

Supporting Information for

**Crustal and Uppermost Mantle S-velocity Structure of the Seoul Metropolitan Area
on the Korean Peninsula from Helmholtz Tomography**

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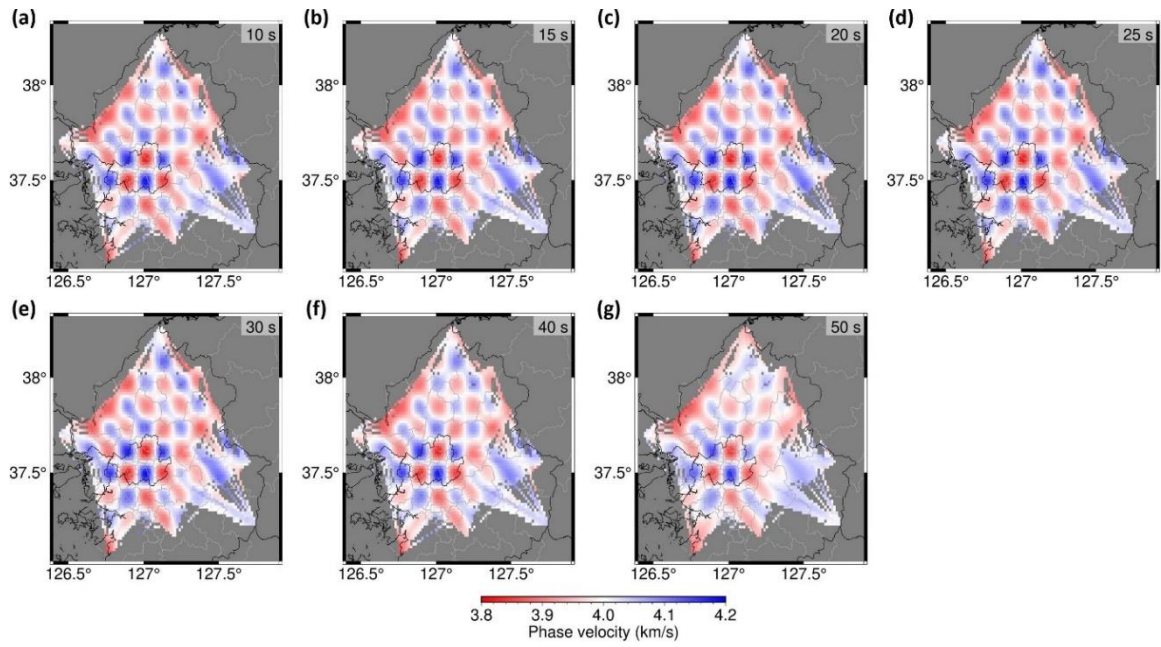


Figure S1. Checkerboard tests with checkers of $0.12^\circ \times 0.12^\circ$ for the periods of 10–50 s. The reference velocity and perturbations are set to 4 km/s and $\pm 5\%$, respectively.

