

VOLCANIC ERUPTIONS IN TONGA



Issue

An eruption of underwater volcano in the Kingdom of Tonga has sent shockwaves and threatened Tsunami warnings.

Background

The volcano is present near two uninhabited islands known as Hunga-Ha'apai and Hunga-Tonga. It is around 1800m high and 20 kilometres wide.

Details

- The volcano has erupted regularly in the past decade. Hot jets of magma and steam exploded during previous instances in 2009 and 2014-15.
- The eruption was one of the massive explosions the volcano is capable of producing roughly every thousand years.

Explosive nature of volcano

- Steam layers are quickly disrupted when hot magma enters water rapidly, bringing hot magma in direct contact with cold water.
- This phenomenon is known as 'fuel-coolant interaction' and it is similar to weapons-grade chemical explosions.
- The chain reaction tear apart magma and new hot layers are exposed to water. The resulting explosion is continuous and ejects volcanic particles.

Previous studies

- Scientists have conducted study during previous eruptions and discovered a caldera below water surface.

- The studies of magma system showed that a big event was scheduled soon. They performed radioactive carbon dating to assume that a larger event could occur every 1000 years.

Effects

- The Tonga volcanic eruption produced a Tsunami throughout Tonga and neighboring Fiji and Samoa.
- Shockwaves were recorded in New Zealand and the volcanic cloud was seen from space. The view of island is completely blocked.

Way ahead

- The major eruption may have released magma pressure built up below the surface. It may take weeks before the system settles.
- The previous records have shown that events occurring once in 1000 years involves multiple eruption episodes, which could be seen in the case of Hunga-Ha'apai and Hunga-Tonga.

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