Unit Summary

	Cluster 1: Earth's Surface Changes (Lessons 1, 2, 10 and 13)
Overview	Students look for evidence of change to the earth's surface in their local environment, and discuss how some changes happen quickly but most happen slowly. They consider processes that shape Earth's surface by carefully observing pictures of various landscapes and apply knowledge gained in the unit as they investigate real landforms. Students look for evidence of change to the earth's surface in their local environment, and discuss how some changes happen quickly but most happen slowly. They consider processes that shape Earth's surface by carefully observing pictures of various landscapes and apply knowledge gained in the unit as they investigate real landforms.
Science Content	• The surface of the earth is always changing. Landforms result from these changes. • Some changes happen quickly, but most happen very slowly. • Weathering, erosion, and deposition work in concert to create landforms. • Evidence can help you determine how a landform has changed over time.
Science Center	• Post photographs and sketches from the Surface Changes Walks. • Post images of landforms from magazines, web sites, or field trip. • Display and add to an Earth's Changing Surface "word bank." • Display photocopies of field sketches. • Post the virtual field trip photo cards.
Family Links	• Build and record changes to sand castles.
Further Science Explorations	• Build and monitor a school sand castle. • Research local landforms. • Select a site and then predict how the area will change. • Take virtual field trips to a variety of landforms.
Cross-Curricular Extensions	**Language Arts:** Write a poem or short story about a place whose surface has changed. Share impressions of a local or famous landform. **Social Studies:** Research a famous landform. Create posters to raise awareness about a landform issue. **Art:** Draw, paint, or make a collage about the meaning of change. Make collages out of earth materials. Study masterworks of famous landforms.

Cluster 2: How the Earth's Surface Changes (Lessons 3—9)	Cluster 3: Movements of the Crust Change the Earth's Surface (Lessons 11—12)	
Students learn about the key processes of weathering, erosion, and deposition. They build several models to simulate rivers, glaciers, hoodoos, and sand dunes in order to explore how the force of moving water, ice, and wind wear down and build up the earth's surface. They also conduct investigations to discover how various rocks abrade differently. In each lesson, they apply their new understandings from the explorations to real world phenomena.	Students learn about the layers of the earth and explore how plate movements form mountains and volcanoes. They are introduced to plate tectonics, and use a model to learn how the slow movements of the earth's plates form mountains. They simulate a volcanic eruption to discover how volcanoes build up and are shaped as magma from within the earth is deposited on the surface. They apply their learning from previous lessons as they recognize that mountains and volcanoes weather and erode over time by moving water, ice, and wind.	**Overview**
• Moving water, ice, and wind break down rock, transport materials, and build up the earth's surface. • The moving water in rivers carries sediment and deposits it in new locations. • Abrasion is a type of weathering; soft rocks abrade easier than hard rocks. • Glaciers abrade rock and deposit rocks and sediment. • Wind-blown sand abrades rock surfaces and makes them smoother; wind deposits sand dunes.	• The earth is composed of the crust, mantle, outer core, and inner core. • The earth's crust is made up of plates that slowly move. • Mountains form when plates collide. • Young mountains are jagged and steep. Old mountains are rounded. • Volcanoes form when magma that emerges from beneath the surface of the earth is deposited on the surface. • Volcanic eruptions build up the earth's surface. • Mountains and volcanoes are weathered and eroded over time by moving water, ice, and wind.	**Science Content**
• Set up a river table. • Post photographs of river table results. • Display samples of abraded rocks and their sediment. • Place jars out for the abrasion investigation. • Provide magnifying lenses and melted glacier models. • Conduct abrasion experiments. • Experiment with a windstorm box. • Start a weathered items collection.	• Display pictures of Himalayan and Appalachian mountain ranges. • Set out materials from the mountain building and volcano explorations. • Provide books with details about the earth's structure and images of volcanoes.	**Science Center**
• Search for rocks with distinctive features. • Gather information about 1930's American Dust Bowl.		**Family Links**
• Discuss how rivers have changed over time. • Explore alluvial fans, wetlands, and floodplains. • Discuss how humans can affect erosion and deposition. • Learn about worms that live on the surface of glaciers. • Model a glacier outwash plain. • Study a variety of glacial deposits. • Explore the effects of wind on local landforms. • Model how water and plants affect erosion and deposition. • Build a windbreak to protect sand dunes. • Explore chemical weathering by acids and oxygen.	• Model plate tectonics. • Show videos related to mountain formation and volcanic eruptions. • Encourage class to learn more about volcanoes.	**Further Science Explorations**
Language Arts: Investigate and report on landscape topics. Create a media broadcast about a cataclysmic event. Research erosion and deposition in their communities. Write stories to document an object's past. **Mathematics:** Explore the rate of glacial movement. **Social Studies:** Research how deltas have been a focal point of human civilizations. Study how civilizations are affected by drought. Study monuments from ancient cultures. **Art:** Discuss works of art that depict rivers. Create a mural depicting how a landscape might change over time. Make sand painting of desert landscapes. **Technology:** Research sandblasting.	**Language Arts:** Explore myths and tribal legends about volcanoes. **Mathematics:** Create a bar graph comparing the heights of mountains. **Social Studies:** Study civilizations that flourish in mountain settings. Plot volcanoes on a world map. Research arts, crafts and tools that different cultures have created from volcanic materials. "Travel" back in time to Mt. Vesuvius eruption. **Art:** Explore mountain arts and crafts. Create volcano illustrations.	**Cross-Curricular Extensions**