Solution of Saint Venant's Equation to Study Flood in Rivers through Numerical Methods

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Abstract. The problems of flood wave propagation, in bodies of waters, caused by intense rains or breaking of control structures, represent a great challenge in the mathematical modeling processes. The solution of this problem passes, invariably, for the development of mathematical models that, in their formulations, describe, in the closest it way, the real scenery of the process. On the other hand, the mathematical manipulation of those models implies in the solution of nonlinear differential equations, as it is the case of Saint Venant's Equation, of great application in the studies in rivers, for gradually varied flow. This research uses a discretization, for the equations that governs the propagation of a flood wave, in natural rivers, with the objective of a better understanding of this propagation process. The results have shown that the hydraulic parameters play important game in the propagation of a flood wave.

Keywords: Hydrodynamics Models, Flood Control, Flow in Natural Rivers.