



## Catchment-scale geomorphological modelling of leaky dams using CAESAR-Lisflood

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The introduction of large wood to fluvial systems is becoming increasingly popular as a method of natural flood management commonly referred to as leaky dams. These are often installed as semi-permanent features through live felling and anchoring in-situ. Currently, most natural flood management modelling is hydrological and focuses on flood risk without accounting for geomorphology of these ‘fixed’ features. We argue that the long-term effectiveness of NFM interventions require and understanding of the nested hydrogeomorphological processes at work within river catchments, particularly those related to bed scour, sediment transport and deposition, and the associated feedbacks following implementation of leaky dams. Leaky dams that are designed to attenuate the hydrograph and ‘slow-the-flow’, may cause sediment storage as well as scour, potentially impeding the effectiveness of a leaky dam to reduce flood risk after a single storm event. Using the new ‘Working with Natural Processes’ toolbox developed for CAESAR-

Lisflood, the influence of different storm scenarios on a series of leaky dams in a hypothetical catchment based on a site in North Yorkshire is assessed. The effectiveness of the model at representing the influence of the dams on hydrogeomorphology is also assessed.