Predicting erosion hazards in river catchments

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Climate change is projected to cause considerable pressure on our environment and communities. In particular, an increase in flooding and extreme erosion events is foreseeable as a result of anticipated increase in the frequency and severity of storms (Gorman et al., 2009). In the absence of timely and strategic intervention, climate change is taking us closer to more uncertain (non-linear, stochastic) and potentially more catastrophic climatic impacts. This research aims to 1) based on the combined application of the ‘Reach’ and ‘Catchment’ modes of Caesar-Lisflood, quantify the uncertainty in the risk posed by flooding and erosion hazards for current climate conditions and for two future epochs (2021-2040 & 2061-2080) using the UKCP18 projections; 2) to assess the economic impact of erosion hazards on critical infrastructure such as buildings, transport networks (roads and bridges), agricultural land, etc; and 3) evaluate the vulnerability and resilience of these assets to differing storm regimes. The above-mentioned storm-related hazards and economic impacts are integrated in a web-based geospatial decision-support tool for visualization which ultimately supports sustainable and resilient decision making for a changing climate.