Numerical study of the interaction of shallow flows with oblique obstacle

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In this study we addressed the phenomenon of the interaction between shallow flows of complex fluid with an oblique dam. The flow is modelled by two dimensional shallow water equations and the dissipation processes are represented by simple basal friction function. The numerical solution of this hyperbolic system is obtained thanks to finite volumes scheme based on simplified Riemann solver. The paper explores the hydro-dynamic modifications induced by the dam according to the upstream flow Froude number and rheology, and the dam geometry, i.e its deflecting angle and shape. A special attention will be paid to determine the conditions of occurrence of the oblique shock and its geometrical features.