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Timing Statistics of the Multiple Passages of the Pressure Wave Generated by the 2022 Hunga Tonga-Hunga -Ha'apai and Comparison with the 1883 Krakatoa Pressure Wave

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The Hunga Tonga - Hunga Ha'apai (HTHH) eruption of 15 January 2022 was an exceptional event by the period, magnitude, and duration of propagation of the atmospheric waves it generated, circling the globe multiple times. Even though several volcanic eruptions in the past 150 years era of scientific instrumentation generated notable barometric disturbances, the HTHH eruption is comparable only to the Krakatoa eruption of 1883 by the magnitude of the atmospheric pressure waves that it generated. The very energetic Mt Pinatubo eruption of 1991 did not produce pressure waves of the same period and magnitude as the Krakatoa or HTHH eruptions. An analysis of the timing of the multiple passes at barometric stations is reported in Symons (1888) for the Krakatoa. Since the HTHH event gave rise to the only pressure wave to have circled the Earth's atmosphere multiple times in the last 139 years, it is of interest to perform similar timing statistics on the multiple passages at stations that recorded them. A review of the Krakatoa analysis and a comparison with the HTHH are presented, with possible implications for the changes in the global state of the atmosphere during the interval between the two events.

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Promotional text

Comparison of two exceptional atmospheric pressure waves at 138 year interval. The Krakatoa 1883 event and the Hunga Tonga - Hunga Ha'apai volcanic eruptions.

Oral preference format

in-person

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