

Calderas

Chapter 4

Caldera is a Spanish word meaning kettle or caldron. Geologists use the term to describe depressions in the ground created when land subsides after a major volcanic eruption. In 1941, Howell Williams, a geologist, grouped calderas into seven types based on the nature of their magmas.

Today geologists classify calderas in a variety of ways. A revised classification that separates the seven calderas into two groups based on their physical features makes them easier to understand. The first group is associated with voluminous explosions of felsic lavas like those that formed the calderas in Yellowstone National Park. The second group is associated with eruptions of basalt lavas like the ones associated with the Hawaiian volcanoes.



Crater Lake is inside Mt. Mazama's caldera that formed about 7,700 years ago. The eruption reduced the height of the volcano by 1,600 meters.

Group I calderas form on mountains that have high silica content and the eruptions are extremely explosive.

- Crater-lake
- Katmai
- Valles
- Atitlan

Calderas

Quiz 4

Fill in the blanks using words from the Word Bank

1. Crater-lake type calderas form when the _____ of large stratovolcanoes erupt less than 100 km³ of material.
2. Caldera is a Spanish word meaning _____ or caldron.
3. Valles calderas form when curved fractures independent of a volcano begin erupting simultaneously with colossal volumes of _____.
4. Long Valley Caldera is a _____ caldera when magma refills the magma chamber below the caldera.
5. Calderas are depressions in the ground after a major volcanic eruption of lava and the land _____.
6. A _____ zone of hot molten rock is rising beneath the Earth's surface above the Yellowstone hot spot.
7. Hawaiian calderas form during the _____ stages of large shield volcanoes.
8. Three calderas in Yellowstone Park are resurgent calderas that have formed above a _____.
9. _____ calderas form when a central magma chamber of a volcano drains to another volcano during an eruption.
10. Generally, the longer a volcano is _____ the more likely it is to have a violent eruption.

Word Bank

late	kettle	plume-like	pumice	dormant
Katmai	hot spot	summit	subsides	resurgent

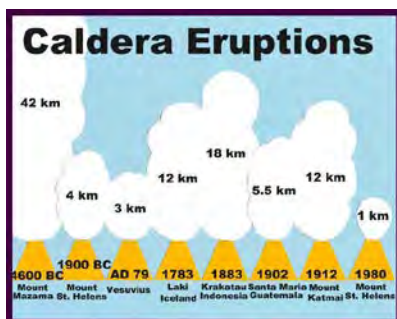
Caldera Eruptions

Activity 4

Introduction

Caldera eruptions have had a tremendous impact on Earth. Large areas of land covered suddenly with ash kill thousands of animals. Tsunamis traveling through the oceans bring death and destruction to people living in low-lying areas thousands of miles away.

In this activity, you will graph eight of these great eruptions. The amount of ejecta is the total combined airborne ash and pumice from each great eruption



Graph of eight caldera eruptions

Materials

- Blue construction paper.
- Orange construction paper
- White drawing paper
- Colored felt pens or pencils

Directions

1. Cut out eight miniature volcanoes and glue each volcano 3 cm from the bottom of the paper in a row.
2. Write the date of the eruption on each volcano.
3. Below each volcano, write the name of the mountain.
4. Draw a cloud to represent each eruption.

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