



Discover VOLCANOES & EARTHQUAKES

Photo Playing Cards

7 ♠ **7** ♠

VOLCANOES
LAVA

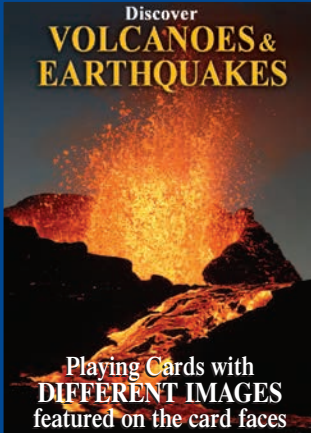


Lava is the molten rock expelled by a volcano during an eruption and the resulting rock after solidification and cooling. When first erupted from a volcanic vent, lava is a liquid at temperatures from 1,200°C. Up to 100,000 times as viscous as water, lava can flow great distances before it has stopped moving. When cooling and solidifying, lava solidifies to form igneous rock. The viscosity of lava is important because it determines how the lava will behave.

A'a (Hawaiian meaning 'stony rough lava') is pronounced 'ah-ah'. A'a is basaltic lava has loose, broken, and sharp, spiny surface composed of broken lava blocks called clinker. The clinkery surface actually covers a massive dense core. A'a lavas erupt at temperatures of 1000 to 1100°C.

Pahoehoe (Hawaiian meaning 'smooth, unbroken lava') is basaltic lava that has a smooth, billowy, undulating, orropy surface. These surface features are due to the movement of very fluid lava under a congealing surface. Pahoehoe flow typically advances as a series of small lobes and toes that continually break out from a cooler crust. It also forms lava tubes. Pahoehoe lavas typically have a temperature of 1100 to 1200°C.

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Playing Cards with **DIFFERENT IMAGES** featured on the card faces

2 ♠ **2** ♠


VOLCANOES
VOLCANO CROSS-SECTION



1. Large magma chamber
2. Bedrock
3. Conduit (pipe)
4. Base
5. Sill
6. Dike
7. Layers of ash emitted by the volcano
8. Flank
9. Layers of lava emitted by the volcano
10. Throat
11. Parastatic cone
12. Lava flow
13. Vent
14. Crater
15. Ash cloud

Q ♦ **Q** ♦

EARTHQUAKES
DEADLIEST EARTHQUAKES IN HISTORY



Location	Year	Death Toll
Shaanxi, China	1556	830,000
Tangshan, China	1976	655,000
Haiyuan, China	1920	273,400
Byzantine Empire (Turkey)	526	250,000
Roman Empire (Turkey)	115	230,000
Indian Ocean (Indonesia)	2004	230,000
Aleppo, Syria	1138	200,000
Hongkong, China	1780	200,000
Tabriz, Iran	896	170,000
Udaipur, India	2010	160,000
Haiti		

A ♦ **A** ♦

EARTHQUAKES
WHAT ARE THE DANGERS?



Earthquakes rarely kill people directly. You are as likely to be swallowed up by the earth as you would meet a T-Rex. Most deaths and injuries occur after following an earthquake.

Collapses of man-made structures - houses, buildings, highways, bridges and tunnels.

Falling or flying objects - utility poles, power lines, signs, bricks, book cases and other household items.

Fires - can be caused by ruptured gas lines, power lines or spillage of flammable liquids.

Liquefaction - can transform soft or wet sandy ground or mud surface into a fluid sludge.

Flooding - Burst dams or creek dikes.

Landslides - steep terrain could be prone to collapse, sending rocks, mud and debris thundering down, burying cars, houses and people.

Tsunamis - Major quakes on the ocean floor can send seismic ocean waves, devastating coastal or low-lying areas.

Not being prepared - if you live in an earthquake prone region, be prepared! It's the difference between being a victim or a survivor!

- LIST OF ALL 52 TITLES IS AVAILABLE
- EYE CATCHING DISPLAY BOX POP-UP PHOTO
- SAMPLE DISPLAYER AVAILABLE

9 ♠ **9** ♠

VOLCANOES
RING OF FIRE



The Ring of Fire is an area where a large number of earthquakes and volcanic eruptions occur around the basin of the Pacific Ocean. In a 25,000mi (40,000km) horseshoe shaped circle, the Ring of Fire is the result of plate tectonics. Much of the seismic and volcanic activity occurs along subduction zones where convergent tectonic plates come together. About 90% of the world's earthquakes and 81% of the world's largest earthquakes occur along the Ring of Fire. It stretches 25,000mi (40,000km) supporting 452 volcanoes which represent 75% of the world's active and dormant volcanoes.

8 ♠ **8** ♠

VOLCANOES
VOLCANIC ASH



Volcanic ash is made up of fragments of pulverized rock, minerals and volcanic glass ejected during volcanic eruptions. Ash particles (referred to as **tephra**) are 2 millimeters (0.8 inches) across or smaller. Coarse ash looks and feels like grains of sand, and very fine ash is powdery. Gases in the volcano's molten lava expand during the eruption and shatter the lava into tiny ash particles. Unlike the soft ash created by burning wood, volcanic ash is hard, abrasive, and does not dissolve in water. During an eruption, the wind can carry fine ash particles thousands of kilometers away from an eruption. The smaller the particle, the further the wind will carry it. Ash deposits (ash fall) tend to be thicker or deeper closer to the eruption, and thinner as distance increases. If inhaled, ash can cause breathing problems or suffocation. It also can disable machinery. Near a violent eruption, the ash in the air can be thick enough to block sunlight. Major eruptions can send ash into the atmosphere creating lowered temperatures worldwide from weeks to years.

7 ♦ **7** ♦

VOLCANOES & EARTHQUAKES
PLATE TECTONICS & CONTINENTAL DRIIFT



Under the soles of our feet and beneath all of the crust of the earth, vast tectonic plates make up continents, other tectonic plates are the size of but some regions are as thin as 5 miles (8 km). Where plates meet, their relative motion determines the type of boundary; convergent, divergent, or transform. Earthquakes, volcanic activity, mountain-building, and oceanic trench formation occur along these plate boundaries. These plates move (continental drift) over or under (subduction) or against each other (uplift), or sideways against each other (transform) at average rates of 1-4 inches (2.5-10 cm) per year. This is the same rate that a fingernail grows. Although these plate movements may seem minuscule, they create enormous friction. The plates on the top layer of the Earth are called the lithosphere. Directly under that layer is the asthenosphere, which is a region of molten rock (magma).

