

## Estimating $V_p/V_s$ ratios near the fault of the 2005 West Off Fukuoka Prefecture Earthquake

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$V_p/V_s$  ratio, the velocity ratio of P wave to S wave, is an important index that expresses the physical properties of the elastic medium. Estimating precise  $V_p/V_s$  ratio leads to clarify the relationship between source process and structure and physical properties in the source region. Wadati diagram or seismic tomography has been used to estimate  $V_p/V_s$  ratio. However, it is difficult to obtain  $V_p/V_s$  ratio in the source region with high accuracy. High-resolution  $V_p/V_s$  estimate method, proposed by Lin and Shearer (2007) enables us to estimate  $V_p/V_s$  ratio in the source region focusing on a pair nearby events within a similar earthquake cluster. So we use the method and estimate  $V_p/V_s$  ratio near the fault of the 2005 West Off Fukuoka Prefecture Earthquake. In this study, we use 2164 arrival time data observed at more than 5 stations (75 permanent and temporary stations were installed within about 100km from the epicenters). Hypocenters were relocated by Matsumoto et al.(2006) using the 3-D velocity structure by Hori et al.(2006).

The estimated values of  $V_p/V_s$  ratio are between 1.57 and 2.01 and exceed 1.8 at over thirty percent of the grid points. Moreover, our result shows that a low  $V_p/V_s$  region corresponds to the location of asperity estimated by Asano and Iwata (2006).

Using waveform cross-correlation, we will be able to estimate more precise  $V_p/V_s$  values. Based on these results, we will discuss the relationship between the source process of the inland earthquake and the heterogeneous structure around the source region.

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**Keywords:**  $V_p/V_s$ , the 2005 West Off Fukuoka Prefecture Earthquake, asperity, heterogeneous structure, source process, source region