**A Universal Feature of Postseismic Transient Found in Inland and Interplate**

**Earthquakes**

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Postseismic observations after large earthquakes have been employed to investigate the rheological properties of the crust and mantle. However, due to the limited spatial and temporal resolution of observations, a unique interpretation of the postseismic signals and related rheological structures has not been achieved. One of the possible rheological models is the nonlinear (power-law) rheology, in which the effective viscosity depends on the stress change. Comparison of postseismic deformation at the same place for multiple earthquakes with different source distances can aid the identification of such nonlinear behavior. Thus, we examined GNSS baseline length changes in NE Japan, where postseismic transients due to inland (e.g., the 2008 M7.2 Iwate-Miyagi-Nairiku) and interplate (2011 M9.0 Tohoku-oki) earthquakes have been recorded.
Comparison of the temporal evolution of the postseismic transients in the same area 500-850 days after each earthquake revealed a high level of similarity in the time-dependent postseismic deformation in NE Japan after inland and subduction earthquakes independent of the magnitude of the earthquakes and tectonic backgrounds. The deformation process could be roughly explained by two exponential decay constants, suggesting a bi-viscous Burgers rheology. The behavior was confirmed in different regions in inland Japan as well. The universality of temporal changes appears to contradict the idea of nonlinear rheology. Although we cannot explain completely the near field deformation, which may represent the contribution of shallow afterslip, our results point to the geodetic observations reflecting mainly the effect of the mantle rheology. In this presentation, we will show the data and the results from different viscous structures models (linear and non-linear rheology) considered to reproduce the observations.