



Monitoring historical sites via the Differential Interferometry SAR technique

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Multipass Differential Interferometry Synthetic Aperture Radar (DInSAR) is gaining an increasing importance for ground deformation monitoring compared to classical geodetic techniques such as levelling and GPS in terms of costs, coverage, data accessibility and availability of data 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 focus on the application of this technique to the monitoring of historical structures. In this field the technique has a potential twofold application. First of all it allows a direct monitoring of the structures, without the need of onsite intervention and of installation of ground sensors. Secondly, as the technique is typically applied on data covering a large area, it allows investigating also the possible ground deformations in the area surrounding the structure, thus contributing to a better understanding of the hazard sources that can interest historical structures and sites.

In this work we present the results of the application of the DInSAR technique to ERS and ENVISAT data on some historical sites, mainly located in Italy, to show the potentiality of the technique in terms of coverage of the measurement points and of the accuracy of the measurements.