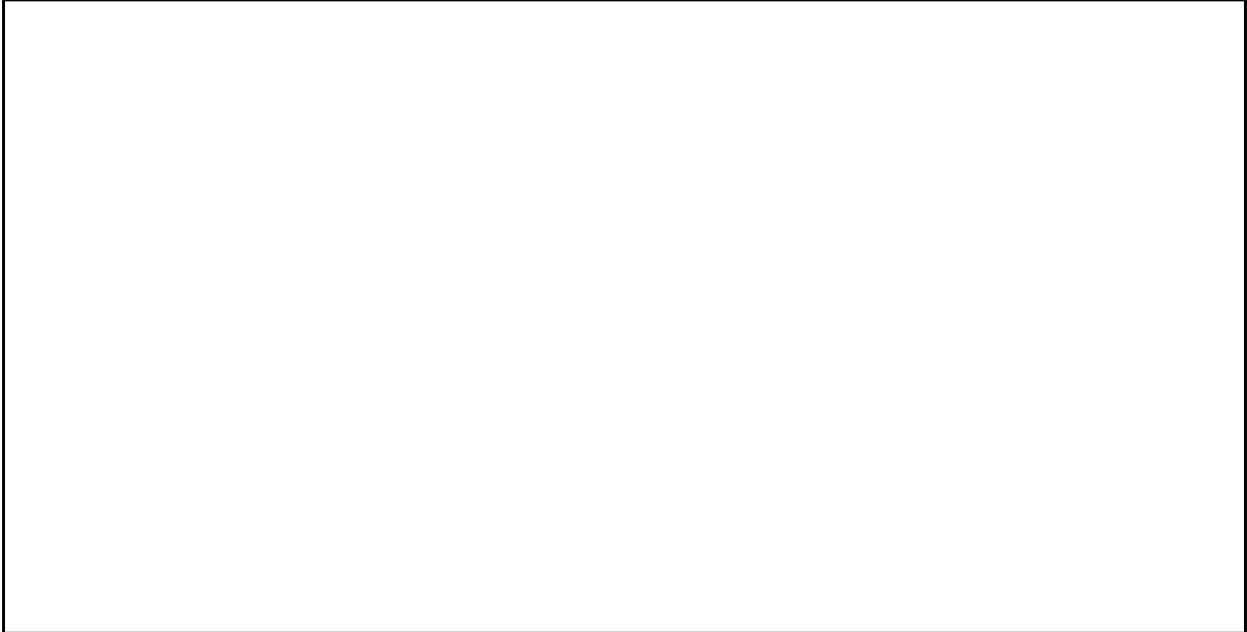
Notes:

Name:

Date:

Recording Sheet: How do earth materials move in watershed?

Before the Storm



After the Storm

