

1600 eruption caused global disruption

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The 1600 eruption of Huaynaputina in Peru had a global impact on human society, according to a new study of contemporary records by geologists at UC Davis.

The eruption is known to have put a large amount of sulfur into the atmosphere, and tree ring studies show that 1601 was a cold year, but no one had looked at the agricultural and social impacts, said Ken Verosub, professor of geology at UC Davis.

"We knew it was a big eruption, we knew it was a cold year, and that's all we knew," Verosub said.

Sulfur reacts with water in the air to form droplets of sulfuric acid, which cool the planet by reducing the amount of sunlight reaching the Earth's surface. But the droplets soon fall back to Earth, so the cooling effects last only a year or so.

Verosub and undergraduate student Jake Lippmann combed through records from the turn of the 17th century from Europe, China and Japan, as well as the Spanish and Portuguese colonies in South America and the Philippines, for information about changes in climate, agriculture and society.

In Russia, 1601-1603 brought the worst famine in the country's history, leading to the overthrow of the reigning tsar. Records from Switzerland, Latvia and Estonia record exceptionally cold winters in 1600-1602; in France, the 1601 wine harvest was late, and wine production collapsed in

Germany and colonial Peru. In China, peach trees bloomed late, and Lake Suwa in Japan had one of its earliest freezing dates in 500 years.

"In one sense, we can't prove that the volcano was responsible for all this," Verosub said. "But we hope to show that 1601 was a consistently bad year, connected by this event."

The previous major eruption that might have affected global climate was in 1452-53, when records were much less complete: in Europe, people began to take more careful note of the natural world after the Renaissance. The 1815 Tambora eruption in Indonesia had a well-documented impact on global agriculture, so such eruptions may occur as often as every 200 years, Verosub noted.

Verosub hopes to expand the study by examining records kept by the Jesuit order in Seville, Spain, and from the Ming Dynasty in China.

The initial results are presented in an article in Eos, the transactions of the American Geophysical Union.

Source: University of California - Davis

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