Andreas Rupp, abstract

We formulate a coupled surface/subsurface flow model that relies on hydrostatic equations with free surface in the free flow domain and on Darcy’s law in the subsurface. The model is discretized using the local discontinuous Galerkin method, and a statement of discrete energy stability is proved for the fully non-linear coupled system. The performance of the proposed scheme is illustrated by a numerical convergence study and a realistic example.