



## **The meandering Dijle River in the western European loess region: an anthropogenic landscape**

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Floodplain deposition rates have increased markedly under influence of human impact throughout the Late Holocene in many Western and Central European catchments. These variations in sedimentation rates have changed the geomorphology and ecology of many floodplains. In this study we discuss the human impact and its influence on floodplain geocology during the Middle and Late Holocene for the Dijle catchment (760 km<sup>2</sup>), located in the Belgian part of the western European loess belt. Based on sedimentological and palynological data, the geocology of the floodplain and the regional vegetation was reconstructed at 6 locations. Age-depth models for each of the studied sequences were obtained through 60 radiocarbon dates. Human impact in the catchment was quantified based on statistical analysis of the pollen data (cluster analysis and correspondence analysis). Our data shows that until ca. 2500 cal BP, human impact was either absent or limited to local disturbances yielding no clear influence on the floodplain geocology. The river environment was in a stable phase and consisted of a marshy environment where organic material could accumulate, which is interpreted as the natural state of the floodplain. From ca. 2500 cal BP onwards, human impact gradually increased. However, only when human impact in the catchment crossed a threshold, the floodplain geocology changed with clearing of the Alder carr forest, the dominance of minerogenic overbank sedimentation and the emergence of a single channel meandering river. Spatial and temporal variability in the coupling between increasing human impact and changes in floodplain geocology can be attributed to differences in hillslope-fluvial system connectivity and local differences in human impact. Overall, this study shed new lights on the indirect effect of anthropogenic forces on floodplain geocology. It also shows that the contemporary morphology of the Dijle River floodplain contrasts widely with that of the Middle Holocene, which was dominated by peat formation in marshes and gyttja deposition in floodplain lakes. These changes in floodplain geocology are the result of human disturbances in the catchment.