A trial estimation of the postseismic slip process based on seafloor borehole data and numerical simulation

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We have developed a long-term, high-quality seismic ocean floor borehole observatory system near the Japan Trench off-Sanriku, where analyses of crustal observation such as GPS or tiltmeter on-land network would not successfully detect the change because of the lack of coverage.

Ariyoshi et al. (2008 ASC) suggested that the detectable postseismic slip of the 2003 Tokachi-oki earthquakes may extend southward to the vicinity of JT1 (N39^{o}10.9', E143^{o}19.9') by comparing observed data and numerical simulation results based on the rate- and state-dependent friction law. However, their simulation assumed depth of plate boundary below JT1 was deeper than actual due to a planar fault model in their simulation model, which may cause quantitative difference of the postseismic slip propagation speed for the 2003 Tokachi-oki earthquake between the observational and simulation results because postseismic slip propagation becomes exponentially rapider and broader for low effective normal stress condition (Ariyoshi et al., 2007 EPSL).

In this study, we formulate a bending plate boundary model in order to explain the speed and range of the postseismic slip quantitatively.

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