

## **1.2-P03. Crustal heterogeneity beneath Northeastern Japanese trench arc system inferred by stress and strain numerical modeling and seismic coupling models - Step to predict earthquakes**

Development of stress and strain fields is the cause of deformations during a process of subduction. Outer rise earthquakes both tensional and compressional (Christensen and Ruff, 1988) as well as shallow inland earthquakes caused by interseismic coupling leads to accumulation of strain. These earthquakes occurring in the subduction zones deform the crust permanently which ultimately changes the crustal heterogeneity. Numerical models on stress and strain in the subduction zone will provide an idea about effects of outer rise earthquakes. Further using interseismic coupling models the behavior of the crust can be understood, since interseismic coupling is affected by the heterogeneity of structures of the forearc (Mishra et al, 2003). Interseismic coupling is also inferred by the inland deformations, therefore it is also convenient to look in-to inland heterogeneity as well. Since the 2011 Tohoku Oki earthquake (Mw 9.0), large earthquakes are expected to occur in inland. It is important to know how crustal heterogeneity inferred by seismological and electromagnetic methods affect the inland earthquakes. Therefore numerical modeling on stress - strain and seismic coupling models are essential to better understand the deformations occurring in the subduction zone which will ultimately make a huge contribution in prediction of earthquakes.

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