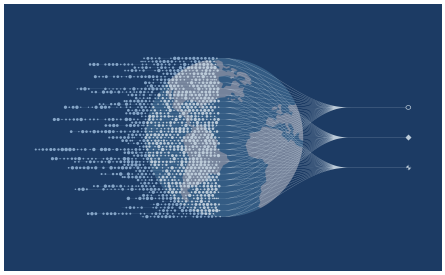

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Volcano Activity Behaviour Using Infrasound and Seismic Data: A Case Study of the Tungurahua Volcano

Tungurahua is one of the active volcanoes in Ecuador. It has an explosive period from 1999 to 2016. Instituto Geofísico Escuela Politécnica Nacional (IGEPN), Ecuador's geophysical institution, recorded Tungurahua's explosive activity. The data record included acoustic (infrasound) and seismic data. Researchers in vulcanology use the acoustic-seismic coupling method to study the behaviour of volcanoes, also known as Volcano Acoustic-Seismic Ratio (VASR). This project analyses the Tungurahua's explosive activity from 2006 to 2013 using the VASR method. The explosive period was divided into 17 episodes, referencing Tungurahua's high explosive activity and inactivity. The results show two episodes from the Tungurahua explosive period with identical VASR trends. Episode 9 (26 May-28 July 2010) and Episode 13 (14 December 2012-21 January 2013) both episodes have a cluster of low VASR (0.1-10) in the early stage. In episode 9, the low VASR was detected in the first 24 days; in episode 13, the low VASR was detected in the first 7 days. Subsequently, the VASR value increased to a high level (VASR>10). The change from low to high VASR variation is believed to be associated with the clearing process from the choked conduit system to the open conduit system of Tungurahua through the explosions.

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