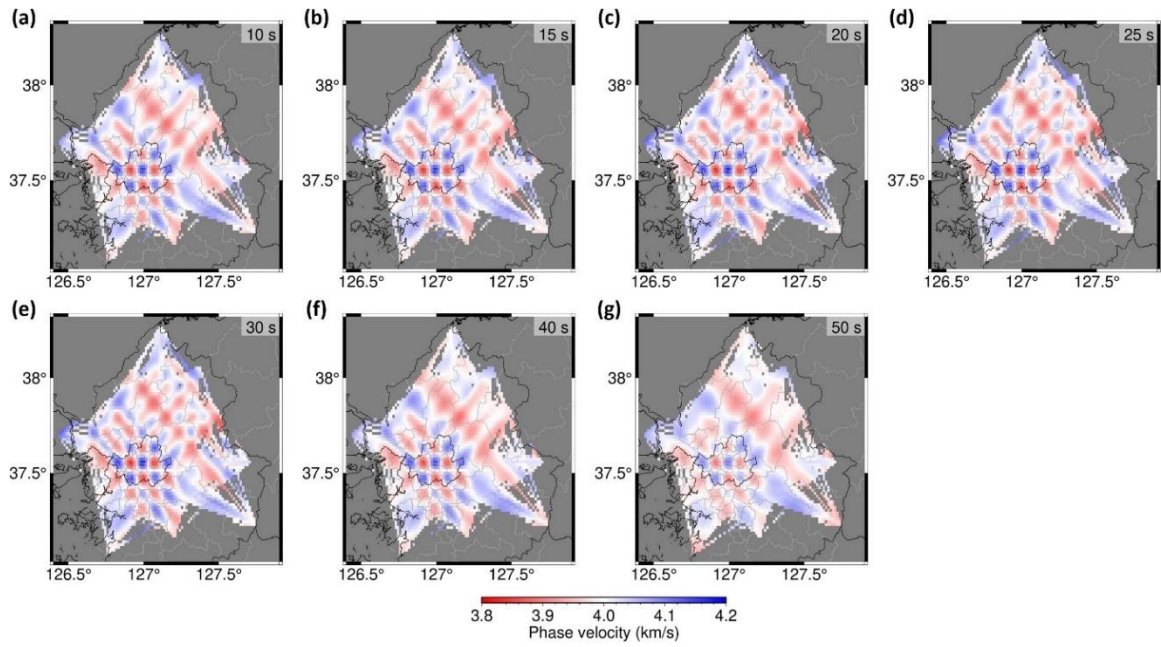


Figure S2. Checkerboard tests with checkers of $0.08^\circ \times 0.08^\circ$ for the periods of 10–50 s. The other parameters are the same as in the test with checkers of $0.12^\circ \times 0.12^\circ$.

