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Monitoring Volcanoes of the World with IMS Infrasound Network: Evaluation of the Reliability of a New Detection Algorithm

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Detecting and notifying ongoing volcanic eruptions is crucial in supporting the Volcanic Ash Advisory Centres. However, local monitoring systems are missing at many active volcanoes. Long range infrasound monitoring, potentially able to detect and notify volcanic explosive events, might provide useful information. Indeed, many studies have already highlighted the utility of long range infrasound for this aim, but still open questions remain concerning its actual efficiency and reliability.
In this study we investigate the potential of International Monitoring System infrasound network of CTBTO to remotely detect volcanic explosive eruptions, focusing on the main active volcanic area in the world, between 2010 and 2019, where multiple eruptions occurred, with an energy spanning from mild explosions to Volcanic Explosivity Index ≥ 4 eruptions.
We applied a detection algorithm developed at local distance and extended for long range volcano infrasound monitoring. To assess the reliability of the algorithm, based on the Infrasound Parameter (IP), we compare the notifications issued with the bulletins reports of GVP (Global Volcanism Program). Although unresolved ambiguity remains due to short spacing among volcanoes with respect to the array and the unfavourable propagation conditions, the algorithm is able to detect in quasi real time the ongoing activity with high notification reliability.

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Promotional text

A contribution to monitoring volcanoes with long-range infrasound observations

Oral preference format

in-person

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