

A BURNING RING OF FIRE!!!

Can the size of a plate tectonic affect how many times it hits other plates?

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Background research:

Plate tectonics has revolutionized the way we view large features on the surface of the Earth. It's understood that Earth's internal processes can move large plates of Earth's outer shell great horizontal distances. **Plate tectonics thus provides "the big picture" of geology; it explains how mountain ranges, earthquakes, volcanoes, shorelines, and other features tend to form where the moving plates interact along their boundaries.** In the 16th Century people noticed how Africa and South America fit together like pieces of a giant jigsaw puzzle. The fit is even more impressive if the continents are joined together along the edges of their continental shelves. The resulting landmass, called Pangea, represents a glimpse in time, about **250 million years ago**, when most of the continental crust happened to be joined together. Since then they have drifted away from one another (**imagine bumper cars being stuck together for a while, then flying apart!**). This theory, called continental drift, was viewed with skepticism in the early 20th Century. It was thought impossible for blocks of crust to plow their way over Earth's mantle. The idea of continental drift provided strong evidence for the theory that later developed as plate tectonics. Seafloor and continents move around on Earth's surface, but what is actually moving? What portion of the Earth makes up the "plates" in plate tectonics? This question was also answered because of technology developed during war times – **in this case, the Cold War**. The **plates** are made up of the lithosphere. During the 1950s and early 1960s, scientists set up **seismograph** networks to see if enemy nations were testing atomic bombs. These seismographs also recorded all of the earthquakes around the planet. The seismic records could be used to locate an earthquake's **epicenter**, the point on Earth's surface directly above the place where the earthquake occurs. The lithosphere is divided into a dozen major and several minor plates. The plates edges can be drawn by connecting the dots that mark earthquakes' epicenters. A single plate can be made of all oceanic lithosphere or all continental lithosphere, but nearly all plates are made of a combination of both. **A theory that was proven correct by Harry H. Hess was that seafloor spreading is the cause of all this.** Seafloor spreading or Seafloor spread is a process that occurs at mid-ocean ridges, where new oceanic crust is formed through volcanic activity and then gradually moves away from the ridge and the new crust pushes plate tectonics to or away from each other.

Hypothesis: If plate tectonics can cause the ring of fire, then the bigger a plate tectonics is the less it will bump into other plate tectonics because it will be a bigger mass.

Independent Variable: The size of the plate tectonic

Dependent Variable: The size of the natural disasters

Constant Variable: How much plate tectonics will be in the aluminum pan and the amount of water in the pan.

Materials:

Aluminum pan

styrofoam cups

timer

scissors

sharpie

Procedure:

1. Fill the Aluminum pan halfway with water.
2. Get any kind of styrofoam object and rip it to make a large, medium, and small piece and make 5 more styrofoam pieces they can be any size.
3. With the sharpie mark your large medium and small pieces so you know which one is which.
4. The water represents lava and the styrofoam pieces represent plate tectonics.
5. Wait and watch the styrofoam pieces for 5 mins and keep track of the main piece to see if it bumps into any.
6. Do this 4 times for each piece of styrofoam.

Data:

Types of plate tectonics

How many times the piece hits another piece

Plate tectonic A
(Large)

0

0

1

0

Plate tectonic B
(Medium)

2

3

1

2

Plate tectonic C
(Small)

