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The recent spate of volcanic eruptions around the world has people asking if this is connected to the warming of the Earth's atmosphere. The eruption of Taal Volcano brings this issue closer to home.

There are at least two ways that volcanic eruptions are linked to climate change.

First, it is without doubt that volcanic eruptions could alter global temperatures because of the amount of ash and gases they emit to the atmosphere. The classic and world-famous case of this was the eruption of Mount Pinatubo. When that long-dormant volcano erupted in 1991, global temperatures cooled by an average of 0.6 degrees Celsius over the months that followed. According to the Nasa Earth Observatory, this was because the volcano spewed about 15 million tons of sulfur dioxide into the stratosphere, where it reacted with water to form a layer of aerosol particles. These particles scatter globally due to strong stratospheric winds and absorb incoming solar radiation, which, in Pinatubo's case, led to global cooling for more than a year. In addition, it has been shown that sea level correspondingly becomes lower as a result of cooler temperatures. Taking inspiration from what happened during Pinatubo's eruption, there are nascent attempts to emulate the global cooling effect of volcanic eruptions through solar radiation management (SRM). For instance, in Harvard's Solar Geoengineering Research Program, scientists are exploring the possibility of injecting aerosols into the atmosphere as a cost-effective way of reducing the amount of radiation coming from the sun, thereby depressing the Earth's temperature. Clearly, there are many technological and social issues that still need to be resolved before this technology becomes a reality, such as its effects on rainfall patterns and climatic extremes. Given the controversy surrounding SRM, it may not even come to fruition at all.

Second, scientists are beginning to investigate whether a warming climate could trigger more volcanic activity. The evidence so far is sparse to warrant any definitive conclusion. For instance, Swindles and co-workers (2018) showed that volcanic activity in Iceland increased as a result of glacier melting, such as those associated with global warming. However, they also found out that there could be a lag time of hundreds of years before the effect is felt. In another study in Canada, researchers showed that glacier melting could lead to catastrophic landslides in volcanoes. Unfortunately, there are no research data available on the impacts of climate warming on volcanoes in the tropics.

Still, the relationship of weather and extreme climatic conditions with the impacts of volcanic eruptions is well-established. Heavy rains and typhoons can exacerbate the destruction wrought by volcanoes, as we witnessed during Pinatubo's lahar rampage. The destruction caused by mud and debris flow from Mayon Volcano because of Typhoon "Reming" is another example. In Taal's case, wind intensity and direction determine which cities and municipalities are affected by ashfall.

All of these show the intricate interconnectiveness of the world we live in. We can no longer afford to be ignorant or skeptical of what is happening to the world around us. Now more than ever, we need to pay attention to the health of our planet.

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