

THREE-DIMENSIONAL MODELLING OF KARST DEVELOPMENT ON THE CATCHMENT SCALE

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Aim of this work is to study the genesis of karst aquifers at the catchment scale. In particular the influence of different boundary conditions and the competing influence of different processes are studied. A numerical modelling tool has been developed, based on a dual porosity approach, which allows the simulation of the characteristic dualistic flow behaviour in karst aquifers as well as of the karstification process.

Results of three-dimensional modelling studies are presented with scenarios to investigate the possibility of deep phreatic karstification as result of valley incision. This is done using varying boundary conditions for the recharge and the river. The type of karstification developing depends strongly on the geological setting and the type of boundary conditions applied.