



## **Overview of historical recurring low-amplitude floods in Lower Provence, Southeastern France (1700-1950)**

Nicolas Maughan

Aix-Marseille University, UMR CNRS 7373, Centre St Charles, Case 18, 3 place Victor Hugo 13331 Marseille, cedex 03, FRANCE

In the Mediterranean world, water plays a prominent role as a « prime mover » in the development of urban and rural spaces. But, the specificities of the typical climate require a management of a natural resource that varies permanently between scarcity and abundance. Since Antiquity, the chronic lack of freshwater could be limited thanks to large hydraulic infrastructures while the flood risk management has always been a recurring problem for rural and urban communities. Because of brief, intense and irregularly distributed rain, amplified by a mountainous topography, stream floods often are heavy and flash with catastrophic consequences.

However, often only past extreme floods were studied because both their consequences and available archival materials they have left while many recurring low-amplitude floods have resulted in severe damage to hydraulic and road infrastructures, in loss of agricultural soils and in conflicts between citizens and administration. Indeed, these ones were a central problem for rural and urban settlements and for the management of water bodies. It seems interesting to present a detailed overview of historical recurring low-amplitude floods and consider how local societies have chosen to manage these questions and how these small hydrological events have contributed to shape existing current hydrological and geomorphological structure of hydrosystems. In this context, the Lower Provence area (especially the Bouches-du-Rhône district, southeastern France), subject to recurring floods for centuries, appears to be a perfect place to explore and understand these questions.

The decision to start the study at the dawn of the Eighteenth Century is especially interesting because it's a turning point for economic, scientific and engineering development in many European countries during which disasters and environmental health risks, including flooding, begin to become a real social and technical problem for authorities and citizens. Moreover, from this time, archives related to rivers begin to be numerous and easily usable. The analysis of archival materials, but also of articles from the local press reporting environmental disasters, provides a rich data set to attempt to understand evolution of both perceptions and responses of local societies to flooding risks.

Therefore, our work is based both on the study of local archives- municipal and regional - (especially debates and reports from the municipal council of Marseilles, from the general council of the Bouches-du-Rhône district and from a local engineering office named the "Service hydraulique", created in 1848 and dedicated to the management of water courses) and on a large corpus of articles from newspapers.

First, after presenting a short panorama of the economic and social role played by rivers in the Provence area during the early modern period, we'll analyze, on the one hand, the frequency and intensity of low-amplitude floods for seven different small-scale urban and rural streams flowing in the Bouches-du-Rhône district (the Huveaune, Touloubre, Arc, Cadière, Raumartin, Aygaldes and Jarre rivers; all having a channel length less than 90 km) during the last three centuries and, on the other hand, their potential environmental, social and economic impact. Second, we will also show how, at the same time, local societies have coped and managed these daily events together with the progressive evolution of most uses of the river's water.