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Shear Wave Velocity Model in the Marmara Sea and Surrounding Using Noise Correlation Tomography

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SHEAR WAVE VELOCITY MODEL IN THE MARAMA SEA AND SURROUNDING USING NOISE CORRELATION TOMOGRAPHY

We computed shear wave velocity distribution in the Marmara Sea and its surrounding using noise correlation tomography. More than 200 stations and maximum 5 years of continuous broadband data are used. We computed phase velocity maps from 6 sec to 25 sec and inverted phase velocities at 5km grid intervals for shear wave velocities and constructed a 3D velocity model. The basins in the Marmara Sea are imaged well and their geometries are consistent with the results of the previous works based on the seismic reflection and refraction data. The low velocity basins in the Marmara Sea are surrounded by the low velocity Trace Basin and high velocity Istanbul zone on the north. The velocity model is overall smooth and we do not observe sharp velocity contrasts across the North Anatolian Fault in the Marmara Sea. In contrast in the eastern Marmara region where the 1999 Izmit earthquake ruptured with supershear speed displays a sharp velocity contrast. The velocity model is a step to construct a 3-D earth model in the region for accurate earthquake location and realistic rupture simulations.