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High-Resolution Velocity Model of the Bohemian Massif Crust from Ambient Noise Tomography

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We build a new shear-wave velocity model of the Bohemian Massif (BM) crust from ambient seismic noise. The combination of noise cross-correlation method with stochastic surface wave inversion is now the well-established technique for extraction of surface-wave dispersion curves and imaging shear-wave velocities in the crust. We closely follow the ambient noise processing sequence (e.g. Bensen et al., 2007), which includes instrument response removals, the seismic noise cross-correlations of all possible station pairs, signal stacking, automated frequency-time analysis (FTAN) and the 2D-Fast Marching Surface Tomography followed by Non-Linear Monte Carlo 1D- inversion. The sources of ambient seismic noise were analysed by seasonal variation tests. The dominant W-E source directivity was clearly related to Atlantic storm seasons. Therefore, winter seasons were excluded from signal stacking period to efficiently reduce the disturbing sources. The checkerboard test and estimated effective sensitivity kernels prove necessity to populate data from available permanent stations by data from passive seismic experiments AlpArray and PASSEQ, in order to achieve desired depth penetration down to the MOHO and optimal spatial resolution. We present crustal shear-wave velocity model of the BM and correlate its regional variations with tectonics of the region. With this new velocity model we aim at improving crustal corrections applied in teleseismic tomography of the upper mantle.