Priestley, K., Ho, T., and McKenzie, D., 2020, The formation of continental roots: Geology, v. 49,
https://doi.org/10.1130/G47696.1

Supplemental Material

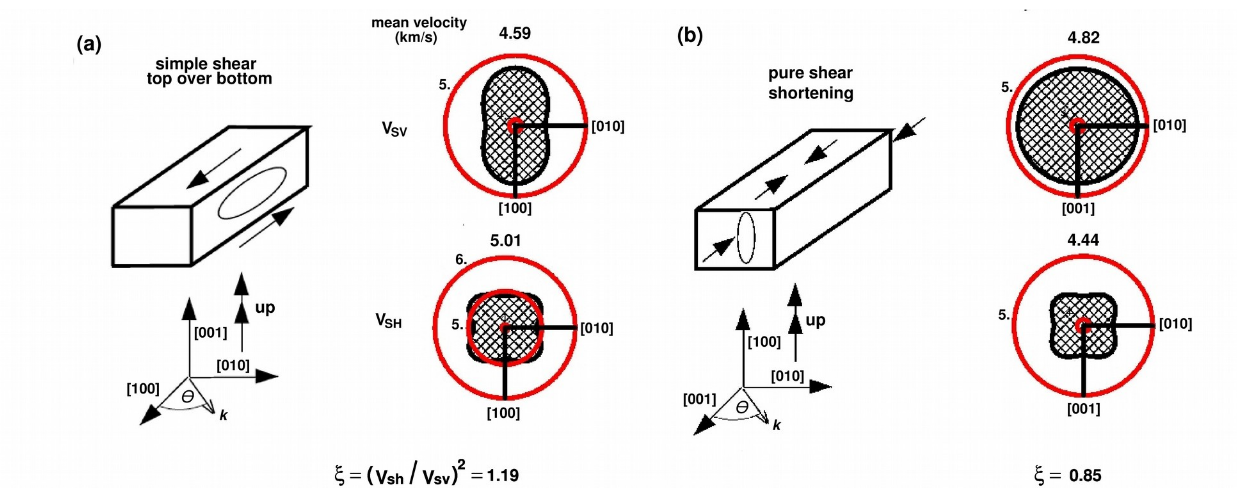

Figure S1: Effect of the deformation mechanism on olivine and the resulting form of radial anisotropy: (a) simple shear and (b) pure shear. When deformation occurs by simple shear (a) V_{sh} is fast and $\xi > 1$. This form of radial anisotropy occurs when, for example, the upper part of the material moves horizontally over the lower part of the material. $\xi > 1$ is observed at 150 km depth beneath the oceans where the oceanic plate (lithosphere) is moving horizontally over the asthenosphere (Fig. 1D). When deformation occurs by pure shear shortening (b) V_{sv} is fast and $\xi < 1$. This form of radial anisotropy occurs when, for example, material is compressed and thickened. $\xi < 1$ is observed at 150 km depth beneath the continental cores (Fig. 1D).

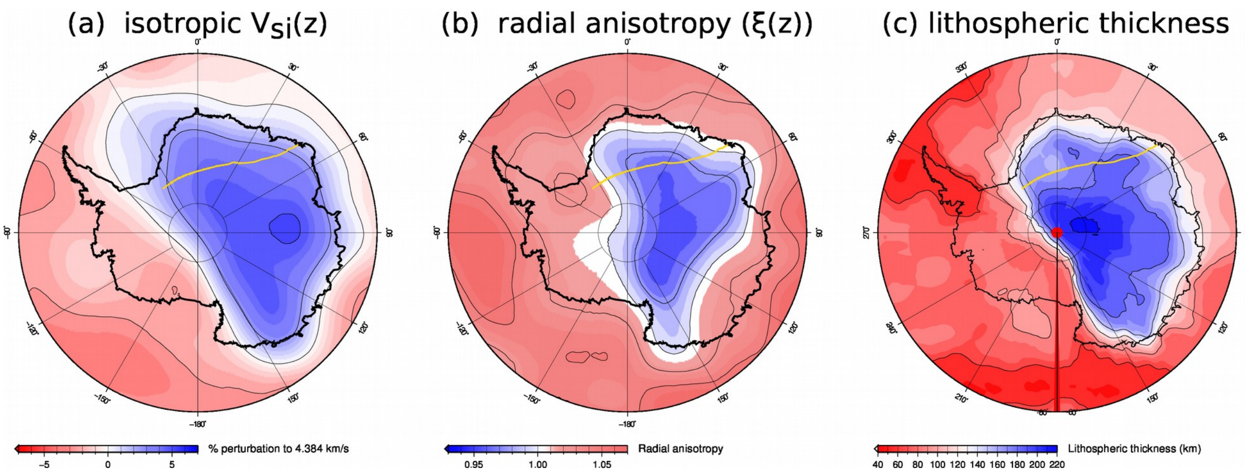

Figure S2: Maps of (a) isotropic shear wave speed ($V_{si}(z)$) at 150 km depth, (b) radial anisotropy (ξ) at 150 km depth and (c) lithospheric thickness beneath Antarctica. The figure format is the same as in Figure 2. The yellow contour denotes the geologically-mapped and inferred boundary of the Antarctica craton (Goodwin, 1996).

