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A component based framework for estimating shallow landslides and debris flow hazard

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It is presented the framework, and the models used for estimating shallow landslides and debris flow hazards. The modelling is based on the distributed model GEOtop and GEOtop-FS (www.geotop.org), which are respectively a distributed hydrological model with dynamic water and energy budgets, and a model of soil stability. Visualization of data and results of the models is performed through tools based on JGrass (www.jgrass.org). JGrass also includes the tools for terrain analysis, and soil characterization which are needed to feed the models, a version of SHALSTAB, and a connection to the software R (www.r-project.org) for statistical analysis. The modeling framework is based on international open source strandards. The data base is derived and based upon concepts developed by CUAHSI (www.cuahsi.org), based on PosgreSQL/PostGIS (www.postgresql.org) and contains tools to exchange and manage (visualizzation and query) the contained data. Hydrological submodels are implemented using the Openmi (www.openmi.org) component framework in Java version.