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# A seismic network to investigate the sedimentary hosted hydrothermal Lusi system

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The 29th of May 2006 marked the beginning of the sedimentary hosted hydrothermal Lusi system. During the last 10 years we witnessed numerous alterations of the Lusi system behavior that coincide with the frequent seismic and volcanic activity occurring in the region. In order to monitor the effect that the seismicity and the activity of the volcanic arc have on Lusi, we deployed a ad hoc seismic network.

This temporary network consist of 10 broadband and 21 short period stations and is currently operating around the Arjuno-Welirang volcanic complex, along the Watukosek fault system and around Lusi, in the East Java basin since January 2015. We exploit this dataset to investigate surface wave and shear wave velocity structure of the upper-crust beneath the Arjuno-Welirang-Lusi complex in the framework of the Lusi Lab project (ERC grant n° 308126).

Rayleigh and Love waves travelling between each station-pair are extracted by cross-correlating long time series of ambient noise data recorded at the stations. Group and phase velocity dispersion curves are obtained by time-frequency analysis of cross-correlation functions, and are tomographically inverted to provide 2D velocity maps corresponding to different sampling depths. 3D shear wave velocity structure is then acquired by inverting the group velocity maps.