



Shear-wave structure of the Lower-Tagus Valley region from ambient noise tomography

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The Lower Tagus Valley (LTV), located on Western Portugal, has a record of significant historical and instrumental seismicity. Knowledge of its subsurface structure is invaluable to better assess seismicity, earthquake source processes and associated risks.

Ambient noise tomography is an efficient tool to illuminate crustal structure, providing a resolution which mainly depends of network coverage. Since 2006 the permanent Portuguese broadband (BB) seismic network expanded significantly. More recently a temporary dense BB network was deployed in Portugal, filling gaps between permanent stations and providing an excellent opportunity to study the shallow crustal structure beneath the LTV.

Dispersion measurements were computed for each station pair using empirical Green's functions generated by cross-correlating one-day-length seismic ambient-noise records. To improve the seismic ambient noise signal extraction we apply a phase cross-correlation method, followed by time-frequency domain phase weighted stack.

Group-velocities were inverted to obtain S-wave velocity profiles between station pairs. The models will be compared with models gathered from Ps receiver functions. The results obtained for the LTV will be integrated on a previous larger scale noise tomography performed on the entire Peninsula. The models will be compared with models gathered from Ps receiver functions. The results obtained for the crust using both methods are consistent.

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