

Investigating Surface Deformation of Small Islands by Persistent Scatterer InSAR

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Abstract- Interferometric Synthetic Aperture Radar (InSAR) in sea environment with clutter background has many research in the literature. However, most of them are mainly detecting large islands.

In our case, we utilize SAR images to detect the small island and calculate the deformation rate of surface. And we focus on the permanent scatterers technique, an advanced InSAR technique, as a method which has been proved an operational tool for measuring surface deformation monitoring due to its millimeter precision and spatial samplings.

About 15 ERS 1/2 scenes have been processed to estimate the velocity field of the island surface. Time series of displacement has been extracted, and ascending and descending geometry data sets have been jointly exploited to produce vertical and horizontal displacement maps. The processing procedure includes three steps: interferometric phase fringe, coherence evaluation, and multi-look analysis. This method is applied with ERS 1/2 Single Look Complex (SLC) image in Taiwan area.

Keywords- Islands, InSAR, PSInSAR,