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9/21/09

Volcanoes are a naturally occurring hazard in Latin America, specifically along the west coast of South America and all throughout Central America in countries such as Nicaragua, El Salvador and Guatemala. They are a problem when they erupt and are either beneficial or harmful to the surrounding environment. They often disrupt lives of the people living by them, either displacing or killing them. However damage and destruction can be minimized with a certain amount of knowledge about them.

Scientists believe that volcanoes are found in places where two or more underground plates collide with each other, as set forth in Plate Tectonics. The middle of the earth is composed of a solid core made of two parts, the inner being made of solid iron, and the outer as liquid iron<sup>1</sup>. As you move away from the core, it cools and forms molten rock, or magma, rather than iron. It's circulation inside the earth's crust causes sea floor spreading,<sup>2</sup> which also the reason for the appearance of "new" land at the bottom of the ocean. The earth's crust is broken into several different plates which move when sea floor spreading occurs. Often these plates will collide with each other and that is the point where volcanic activity and earthquakes are common. In the Latin America region we have the Nazca plate colliding with the Souther American Plate to form volcanoes up and down the west coast of countries like Chile, Ecuador and Peru.<sup>3</sup> Also

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<sup>1</sup> "The Core of the Matter" TheTech.org accessed 9/11/09 [http://www.thetech.org/exhibits\\_events/online/quakes/inside/core.html](http://www.thetech.org/exhibits_events/online/quakes/inside/core.html)

<sup>2</sup> Clawson, *Latin America and the Caribbean: Lands and Peoples 4th ed.* (Mcgraw-Hill, New York 2006) 25

<sup>3</sup> Dr. Tillman, Powerpoint 8/28/09

we see the Caribbean Plate going north east against the westward North American Plate to create the islands we know of as the Lesser Antilles.<sup>4</sup> Also, the result of the Caribbean Plate going against both the North and South American Plate results in mountains such as are found in the Greater Antilles and in upper Venezuela.<sup>5</sup> The Cocos Plate in the which is squished between five other ones has the least stability. It pushes up against the southern part of the North American Plate and the Western part of the Caribbean Plate and many volcanoes, as well as earthquakes are found there.<sup>6</sup>

There are three major types of volcanoes. Composite cones or Stratovolcanoes, the most well known, that spews forth both lava and pyroclastic, or non lava rocks during an eruption. <sup>7</sup> There are shield volcanoes such as are found in Hawaii which usually only brings lava to the surface, and Cinder Cones, the smallest volcanoes but nevertheless still can have a major impact on life for those around them.<sup>8</sup>

Volcanoes are wonderful things to behold and can either be very good, or cause lots of destruction. A field recently touched by volcanic activity is considered one of the most fertile farming grounds there is. However volcanoes also destroy the flora and fauna around them when they erupt. The ash and debris that stratovolcanoes send up into the air can travel for miles, causing, in extreme cases, a blocking out of the sun, or, more beneficially, the fertilization of farm land further away. The impact it has on

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<sup>4</sup> Clawson, *Latin America and the Caribbean: Lands and Peoples 4th ed.* (Mcgraw-Hill, New York 2006) 26

<sup>5</sup> Ibid.

<sup>6</sup> Ibid.

<sup>7</sup> "Volcanic Hazards" IUPUI Dept. of Earth Sciences Feb 26, 2009. Accessed 9/11/09 [http://www.iupui.edu/~g107cwt/11\\_volcanoes/concepts/06.html](http://www.iupui.edu/~g107cwt/11_volcanoes/concepts/06.html)

<sup>8</sup> Dr. Tillman, Powerpoint 8/28/09

humans is much more noticeable. That same field, once farm land now has to be plowed again, and a farmer might lose out on that season's crop, though gaining a better one that next year. The ash and debris spewed out could affect people living nearby who have to breathe the now toxic air and could die as a consequence.

Displacement is a big example of what can happen to humans when a volcano erupts. Those who build their houses in the path of a volcano may be forced to build another home if it is destroyed. Also, when there is impending danger of an eruption, they may be forcefully displaced by others such as their government.

The biggest impact volcanos, as with any other force of nature, has is that of death. The most extreme form of this is perhaps the example of St. Pierre which was devastated by Mt. Pelee in 1902.<sup>9</sup> This city was destroyed by a Nuee Ardente, a fluidized mixture of solid materials and hot gasses that flows down a volcano.<sup>10</sup> This destroyed all the buildings and killed almost every person in that town. When living next to a volcano there is always the danger of death by falling pyroclasts, lava, or more likely, the Nuee Ardente.

In light of the destruction and death that volcanoes are able to cause, we must be knowledgeable about volcanoes and the people who live near them. People usually have one of three general attitudes toward natural hazards. They either deny that it will not happen, say that it will happen but there is nothing they can do about it (often called fatalism), or know it will happen and predict it and ask what can be done about it. The third is usually the attitude that scientists have of volcanos have while in general, people

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<sup>9</sup> Ibid.

<sup>10</sup> "Pyroclastic Flows" [San Diego State University Department of Geological Sciences](http://www.geology.sdsu.edu/how_volcanoes_work/Pyroflows.html) Aug. 30, 2009. Accessed 9/11/09 [http://www.geology.sdsu.edu/how\\_volcanoes\\_work/Pyroflows.html](http://www.geology.sdsu.edu/how_volcanoes_work/Pyroflows.html)

in Latin American countries have one of the first two. This is important to remember when talking to others about the dangers of volcanoes. If one holds to the attitude that it will not happen, or that of fatalism, there is often not much discussion on preparation preparation and safety. Persuading people that they need to plan and prepare for a disaster is hard if they do not believe that one will happen. Despite the difficulties, volcanologists feel it is their duty to educate the people that these things can happen and that they can be prepared for. They are able to work with the people to plan out escape routes and prepare emergency survival kits to minimize the impact of a volcano, both in deaths and in destruction. Not very much can be done to reduce volcanic destruction except for encouraging the growth of a city away from the main path of a lava flow, or ideas similar to that. So preparations for an eruption are made which emphasizes saving lives and quicker evacuation times.<sup>11</sup>

Though volcanoes are often beautiful snow-capped mountains, they can be extremely deadly. They are helpful in certain ways to the environment such as by providing much fertile land but seem to be more harmful by destroying whole plant and animal life. To those living around them, they are a reminder of the tremendous destructive ability of many natural forces, able to cause death and decimation of cities. Yet death and destruction that results from these can be minimized, but only if we plan and prepare, and inform others of what could happen, should these sleeping giants awake.

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<sup>11</sup> A lot of the information from this paragraph is from a video watched in class about volcanoes and the discussion on it.