Modelling natural hazards in gvSIG with the HortonMachine plugins

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Abstract

The climate change and the recent extreme events occurred all over the world draw again the attention to the natural hazards both for prevention and for management aspects. In this context, environmental modelling can help in mapping hazards and risks zones and to support decision makers in building functional infrastructures with low environment impact and for a safe urban planning.

In the context of modelling natural hazards hydro-geomorphology analysis is a key aspect. In the last decades many researchers tried to extract useful information from digital data and in particular from Digital Terrain Models (DTM) with the development of ad-hoc algorithms and tools. In the meanwhile the data availability increased and high precision DTM are available almost all over the world.

There are many possibilities to analyze natural hazards and to define hazard and risks zones as required by the national and international directives. The algorithms contained in the HortonMachine library are the result of more than 10 years of research, development and real application of people from different research institutes and professionals working in the field of natural hazards. The HortonMachine library contains tools for data management (raster, vector and point cloud), data collection in the field, and environmental modelling in particular related to hillslope stability, floods, debris flow, forestry management and large wood transportation during floods.

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