Geophysical Research Abstracts,
Vol. 10, EGU2008-A-09827, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-09827
EGU General Assembly 2008

Testing capabilities and limitations of a model for the prediction of debris flow inundated areas

M. Berti , **M. Mammoliti** and A. Simoni

Dipartimento di Scienze della Terra e Geologico Ambientali, Università di Bologna (simoni@geomin.unibo.it)

Two predictive equations, that relate the lahar volume (V) to the cross-sectional inundated area (A) and to the planimetric inundated area (B), can be adapted to debris flows. These equations (and), derived by combining a scaling analysis of lahar kinematics with the statistical analysis of data for 27 historical lahars, have been implemented in an automated code (DFLOWZ) that delineates the inundated area on a debris flow fan on the basis of a user-specified debris flow volume V with taking the statistical uncertainty in the prediction into account. DFLOWZ is simple, reproducible, and it can handle both confined and unconfined flow. This work tests the validity of this approach in the prediction of debris flow inundated areas and, in order to verify its validity and main limitations, the model was applied on a dozen of well documented debris flow events that have been surveyed in the Eastern Italian Alps. Each of them has been studied to obtain informations about the inundated area and the debris flow volume. In addition, DEMs with normal resolution of 10 m and, in some cases, high resolution DEM obtained by laser scanner technique, are available for each case of study. The results have shown the importance of DEM accuracy and local conditions in detrmining the channel overflowing. In spite of this, it has been demonstrated that the method can be useful for practical applications.