ID: **P1.4-796** Type: **E-poster**

Acoustic Data Analysis of the Tonga Submarine Volcanic Eruptions in January 2022

Tuesday, June 20, 2023 9:28 AM (1 minute)

One of the sources of acoustic signals is underwater volcanic eruptions. Climatic phase of such underwater eruptions results in an ash cloud being ejected into the stratosphere thus generating infrasound signals while at the same time generating acoustic signals. The active volcano in Hunga Tonga-Hunga Ha'apai (HTHH) one of the Tonga Island groups erupted violently on 15 January 2022 triggering tsunamis. International Monitoring System (IMS) infrasound and hydroacoustic stations recorded the event from the foreshock to aftershock. Submarine and subaerial components were identified in the study of acoustic signals obtained from these IMS stations. A complex source sequence was detected by the stations analysed during the eruption phase. DTK-GPMCC was used to study the wave properties with the time frequency bands at lower frequency (0.001-1Hz). The wave parameters of back-azimuth, frequency, the root-mean-square amplitude, and the apparent velocity were calculated. Result of the event showed acoustic gravity, Lamb wave and infrasonic features. This study is an indication of the importance of IMS stations towards the understanding of submarine volcanic eruptions.

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Promotional text

Importance of International Monitoring System stations towards the understanding of submarine volcanic eruptions.

Oral preference format

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Session Classification: Lightning talks: P1.3, P1.4, P5.2

Track Classification: Theme 1. The Earth as a Complex System: T1.4 Multi-Discipline Studies of the Earth's Subsystems