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Australian Crust and Upper-Mantle Structure from Ambient Noise Tomography

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We show the results from the cross-correlation of ambient seismic noise data for Australian continent from 3 component seismic broadband station deployments over the last 17 years. This work updates the seismic images by utilising new additional data from ongoing seismic deployments. The group and phase velocities of Rayleigh and Love waves Green's functions are measured between the periods of 5 and 100 s. We use these measurements in a nonlinear iterative tomographic inversion technique to map depths between upper crust and upper mantle. The results indicate the variations in wavespeed between Archaean cratons in west and sedimentary zones in the central and eastern Australia. The inverted wavespeeds are then used in a joint inversion scheme to map the Moho depth under the regions where the raypath coverage is the highest. The seismic images are in good agreement with results from receiver function and earthquake tomography.