ID: **P2.5-499**                                                                                   Type: **e-Poster**

# Quantitative research using digitized historic short-period nuclear explosion seismograms

*Wednesday 30 June 2021 10:15 (1 minute)*

The recovery and digitization of Peaceful Nuclear Explosions (PNEs) from the Soviet Era provides a unique opportunity to study the geology and geophysics of seismically quiescent regions. Due to the improved digitization and excellent recovery of the analog signals, these now-digital seismograms can be used with modern seismic modeling techniques. PNEs can be modeled as point sources and since the source characteristics are known, they serve as ground truth events. However, regional geology heavily affects the ability to distinguish between nuclear explosions and tectonic earthquakes, such as in the Siberian Platform. We are using regional full moment tensor inversions of the digitized PNE data to see if it can be used to compare competing Earth models of these regions, since we know the nature of the source of the events. We also evaluate amplitude data in multiple frequency bands to find phase-based discrimination criteria in relation to the local geology in regions of northern Eurasia. Furthermore, the moment tensors and phase ratios can be researched with respect to how the emplacement geology, regional stress, depth, and yield affect the seismic signal. Other abstracts describe the data set and digitization process.

## Promotional text

The applicability of short-period digitized seismic data from Soviet Era Peaceful Nuclear Explosions are tested through evaluation of source characteristics and event discrimination.

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**Session Classification:** T2.5 e-poster session

**Track Classification:** Theme 2. Events and Nuclear Test Sites: T2.5 - Historical Data from Nuclear Test Monitoring