

The seismic attenuation structure in the focal area of the 2016 Kumamoto earthquake

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The 2016 Kumamoto earthquake occurred in April 2016. The first earthquake (M6.5) occurred at 21:26 (JST) on April 14th. The main shock (M7.3) occurred at 1:25 (JST) on April 16th. The aftershock activity is high and the active area covers entire Hinagu and Futagawa fault zones. The velocity structure by travel time tomography method in this area suggested that the heterogeneous feature controlled the seismic activity. In this study, we investigate relationship between the activity and heterogeneous structure with shorter wavelength.

Small scale heterogeneity in the earth is evaluated from attenuation factors of seismic waves as Q^{-1} value. We analyzed data before and after the 2016 Kumamoto earthquake and estimated the Q^{-1} values for both intrinsic and scattering attenuation. To estimate spatial distribution of the attenuation factors, Del Pezzo et al. (2016) had proposed a method in which the spatial weighting functions for estimated Q^{-1} values of many source-receiver pairs was adopted. However, the weighting function was not applicable to our data because of various hypocentral distance until several tens kilometers. Therefore, in this study, we consider the appropriate weighting function by Monte-Carlo simulation and estimate the Q^{-1} structure in the hypocentral area of the 2016 Kumamoto earthquake.

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