

Japan Geoscience Union Meeting 2011

(May 22-27 2011 at Makuhari, Chiba, Japan)

©2011. Japan Geoscience Union. All Rights Reserved.



SSS026-P13

Room:Convention Hall

Time:May 27 14:00-16:30

Generation mechanism of the swarm activity following the 2004 Sumatra-Andaman earthquake

Shinya Hiratsuka^{1*}, Tamao Sato¹

¹Sci. and Tech., Hiroasaki Univ.

A swarm activity occurred east off Nicobar Islands about a month after the 2004 Sumatra-Andaman earthquake. We discussed three problems of the swarm activity, i.e.,(1) How could the spatial distribution of strike-slip events and normal fault events be explained? (2) Why was the swarm activity triggered east off Nicobar Islands? (3) What is the cause of the swarm activity that started about a month later? In order to answer these problems, we relocated the hypocenters of the swarm activity using the Modified Joint Hypocenter Determination (MJHD) method and investigated the spatial distribution of fault plane solutions. As results, we found that the spatial distribution of strike-slip events and normal fault events can be explained by the activation of Riedel shears in the region between West Andaman Fault (WAF) and Sumatra Fault System (SFS). Normal fault events may have been triggered by the increase in tensional stress associated with injection of magma into tension fractures. Moreover, we calculated the change of the Coulomb Failure Function (dCFF) due to the mainshock and afterslip of the Sumatra-Andaman earthquake. Based on the results of these analysis, we found that the spatial pattern of dCFF due to mainshock could explain why the swarm activity occurred east off the Nicobar Islands. The delay of the swarm activity may be due to the afterslip or the injection of magma into tension fractures.