



Investigating the geomorphic and hydrological responses of flood embankment removal on a montane river: a preliminary assessment

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River and floodplain restoration techniques have been used for decades to restore the natural ecological and geomorphic functions of fluvial systems. This type of restoration has been highlighted as a technique that could help to reduce flood peaks as part of a nature based solution to flood risk management. However, empirical evidence on the effectiveness of river and floodplain restoration for flood risk management is limited. Therefore there is a need to assess the benefits of these restoration schemes, including the ability to manage storm runoff. This poster presents initial findings from a case study site on a medium sized gravel-bed river where an artificial embankment was partially removed in October 2015 to reconnect part of the floodplain. The site on the River Dee, N.E. Scotland has an upstream catchment area of 370 km². Analysis of pre and post-restoration geomorphic and hydrological monitoring data is presented. At the restoration site, channel widening, deposition of up to 1 m in the main channel and the movement of gravel into the floodplain were the dominant responses. Initial findings show that the hydrological response has changed locally on the floodplain, with increased connectivity during more moderate size events (which were previously disconnected) and a higher water table. However, continued monitoring is required in order to assess this impact during a range of flood events, seasons and weather conditions. The data collected is being utilised within a hydraulic model to assess the impact of different restoration scenarios for reducing flood peaks.