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methods for the implementation of OSI Resonance Seismometry

The Treaty mentions Resonance Seismometry (RS) as a method for the continuation period of the OSI. RS shall use resonant seismic wavefields generated inside the explosion cavity, the rubble zone, or up to the surface to map the suspected subsurface test site. However, RS is not yet an established method in the scientific community, and a variety of different source signals and interpretation methods may fill its role. We compare the practicability of some different methods for their implementation as part of the OSI. Test case of our analysis is the Kylylahti mine dataset of 2016 in Finland, where we implemented two candidate methods for RS: (1) The H/V method resolves near-surface changes of soil properties by relating the horizontal and vertical portions of ground motion. (2) The calculation of minor variations in the planar wavefield from larger earthquakes at teleseismics distances, i.e. more than 3,000 km away, visualizes local subsurface anomalies. Results of both methods will be presented and discussed for relevance in RS.

Primary author: HÄFNER, Rolf (Sonicona)

Presenter: HÄFNER, Rolf (Sonicona)

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