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**Excerpt:** The unit looks at volcanoes as an example of an extreme environment. Facts and myths about volcanoes will be explored in class and teacher-led. In conjunction with the lessons about volcanoes, students will be assigned their own extreme environment to explore (e.g. outer space, oceans, polar regions, deserts, and caves) Students will follow the teacher’s model for volcanoes and create their own in depth examination of their extreme environment.

**Engaging the Extremes and Limits Cognitive Tool:**

Prompts/activities will be added slowly over the course of the unit. This is a sample for Volcanoes—students will apply to their own assigned environments.

1. **Find something that is really weird or odd about your environment.**

The volcanic rock pumice is the only rock that can float in water. It is usually grey and full of bubbly holes, which form when hot gases jet furiously out of the rock as it cools.

1. **Find something that is gross or icky about your environment.**

Hundreds of years ago, the Aztecs of Mexico and the people of Nicaragua believed gods lived in lava lakes. They would sacrifice beautiful young girls to these powerful gods.

1. **Figure out a striking measurement with your environment.**

The eruption of Mount St. Helens on May 18, 1980 had 500 times the power of an atomic bomb. Geologists considered this a moderate eruption.

1. **Determine an unexpected comparison to your environment.**

Mauna Loa (The worlds biggest volcano) is 4,169 m above sea level which is the height of 9.5 Empire State buildings.

1. **Identify something unusual or unique about a person involved with your environment.**

Pele is the Hawaiian goddess of fire and volcanoes and was thought to live in the crater of the Kilauea volcano on [Hawaii](http://facts.randomhistory.com/2009/04/03_hawaii.html). She is said to have a terrible temper and will throw lava at anyone who angers her. Some people have been known to send back lava samples they have taken from the Hawaiian Volcanoes National Park because of the bad luck they associate with Pele.

1. **Determine or locate a startling statistic about your environment.**

The largest volcanic eruption ever observed was of [Mount Tambora](http://www.livescience.com/mysteries/071018-llm-largest-eruption.html), on the island of Sumbawa, in Indonesia. Its eruption in 1815 killed about 100,000 people. Indonesia is thought to have the largest number of historically active volcanoes – a total of 76, according to the U.S. Geological Survey.

1. **Identify something scary or creepy about your environment.**

The most formidable volcanoes are called [super volcanoes](http://www.livescience.com/environment/050308_super_volcano.html). A super volcanic eruption can rain hellfire across thousands of miles and cause worldwide climatic changes, such as a drop in global temperature due to the release of tons of ash particles into the atmosphere. These monsters rear there ugly heads only ever few hundred thousand years, however. One of the biggest is in Yellowstone National Park, and scientists say it may be due for another eruption.

1. **Determine an “est” “about your environment —tall*est*, low*est*, small*est*, larg*est*, etc.**

The biggest volcano on Earth is Hawaii’s Mauna Loa. One of the five volcanoes in Hawaii, it towers 13,000 feet above sea level. The Hawaiian Islands were actually created by a hot spot.

1. **Locate a quirk about a specific date of importance to your environment.**

The worst volcanic disaster of the twentieth century is considered to be the eruption of Mt. Pelé in 1902 on the island of Martinique in the Caribbean which killed 30,121 people. Only two people survived: a shoemaker living on the edge of the island and a prisoner who had been locked in a dungeon cell with thick stonewalls.

1. **Identify a “first” or a “last” about your environment.**

The eruption of Chile's 6,500-foot Calbuco volcano on April 22 blacked out the sun and rained down 20 inches of ash—enough to collapse the roofs of homes in the nearby town of Ensenada. The ash cloud, carried by winds out of the southwest, darkened the skies above Buenos Aires, almost 1,000 miles away.

1. **Create or identify an interesting “average” about your environment.**

Average between 50 and 60 volcanoes that erupt each year somewhere on Earth (about 1 every week).

1. **Figure out a “not” about your environment.**

There are no active volcanoes in Australia because it sits in the middle of a tectonic plate.