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Identification of Mass Movements Using the CTBTO IMS Data: Seismo-Acoustic Technology

In densely populated areas, mass movements such as debris flows, landslides, and rock falls have been for a long period of time subjects that so many engineers, both practitioners and researchers have been focused on, trying to figure out how they can be detected and mitigated. The losses caused by these hazards are generally spectacular, often destructive and sometimes murderous. Generally, mass movements are preceded by the propagation of characteristic seismic and acoustic waves in low-frequencies (< 20Hz), roughly audible to humans. Beyond their scope of continuously monitoring Nuclear explosions, the 150 seismic and 48 infrasound sensors of the CTBTO IMS are capable of traveling efficiently through the earth surface, screening out the entire planet in 40 hours, and detecting pre and post soundings or shakings related to a particular event. Combining infrasound and seismic data has appeared to be one of the very powerful tools that can be used to detect, characterize, and extract quantitative information from signals of mass movements in order to set up early warning systems (EWSs) for a sustainable risk management.

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