

Characteristics of focal mechanism solution of the earthquakes in the source region of the 2000 Western Tottori Earthquake based on "0.1 Manten" hyper dense seismic observation

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In order to understand earthquake generation process, stress field around an earthquake fault is important because it is affected co-seismic fault behavior. Precise Determination of focal mechanisms of earthquakes is required to estimate stress field in a target region. Here, we investigate characteristics of stress field in the source region of the 2000 Western Tottori Earthquake by hyper dense seismic network. The network is composed by about 1000 seismic stations in the region. Using high density polarity of first P wave onset data on a focal sphere from the network, we accurately determined a focal mechanism solution of small earthquake. We found some cases in which the polarity distributions of the events cannot be explained by well-known double couple earthquake source model. The misfit of the data from the expected polarity distribution provides important suggestions for understanding relation between earthquake generation and regional property of the crust. In order to identify the cause of the misfit, we considered three factors producing it: velocity structure model, far-field approximation in radiation pattern of earthquake source model, and simultaneous occurrence of events with different source mechanisms. In order to confirm a most dominant factor among them, we verify misfit for various model considering the three factors. We conclude no effect on the misfit distribution from the factors of the velocity model and the far-field approximation. On other hand, the misfit of about 25% decreased due to multiple event model. This suggests complex stress field in the region.

Keywords: focal mechanism, the 2000 Western Tottori Earthquake