



## **Crustal and uppermost mantle structures beneath the Carpathian-Pannonian system from ambient noise tomography**

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The Southern and Eastern Carpathian mountains, in central Europe, were formed as a result of the closure of the Tethys Ocean due to continental collision between the Eurasian and African plates during the Mesozoic and Cenozoic. During the later evolution of this Carpathian-Pannonian system, extension of the crust and lithosphere played an important role, and has created several inter-related basins of which the Pannonian basin is the largest. The Carpathian Basins (CBP, 2005-2007) and South Carpathian seismological projects (SCP, 2009-2011) are two projects investigating crust and upper mantle structure in central Europe with the aim of testing models of the role of extension and convergence in the Carpathian-Pannonian system. Here, we use both the ambient noise tomography and the earthquake surface wave tomography to investigate the crust and uppermost mantle structure in the region. We have collected and processed continuous data from 52 temporary stations deployed in the Carpathian Basins Project for 16 months and 41 permanent broadband stations; as such we have one of the most high resolution images of the S-wave structure of the region. We computed the cross-correlation between vertical component seismograms from pairs of stations and stacked the correlated waveforms over 1-2 years to estimate the Rayleigh wave Green's function. Frequency-time analysis is used to measure the group and phase velocity dispersion curves, which are then inverted for the group and phase velocity maps. These results will be used in conjunction with 3D geodynamical modelling to help understand how these structural elements have interacted during their formation.

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