



Landscape evolution of the highly anthropized Meuse flood plain (Eastern France) using geomorphology, stratigraphy and geoarchaeology

G. Fronteau (1), O. Lejeune (1), C. Thomachot (1), E. Buselin (2), E. Chopin (1), A. Devos (2), F. Leroux (3), Y. Thomas (3), G. Verrier (3)

(1) Groupe d'Etude des Géomatériaux et des Environnements Naturels et Anthropiques, EA 375, Rheims Champagne-Ardenne University, CREA, 2 esplanade Roland Garros, 51100 Rheims, France, (2) Conservateur du Patrimoine, DRAC Franche-Comté, 7 rue Charles Nodier, 25043 Besançon Cedex, France, (3) I.N.R.A.P., 38 rue Dats, 51520 Saint Martin sur le Pre, France.

Stratigraphy and sedimentology of superficial and geological formations were analysed for three sections of the Meuse bank (Eastern France) as part of a geoarchaeological study. The geological formations corresponded to modern and ancient river deposits, and underlying Toarcian marl, Sinemurian limestones and Paleozoic schist.

River deposits were composed of silt and gravel layers up to 10 m thick with reed enriched clay horizons locally, but without peat. Sedimentation rates were elevated. Data analyses allowed deposit dating and landscape interpretation.

The period between Subboreal and Subatlantic was characterised by erosion which modelled secondary anastomosed channels and subsequently filled them. During Subatlantic, river flow rate decreased with only fine particles being deposited in the alluvial plain during flooding. However, bore holes showed differences due to anthropogenic inputs.

Relationship between Quaternary landscape evolution and historical site management showed that the Meuse main flood plain filling was characterised by a succession of actual anthropogenic backfilling and natural deposition. These phases led to river channelling and increased flooding which present a major hazard.