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MIS036-P07

Room:Convention Hall

Time:May 26 14:15-16:15

## Possibility of Mw 9.0 mainshock triggered by diffusional propagation of after-slip from Mw 7.3 foreshock

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In two days advance of the March 11, 2011 off the Pacific Coast of Tohoku, Japan, earthquake, a Mw 7.3 earthquake occurred at a location 40 km away toward northeast from the mainshock hypocenter. I investigated the spatio-temporal changes in seismicity from the Mw 7.3 foreshock, May 9 2011, 11:45, to the Mw 9.0 mainshock, May 11, 14:46 (Japan Standard Time). I found that seismic activities slowly migrated from the source area of the foreshock, which presumably reflected the propagation of after-slip. The mainshock rupture was initiated when the migration reached to the hypocentral location of the mainshock. It is also found that the migration slowed down as it expanded, where the migration distance was well fitted by a certain curve proportional to square root of duration, suggesting that the propagation was limited by diffusion with the diffusion coefficient of about  $104 \text{ m}^2 \text{ s}^{-1}$ . This value of the diffusion coefficient is of the same order of magnitude with that reported for the migration of the deep non-volcanic tremor. These results appear to be compatible with a conceptual model that strongly coupled patches are separated by decoupled stable regions on this plate-interface, however these patches were not mechanically isolated and became interactive when they broke.

Keywords: Tohoku, Japan trench, foreshock, triggering, seismicity, afterslip