ID: **P2.3-317** Type: **E-poster**

# Moment-Tensor and Source Depth of a Mine Quake Using Local Infrasound Data

*Wednesday, 21 June 2023 09:30 (1 minute)*

Previous works have demonstrated potential in using infrasound data to constrain earthquake source properties (Hernandez 2016; Shani-Kadmiel 2018, 2021; Averbuch 2020). Typically, the applied approaches are based on comparing modelled and recorded signals. In the current study we seek to constrain the source depth and moment-tensor. We use infrasound data from local and seismic data from local and regional stations. We use the data from the Kiruna 2020 mine quake of which the local and regional recorded infrasound signatures have been presented at previous venues. This event is one of the largest Scandinavian mining-induced earthquake. It produced signals recorded by three infrasound arrays at distances of 7 km (KIR), 155 km (IS37) and 286 km (ARCI). Our recent studies show: (1) Full moment-tensor estimated from the seismic data, and source-type analysis shows that this event has collapse features. (2) Data simulation comparison of seismoacoustic data for various possible source depths using SPECFEM-DG concludes that the local infrasound data helps estimating source depths. (3) Comparison of simulated infrasound signals using full moment tensor solution estimated in this study and the full moment tensor solution from GCMT showed that our full moment-tensor solution produces infrasound signals having a better agreement with the observations.

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## Promotional text

Previous works have demonstrated potential in using infrasound data to constrain earthquake source properties. In this work we show how infrasound data can be used to constrain further the estimations of source depth and moment-tensor estimations.

## Oral preference format

in-person

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**Session Classification:** Lightning talks: P2.1, P2.3, P4.4

**Track Classification:** Theme 2. Events and Nuclear Test Sites: T2.3 Seismoacoustic Sources in Theory and Practice