

RECOMMENDED GRADES: K-4



TIME NEEDED: 45 MINUTES

Description

Students learn where volcanoes and earthquakes occur in the Pacific by acting out these geological events on the Giant Map.

Learning Objectives

Students will:

- map locations of earthquakes and volcanoes on the Ring of Fire
- learn about the pattern of earthquakes along the boundary of the Pacific Plate
- understand the correlation of volcano formation and earthquake activity

Materials

- Poly spots (red, 12)
- Poly spots (yellow, 12)
- Volcano model (Optional)

Preparation

10 minutes

- Read over the activity. With the Ring of Fire map in hand, practice walking around the Ring of Fire on the Giant Map, acquainting yourself with the locations along the ring.

Tips/Modifications

Modification

- Have students create volcano and earthquake cards to use in place of the poly spots.

Rules



Have students remove shoes before walking on the map.

DIRECTIONS

1. Tell students that one group of students, the Shakers, will be locating earthquakes; and one group of students, the Bakers, will be locating volcanoes. As the teacher, you are playing the role of a U.S. Geological Survey official. Explain that you will announce where an earthquake occurs by standing on the map at the location of the earthquake and shaking your body. This will give the Shakers the signal to walk over to you, as they shake their body. Then, they will drop their poly spot and return to base camp.
2. Tell students that you will announce a volcanic eruption by making a triangle with your arms over your head. This will give the Bakers the signal to walk over to you, as they make a triangle over their heads and drop a yellow poly spot.
3. Divide the class into two evenly numbered groups, red and yellow. The red group will be the Shakers. The yellow group will be the Bakers. Send them to their "Base Camp," (the colored circles at each corner of the map). Each group selects one student to start on the colored circle. The remaining group members line up on the yellow border near Base Camp.
4. Instruct the students to watch for your signal to mark your location of either an earthquake or volcanic eruption. To start, position yourself in the Southern Hemisphere on New Zealand's North Island. Once you are at your station, you begin by shaking your body to represent an earthquake. This will signal to the first student in the Shaker group to proceed on the map to your location while shaking his or her body, dropping the red poly spot at your feet, and returning to Base Camp at the back of the line. While the Shaker student is returning to Base Camp, advance to your next station on the Giant Map. Once you have arrived, put your hands over your head and make the shape of a triangle (representing a volcano). Announce for the first Baker to make the same volcano shape and approach your station. The Baker will then deposit the yellow poly spot at your feet. He or she will return to Base Camp as you proceed to your next station on the Giant Map. Continue this play until all of the students have deposited their poly spots.
5. Move around the map as you announce and signal the earthquake or volcanic eruption. Look at the ring of fire and plan the activity so that after 24 announcements you have made a circle starting in New Zealand and ending along the Peru-Chile Trench next to South America.
6. Direct students to each sit on one of the colored poly spots placed by their group. Standing in the center of the map, ask them the following questions:
 - *What is the pattern of the red and yellow spots?* [circle/ring]
 - *What is the circle called?* [Ring of Fire. The ring is a large circle, starting on the western side of the Pacific in New Zealand, north through the Philippines, Japan, and the Aleutian Islands; to the eastern side of the Pacific, from the volcanoes of North America's Cascade Range to South America's Andes.]
 - *Why does the Ring of Fire exist?* [The large plates making up Earth's crust collide underneath the surface of the ocean and where ocean plates meet continental plates. These collisions cause earthquakes (thousands each year, mostly small), shaking the coasts of the Pacific Rim. The earthquake releases the pressure that builds up in the rocks when one plate jams against another. As the ocean crust drops underneath the continental crust, deep trenches are formed. High heat and pressure from where the

