



## **Modelling shallow landslides within the context of a distributed framework for multi-risk assessment of natural hazards.**

**C. I. Bovolo** (1), S. J. Abele (1), J. C. Bathurst (1)

(1) School of Civil Engineering and Geosciences, University of Newcastle upon Tyne  
(Isabella.Bovolo@ncl.ac.uk, Fax: +44 191 222 6669)

The SHETRAN landslide model is a physically based, spatially distributed integrated surface/subsurface modelling system for water flow and sediment transport in river basins. It models shallow landslides based on infinite slope analysis (factor of safety). Unlike most landslide models, which are typically limited to scales of a few square kilometers, SHETRAN can predictively examine the occurrence of shallow landslide and debris flows in a catchment, on a spatially distributed basis, at a scale of up to 500 km<sup>2</sup>. SHETRAN can simulate the land phase of the hydrological cycle, soil erosion and sediment yield, and shallow landsliding as a function of land use and climate (including rainfall characteristics).

As part of the EC MEDIGRID project (004044), the SHETRAN landslide model is being incorporated into a distributed decision support framework for assessing multiple hazards. The SHETRAN landslide model, together with other models of forest-fires, flash floods and soil erosion, are being developed into web applications in order to be run remotely as web services over the internet. A distributed repository of data, combined with field measurements from countries that have suffered important forest fires is being created by the project partners. The MEDIGRID testbed will initially have data storage nodes and model processing nodes set in Greece, Slovakia, France, UK, Portugal and Spain. These individual nodes form a modular framework based on distributed data architecture.

Users will be allowed to run the models, initially for study areas in Spain, France and Portugal. A standardised data repository is being developed with data sharing capability so that the output of one model can be input to another via data transforma-

tion tools. Data transformation tools are currently being developed for the SHETRAN model. In addition, the SHETRAN code is being modified to allow a greater range of user-friendly and generic input/output results.

The development of SHETRAN and the other hazard assessment models into web-based risk-assessment tools, using distributed disaster data, and the establishment of a framework to validate risk models, will help users to assess the impact of multiple hazards and help reduce disasters risk.