

infrasound sources using nearby and co-located infrasound and seismic sensors

Tuesday, 5 November 2024 16:30 (10 minutes)

An eight-station seismic network and a four-element infrasound array detected an uncategorized seismo-acoustic event in Sete Lagoas, a city in southeastern Brazil. The area contains quarries that frequently conduct unannounced explosions to extract limestone. The network and array were deployed to distinguish signals from these explosions and natural events, as tectonic activity occurs both near and within the mine caves, likely induced by stress release from the extensive material removal over time. Unfortunately, neither tectonic events nor explosions were recorded; instead, an unusual event was detected, where the wavefront arrived simultaneously at both the co-located infrasound and seismic sensors, with waveforms that were very similar and difficult to interpret. The event was reported by many residents of Sete Lagoas as a ground vibration, sometimes followed by a boom or bang. However, by analyzing the signal characteristics, it was possible to identify an acoustic signal, based on measurements of the wavefront arrival times, frequency content, and speed. The event was located near Sete Lagoas City and was classified as an acoustic event, possibly generated by a bolide explosion in the atmosphere. In this study, we analyze different potential infrasound sources to accurately classify the event.

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Session Classification: Poster

Track Classification: Poster session