

# Mathematical questions along the flow of a river.

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Motivated by computational aspects of Saint-Venant's shallow water system (usual for many applications like rivers flow, tidal waves, but also narrow tubes) conducted at INRIA/M3N, we consider some mathematical and algorithmic questions for hyperbolic systems with a topography driven source term. We also revisit some classical questions in the numerical analysis of finite volume methods such as: what are sharp CFL conditions for E-schemes (after Tadmor's seminal paper), why TVD bounds on the approximate solutions ARE NOT necessary for  $h^{1/2}$  convergence rates.