Preliminary result of PSInSAR from Yunlin Country, central Taiwan

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Abstract

Groundwater withdrawal and the convergence between the Philippine Sea plate and the Eurasian continent are both actively affecting the surface deformation in central part of western Taiwan. Previous research indicates more than 8 cm/yr of subsidence is observed in Yunlin county. The high rate of surface deformation not only will damage the natural environment of the area but also likely to cause damages to the infrastructures. In order to quantify different types of deformation and further mitigate the hazards caused by both tectonic and anthropogenic activities, many geodetic measurements were deployed in Taiwan.

However, the spatial density of these geodetic measurements were generally very low due to the high cost of the instrument or the time required for the campaign. An alternative method was using SAR interferometry, however, the vegetations and farmland in central Taiwan prevent the radar signal from having high enough coherence to form meaningful interferogram. Persistent scatterer InSAR was therefore deployed in our study area to acquire the deformation signal. The result showed that a significant amount of area in central Taiwan was subjected to a very rapid subsidence rate of up to 10 cm/yr. Further works are needed in order to precisely map out the area affected and find out the causes of the phenomenon.

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