Simulation of Shallow Water Flow with Source Term

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Abstract: The numerical simulation of extreme events characterized by hydraulic and hydrogeologic risk has become one of the major ingredients for environment protection issues in scientific community. In this paper , a numerical code for the simulation of 2D dam-break flows is described. The algorithm is based on the two - dimensional shallow water equations in their classical form. The spatial discretization is obtained by the Finite Volume method. The system is solved in an explicit way. The scheme is second order accurate both in space and time. The scheme falls into the family of Godunov-type. The selected approximated Riemann solver is based on the Harten, Lax and Van Leer Contact (HLLC) scheme. When the source terms (e.g., bottom friction and bottom slope) are included, the system is discretized using a semi-implicit technique. Discussion on the dam-break flow past an obstacle is also presented.

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