

Source model of the 2011 great Tohoku earthquake estimated from tsunami waveforms and crustal deformation data Source model of the 2011 great Tohoku earthquake estimated from tsunami waveforms and crustal deformation data

Aditya Gusman^{1*}, Yuichiro Tanioka¹, Shinichi Sakai², Hiroaki Tsushima³
GUSMAN, Aditya^{1*}, Yuichiro Tanioka¹, Shinichi Sakai², Hiroaki Tsushima³

¹Institute of Seismology and Volcanology, Hokkaido University, ²Earthquake Research Institute, University of Tokyo, ³Meteorological Research Institute, Japan Meteorological Agency

¹Institute of Seismology and Volcanology, Hokkaido University, ²Earthquake Research Institute, University of Tokyo, ³Meteorological Research Institute, Japan Meteorological Agency

The slip distribution of the 11 March 2011 Tohoku earthquake is inferred from tsunami waveforms, GPS data, and seafloor crustal deformation data. The major slip region extends all the way to the trench, and the large slip area extends 250 km long and 160 km wide. The largest slip of 44 m is located up-dip of the hypocenter. The large slip amount, about 41 m, ruptured the plate interface near the trench. The seismic moment calculated from the estimated slip distribution is 5.5×10^{22} N m (Mw 9.1). The large tsunami due to the 2011 Tohoku earthquake is generated from those large slip areas near the trench. The additional uplift at the sedimentary wedge as suggested for the 1896 Sanriku earthquake may have occurred during the 2011 Tohoku earthquake, too.

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