

FRIENDS OF THE
MISSISSIPPI RIVER

ONLINE LESSON
SERIES:
LANDSCAPES &
EROSION



2020

INTRODUCTION

Friends of the Mississippi River engages people to protect, restore and enhance the Mississippi River and its watershed in the Twin Cities region. This in-person classroom lesson has been adapted for homeschooling and remote teaching and has corresponding videos that can be found on the FMR website (<https://fmr.org/events-online-education>). Other educator resources can be found on our Online Environmental Education with FMR Facebook Group (https://www.facebook.com/groups/202957270996905/?source_id=81498431082).

Our **landscape**, the visible features of an area of land, is constantly changing. Day to day, you may not notice the differences, but over a long period of time you can see that the land around us does not stay the same. Unlike living things like plants and animals, land isn't growing or changing on its own but is influenced by weather and climate. **Weather** is the state of the air around planet Earth at a specific time and place. Examples of weather include rainstorms, sunshine, clouds, wind, tornados, monsoons and snow, among others. **Climate** is the average weather condition of a specific place over a period of 30 or more years. The climate in Minnesota is hot and humid in the summer and cold and snowy in the winter.

Ten thousand years ago, the climate of Minnesota was much different than it is today. The ice age was ending and Minnesota's landscape had been covered in a thick sheet of ice called a glacier. A **glacier** is a large mass of ice that is created when snow accumulates year after year faster than it melts. Because of their enormous size, glaciers move very slowly under their own weight and often carry dirt, rocks and even massive boulders with



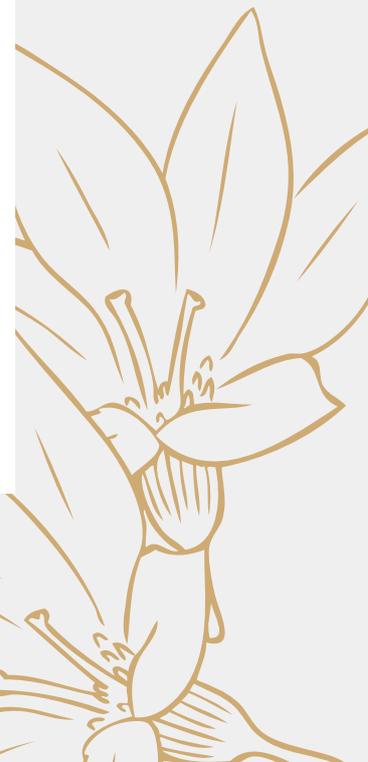
them as they move across the land. You can imagine how a glacier carrying rocks and boulders could have dug out all of Minnesota's many lakes as it moved across our landscape.

As the climate warmed ten thousand years ago, streams and rivers from the melting glaciers began to carve through the soil and rock in a process called erosion. **Erosion** is the process of a moving thing that transports soil and rock from one location to another. Erosion is a natural process caused by water, ice (glaciers), snow, air (wind) and animals.

While erosion is a natural process, humans have also impacted the erosion of our landscape. Nearly 400 years ago, European settlers began making their way to what we now call Minnesota, and eventually they fought against and displaced the native Dakota and Ojibwe people that had lived on the land for thousands of years. The Europeans brought with them different ways of using the land than the native people had been using, reshaping the landscape as they cleared native forests and prairies to make way for houses and farms. Recent human development has caused erosion to happen ten to forty times faster than it did before European settlers came to the area.

For example, imagine a large farm field in the fall or spring when there are not plants growing. Usually, it looks brown because it is bare dirt. Now imagine that it is really windy and rainy, causing the soil in the field to be swept away quickly. There are very few plants or barriers to keep the soil in place or protect it from the wind and rain, and this process can take away the nutrients in the soil that make it healthy for plants and animals. The wind and rain can also bring eroded soil to a nearby lake or stream. Adding more soil to a body of water can make it cloudy and brown, creating an unhealthy environment for the plants and animals living there. Human activities that speed up erosion can cause issues for farmers, property owners and wildlife.

In today's lesson, we will explore how erosion works, learn how we can slow down erosion, and observe the ways in which landscapes change over time.



EROSION INVESTIGATORS

Please take the CDC recommendations seriously and only go outside if you feel comfortable doing so and can stay six or more feet away from others. Please also wash your hands as soon as you return to your home and always let an adult know about your plans to be outside.

MATERIALS

- Paper
- Pen
- Something to write on



DIRECTIONS

1. Make a T-chart on your paper. Label one column of your chart “signs of erosion” and the other column “location on the landscape.”
2. Take a slow observational walk around your neighborhood. Stop to record (write or draw) evidence of erosion you see. This could be evidence such as dirt accumulating on a sidewalk or gullies forming along a road.

Signs of Erosion	Location on the Landscape
	On the side of a hill in a front yard near the sidewalk

3. When you find evidence of erosion mark it down on your chart. Then take a broader look at the landscape surrounding that erosion. What does the landscape look like? Is the erosion at the top or the bottom of a hill? Is it near a source of water? What is the vegetation (plant life) like at that spot? Write or draw those observations down under the column “location on the landscape.”
4. After your walk, check out your neighborhood on Google Earth. In relation to other neighborhoods, where does yours sit on the landscape? Are there ravines in your neighborhood or the edge of a bluff? Where is the Mississippi River in relation to your neighborhood?
5. If you have drawn a picture or made a list of observations please take a picture and send it to the FMR Facebook page or find our Education and Stewardship staff at www.fmr.org and send them a message.