

## **Determining soil erosion by water using high resolution remotely-sensed data**

**MAGDALENA FITRZYK**

*Institute of Geodesy and Geoinformatics, Wrocław University of Environmental and Life Sciences, Grunwaldzka 53, 50-357 Wrocław, Poland*  
[magdalena.fitrzyk@igig.up.wroc.pl](mailto:magdalena.fitrzyk@igig.up.wroc.pl)

**Abstract** The Trzebnickie Hills located to the north of Wrocław, Poland, are dominated by fertile loess soil formations which are highly susceptible to water erosion. Against this context, the aim of this study was to investigate the advantages and limitations of using satellite imagery in the assessment of water erosion of loess soils. More specifically, the work focused on the interferometric analysis of high resolution SAR images from the TerraSAR-X satellite using coherence imagery. The results of this analysis were superimposed on a digital elevation model and slopes map to assess the relationship with coherence loss. Both visual interpretation and statistical analysis demonstrated that there may be correlation between local terrain slope angles and decreased correlation in coherence maps. Since slope is a major trigger of soil denudation, it was concluded that coherence maps can serve as a useful tool for extracting and delineating eroded areas. However, certain conditions must be met before the assessment of erosion from coherence maps can be considered credible and these are briefly discussed.

**Key words** loess soils erosion; TerraSAR-X; interferometry