

Dynamics of decollement formation during accretion and mechanism of great earthquake generation in subduction zones

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In the previous studies, necessary conditions for decollement formation have been considered as the existence of weak layers due to material heterogeneities, fluid pressure anomaly, etc. Further, in the multiple decollement formation, as called decollement step-down, the newer decollement would be formed deeper than the older one. However, our numerical experiments of accretionary prism formation demonstrate that decollement can be formed without material heterogeneity, and the newer decollement is formed above the older one. We will explain the mechanism of the above processes, and propose new paradigm for the dynamics in accretion and decollement formation. Furthermore, we will discuss earthquake generation mechanism based on our dynamical model for accretion formation.