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The fault model of the 2011 Off the Pacific Coast of Tohoku Earthquake from the coseismic strain steps

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The 2011 off the Pacific Coast of Tohoku earthquake, whose moment magnitude is 9.0, occurred. The fault slip of this earthquake caused the coseismic strain steps of 10^{-7} in the Tokai, Kii Peninsula and Shikoku, which were observed by the borehole strainmeters of Geological Survey of Japan, AIST. Using these strain steps, we estimated the fault model of the earthquake on the boundary between the Pacific and North American plates. According to the fault model, the moment magnitude of the earthquake is 8.7. Our model is almost consistent with the fault models estimated from the data of GPS and seismic waves. This shows that the array of precise borehole strainmeters can be useful for rapid estimation of faults of gigantic earthquakes.

Keywords: strain step, crustal movement, fault model, magnitude, The 2011 Off the Pacific Coast of Tohoku Earthquake