

The 15 January 2022 eruption and tsunamigenic episode at Hunga Tonga-Hunga Ha'apai– Observations from the International Monitoring System Hydrophone Stations

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On 15 January 2022, an explosive, tsunamigenic episode of volcanic activity occurred at Hunga Tonga-Hunga Ha'apai, a submarine volcano in the Tonga-Kermadec Arc, southern Pacific Ocean. Underwater sound waves associated with the initial stages of this cataclysmic episode were detected at thousands of kilometres distances from the volcano by hydrophone stations of the International Monitoring System (IMS), a global sensor network maintained as part of the verification regime for the Comprehensive Nuclear-Test-Ban Treaty. The IMS hydrophone stations, typically consisting of two triplets that are positioned in the water column and at opposite sides of remote ocean islands, subsequently recorded the tsunami signal associated with the eruption at sites in the Pacific, Indian, and Atlantic Ocean. These findings further highlight the potential of the IMS hydroacoustic component for remotely observing volcanic eruptions as well as tsunamigenic events in the global ocean.

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