



**COMPLETE INTRODUCTION TO EARTH & SPACE**  
**(GRADES 6–8)**

**KT-EARTINT**

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Science Foundations Series

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## WEATHERING AND EROSION

You have probably heard the terms weathering and erosion before. But, like many other terms in science, these two are commonly used interchangeably when they refer to different processes that occur here on Earth.

**Weathering** is the geological process of breaking down rocks into smaller pieces. There are five mechanisms for weathering:

1. Wind
2. Water
3. Ice
4. Plants
5. Animals

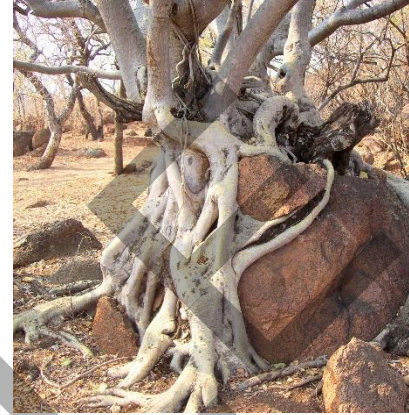


Figure 10. The Plant is Breaking Down the Boulder.

**Erosion** is the movement of sediment from broken rocks. There are four mechanisms for erosion:

1. Wind
2. Water
3. Ice
4. Gravity



Figure 11. The Avalanche is Moving Rock.

Both the list of mechanisms for weathering and mechanisms for erosion seem similar or have many of the same mechanisms listed. This is because both weathering and erosion are geological processes that work together in the altering of landscapes.

Like many other geological processes, weathering and erosion are not independent of one another. Instead, many geological processes happen simultaneously, or where one is the predecessor or the result of another geological process.

## NATURAL RESOURCES

**Natural resources** are materials found in nature that can be used for economic gain. Economic gain means to make money.

Natural resources are broken into two categories – renewable resources and nonrenewable resources. **Renewable resources** are natural resources that are unlimited in their quantity or naturally replenished quicker than we use them. **Nonrenewable resources** are natural resources that do not have an unlimited quantity or will not naturally replenish at the speed in which we use them.

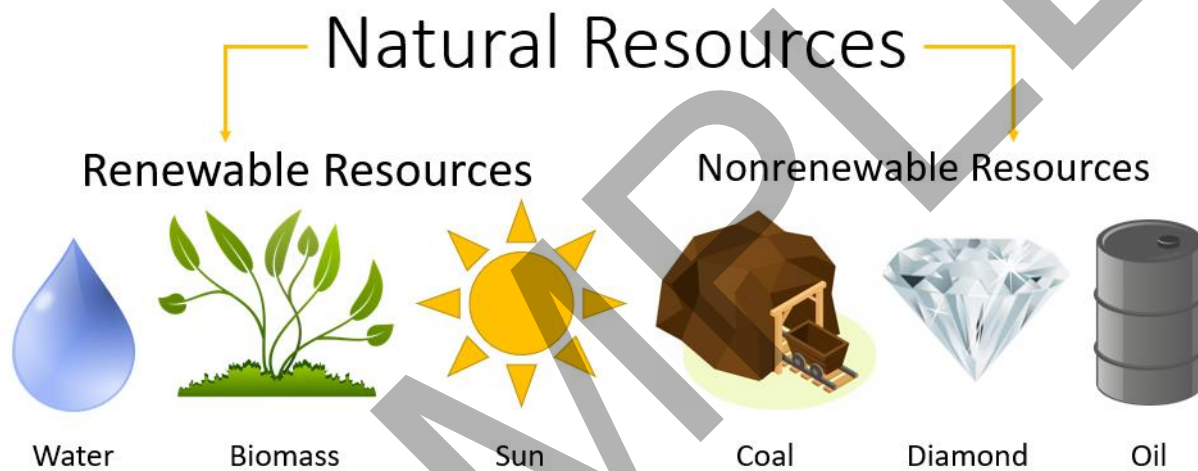


Figure 24. Examples of Renewable and Nonrenewable Resources.

Natural resources can be found all over the Earth. While some natural resources are easy to collect, others can be difficult and require methods such as **fracking**. Fracking is the process of boring into Earth's crust and injecting a high-pressure liquid to force out oil.

Fracking is possible in many areas of the world. However, we are now looking to new areas for oil as many of the places where fracking currently happens are finding less and less oil.

One area under discussion for fracking ventures is Alaska. Oil companies discovered billions of barrels of oil available in Alaska's North Slope. At this time, there are efforts to both increase and decrease the amount of fracking happening in the northern region because of the impacts it has on natural resources and the polar ice caps.

Find out more in Activity 10!

## ACTIVITY #10 – UNDER THE ICE

**FROM THE KIT:** Peat moss, sand, pebbles, science notebook, tape measure, and plastic box.

**YOU PROVIDE:** Ice and water.

**PREPARATION:** You will need to make a minimum of eight ice cubes prior to this activity.

**NOTE:** Save the science notebook, plastic box, and unused portion of sand for future activities.

1. Add 2 cups of water to a bag of peat moss and seal the bag.
2. Mix the peat moss and water by squishing the bag. The peat moss should look like dark soil. Pour out any excess water.
3. Make three small hills on the plastic box lid. One hill will be made of peat moss, one of sand, and one of pebbles.
4. Place the lid in a sunny or warm location.
5. Fill the plastic box 4 cm full with cool water and place it next to the lid.
6. Form a hypothesis for the question “Which surface will ice melt fastest on?” and record it in your science notebook.
7. Form a hypothesis for the question “Which surface will ice melt slowest on?” and record it in your science notebook.
8. Place two ice cubes on each hill and one in the water.
9. Let the ice cubes sit in a warm location for 1–3 hours.
10. Every 30 minutes, record whether or not the ice cubes melted, and how much melting occurred for each substrate in your science notebook.
11. Review and evaluate your hypothesis. Record any information that confirms or contradicts your hypothesis.

### What happened?

The melting of the ice is due to the thermal energy transfer from the water or substrate to the ice. Ice cubes are frozen water and water freezes at 0°C (32°F). Cool water is typically around 16°C (60°F), so placing ice in cool water results in the thermal energy from the cool water transferring to the ice. As a result, the ice melts, and the water and ice temperatures come to an equilibrium.

**FROM THE KIT:** Vegetable oil, absorbent pad, plastic box, dishwashing liquid, sand, science notebook, and feather.

**YOU PROVIDE:** Water

**PREPARATION:** Make sure you have completed Activities 14–16 before performing this activity.

1. Fill the plastic box about half full with water.
2. Add the rest of the vegetable oil to the water.
3. Place the feather in the water, dipping it through the vegetable oil.
4. Use what you learned in Activities 14–16 to remove the vegetable oil from the feather.
5. Record your experience in your science notebook.

### What happened?

Once a crude oil spill has happened, it starts affecting plants and animals that live in the ocean or near it. Some of the crude oil mixes with sand and other sediments in the ocean, sinking to the bottom. Other parts of the crude oil float to the top of the water. With the waves and wind, the crude oil is moved toward the shoreline.

Crude oil is toxic if ingested, so animals can die when a crude oil spill occurs. These crude oil spills can cause damage in other ways. For example, a sea sponge can soak up crude oil making it difficult for the animal to access nutrients that it needs from water. Sea sponges are filter feeders, so they are unable to access food another way. Crude oil can either clog up the feeding tubes of a live sponge or can give off toxins that kill it.



Figure 44. Grey and Yellow Sea Sponges.