



## Azimuthally anisotropic ambient-noise tomography using the AlpArray seismic network

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We make use of the AlpArray Seismic Network to study the properties of the ambient-noise field and create a new 3D shear-velocity model of the Alpine crust. The latter will be used to improve our understanding of the tectonic processes that formed the Alps.

From two years of data, more than 150,000 station-station cross-correlations are extracted and used to evaluate strength and directivity of the noise field and its seasonal variations. Phase-velocity measurements for both Love and Rayleigh waves are obtained and the anisotropic phase-velocity structure is imaged. At mid-crustal levels, the strongest azimuthal anisotropy is found underneath the northern Italian Po plain and in the northern Dinarides, with strengths of 10-20% and a fast axis direction pointing NNE in Italy and NE in the Dinarides. In the western and central Alps we find an approximately NE direction and a strength of 5%; the eastern Alpine fast axis point toward the north with strengths of 2-5%.

We apply a probabilistic inversion to resolve the 3D shear-velocity structure of the crust. The homogeneous and dense station setup results in a shear-velocity model of unprecedented resolution for the uppermost 60 km of the crust underneath the entire orogen. By using data in the period range between 2 and 100s, we are able to better constrain shallow structures, such as the sedimentary basins, and to link surface-geological features to velocity variations observed at depth.