

Suggested topics: Data processing - Change detection

Preference: poster presentation

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Multi-temporal InSAR deformation analysis over Singapore

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Interferometric synthetic aperture radar analysis has developed for several years, which has been applied in a number of applications. With the availability of more and more SAR satellites and data, multi-temporal InSAR methods were initiated since the late 19th century and it has been proven as a valid tool for monitoring the ground deformation up to millimeter accuracy. 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-born SAR is favored with its nighttime observation, large-scale coverage and cloud-penetrating capability, which is particular useful in tropical area, where the optical images suffer frequent presence of dense cloud coverage.

In this paper, we are curious about the stability of the reclaimed land of Singapore, which was started in 1960s and had increased 51.5 km square by 1990. With the advantage of the multi-temporal InSAR analysis techniques, we have conducted study on applying Persistent Scatterer - InSAR and Small Baseline - InSAR to generate the ground surface change map of Singapore from ALOS PALSAR images. 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: PS-InSAR, SB-InSAR, multi-temporal analysis, ground deformation monitoring

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