

4.1-O2. ADVANCED METHODS TO REMOTELY MONITOR VOLCANOES USING INFRASOUND

The International Monitoring System (IMS) is designed to ensure compliance with the Comprehensive nuclear Test Ban Treaty (CTBT) by detecting, locating and characterizing explosions worldwide. Simulation methods incorporating realistic source and propagation effects have been developed to quantify the detection capability of this network and also to optimize the network configuration. Even not yet fully established, the infrasound network already allows studies on a global scale such as remote volcano monitoring. It provides a sensing tool to study the dynamics of various eruption styles and to infer useful information about eruption dynamics. Comparisons with near-field recordings allow evaluating the potential of these observations to better constrain source parameters when other monitoring techniques are not available. Because of its regular activity, the well-instrumented Mount Etna is in Europe a unique natural repetitive source to test and optimize detection and simulation methods. During downwind conditions, its eruptions are quasi-permanently well detected by IS48 in Tunisia, the closest IMS infrasound station. Under the European ARISE project (Atmospheric dynamics InfraStructure in Europe, FP7/2007-2013), experimental arrays have been installed in order to characterize infrasound propagation. Such an experimental setting offers an opportunity to address the societal benefits that can be achieved through routine infrasound monitoring.

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