



## **Flood mitigation via dispersed hydraulic structures at watershed scale**

**S. CHENNU (1), J-M. GRESILLON (1), D. DARTUS (2), C. POULARD (1), J-B. FAURE (1), M-M. MAUBOURGET (2), E. LEBLOIS (1)**

(1) Cemagref, Lyon, France

(2) IMFT, Toulouse, France

chennu@lyon.cemagref.fr / Fax : (+33) 4 78 47 78 75 / Phone: (+33) 4 72 20 87 65

Uncoordinated flood defence strategies too often while protecting one area, aggravate the situation elsewhere. Flood mitigation at watershed scale can be achieved through retentions distributed over the entire watershed. Dry dams are ideal structures to attenuate the flood peak without rupturing the normal flow regime of the river. It normally holds back no water and allows the channel to flow freely through an opening, except during periods of intense flow. Our study looks at the hydrological impact of several dry dams dispersed along the drainage network of the watershed.

Based on the data of an existing watershed of about 150 km<sup>2</sup> a virtual watershed was generated, on which simulations were carried out. Spatially distributed precipitation obtained from a stochastic model (TBM, Cemagref, Lyon) is imposed on a distributed hydrological model (MARINE, IMFT, Toulouse). The discharges from the distributed rainfall-runoff model reaching the river is then injected into the hydraulic model (MAGE, Cemagref, Lyon) to simulate the flow in the drainage network and note the influence of the hydraulic structures. This sequence of the model is tested for a range of high flows similar in characteristic to those observed onsite and then the hydraulic structures are introduced. The impact of these structures on the hydrological regime at the outlet of the watershed is analysed. The importance of taking into account the confluence to obtain an optimized placing of the structures is shown. The efficiency of having many small hydraulic structures dispersed in the watershed instead of a single large control structure is also addressed.