

Volcanic Eruption, Mt. Pinatubo

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On June 15, 1991, the Mt. Pinatubo volcano, on Luzon Island in the Philippines, erupted, injecting about 20 million metric tonnes of SO₂ into the stratosphere. The cloud of volcanic gases and particles traveled westward, circling the Earth in 3 weeks. Although it started at 15°N latitude, by the time it had circled the Earth once, the cloud straddled the Equator, extending from about 15°S to 15°N. This was the largest volcanic eruption of the 20th century.

The eruption was fairly well forecast by a team of Filipino and American geologists. Many lives were saved by these warnings, but a typhoon hit the area during and soon after the eruption. The thick layers of volcanic dust on the roofs of some of the shelters were soaked by the intense rain and collapsed, killing hundreds. The US Clark Air Force base at Angeles City, only 10 km from the eruption, was destroyed and never reopened.

The climatic effects included global cooling of about 0.3°C for about 2 years. The cooling was particularly strong over Northern Hemisphere continents in the summer of 1992, with cooling more than 3°C in the northern US and southern Canada. The cooling was temporary and 1998 was the warmest year in the past 1000 years. This cooling was predicted by climate models, which are also used for predicting global warming from anthropogenic greenhouse gases, thus giving strength to the global warming predictions.

Due to the heating of the lower tropical stratosphere by the volcanic aerosols, the enhanced temperature gradient produced a changed atmospheric wind pattern in the troposphere which had large impacts on winter temperatures. In the winter of 1991–1992, the temperature over North America, Europe, and Siberia was much higher than normal, and over Alaska, Greenland, the Middle East, and China it was colder than normal. In fact, it was so cold that winter that it snowed in Jerusalem, a very unusual occurrence.

See also: **Volcanic Eruptions**, Volume 1.

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