



ID: P3.5-171

Type: E-poster

## Seismic and Infrasound Technologies for Discriminating Tectonic and Quarry Explosions in Southeastern Brazil

Discriminating tectonic events from artificial ones poses a significant challenge, particularly when both sources are small and geographically close. This issue is common in regions with quarries for rock blasting and tectonic seismic activity. This study focuses on distinguishing tectonic events from quarry explosions by integrating seismic and infrasound data collected from stations in Sete Lagoas, Minas Gerais, southeastern Brazil. The region experiences low-magnitude natural and anthropogenic events, which are often difficult to differentiate. Properly identifying these events is crucial for understanding anthropogenic processes, assessing risks, forecasting impacts, and mitigating environmental damage.

The NDC in a box software, along with SEISAN and SeisComp software, was used to evaluate signals, correlations, locations and magnitudes. The application of infrasound technology plays an important role in event discrimination by detecting acoustic signals typically associated with quarry explosions, while low-magnitude natural tectonic events ( $M < 3$ ) are generally characterized by the absence of such signals. Additionally, focal mechanism determination contributes to the characterization of stress orientation and fault plane solutions. This comprehensive approach, combining seismic and infrasound technologies, enhances the ability to identify seismic patterns, differentiate between tectonic and artificial sources, and deepen the understanding of local phenomena and their environmental implications.

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**Session Classification:** P3.5 Analysis of Seismic, Hydroacoustic and Infrasound Monitoring Data

**Track Classification:** Theme 3. Monitoring and On-Site Inspection Technologies and Techniques: T3.5 Analysis of Seismic, Hydroacoustic and Infrasound Monitoring Data