



Modelling the impact of dam removal on geomorphic channel response and sediment delivery: an Austrian case study

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Dams are often considered to have the most significant impact on rivers as dam construction generally reduces downstream sediment fluxes which further involves geomorphic changes in the affected river reaches. Since many dams no longer fulfill their intended purpose (e.g. due to siltation), are dangerous (e.g. catastrophic dam failures) and/or are ecologically damaging (e.g. habitat destruction), within the last two decades several dams have been removed and many more are already proposed for removal. Unfortunately, there is still only little empirical knowledge about the geomorphic consequences of dam removals and the related sediment release which represents a big challenge for river management. Modelling is one way to approach this problem. In the presented study we modelled the impacts of dam removal on geomorphic channel processes, channel morphology and sediment delivery further considering the role of channel engineering measures and reservoir excavation within a river reach impacted by a series of dams using the landscape evolution model CAESAR-Lisflood. The model was run with data from a small catchment located in Lower Austria. Modelled geomorphic channel changes and sediment fluxes were spatio-temporally analyzed, related to real-world data and are discussed in the context of river management issues.