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ON THE INFLUENCE OF RHEOLOGY ON DEBRIS FLOW MATHEMATICAL SIMULATION: A REAL CASE

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Mathematical models, based on systems of differential equations, are widely used for simulation of debris flow initiation, propagation and deposition, both in field applications (prediction of run out, design of countermeasures, etc.) and in laboratory research. The numerical solution of the equations can be very difficult, due to the complexity of the models themselves and to the variability of physical unknowns in time and space, consequently many numerical methods have been developed. However, the choice of the most reliable rheological model could be more important than the choice of the numerical method. A simulation of a debris flow occurred in the Rio Moscardo (Northeastern Italy) has been made, and the results have been compared to the limnographs recorded during the same event. The rheological parameters obtained have been compared to those of previous events, occurred in the same basin. The simulation shows that the influence on the calculation of inertial terms of the equations is much less than the influence given by the choice of rheological parameters and geometry.