

Environmental Impacts of Recent Volcanic Eruptions

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Volcanoes are the mountains that erupt metallic compounds in the form of Lava, dust and gases 9 vulnerable to the environment. These erupted gases affect the physical and chemical characteristics of 10 Aerosol particles present in the atmosphere by absorbing the incoming radiation from the sun. This 11 process has a huge contribution towards instability of the Heat budget of the Earth and leads to global 12 warming and climate change. Compounds of sulfur e.g. (H₂S, C₂S, SO₄) erupted from a volcano have 13 severe effect on climate by scattering the incoming sunlight back to the space and leads to increased 14 cooling rate of the earth surface. In this paper; short term and immediate effects of volcanic eruption 15 from Mayon volcano have been discussed. The recent eruption of Mt. Mayon at Albay, Philippines on 29th 16 Jan 2018 affected huge vegetation and environmental impacts of this eruption are found up to 17 Brunei and Sarawak province of Malaysia. The study revealed that outbound air mass patterns from Mt. 18 Mayon had Southwest direction that carried Sulfur dioxide and ash plumes till Malaysia. The case study shows huge vegetation loss and sudden rise in SO₂ concentration over Sarawak from 1st Feb 2018 to 4th Feb 2018.

Volcanic eruptions are listed as severe natural hazard that affect the Earth system by producing 25 Lava to the earth surface along with aerosol particles and gases to the atmosphere. Lava or molten rock is referred as emerging liquid having very high 27 temperatures of molten

rocks ranging from about 700 °C to 1,200 °C onto Earth's surface. The term 28 lava is also used for the solidified rock formed by the cooling of a molten lava flow. The higher the 29 lava's silica content, the higher its viscosity. Volcanic eruptions can disperse 30 huge amount of chemically and micro physically active gases and solid aerosol particles into the 31 stratosphere, which disturb the stratospheric chemical equilibrium. Some volcanic eruptions are 32 explosive as compared to others. The explosivity of a volcanic eruption depends on the composition 33 of the magma. If magma inside the volcano is thin, gases can escape easily from it. This type of 34 magma erupts smoothly out of the volcano. Hawaiian volcanoes are a good example of such 35 eruptions. If the magma inside the volcano is thick and sticky, gases cannot escape easily and 36 explosion occurs by building up the pressure until the gases escape violently. Mount St. Helens at 37 Washington is a good example of such eruption. In this type of eruption, the magma blasts into the 38 air and breaks into pieces called tephra. Tephra can range in size from few nanometers to house-size 39 boulders. Explosive volcanic eruptions can be dangerous enough to affect plants, animals, and 40 humans. Volcanic magma flows down destroying almost everything in their path. Volcanic Ash 41 erupted into the atmosphere falls back to Earth like powdery snow and this thick ash can suffocate 42 plants and living species. When hot volcanic materials mix with water from streams or melted snow 43 and ice, mudflows form that can bury entire communities located near erupting volcanoes (USGS)

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