



Mediterranean Grid of Multi-Risk Data & Models



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

C. Isabella Bovolo, Simon J. Abele, James C. Bathurst
 School of Civil Engineering and Geosciences, University of Newcastle upon Tyne, UK
Isabella.Bovolo@ncl.ac.uk, S.J.Abele@ncl.ac.uk, J.C.Bathurst@ncl.ac.uk

Introduction

MEDIGRID is an EC funded project (GOCE-CT-2003-004044), led by AlgoSystems, in which the School of Civil Engineering & Geosciences, University of Newcastle upon Tyne, UK, is a partner. The MEDIGRID project aims to use distributed computing technology to integrate hazard assessment models. The SHETRAN landslide model, together with other partners' models of forest-fires, flash floods and soil erosion, are currently being modified in order to be run remotely over the internet as web services. When combined, these models will form a larger grid service, allowing each model to be configured, chained, and run as a single step process. Where appropriate, the results of one model will act as input to another. Transformation tools allow model data to be converted to, and from, a common data format, so that information can be shared. All data will be stored and accessed via a set of distributed data repositories, spread across partner and data holder sites.

MEDIGRID is integrating SHETRAN and other hazard assessment models into web-based, distributed risk-assessment services, using shared disaster-related data resources. The MEDIGRID system should help users to assess the links between, and impacts of, multiple hazards and help reduce the risks posed by natural disasters.

Data Warehouse

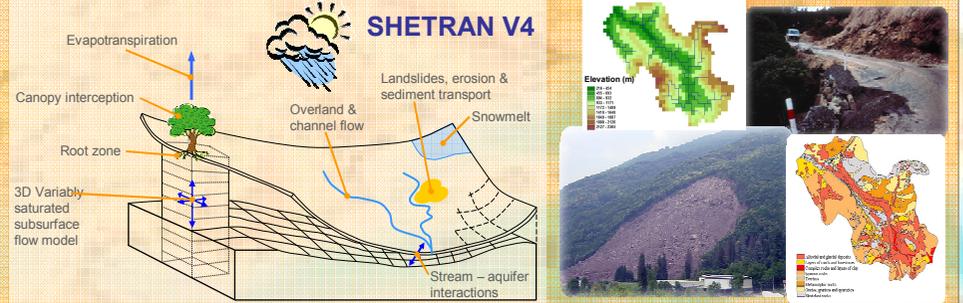
A standardised, distributed, data repository is being created, populated with physical and climate data, plus field measurements from countries that regularly suffer from forest fires. Users will be able to run the models, initially for study areas in Spain, France and Portugal.

