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The use of 1-D hydraulic models in fluvial geomorphology, as a tool for quantifying and mitigating flood risk. Application to the Argent-Double River, a left-bank tributary of the Aude River, Mediterranean France.

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Present management of river hydrosystems is more and more viewed with an approach based on sustainable development. This logic implies that the hydraulic, engineering works made in the floodplain are of quality and that flood risk is minimum. In the Mediterranean area, it is difficult to reduce the risk because floods are rapid and often very destructive. In November 1999, a flashflood (1:30 years recurrence interval) had very damaging effects in several departments of the South of France, and more specifically in the Aude Department. Along the Argent-Double River, a rank 4 (Strahler) torrential tributary of the Aude River, the current system of flood-risk management proved to be rather inefficient during this flood. After the 1999 flood event, several schemes were conceived to improve water flowing and floodplain draining. Among various proposals, that chosen by the competent decision-making authorities (SIAH-BAD, the community water association) consists only in restoring the capacity of the flood plain, occupied by extensive vineyards and local settlements. This does not account for mitigating the effects of larger floods, nor does it consider the vulnerability of the population living nearby the river. This option even leads to increase locally the human vulnerability in the flood plain. Another option proposed collectively by both Paris 7 University (UMR PRODIG) and the research department PROLOG In-

génierie is based on the use of a monodimensional (filar), cells (“casiers”) integrating, hydraulic model, with the software InfoWorks? for River Systems (IWRS). Tested on the Peyriac-Minervois section of the Argent-Double River, the application of this model should be successful in reducing the flooding process, by restoring a sufficient channel capacity, namely the capacity that it had before its artificial narrowing.