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T1.1-P10. Global cataloging of explosive volcanism using the IMS infrasound network

Explosive volcanic eruptions are among the most powerful sources of infrasound observed on earth, with recordings routinely made at ranges of hundreds to thousands of kilometers. These eruptions can also inject large volumes of ash into heavily travelled aviation corridors, thus posing a significant societal and economic hazard. Detecting and counting the global occurrence of explosive volcanism helps towards several goals in earth sciences and has direct applications in volcanic hazard mitigation. This project aims to build a quantitative catalog of global explosive volcanic activity using the IMS infrasound network. We are developing methodologies to search systematically through IMS infrasound detection bulletins and waveform data archives to identify signals of volcanic origin. We combine infrasound signal association and source location using a brute-force, grid-search, cross-bearings approach. When volcanic signals are identified, we extract metrics such as location, origin time, acoustic intensity, signal duration, and frequency content, compiling the results into a catalog. This work represents a step towards the goal of integrating IMS data products into global volcanic eruption early warning and notification systems. Additionally, a better understanding of volcanic signal detection with the IMS will improve operational event detection, discrimination, and association capabilities.

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