Grid Portal

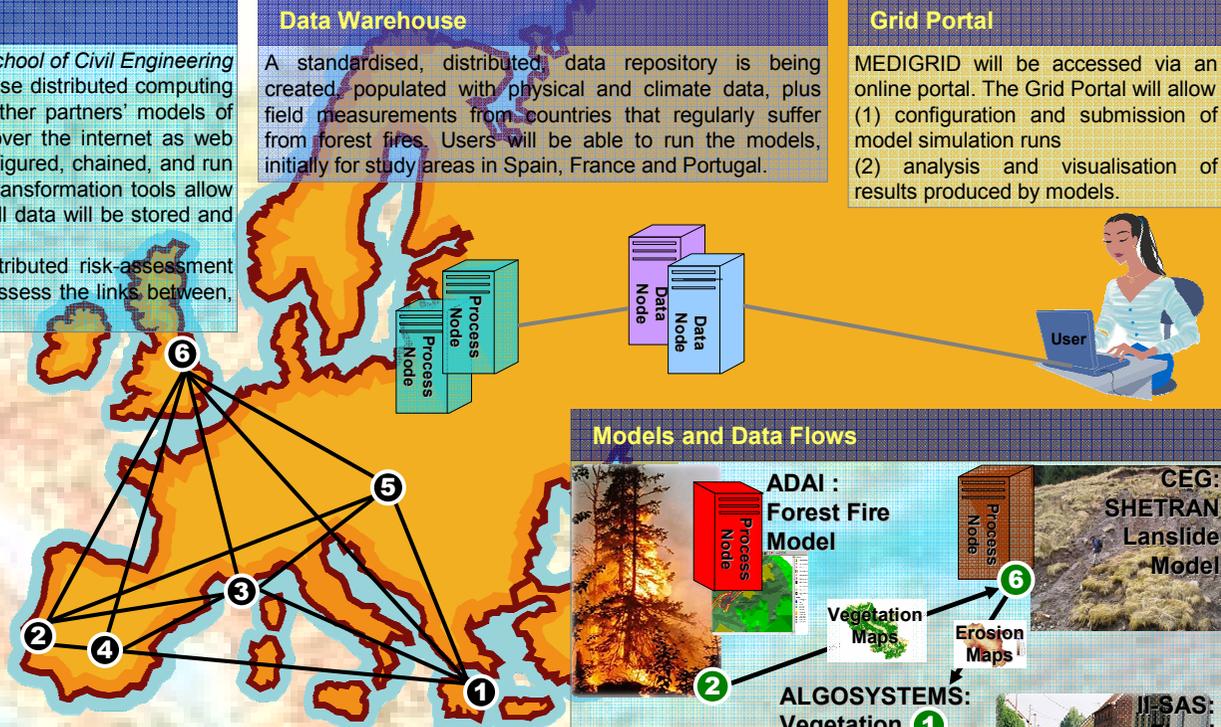
MEDIGRID will be accessed via an online portal. The Grid Portal will allow (1) configuration and submission of model simulation runs (2) analysis and visualisation of results produced by models.

The SHETRAN model

As part of MEDIGRID, the SHETRAN landslide model is being developed into a web-based application. Data transformation tools for converting data to and from a common format are currently being developed and the code is being modified to allow a greater range of user-friendly and generic input/output results.



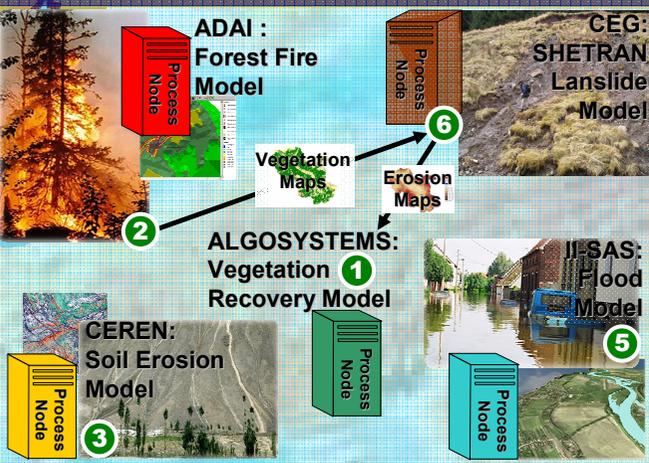
- > SHETRAN is a physically based, spatially distributed, integrated surface / subsurface modelling system for water flow and sediment transport in river catchments.
- > The landslide component models shallow landslide occurrence and the resulting sediment yield at the catchment scale, using infinite-slope, factor-of-safety analysis. It is relevant to catchment scales of up to 500 km².
- > SHETRAN can predictively examine the impacts of possible future changes in land-use and climate (including rainfall characteristics) and can therefore be used in hazard assessment and as a tool for developing mitigation strategies.



Processing & Data-storage Nodes

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 a distributed network of hardware, software and data.

Models and Data Flows



More Information

For further information about MEDIGRID, please see <http://www.eu-medigrid.org>, <http://ce-gs09.ncl.ac.uk/medigrid/> and visit the European Network of Research in Natural Disasters, EU-MEDIN, at <http://www.eu-medin.org>.