

Preventive measures for giant eruptions

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Approximately once every 10,000 years, Japan experiences a "giant eruption" in which more than 10 cubic kilometers of magma is erupted in a short period. Although giant eruptions occur less frequently, the damage they cause is extremely severe. The annual death rate of a giant eruption is estimated to be several dozen times that of the Great East Japan Earthquake, or about half that of traffic accidents, so they cannot be ignored just because they occur infrequently. Here, I introduce a "giant eruption" that would inevitably cause significant losses if it occurs, and then present technical solutions to prevent it in advance (patent application 2025-140580) through artificial degassing of magmatic volatiles. This disaster-prevention project has the potential to save the lives of 10 million people and protect hundreds of trillions of yen in national property. If a major eruption can be avoided, it is expected to yield a substantial return on investment. Moreover, as a by-product, there is potential to obtain purely domestically produced geothermal energy and mineral resources that will never be depleted as long as the magma continues to degas.

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