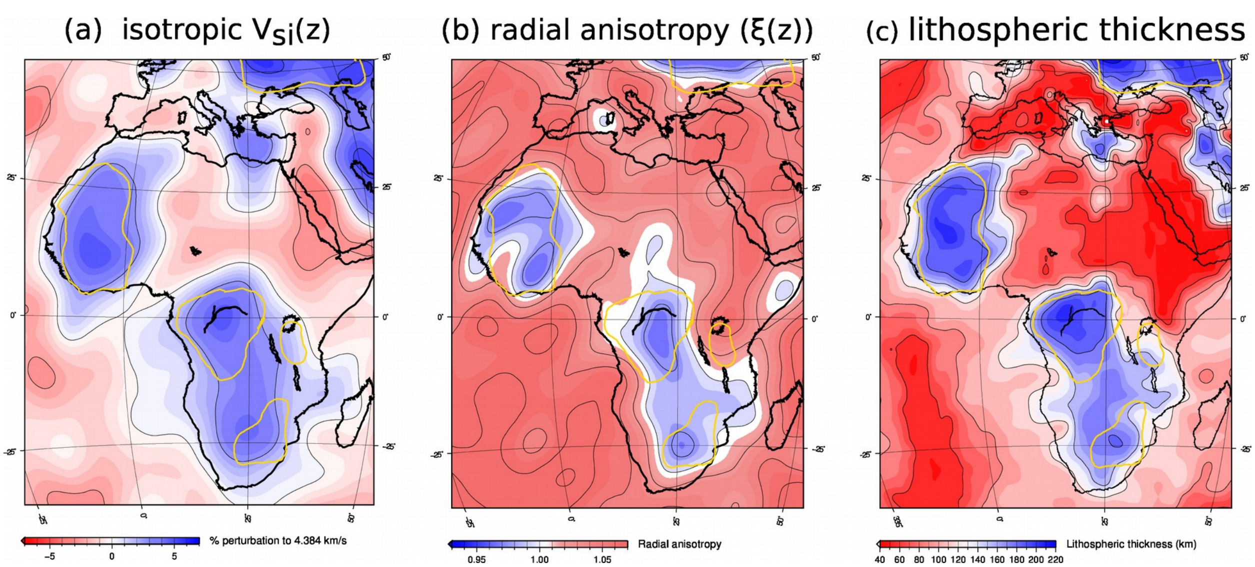

Figure S3: Maps of (a) isotropic shear wave speed ($V_{si}(z)$) at 150 km depth, (b) radial anisotropy (ξ) at 150 km depth and (c) lithospheric thickness beneath Africa. Figure format the same as for Figure S2.

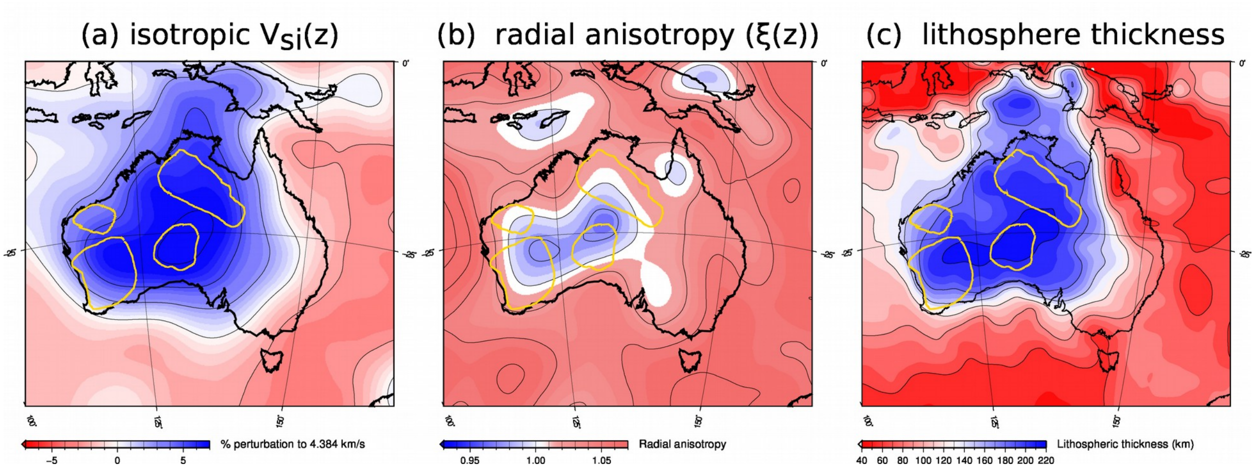

Figure S4: Maps of (a) isotropic shear wave speed ($V_{si}(z)$) at 150 km depth, (b) radial anisotropy (ξ) at 150 km depth and (c) lithospheric thickness beneath Australia. Figure format the same as for Figure S2.

