

Study on the Evaluation Method for Fault Displacement: Probabilistic Approach Based on Japanese Earthquake Rupture Data - Principal fault displacements along the fault-

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The purpose of Probabilistic Fault Displacement Hazard Analysis (PFDHA) is estimate fault displacement values and its extent of the impact. There are two types of fault displacement related to the earthquake fault: principal fault displacement and distributed fault displacement. Distributed fault displacement should be evaluated in important facilities, such as Nuclear Installations. PFDHA estimates principal fault and distributed fault displacement. For estimation, PFDHA uses distance-displacement functions, which are constructed from field measurement data. We constructed slip distance relation of principal fault displacement based on Japanese strike and reverse slip earthquakes in order to apply to Japan area that of subduction field. However, observed displacement data are sparse, especially reverse faults. Takao et al. (2013) tried to estimate the relation using all type fault systems (reverse fault and strike slip) so in this time, we try to estimate distance-displacement functions each strike slip fault type and reverse fault type especially add new fault displacement data set.

To normalized slip function data, several criteria were provided by several researchers. We normalized principal fault displacement data based on several methods and compared slip-distance functions. We normalized by maximum displacement rate, normalized by mean displacement rate. The normalized by total length of Japanese reverse fault data did not show particular trend slip distance relation. In the case of segmented data, the slip-distance relationship indicated similar trend as strike slip faults. We will also discuss the relation between principal fault displacement distributions with source fault character.

According to slip distribution function (Petersen et al., 2011), strike slip fault type shows the ratio of normalized displacement are decreased toward to the edge of fault. However, the data set of Japanese strike slip fault data not so decrease in the end of the fault. This result indicates that the fault displacement is difficult to appear at the edge of the fault displacement in Japan.

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