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## Ambient noise tomography for geothermal exploration: the central Vienna basin, Austria

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The Vienna Basin (VB) is currently the main target area for deep geothermal exploration in Austria. Knowledge of the subsurface heavily relies on active seismic reflection that are expensive and logistically demanding. Affordable geophysical prospecting methods are needed to reduce subsurface uncertainty. Over the recent years, seismic ambient noise tomography (ANT) has proven to be a cost-effective and environment-friendly exploration technique. Here, we present an ANT of the central Vienna Basin revealing the shear-wave velocity structure of the top 5 km beneath the surface. We deployed an array of ~100 seismic nodal instruments during 6 weeks over summer 2023. We measured fundamental-mode Rayleigh and Love-wave group velocity dispersion from seismic ambient noise and employed transdimensional Bayesian tomography to invert for isotropic group velocity maps at periods ranging from 0.8 to 5.5 s. We then extracted Rayleigh and Love group velocity dispersion curves from the group velocity maps at all locations and jointly inverted them for shear-wave velocity as a function of depth using a transdimensional Bayesian framework. We discuss features observed in our 3D shear-wave velocity model relevant to geothermal exploration.