

Receiver function analysis of records from dense strong motion seismometer array: In the case of Sizuoka Prefecture

Haruo Horikawa[1]

[1] Active Fault Research Center, AIST, GSJ

Sizuoka Prefecture, central Japan, is closely located to the Suruga and Nankai troughs, where great subduction-zone earthquakes will occur in the near future. This means that strong motions from these earthquakes will strike this region and that seismic waves will pass through this region, suggesting that subsurface structure of this region strongly affects the characteristics of ground motions of nearby regions as well as this region.

In order to constrain the subsurface structure, receiver functions were calculated from strong motion records deployed by the National Research Institute for Earth Science and Disaster Prevention, Japan Meteorological Agency, and Sizuoka Prefecture. The spectra were calculated with the multi-taper method proposed by Thomson (1982). The frequency range considered in this study is between 1 Hz and 5 Hz.

The preliminarily-derived receiver functions show variation that seemingly correlates with geologic structure. In the western part of Sizuoka Prefecture, receiver functions have a distinct peak that corresponds to the P-to-S conversion wave. This clear conversion wave will be produced strong contrast between basement rock and Quaternary fan deposits. On the other hand, stations in the southern part of the Prefecture do not have a clear phase that corresponds to the conversion wave. These stations are located above thick sediment including accretionary prism. However, the derived receiver functions are not stable partly because the number of records are not large. Hence further calculation of receiver functions may stabilize the results, and stacked receiver functions of stations on thick sediment might show a peak that correspond to converted S-wave at the top of basement.