

Suggested topics: Data processing - Change detection

Preference: poster presentation

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PS-InSAR for ground deformation monitoring using ALOS PALSAR data: a case study in Singapore

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Persistent scatterer interferometric synthetic aperture radar (PS-InSAR) has been proven as a valid tool for monitoring the ground deformation up to millimeter accuracy, and it has been applied in a number of applications. Ground subsidence is a geological phenomenon caused by either natural (e.g. earth quake) or human factors (e.g. land reclamation, excessive exploitation of underground water). As compared to optical remote sensing, space-borne SAR is favored with its nighttime observation, large-scale coverage and cloud-penetrating capability, which is particularly useful in tropical areas, where the optical images suffer frequent presence of dense cloud coverage.

In this paper, we are curious in the stability of the reclaimed land in Singapore, which was started in the 1960s and had increased 51.5 km square by 1990. Due to the advantage of data availability and the PS-InSAR techniques, we have conducted our first study on applying PS-InSAR technique to generate the ground surface change map of Singapore from ALOS PALSAR level 1.1 images, for possible inspection of the reclaimed areas. The initial results demonstrate that most of the reclamation area is stable, areas with ground subsidence will be illustrated and discussed further, and the more detailed analysis will appear in the full paper.

Keywords: D-InSAR/PS-InSAR, interferogram, ground deformation monitoring

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