



How relevant are anisotropic flow processes in the unsaturated zone for flood modelling in Central European Mountain regions?

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Interflow has a clear influence on the runoff generation at the catchment scale and on the development of flood events. Among other factors flow processes in the unsaturated zone are characterized by anisotropic flow conditions, that are caused by the soil structure (e.g. stratification, compaction, particle orientation), periglacial debris layers (which are frequent in Central European Mountain areas) or preferential flow paths (root systems etc.). In the study presented the role of anisotropic conditions in the unsaturated zone during flood events is investigated with a distributed rainfall-runoff model of the mesoscale Upper Flöha Watershed (Southeastern Germany). The study area is located in the Ore Mountains, one of the main source areas for flood runoff in the Elbe basin (e.g. 2002, 2006, 2013). Model development is based on the conceptual modelling system NASIM (Hydrotec GmbH Aachen). For selected flood events the study analyzes the sensitivity of the model to a variation of the vertical and lateral hydraulic conductivities and defines optimum parameter sets for the Ore Mountains. The identified parameter sets are compared to field investigation in the region and from that conclusions for the relevance of anisotropy in flood models are drawn.