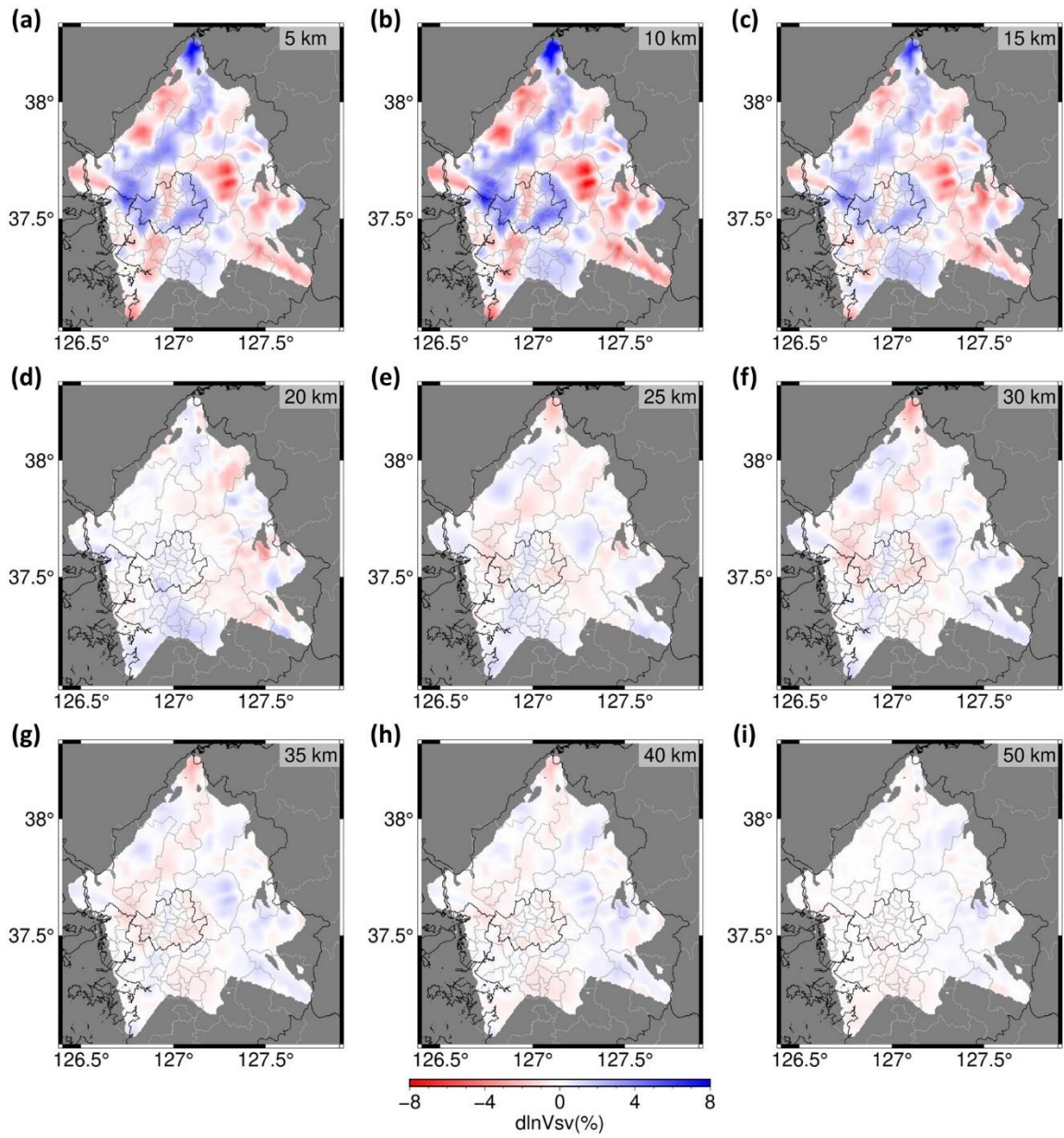


Figure S3. Resolution test results with the input model including velocity anomalies from the surface to 15 km depth in our S-velocity model.

