Supporting Information for

Shear wave velocity structure beneath Northeast China from joint inversion of receiver functions and Rayleigh wave phase velocities: Implications for intraplate volcanism

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Figures S1 to S7
Figure S1. (a) Global distribution of earthquakes (2016–2019, red stars) for our receiver function analysis at the permanent CEA stations. (b) Global distribution of earthquakes (between 2009.09 and 2011.08, red stars) for obtaining receiver functions at the temporary NECESSArray sites.
Figure S2. A synthetic test for joint inversion. The true model (black) contains alternating positive/negative Vs anomalies (i.e., ±5%) of 2.5 km thick between 0 and 60 km depth. The synthetic receiver functions (ray-parameter 0.05 s/km, at Gaussian widths of $\alpha = 2.5$ and 1.0) and Rayleigh wave phase velocity dispersion curve (at periods of 6–143 s) corresponding to the true model are represented by black lines. Evolution of the iterated solutions and the corresponding predicted data are shown by red lines. Note that the resulting model converged to the true solution and the presumed crustal and uppermost-mantle Vs anomalies are well recovered in three iterations.
Figure S3. Same as Figure S2, but the true model (black) consists of alternating positive/negative Vs anomalies (i.e., ± 5%) of 5 km thick at 0-125 km depths.
Figure S4. Same as Figure S2, but the true model (black) consists of alternating positive/negative Vs anomalies (i.e., ±5%) of 10 km thick at 0-125 km depths.
Figure S5. Comparison between our joint inversion results and surface wave tomography of Fan et al. (2021). Our 3-D Vs model from joint inversion at crustal levels (0-50 km) is visualized along the same directions, with the same color pattern as Figure 3 of Fan et al. (2021).
Figure S6. Comparison between our results and surface wave tomography of Fan et al. (2021). Our 3-D Vs model is visualized at upper-mantle depths (25-125 km) along the same directions, with the same color pattern as Figure 3 of Fan et al. (2021).
Figure S7. Absolute S-wave velocities (Figure 3) at crustal and upper-mantle depths (0-200 km) from surface wave tomography of Fan et al. (2021).