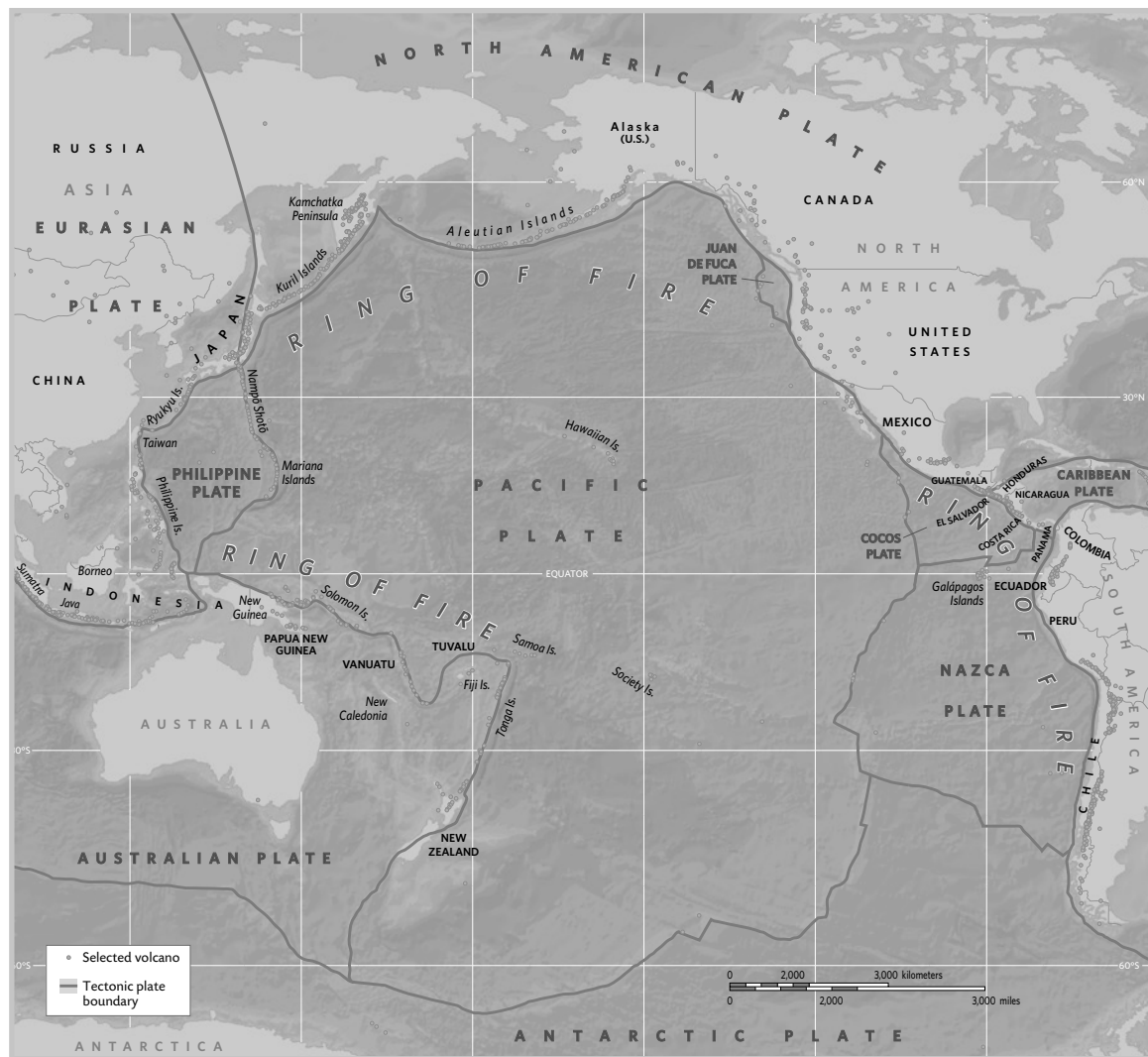
EARTHQUAKES AND VOLCANOES

crust is being forced deep into Earth causes gases to escape, which melt the crust and create magma. This magma buildup can be released through a vent, creating a volcano that spews hot lava and ash. The lava is cooled by the water and builds up over time into mountains that can eventually rise above sea level and become islands. These volcanoes would not have formed unless the plates first moved in earthquakes. The two together create "The Ring of Fire," a 40,000 kilometer (25,000-mile) long arc that is home to more than 70 percent of the world's earthquakes and most of its volcanic eruptions.]

Optional

Use a volcano model to demonstrate the components of volcanoes.

RING OF FIRE



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