

# Removal of Residual Topographical Phase using Three-Pass DInSAR Stack

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## Abstract

Differential Interferometry of Synthetic Aperture Radar (DInSAR) is a technique that is commonly used to map land deformation over a large area of land up to an accuracy of millimeter range. An external digital elevation model (DEM) is usually taken as reference topology to extract the changes. Due to the relatively small baseline of Shuttle Radar Topography Mission (SRTM) of 60m compared to the perpendicular baseline of Advanced Land Observing Satellite (ALOS) repeat passes of up to hundreds of meters, residual topographical phases are detected.

In this paper, we used three-pass DInSAR with a large baseline as the topographical pair and to bypass the residual topographical phase. The land movement of an urban area will be studied using both techniques. The pros and cons of stacking three-pass DInSAR compared to stacking SRTM DEM are also discussed.

**Keywords:** Interferometric Synthetic Aperture Radar (InSAR), Three-Pass Differential InSAR (DInSAR), InSAR Stacking