INTERFEROMETRY IN PROCESSING YEAR-LONG SPACEBORNE SAR IMAGES OVER TERRAIN

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KEY WORDS: Synthetic Aperture Radar (SAR), Surface Deformation, SAR Interferometry, Persistent Scatterer

ABSTRACT: The Interferometric Synthetic Aperture Radar (InSAR) technique is an application of the traditional radar image. It has been widely used to monitor the surface elevation. In recent years, it's also used to observe the volcano, earthquake and other natural disasters.

The quality of radar images influence the result of InSAR. Due to temporal and geometry de-correlation, not only the interferogram is hard to recognize but also the surface deformation becomes hard to estimate. Even if the Persistent Scatterer (PS) InSAR technique is proposed, in late 1990s, to overcomes this limitation. But low correlation will decrease the density of PS points. However, the number of PS points is not enough in the mountainous area to acquire confident results.

This paper uses coherence value as an index to select the PS points. And model the SAR image return signal at those PS points. We uses Delaunay triangulation to connect PSs to help us calculate the phase difference between two neighbor PSs. The final step is a least-squares method to estimate surface deformation and topographic error.