



ISeeSnow - initiating an avalanche simulation tool intercomparison

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The ISeeSnow pilot-study aims at bringing together and starting a conversation among the different groups in the field of gravitational mass flow simulations, with a focus on snow avalanches. These simulation tools are an integral part of engineering practice, scientific development and academic education.

At its core, an objective comparison of simulation results is performed for three different test cases, based on a generic, idealized topography as well as a real-world simulation scenario. In this initial effort, we focus on thickness-integrated shallow water models using a simple Coulomb- or classical Voellmy rheology. In this manner, comparing simulation results for the test cases, prescribing the friction parameters, topography, release area and release thickness, allows us to analyze common features and differences stemming from the various implementations, i.e. formulation of model equations, choice of numerical methods and their implementation into computer code as well as geo-data handling (input/output). We also include simulation tools that rely on a different mathematical formulation and basic assumptions (e.g. 3D models or conceptual approaches) and perform a qualitative comparison for a specially designed test case. Furthermore,

performing this pilot-study helps to identify common data needs, come up with standard result formats and discuss helpful visualization options. As a third outcome, we summarize ideas on what is needed to perform a more comprehensive model intercomparison study which also tackles model verification and validation tests, with respect to test designs, required input data as well as model configuration options. In this community-based contribution, we present the concept of the ISeeSnow pilot-study, show preliminary results of the simulation comparison and give an outlook on potential avenues for a future comprehensive model intercomparison project.