



Enhanced Spatial Differences (ESD): a new technique for DInSAR monitoring of deformation over wide areas

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Multipass differential Synthetic Aperture Radar interferometry is gaining more and more importance as a powerful technique for ground deformation monitoring compared to classical geodetic techniques such as levelling and GPS in terms of costs, coverage, data accessibility and availability of historical archives. Application to different areas of risk management such as monitoring of volcanoes and slope instabilities, tectonic movements, urban areas and infrastructure, has been already successfully demonstrated. In this work we discuss a new multipass Differential Synthetic Aperture Radar interferometry (DInSAR) processing technique that makes extensively use of spatial differences. The obtained results demonstrate that this technique, named Enhanced Spatial Differences (ESD), allows achieving a fast estimation of deformation velocity as well as an accurate monitoring of deformation over wide regions. Processed data are relative to the ERS-1 and ERS-2 sensors and have been acquired over three, partially overlapping, tracks relative to a region, located in the center-south of Italy, west coast.