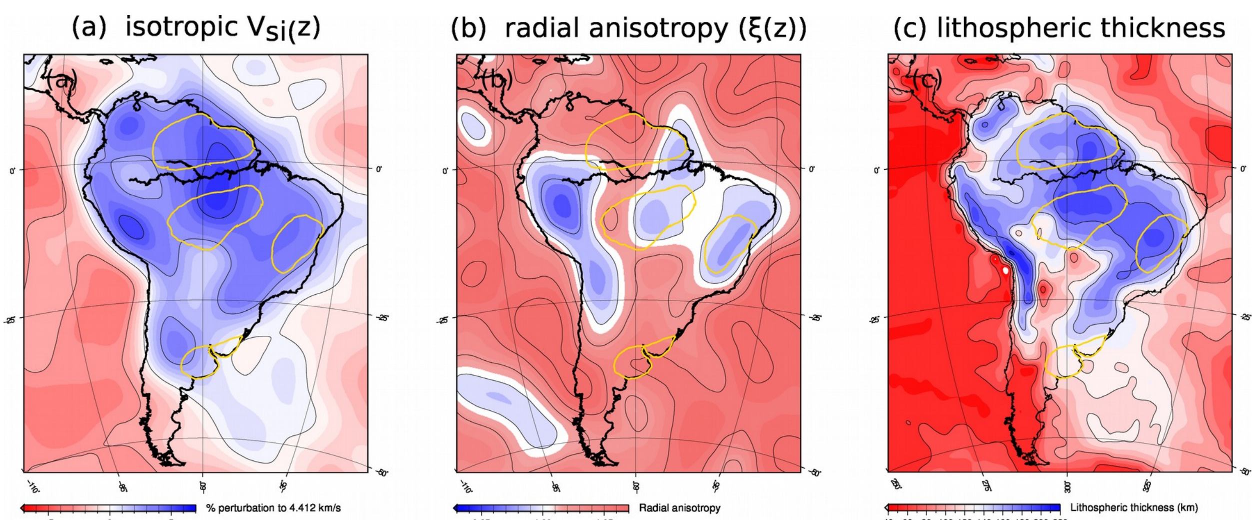

Figure S5: Maps of (a) isotropic shear wave speed ($V_{si}(z)$) at 150 km depth, (b) radial anisotropy (ξ) at 150 km depth and (c) lithospheric thickness beneath South America. Figure format the same as for Figure S2.

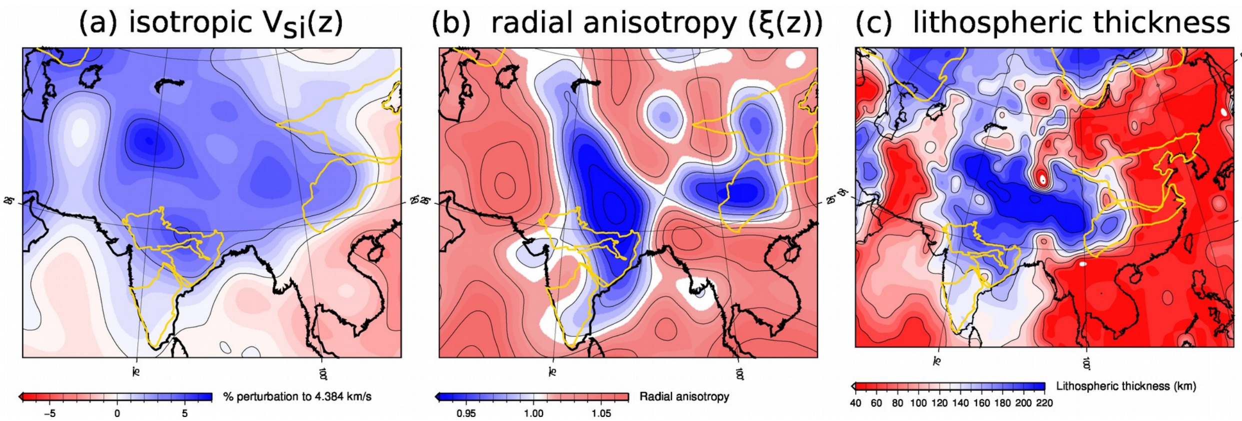

Figure S6: Maps of (a) isotropic shear wave speed ($V_{si}(z)$) at 150 km depth, (b) radial anisotropy (ξ) at 150 km depth and (c) lithospheric thickness beneath eastern Eurasia. Figure format the same as for Figure S2.

