



Swelling soils monitoring through PSI and DINSAR interferometry : Applications on eastern Paris surroundings (France)

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Swelling soils may induce small surface displacements under various climatic conditions, that may affect individual buildings. The aim of this work, funded by MAIF foundation (Insurance foundation), is to monitor those small seasonal-dependant displacements through DINSAR and persistent scatterer interferometric methods. The eastern paris basin is locally composed of outcropping Marne de Pantin and Argiles Vertes particularly sensible to swelling phenomena observed during for instance the last dryness event of 2003. Radar differential interferometry (DINSAR) method which enables one to map surface displacements from two radar images acquired on a specific area gives rather poor results and is not that efficient in the eastern Paris Basin highly due to the temporal decorrelation. On the contrary, interesting results are obtained with Persistent Scatterer Interferometry (PSI) which reveal precisely the surface displacements, continuous in time. This new application of interferometry presents high potential to better understand the swelling soil natural hazards and the induced geologic processes.