

Japan Geoscience Union Meeting 2011

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

©2011. Japan Geoscience Union. All Rights Reserved.



MIS036-P13

Room:Convention Hall

Time:May 26 14:15-16:15

Crustal deformation of the 2011 off the Pacific coast of Tohoku Earthquake detected by SAR interferometry

Taku Ozawa^{1*}

¹NIED, Japan

On 11 Mar. 2011, Mj9.0 great earthquake occurred off the Tohoku district where the Pacific plate is subducting beneath the North American plate. To investigate crustal deformation associated with this earthquake, we applied SAR interferometry technique to ALOS/PALSAR data. Now we analyzed strip-map mode data for seven ascending and three descending orbit paths, and obtained clear fringes over the land area. Fringe configuration for ascending orbit was roughly half circles, which centered the epicenter of the mainshock, meaning that large dislocation occurred there. This slant-range change is consistent with the thrusting of the plate interface.

Crustal deformations associated with inland shallow earthquakes that occurred after the Mj9.0 earthquake were also obtained. Around the epicenter occurred in the Nagano Prefecture (2011/3/12, Mj6.7), slant-range change of 10cm was obtained, indicating that the fault dips to southeast. Furthermore slant-range change by another small fault was found. In the northern area of the Ibaraki Prefecture, slant-range change due to the earthquake occurred in 2011/3/19 (Mj6.1) was found, and it indicates that the fault dips to southwest. In the eastern area of the Fukushima Prefecture, slant-range changes due to earthquakes occurred in 2011/3/23 (Mj6.0) and 2011/4/11 (Mj7.0) were found. It indicates that the fault of the 2011/3/23 earthquake dips to west. For the 2011/4/11 earthquake, the obtained interferogram shows that crustal deformation concentrated along the Yunotake Fault and the Idosawa Fault.

Keywords: the 2011 off the Pacific coast of Tohoku Earthquake, crustal deformation, SAR, interferometry, InSAR