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Array Processing of Receiver Functions Across the Southern Alaska Cordillera Using 400 Nodal Seismometers ANNEKE AVERY, Calvin University, KEVIN WARD, JIMMY BRADFORD, South Dakota School of Mines and Technology, AMIR ALLAM, University of Utah, CARL TAPE, University of Alaska Fairbanks — Alaska is comprised of an active subduction zone, accreted terranes, and a complex tectonic history that makes it a unique place to study tectonic processes. In February and March of 2019, we deployed 400 three-component nodal seismometers in Southern Alaska between Anchorage and Fairbanks. 300 nodes were placed 1 km apart in a large pseudo-linear array that crossed the Denali Fault and 100 nodes in a closer subarray to provide greater detail across the Denali Fault. We present the results of our radial receiver function analysis calculated from teleseismic earthquakes to image subsurface structure in the region. We include data from nearby broadband stations to evaluate the robustness of our results obtained from our spatially dense but temporally limited nodal deployment. We explore the possibility that our dense nodal array can image subsurface discontinuities in greater detail than existing broadband stations. In our work, seismic discontinuities are often localized, and the same structure is not regularly seen in receiver functions for different events. Discontinuities from our nodal receiver functions are not as consistent as those observed in the broadband receiver functions. For our deployment, nodal receiver functions do not offer the same level of results as broadband seismometers under equivalent processing techniques. Ongoing work includes array processing by stacking nearby nodal sites before calculating receiver functions to further help reduce noise and enhance scattered wave signals.

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