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## Earthquake Occurrence Probability in Inland Japan Modified by the Information of Focal Mechanism Types of Stress Fields

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Okada et al. (2010, EPS) found that seismicity in the upper crust is higher just above low velocity zones in the lower crust. They suggested that these low-velocity zones in the lower crust might be caused by the upwelling flow of fluid originating from the mantle wedge. Their observation supports the hypothesis by Hasegawa et al. (2005, Tectono.) that inelastic deformation due to fluids forms the strain concentration zones and promotes the high seismic activities.

Hirose and Maeda (2010, SSJ) researched the relation between epicentral distributions of earthquakes with magnitude ( $M > 6.0$ ) and the precise 3D seismic velocity data [Omuralieva et al. (2010, JpGU)]. They found that seismic activity is relatively high in the regions where the seismic velocity at the lower crust near the Moho is lower than the average of that depth. Then they introduced the information of the seismic velocity into the MGR model [Hirose and Maeda (2011, EPS, in press)], and thus produced new earthquake forecast model (MGR-V model). The total performance of the MGR-V model is slightly better than the MGR model.

On the other hand, the Pacific, Philippine Sea, and land plates in Japan have influences mutually and form complicated stress fields. We expect that the precision of earthquake forecast models is improved by incorporating the information of stress fields into those models. Therefore, this study is directed to revise the MGR-V model by taking into account the information of stress fields near seismogenic zone.

We used the information of stress fields divided into three types (normal, reverse, and strike-slip) at the depth of 10 km by Terakawa and Matsu'ura (2010, Tectonics), and combined it with the relationship between epicentral distributions of earthquakes with  $M > 6.0$  and the precise 3D seismic velocity data. We found that, in stress field of the normal type (234/4227, mainly Beppu-Shimabara graben), the relationship between seismic velocity structures and seismic activities is not clear. On the other hand, in stress field of the reverse type (2097/4227, mainly eastern Japan and the Kinki district), seismic activity is relatively high in the regions where the seismic velocity at the lower crust near the Moho is lower than the average of that depth. Furthermore, the similar feature is also observed in stress field of the strike-slip type (1896/4227, mainly eastern Hokkaido and western Japan).

We will revise the MGR-V model by using these results.

Keywords: Earthquake occurrence probability model, Seismic velocity structure, Stress fields