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Towards a Robust Model of Eastern U.S. Crustal Structure and Composition for Applications in Seismic Hazard Analysis PRANAV ARREPU, North Carolina School of Science and Mathematics, CEMAL BIRYOL, University of North Carolina at Chapel Hill — While large-scale studies to obtain crustal parameters and structure have been performed on various regions within North America, detailed receiver function (RF) studies to resolve the structure above the Moho have only been recently performed for the Eastern U.S. Our work retrieves various crustal parameters and receiver-side structure as results of RF analysis for a data two selected stations in North Carolina. Results from 52 RFs indicate a crustal thickness of $\sim$ 36.2 km and a V_p/V_s ratio of $\sim$ 1.51 for the receiver structure beneath TA.V57A as well as a crustal thickness of $\sim$ 27.7 km and a V_p/V_s ratio of $\sim$ 1.68 for the receiver structure beneath TA.V58A. These parameters are used to create crustal models that are perturbed via 1D inversion. A parameter space search method is developed as means for obtaining robust results in a computationally inexpensive manner. Initial forward modeling and inversion results suggest a shallow depth layer of high velocity above the Moho and may support the eastward extent of basement rocks associated with Grenville Orogeny. We use a shear wave velocity model obtained from our study to determine ground shaking parameters for the Eastern U.S. Along with demonstration of robust results for crustal structure and ground shaking, we propose strategies to expand our data set for the Eastern U.S and assessment of ground shaking for a wider region.

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