



Advanced Differential Radar Interferometry (A-DInSAR) as integrative tool for a structural geological analysis

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Advanced Differential SAR interferometry (A-DInSAR) is a technique monitoring large-coverage surface deformations using a stack of interferograms generated from several complex SLC SAR images, acquired over the same target area at different times. In this work are described the results of a procedure to calculate terrain motion velocity on highly correlated pixels (E. Biescas, M. Crosetto, M. Agudo, O. Monserrat e B. Crippa: Two Radar Interferometric Approaches to Monitor Slow and Fast Land Deformation, 2007) in two area Gemona – Friuli, Northern Italy, Pollino – Calabria, Southern Italy, and, furthermore, are presented some consideration, based on successful examples of the present analysis. The choice of these pixels whose displacement velocity is calculated depends on the dispersion index value (DA) or using coherence values along the stack interferograms. A-DInSAR technique allows to obtain highly reliable velocity values of the vertical displacement. These values concern the movement of minimum surfaces of about 80m² at the maximum resolution and the minimum velocity that can be recognized is of the order of mm/y. Because of the high versatility of the technology, because of the large dimensions of the area that can be analyzed (of about 10000Km²) and because of the high precision and reliability of the results obtained, we think it is possible to exploit radar interferometry to obtain some important information about the structural context of the studied area, otherwise very difficult to recognize.

Therefore we propose radar interferometry as a valid investigation tool whose results must be considered as an important integration of the data collected in fieldworks.