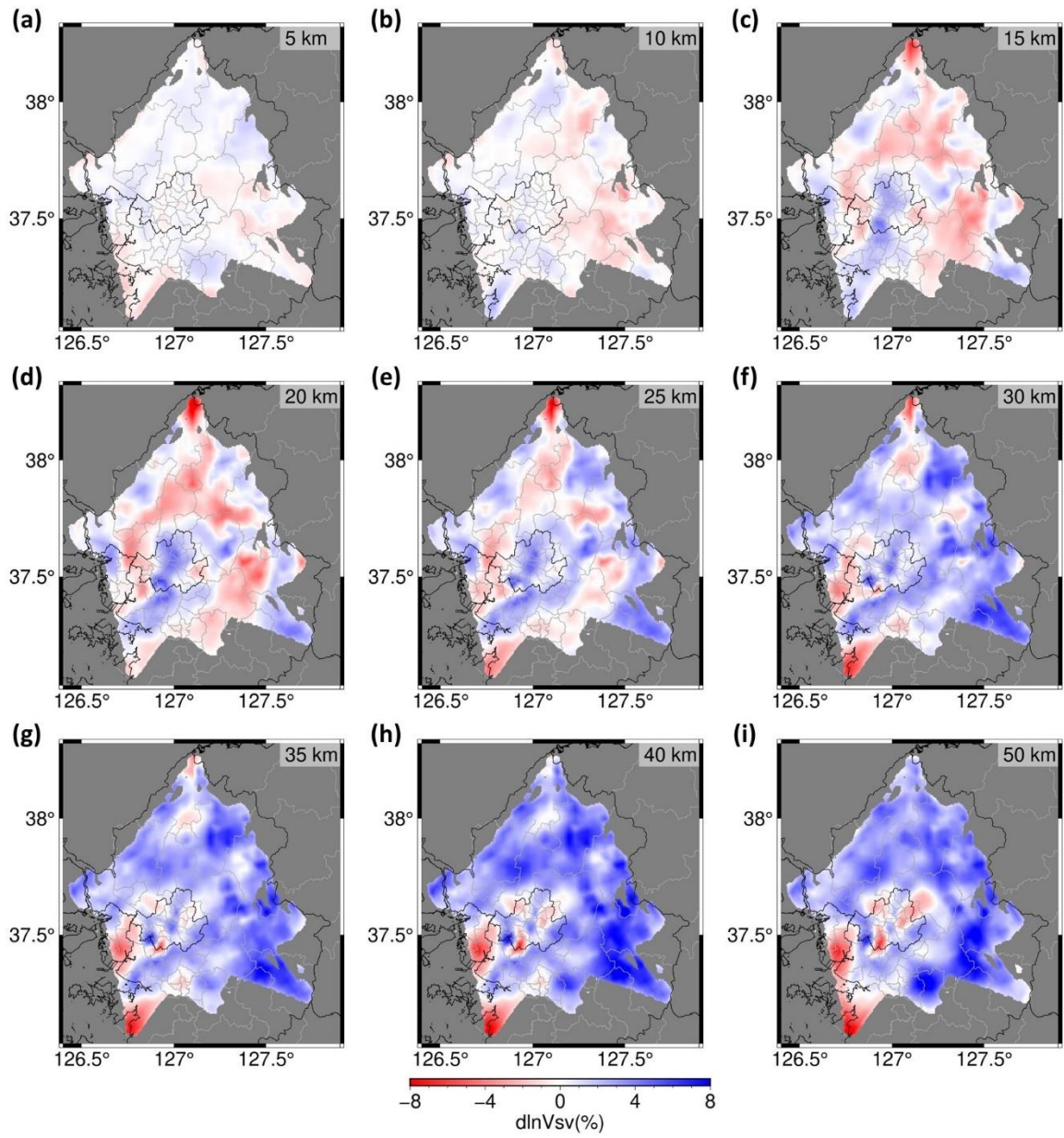


Figure S4. Resolution test results with the input model including velocity anomalies below 15 km depth in our S-velocity model.

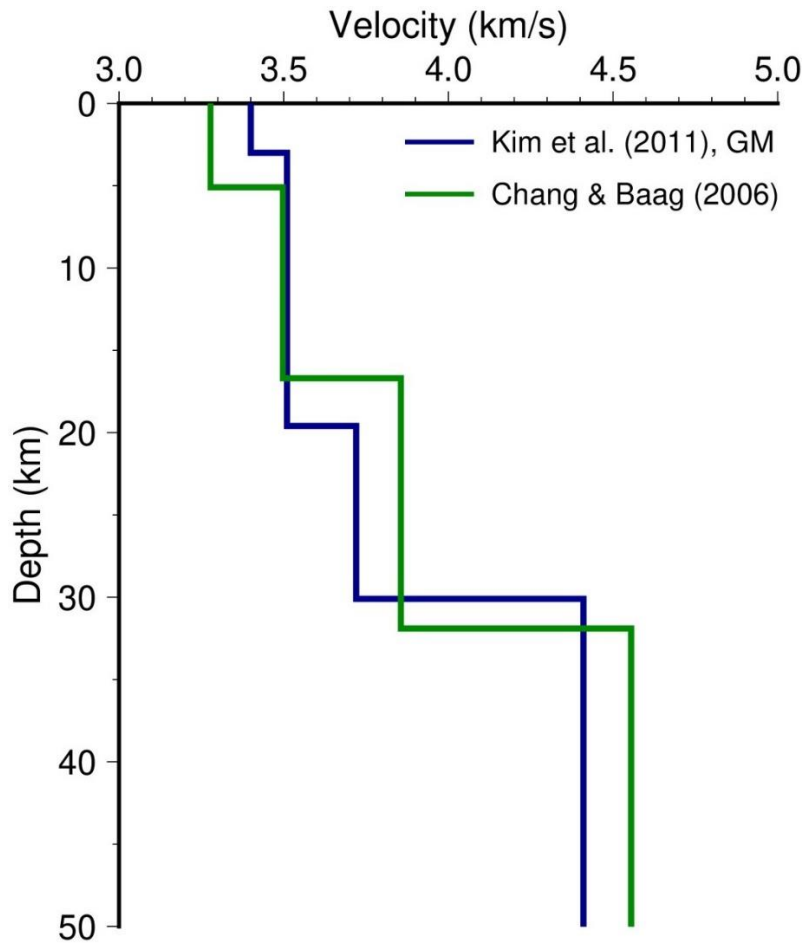


Figure S5. Two different reference S-velocity models. The GM model from Kim et al. (2011) is used as the reference velocity model for constructing our S-velocity model. Chang and Baag (2006)'s model is used as the reference velocity model for the inversion results presented in Figures S6 and S7.

