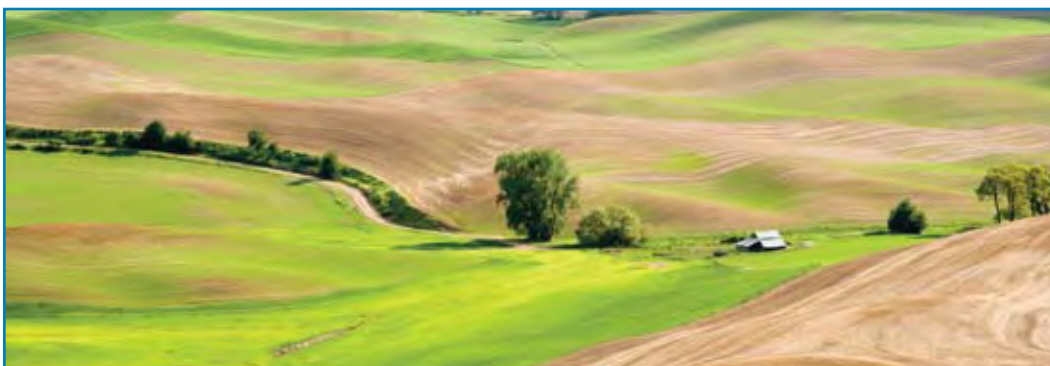


2.1 Understand the Question

Think About the Structure of Earth

When you look around you at Earth's surface, it may seem like one continuous covering. But information in your pen pal letters supports evidence of a different idea. Perhaps there are breaks in Earth's surface that allow the ground to shake and volcanoes to erupt. Exploring the characteristics of Earth's surface may provide evidence about why geologic activity occurs.



Earth's surface looks continuous. But is it?

Get Started

Photographs taken from areas affected by earthquakes or volcanic eruptions show that something has caused buildings and highways to collapse, or large areas of land to be leveled. Examining the photographs on the next two pages may give you some ideas about what is moving.

With your partner, choose one of the geologic events pictured on the next two pages. Observe the series of photographs you selected and answer the following questions:

- What changes occurred in the area you selected? Changes might be large or small. You might notice that the size, shape, or position of parts of the area may have changed. Describe each of these changes.
- What evidence do you see in the photographs that might indicate Earth's surface is not one continuous piece?

Mount St. Helens Eruption: 1980



Before the eruption.

Mount St. Helens, a volcanic mountain located in southwestern Washington State, had not erupted since 1850. On May 18, 1980, a huge eruption caused widespread devastation and the loss of 57 lives. Within a zone of eight miles around Mount St. Helens, everything natural and human-made was destroyed or carried away. This eruption was the most destructive in the history of the United States.



During the eruption.



After the eruption.

Guatemalan Earthquake: 1976

The main railroad line between Puerto Barrios and Guatemala City in the Central American country of Guatemala was moved and twisted after a massive earthquake occurred on February 4, 1976. The earthquake killed 23,000 people and injured 76,000 people.



Before the earthquake.



After the earthquake.

Birth of the Island of Surtsey: 1963

The volcanic island of Surtsey, the southernmost point of Iceland, came about in 1963 as a result of a volcanic eruption 130 m (426 ft) below sea level. The island reached the surface in November of 1963, and the eruption lasted until June of 1969. That year, the island reached a size of 2.7 km² (1 mi²).

During the eruption.



After the eruption.

Conference

Meet with other students who selected the same series of photographs you examined. Discuss each group's answers to the questions and compare your ideas. Determine what questions you have about the structure of Earth's surface and what beneath it could cause geologic activity.

Organize your ideas on a poster. Make sure your poster includes all of the following points:

- all changes you observed in the photographs and what those changes indicated to you about the surface of Earth

- a brief description of the discussion you had with your group. Include the similarities and differences in your ideas.
- your ideas about the structure of Earth's surface and what beneath it could cause geologic activity. Include any evidence in the photographs supporting your ideas.
- any questions you want to investigate to better understand the structure of Earth

Communicate

Share Your Ideas

Groups will take turns presenting their ideas to the class. After all of the groups have presented, discuss the different ideas presented about the structure of Earth's surface. If there are disagreements, the class may want to divide into two groups: one group that supports the idea that Earth's surface is continuous and unbroken, and one that supports the idea that the surface is not continuous. Groups should provide evidence to support their opinions. If there is still disagreement about which idea the evidence supports, a question about the structure of Earth's surface should be added to the *Project Board*.

Update the *Project Board*

Record any ideas about the structure of Earth's surface and what is beneath it in the *What do we think we know?* column of the *Project Board*. You developed some questions about what you need to investigate to better answer the *Big Question*. Record your questions in the *What do we need to investigate?* column. Throughout this *Learning Set*, you will be expanding on these ideas and finding answers to your questions. This will help you answer the *Big Question* for this Unit, *What processes within Earth cause geologic activity?*

What's the Point?

Your observations may indicate that Earth's surface is one continuous piece. But further data, collected in places where there is a lot of geologic activity, provide evidence that pieces of Earth's surface are moving. If pieces of Earth's surface are moving, perhaps the crust is not one continuous piece. It may instead be broken in to pieces that each shift and move.

