Surface deformation from multi-temporal INSAR methods with ALOS PALSAR in Pingtung Plain

aChia-Ying Lee, aWei-Chia Hung, aCheinway Hwang

a Department of Civil Engineering, National Chiao Tung University, Taiwan.

Tel: + 886-3-5712121#{54958}; E-mail: {joyokolee@gmail.com; khung@itrige.com.tw; cheinway@mail.nctu.edu.tw}

**ABSTRACT:** Pingtung Plain is suffering severe subsidence caused by groundwater withdrawal. Extracting groundwater has caused large-scale land subsidence in Pingtung Plain, with the largest cumulative subsidence being 339 cm over 1972-2011. The subsidence has caused that the elevation in coast area is lower than sea level. How to effective monitor land subsidence becomes a major issue in Taiwan. Interferometry synthetic aperture radar (INSAR) technique has proven a useful way for detecting ground displacement. This technique can not only apply to some geohazards such as volcanoes, landslides and land subsidence but also offer ground information with high spatial resolution and centimeter-scale accuracy. In this study, We utilize two Multi-temporal InSAR (MT-InSAR) methods including Temporarily Coherent Point InSAR (TCPInSAR) and Persistent Scatterer InSAR(StaMPS) with 18 ALOS PALSAR acquisitions from 2007 to 2011 to derive land deformation, respectively. Results of this study show that the subsidence region located at Linpien River’s two-side area near coast area in Pingtung Plain and demonstrate the effectiveness of TCPInSAR and StaMPS in monitoring land subsidence.

**KEY WORDS:** Land Subsidence,TCPInSAR, StaMPS