# The past and present activities of Tonga's Hunga Volcano

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**Abstract**: The Hunga volcano, located in the New Zealand—Kermadek—Fiji subduction zone, reactived in late 2021 and had a millennium-scale centurial eruption on January 14 and 15, 2022. The plume penetrated into the stratosphere, forming a plume with 30 km high and 800 km wide at top. The gas—ash cloud circled almost all around the southern hemisphere. The tsunami caused by this eruptive event brought damage in many places around the Pacific coast. According to the existing data the magma composition of Hunga volcano is mainly andesite, and the magma may be driven by the "leakage" of gas-rich magma masses along the edge of the caldera. One of the most important significances of the Hunga eruption is that it produced an extremely strong atmospheric shock wave, which implies a great enrichment of volcanic gases within the magma. It is this eruption of "super-rich gases" that creates an outlet pressure of well over one barometric pressure at the crater, triggering a shock wave that radiates across the globe and an eruptive sound that can be heard thousands of kilometers away. The tsunami was triggered by an outward spreading shock wave in the atmosphere, which pushed the surface water outward. Another mechanism for this tsunami is that Surtseyan eruptions have the ability to expel water outwards. Eruptions of Hunga in future are likely to take the form of lava domes or flows along the perimeter of the caldera rim or near the central depression of the caldera. Surtseyan eruptions are common, but not on a large scale.

**Keywords**: marine volcano; surtseyan eruption; caldera; gas-rich magma; future eruption

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# 中国地质学会新组建四个分支机构

经中国地质学会第40届理事会第三十五、三十七、三十九次常务理事会议(通讯)审议批准,同意油气地球化学与成藏专业委员会、人类世研究分会、盐类资源环境专业委员会、数据驱动与地学发展专业委员会四个分支机构的第一届委员会组成人选,其中:

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(张子薇 供稿)

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