

## APPLICATIONS OF INSAR TECHNIQUE TO MONITOR THE SURFACE DEFORMATION ON THE WESTERN LESSER HIMALAYAS AND THE ADJOINING PIEDMONT ZONE OF GANGA PLAIN, INDIA

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**ABSTRACT:** Radar interferometry is a technique for extracting information about the Earth's surface by using the phase content of the radar signal as an additional information source derived from the complex radar data. The present study pertains to applications of DInSAR and PSInSAR techniques to identify surface deformations, in the western Himalaya and Piedmont zone of the Ganga Plain in India. The southern part of the study area is located in the Piedmont Zone of the Ganga Plain, which has extensive built-up areas. Here the DInSAR technique is expected to reveal even slight deformation features owing to its sensitive characteristic. The northern part of the study area, on the other hand, is located in the Himalayan mountain ranges. Here DInSAR technique might not be able to determine the phase change signal upon which to draw any conclusions about the regional surface deformation owing to its low correlation,. Therefore, the Persistent Scatterer (PS) InSAR technique has been applied to extract the phase signal of the chosen PS points for the northern part. This study is first of its kind in the study area, the preliminary results of which reveal some surface deformation, related to the active tectonic movements in the region. We then compared our results with the geomorphology and our field observation. This comparison largely helps us to understand the recent deformation in and around the western Himalaya and Piedmont zone of the Ganga Plain.