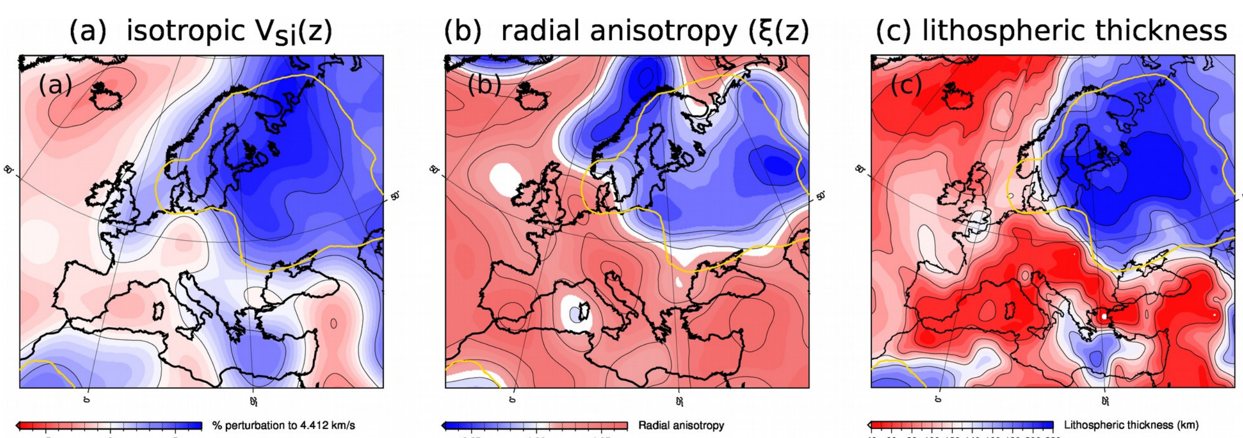

Figure S7: Maps of (a) isotropic shear wave speed ($V_{si}(z)$) at 150 km depth, (b) radial anisotropy (ξ) at 150 km depth and (c) lithospheric thickness beneath western Eurasia. Figure format the same as for Figure S2.

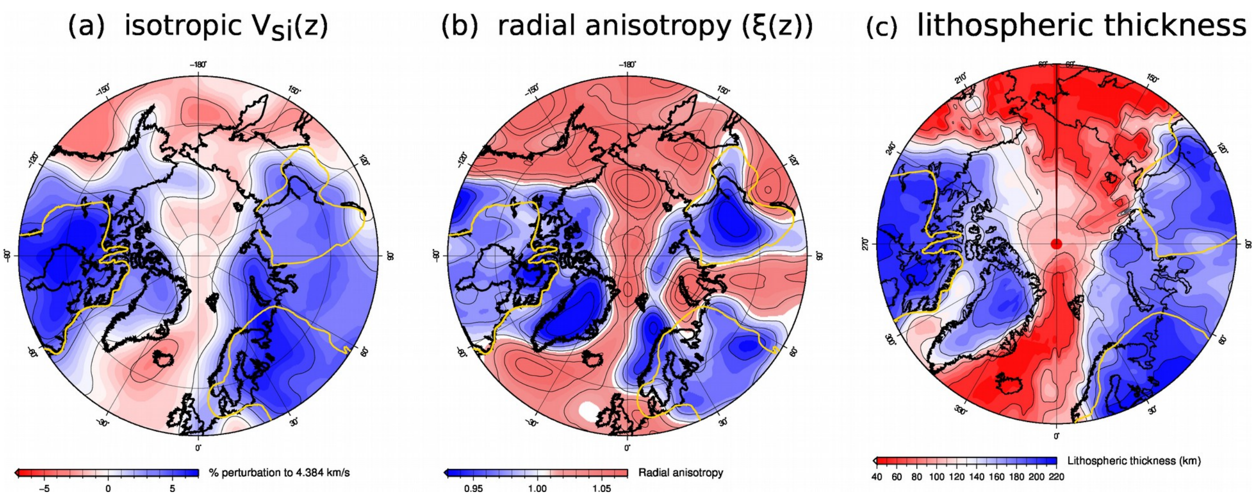

Figure S8: Maps of (a) isotropic shear wave speed ($V_{si}(z)$) at 150 km depth, (b) radial anisotropy (ξ) at 150 km depth and (c) lithospheric thickness beneath the Arctic. Figure format the same as for Figure S2.