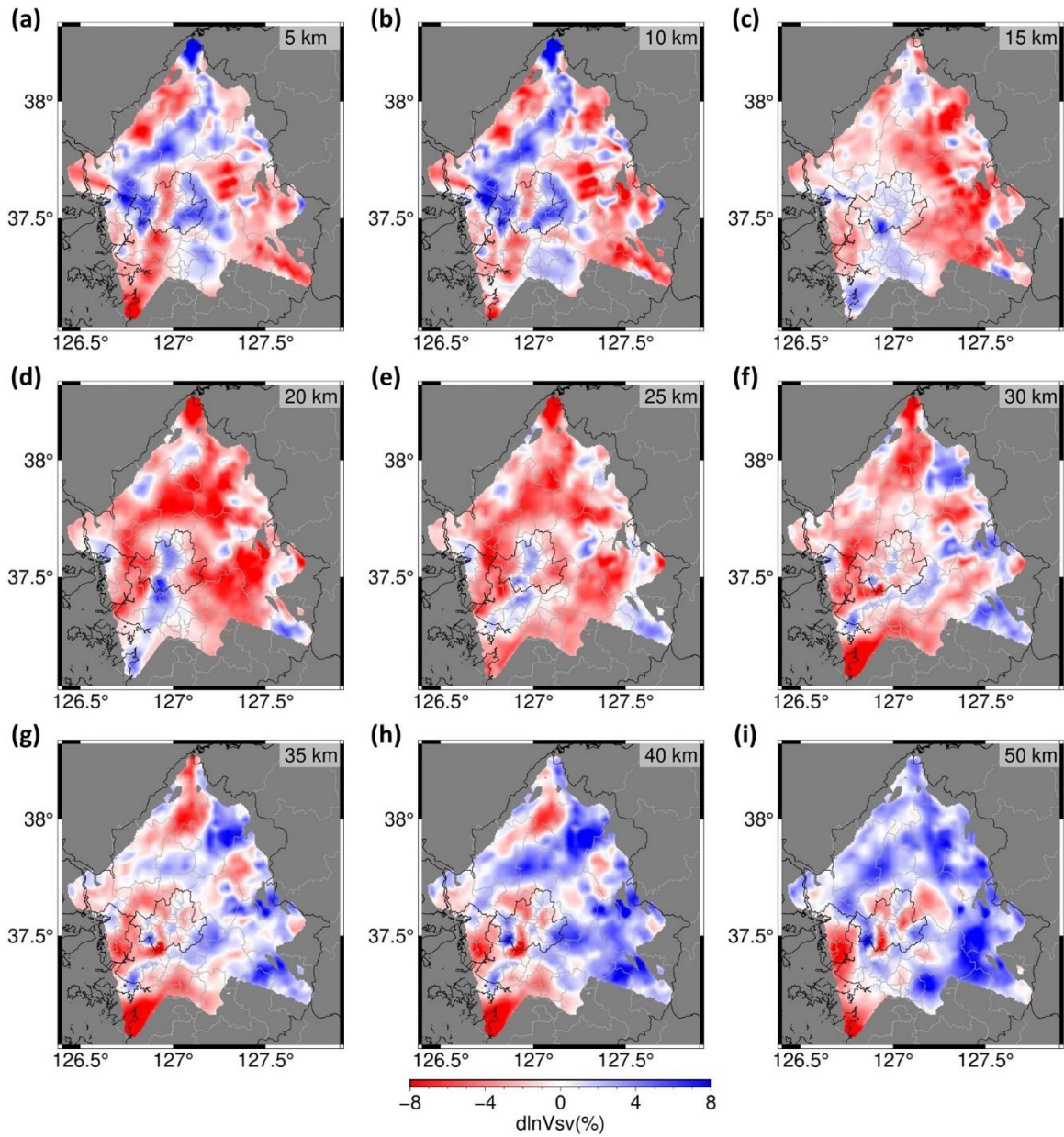


Figure S6. Depth slices of the S-wave velocity model for the Seoul metropolitan area at depths of 5, 10, 15, 20, 25, 30, 35, 40, and 50 km, derived using the reference velocity model of Chang and Baag (2006). The centers of the scale bars are based on the reference velocities of Chang and Baag (2006) shown in Figure S5.