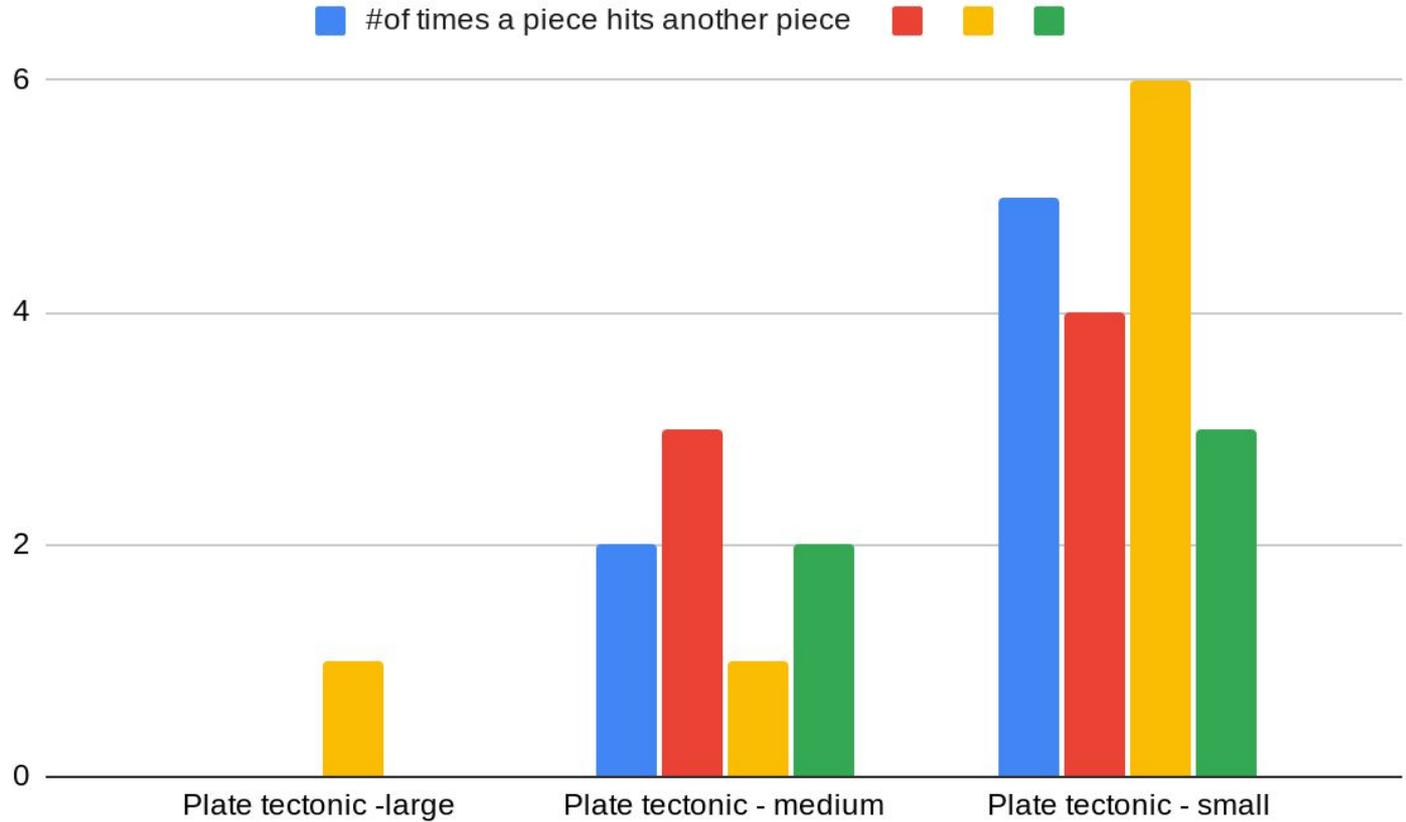
5

4

6

3

Graph:



Conclusion: For my conclusion my hypothesis was correct because the largest plate tectonic crashed into other plate tectonics less. My hypothesis was "If plate tectonics can cause the ring of fire, then the bigger a plate tectonics is the less it will bump into other plate tectonics because it will be a bigger mass." During my experiments I had to cut out three different tectonic plates. I tested how many times they hit other pieces. My data showed that the largest plate tectonic hit other plates less than the smaller one. The smaller one hit more plates.



All photos taken
by researcher.

References:

Planet Earth, Time Life Student Library Pg 14-15 Alexandria, Virginia 1997

Interactive Science, New Mexico, Grade 6, Pearson, Pg 194-204, 2012, Upper Saddle River, New Jersey

Interactive Science, New Mexico, Grade 4, Pearson, Pg 224-227, 2013, Upper Saddle River, New Jersey

[Plate Tectonics—The Unifying Theory of Geology - Geology \(U.S. National Park Service\) \(nps.gov\)](#)

[The Theory of Plate Tectonics | Geology \(lumenlearning.com\)](#)

Abstract:

My topic for my science fair project is geography. I chose this topic because I love to learn about plate tectonics. I wanted to do something about the ring of fire because I think it's interesting how natural disasters are only happening in certain areas that connect them all together they make a circle. I wanted to learn more about plate tectonics. So then I thought, does the size affect how times it can hit other plate tectonics. My hypothesis for this project was that bigger plate tectonics would hit other plate tectonics less. I had to cut 3 different size pieces of styrofoam to represent plate tectonics. I put them in water which represents lava. I timed it for 5 minutes while the time went I kept track of how many times the main plate tectonic hits other plates. The bigger sized plate tectonics hit other pieces less than the smaller plate tectonics. What I learned from my experiment was that bigger plate tectonics hits other pieces less than the smaller. I don't think that I can make any changes but try adding more plate tectonics.

Any Questions?