

Case study of mount st. helens



Case Study of Mount St. Helens Date: 18th May, 1980 Time: 8: 30-8: 33 8: 30-ash and steam erupted. 8: 32-earthquake of magnitude 5. 1 on the Richter scale caused the bulge on the north side of the mountain to move forwards and downwards, releasing material that formed a landslide of rock, glacier, ice, and soil that moved downhill to fill Spirit Lake. However, the water only reinforced it, and it moved rapidly down the northern fork of the Toutle Valley. The mudflow reached Baker Camp, but the floodwater continued down the valley and the sediment blocked Portland's port on the Columbia River. 8: 33-The exposed magma exploded sideways, which sent out blast waves of volcanic gas, steam, and dust, which is called a ' nuée ardente'. This moved northwards for 25 km. Within this range every form of life, like plants and animals, were destroyed. For the rest of the morning, a series of eruptions took place, which ejected gas, ash, and volcanic ' bombs', or simply rocks. The thicker ash rose 20 km into the air and drifted eastwards before settling. The volcanic ' plume', or cloud, of fine ash reached the eastern coast of the USA three days later, and several days later, the ash had completely encircled the world. Location: Mount Saint Helens (stratovolcano) is in North America, in the Cascada mountain range. Skamania County, Washington State, USA. Plates involved: Juan de Fuca plate and the North American Plate. Types of boundary and crust: Oceanic (Juan de Fuca) and Continental (North American) crusts. The margin is destructive, also known as a convergent boundary. It's also a Subduction Zone, as the Juan de Fuca plate is subducted under the North American Plate. Warning Signs On March 20th there was a minor earthquake, which measured 4. 1 on the Richter scale. Tremors happened for the next few days until the 27th of March, when there was actually a small eruption of steam

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and ash, which left a crater around 250 feet wide. On March 30th there were 79 earthquakes on the mountain. After that minor eruptions occurred daily. On April 3rd there were harmonic tremors signaling the movement of magma deep within the mountain. The crater was 1500 feet wide then. Explosions of ash, ice, and rock were happening almost daily. A harmonic tremor is a sustained release of seismic and/or infrasonic energy most often related to the underground movement of magma and/or the venting of volcanic gases from magma. In late April/early May the north side of the mountain had begun to bulge by 1.5 meters per day, indicating a build-up of magma and an increase in pressure. By then the mountain had lost its perfect cone shape. It was given the name 'Mount Fuji of America'. What happened? Impacts? Economic All buildings and manmade structures within the vicinity of Spirit Lake were buried. More than 200 houses and cabins were destroyed and damaged in Skamania and Cowlitz Counties. Bridges, roads, trails, were also destroyed by the eruption. More than 185 miles of highways and 15 miles of railways were also damaged. Around 12% of the total crop was ruined by settling dust. Fruit and alfalfa were hit the hardest. Crops and livestock on valley floors were lost due to flooding. Unemployment around the region of the volcano rose tenfold immediately after the eruption, about weeks following the disaster. This returned to normal after the area was cleaned up. Tourism was nearly crippled in the area after the volcano erupted, however, this was quickly remedied as tourists began pouring in, eager to see the results of the incident. Social Of course the destroying of the houses and cabins led to many people being homeless. The ash coming from the eruption hindered the smooth running of car engines in three states. Trees caused a logjam 60 km away, carried away by floodwater.

Electricity supplies were interrupted and telephone wires were cut. Many other electronic equipment malfunctioned due to the layers of ash and the fine ash that drifted into the engines or structures. Transportation was also affected because railways and highways were closed down. The ash also limited visibility, so it was dangerous on the roads. Ash accumulation stopped airplanes from taking off in airports around the area. Environmental

Many tens of thousands of acres of prime forest were destroyed or heavily damaged. Every tree in the 250 km² blast zone north of the volcano was totally flattened and destroyed. 10 million or so trees had to be replanted. Like with the trees, nothing alive, or inanimate, survived the eruption within the blast zone. Game animals like elks, bears, and deer perished in the area as well; Around 7000 of them died. However smaller rodents and such animals were able to survive, as they were below ground level and/or water surface when the volcano erupted. Salmon and other fish were lost when the hatcheries were destroyed, and an estimated of 40, 000 young salmon were lost when they were forced to swim through hydroelectric turbine blades.

After the eruption Mount St. Helens was left with a huge crater on its north side. The loss of the north side of the mountain, which was 13% of the cone's volume, reduced Mount St. Helens' height by about 1, 313 feet and left a crater that was 1 to 2 miles wide and 2, 100 feet deep. Responses The government of Washington State set up two zones around the volcano, a ' Red Zone' and a ' Blue Zone'. The red one surrounded the volcano, while the blue one surrounded the red one. The WA National Guard response to Mt. St. Helens eruption was:(from youtube): " When I saw the plume rise 60-80, 000 feet above, I mean it was just awesome that one away to say it because we never really get to see things like this often, however when I saw at the rate

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it was coming towards us I felt tremendously terrified. " Five of the guards ignored the ' shut down' command and went to save survivors of the eruption. Many people owe their lives to the five guards who risked their own lives to save them.