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Prediction of an index-flood in ungauged catchments – the benefit of data-transfer

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This presentation discusses the potential benefits and limitations of data transfer methods for estimation of an index flood in ungauged catchments. Using annual maximum peak flow data from 602 catchments in the UK, the performance of hydrological regression models linking the (log) index flood to a set of (log) catchment descriptors is investigated and compared to the benefit of enhancing the regression-based estimates with data transfer from a gauged site that is either: i) geographically close, ii) considered hydrologically similar, or iii) both i) and ii). The study compares the performance of two regression models when combined with data transfer: i) a comprehensive model with four catchment descriptors, ii) a simple model using only catchment area as an explanatory variable. The results show that the simple regression model benefits more from additional data transfer than does the more comprehensive model. It is also shown that when the ungauged and the gauged site are very close, the two models when they include data transfer perform equally well. However, when no data is available from a sufficiently nearby site then the comprehensive model performs best. Little or no benefit was gained by selecting the gauged site by considering similarity of catchment area.