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Quasi real time estimation of coseismic displacement field based on the RTK-GPS time series ?Applied to the 2011 off the

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The Mw 9.0 earthquake, the 2011 off the Pacific coast of Tohoku Earthquake on March 11, 2011 (hereafter PCTE) generated a large tsunami, which caused a devastating disaster including the loss of more than 12,200 lives up to April 7. It is the extremely important for the rapid-determination of the earthquake size for disaster prevention and tsunami early warning system. Kobayashi et al. (2011) developed the rapid permanent displacement estimation method based on the RTK-GPS time series. In this study, we applied this newly developed method to the PCTE event.

The GEONET Oshika (0550) site is, which the close to the epicenter of the PCTE event, recorded huge coseismic displacement. Ohzono et al. (in this meeting) shows the detail coseismic displacement field based on the daily analysis. The estimated coseismic displacement reached 5.19 m (Eastward), 1.46 m (Southward), and 1.16 m (downward), respectively. For rapid-determination of the coseismic displacement fields, we applied our newly developed method (Kobayashi et al. (also this meeting)) to the RTK-GPS time series. In Oshika site, we succeed to determine the coseismic displacement 2 minutes 28 seconds after the mainshock occurrence. The estimated coseismic displacement amount is 5.20 m (Eastward), 1.50 m (Southward), and 1.49 m (downward), respectively. It is almost consistent with the daily coordinate analysis. When we applied the same procedure to the all GEONET sites of the Tohoku and Kanto region, the coseismic displacement estimation finally finished after the approximately 4 minutes after the mainshock. Our result suggests that we can start the coseismic fault estimation after the 4 minutes after the mainshock. We will show the more detail discussion including rapid determination of the coseismic fault model in this meeting.

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