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# Continent-scale anthropogenic impacts on North American alluvial sedimentation

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Human action has led to significant geomorphic change, likely far exceeding the changes expected via natural geologic processes such as climate and tectonism in terms of absolute mass transfer rates. Nevertheless, understanding the precise impact of humans on the natural landscape is complicated by limitations in the ability to accurately compare past and present rates of change across wide spatial and temporal scales, and thus evaluate anthropogenic impacts in a long-term, geologic context at a continental scale. In this contribution a compilation of over 6000 rates of North American alluvial sedimentation is presented that provide an indirect record of landscape erosion and evolution over the past 40,000 years. Statistical analysis of this compilation reveals a >1 order of magnitude increase in alluvial sedimentation rates coeval with the rapid expansion of agriculture associated with European settlement. These findings help to quantify the continent-wide impact of humans on the North American landscape, and demonstrate the likely far greater significance of this impact compared to natural processes. At the continent scale, the results suggest that humans have moved as much sediment in the past 100 years as natural processes can transfer in $\sim$2000 years.