

Human-environment interactions in the Gete catchment (Belgium). An interdisciplinary approach

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Floodplains are highly dynamic environments that have attracted humans throughout history. As such, they have not only been shaped by the interplay of geomorphological, ecological and hydrological processes. They have also been directly and indirectly impacted by human activity. It is in these parts of the landscape that we find ideal research areas to study and reconstruct how humans affected the environment as well as vice versa. For this paper we will focus on one such area: the Gete catchment, situated in the Belgian loess belt. Prior geomorphological and palynological research shows that its floodplain geo-ecology underwent a gradual transformation from a marshy wetland environment, characterised by multiple channels, active peat growth and alder carr forest, to a stereotypical alluvial floodplain, characterised by a single-thread meandering channel, clastic overbank sedimentation and open vegetation. This transformation is dated around 5000 to 4000 BP and occurs roughly 2000 years sooner than in other studied floodplains in the Belgian loess belt. This change is linked to the rich agricultural history of the catchment in which increasing deforestation - related to the establishment of new settlements and/or croplands - lead to increased erosion and as such increased sediment input into the floodplains, causing them to transform. A time lag can be observed between the arrival of the first farmers in the catchment in the Early Neolithic and the first signs of change in floodplain geo-ecology. A similar time lag is attested for a short phase after the Migration period in which the floodplain - following a period of decreased human activity - temporarily reverted to its primary wetland state. This is indicative that changes in floodplain geo-ecology only occur when changes in human impact are large enough and reach a certain threshold. The focus of ongoing research, and the main aim of this paper, is to increase our understanding of these interactions by taking a closer look at the human activities involved and to improve upon the resolution of the geo-ecological data and its temporal framework. Archaeological and historical sources are studied and integrated at a catchment scale, to come to quantitative reconstructions of population size and density as well to gain insight in changes in subsistence- and land-use strategies. Additional geomorphic field work and palynological research is undertaken to better understand the attested time lags whilst taking into account within-catchment variability. This interdisciplinary approach will offer us high-resolution insight into the effects of increasing and decreasing human impact on floodplain geo-ecology and as such can have important implications for future floodplain management. By taking into account the past, it will not only enable us to understand how the present-day landscape came about, but it can also teach us lessons to adapt and employ towards a more sustainable future.