Debris flows are phenomena intermediate between sediment-laden floods and landslides. They pose a major hazard to people and property when interfering with infrastructures or buildings.
The present thesis is directed towards the design of freely available, GIS-based model frameworks for simulating the processes of debris flow triggering, mobilization, and runout, in order to help reducing the risk.
The newly developed model frameworks were tested for some selected study areas along the international road corridor from Mendoza (Western Argentina) to Central Chile.
The model layout and the results are presented in detail, and the capabilities and limitations of the models are discussed.

Martin Mergili

Martin Mergili was born in 1979 in Linz, Austria. After a technical education, he completed his studies in Geography at the University of Innsbruck in 2005. He elaborated the present thesis as part of his doctoral studies of Natural Sciences at the same university. The major research interest of Martin Mergili is GIS-based modelling in the fields of natural hazards research and environmental sciences.

Martin Mergili Integrated modelling of debris flows with Open Source GIS

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Integrated modelling of debris flows with Open Source GIS

Numerical simulations of triggering, mobilization, and runout of debris flows for selected study areas along the Trans-Andean road corridor Mendoza – Valparaíso