

Surface deformation associated with the Meinong, Taiwan, earthquake

*Manabu Hashimoto¹

1. Disaster Prevention Research Institute, Kyoto University

A Mw 6.4 earthquake hit southern Taiwan on February 6, and claimed more than 100 casualties due to the collapse of building. In order to detect surface deformation associated with this earthquake, we analyzed ALOS-2/PALSAR-2 images provided by the Japan Aerospace Exploration Agency (JAXA). Post-event observations were made on February 9 and 14 with strip-map mode from the ascending orbit and with ScanSAR mode from the descending orbit, respectively. ScanSAR mode image covers the entire southern half of Taiwan including the epicenter. Therefore we can discuss total image of earthquake. We performed 2-pass interferometry with Gamma software with ASTER-GDEM ver. 2. In ScanSAR interferogram, we found a 20 km x 20 km are of increase of line-of-sight (LOS) up 9 cm and a 10 km (EW) x 20 km (NS) zone of LOS decrease up to 12 cm. The latter zone is also recognized in the strip-map mode interferogram, implying that this zone uplifted. These results are consistent with the GNSS observations and interpretation that the thrust motion on a shallow dipping decollement is responsible for this event (Ching et al, 2016, personal communication).

It is interesting that there is a zone of LOS increase sandwiched by two LOS decrease areas. There is a report that cracks were found in the peripheral region of this LOS increase zone (Ray Chuang, personal communication). This observation implies that a subsidiary faulting may have occurred near the western edge of decollement.

We also found LOS increase in northeastern part of the Tainan city. This area is an alluvial plane near a river. Therefore we suspect that liquefaction occurred in this area.

We will visit Tainan and make a field reconnaissance. We will report the results of field reconnaissance as well.

ALOS-2/PALSAR-2 images were provided by JAXA through the activity of SAR analysis Working Group of the Coordinating Committee for Earthquake Prediction. The ownership and copyright of ALOS-2/PALSAR-2 images belong to JAXA.

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