

## Receiver function analysis for the Osaka plain, southwestern Japan

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Receiver functions are calculated for stations within the Osaka sedimentary basin, southwestern Japan. The calculation was begun with verification of the azimuth of the horizontal components of the seismometers used in this study. The verification was performed with calculating cross-correlation of filtered observed ground motions between stations with in-situ measurement of the azimuth and those without the measurement. It was suggested that the actual direction was different from the assigned one by tens of degrees for several stations. Receiver function then were calculated after Soda et al. (2001) and with the correction of the azimuth of the horizontal components as suggested above. The receiver functions often contain distinct P->S converted phase that is responsible for high impedance contrast at the basin floor, which is the boundary between Pliocene sediment (Osaka Group) and pre-Tertiary rock. The arrival time of the distinct phase in the receiver function is equal to the travel time difference between S-wave and P-wave within the sediment. The observed travel time differences were compared with those calculated from the J-SHIS model developed by the NIED. It was found that the calculated travel differences were often shorter than the observed ones for stations near the northern and eastern basin edges. This shortage comes from parameterization of the basin floor. The J-SHIS model used spline functions for expressing the shape of the basin floor, which made the modeled basin floor smooth. On the other hand, several geophysical explorations revealed that the actual basin floor stays at a depth of around 1 km even at the northern and eastern edges of the basin, and is exposed to the ground surface in a step-wise form. Since the basin edge heavily controls the location of destructive strong motions near a causative fault (Kawase, 1996), parameterization of a basin floor should be further examined.

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