



Impacts of river management on low energy rivers in Normandy (France) over 3000 years, first results of a geomorphological and geoarchaeological approach.

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The European Water Framework Directive (WFD), issued in 2000 has the objective of improving the quality of water and aquatic environments. In France, the application of this law requires the dismantling and razing of structures built across waterways (mill valve, mill dam...) which no longer have any use today. The first archaeological results in Normandy show evidence of river management since the Iron Age (800 BC.). They also show that during the last 4000 years, floodplains have been affected by a significant vertical aggradation resulting from soil erosion in the catchment related to the development of agro-pastoral activities. However, these results say nothing about consequences of the proliferation of mill dams for hydrosedimentary flow for low energy rivers and their role in the development of sedimentary stocks in valley beds.

The aim of this work is to measure the impact of the implementation of major hydraulic structures (mill inlet, mill dam, millrace, mill valve, drainage ditches...) on the rivers functioning in the past millennia to (1) propose a long term modeling Human/Ecosystem interaction for Lower-Normandy river systems and (2) to anticipate the geomorphological consequences related to dam-removal policy.

This research is based on study sites located in the valley bed, most of them have been investigated by archaeologists and have revealed old hydraulic structures. Today, five sites have been identified in varied archaeological and hydromorphological contexts. Trenching was carried out upstream and downstream of hydraulic structures to uncover the Holocene sedimentary infilling of the valley floor. First results from the antique and medieval sites Montaigu-la-Brisette (Manche, FRANCE) and Colomby (Manche, FRANCE) show the influence of river management on the evolution of sedimentation in valley bed.