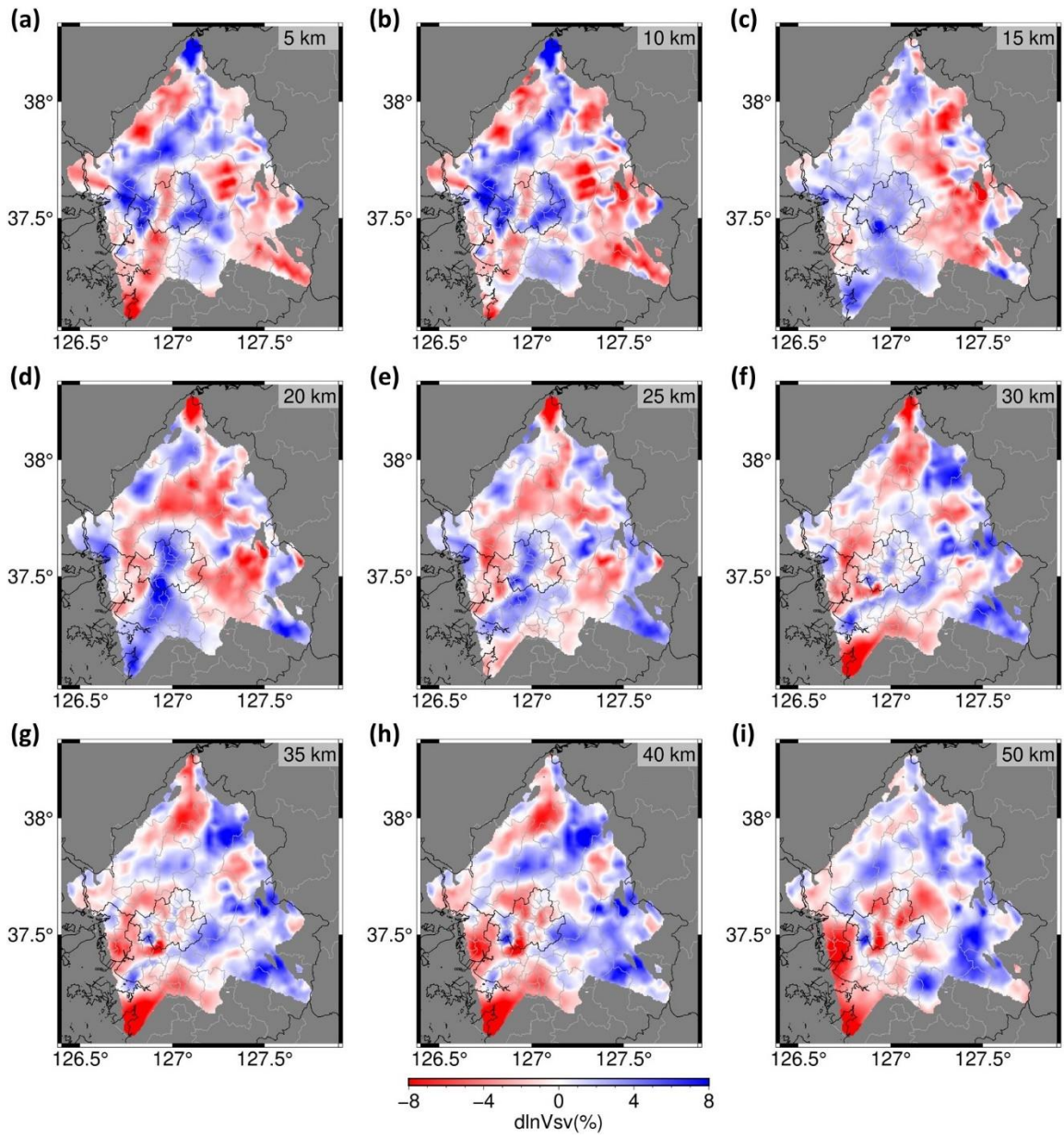


Figure S7. Same as Figure S6 but with zero means.