



The changing human impact on sediment dynamics during the Holocene across different environments

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From the Neolithic onwards, human interference with the landscape has caused significant changes in the intensity of soil erosion and sediment delivery processes. The human impact on the sediment dynamics has moved from the hillslopes to the larger river channels during the course of the Holocene. The exact timing and the rate, at which the changes took place, differs greatly between various environments. To a large extent, these differences are related to the intensity and the longevity of the human pressure on the landscape. In NW-Europe, for instance, it took several millennia before the major human impact changed from high local erosion rates on the cleared slopes, to the main river channels that are dammed and cut-off from their floodplains. Population and agricultural development were so slow that it took a long period before certain threshold levels were reached and the coupling between the various sub-systems of a catchment was realized. On the other hand, there are many areas of the world that were only colonized during the last centuries, and that witnessed a very intense agricultural development, often followed by reforestation or the implementation of conservation measures. In these areas, fluvial systems reacted promptly following disturbance, but also recovered quite rapidly after restoration. Despite the different human-environment interactions in both environments, the most important human impact is nowadays equal: reservoir sedimentation. On a global scale, this process has replaced floodplain sedimentation as the major sediment sink in a river basin. These changing human impacts on the fluvial system are illustrated by various field-based sediment budget studies, but also through spatially distributed modeling.