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The 3D crustal structure of Eastern Alps and Bohemian Massif revealed by ambient noise surface wave tomography

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The Eastern Alps are the place of many unsolved questions regarding the tectonic evolution of the Alpine orogen: the nature of the Moho "gap" between the two plates, the anisotropic nature of the lower crust, the relationship between the Alpine orogen and the adjacent foreland basin to the north and the lithospheric blocks of the Bohemian Massif and to the Adria – northern Dinarides in the south.
We exploit one year of continuous data recorded at 55 temporary broadband stations operated between 2014 and 2015 within the EASI AlpArray complementary experiment and 200 permanent broadband stations in the area ranging from $8°$E to $19°$E and from $45°$N to $52°$N to obtain a 3-D crustal model of this area. In particular, the EASI data allows us to image with high-resolution the shallower part of the crust (from the surface to $\sim$ 20 km depth). We first construct a database of ambient noise Rayleigh-wave group-velocity observations from 4s to 40s and we conduct a suite of linear least-squares inversions of the group-velocity data, resulting in 2-D maps of Rayleigh-wave group-velocity with a resolution of 20 km. The Rayleigh group-velocity maps are next jointly inverted via the Neighbourhood Algorithm to determine a set of one-dimensional shear-velocity models (one per group-velocity cell of 20km), resulting in a new 3-D model of shear-wave velocity (v_S).
We present here our firsts results and we compare them with other studies discussing geological/geodynamical implications that contribute to a better understanding of Eastern Alpine tectonics.