Supplementary Information 3

Decomposed SH-, SV-, and P-wavefields and their visualizations for interpretation of reproduced synthetic waves in the Osaka sedimentary basin, Japan, due to a Mw 5.6 earthquake beneath its edge

Hirotoshi Uebayashi[1] and Haruko Sekiguchi[2]

Supplementary information on the validity of evaluating SV-wave propagation through semblance analysis based solely on horizontal motion component

[1] Institute for Integrated Radiation and Nuclear Science, Kyoto University
[2] Disaster Prevention Research Institute, Kyoto University

Table of content:

Validity of evaluating SV-wave propagation through semblance analysis based solely on horizontal motion component

When assessing the propagation characteristics of SV waves or Rayleigh waves using semblance analysis based solely on the horizontal motion component, the results may become unreliable under conditions where the horizontal amplitude becomes very small. To address this concern, we examined the horizontal-to-vertical amplitude ratio of the SV and P-SV wave components. As shown in the figure below, this ratio was found to be greater than 1 across most of the study area, except for regions not focused in this study. In addition, the semblance analysis and the subsequent PTA focused on coherent phases and wave packets with relatively large amplitudes. Therefore, based on the above results, phases with small horizontal components—where the corresponding vertical components would be even smaller— were not considered in the evaluation.

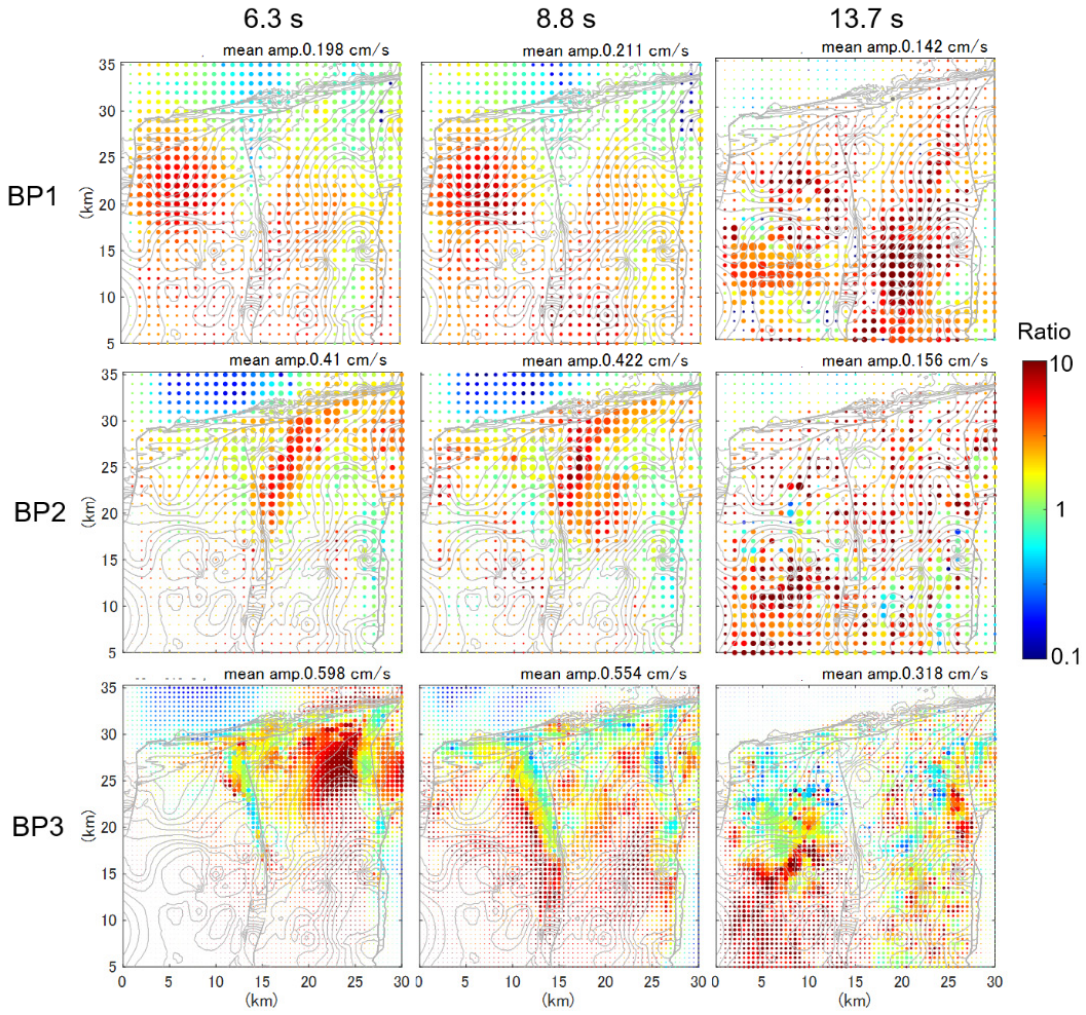

Figure S1 Amplitude ratio distributions of the horizontal to vertical components of decomposed SV-waves, shown at three different times for each of the three frequency bands. The horizontal component is calculated as the vector sum of the NS and EW components. The size of each circle reflects the amplitude of the resultant vector from all three orthogonal components.