

Hydrograph transposition between basins through a geomorphology-based deconvolution–reconvolution approach

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Abstract The aim of this study is to consider couples of basins and their respective non-calibrated robust geomorphology-based transfer functions. In the frame of discharge transposition, the two basins are respectively considered as the provider and the receiver. A discharge series of the provider basin is deconvoluted, through the inversion of its transfer function, to assess the net rainfall series. Assuming, as a first step, homogeneity between the two basins, the assessed net rainfall series is considered to be relevant for the receiver basin and convoluted with its own transfer function to simulate the discharge series at its outlet. Optimistically, the homogeneity between basins could be sufficient for nested, neighbouring and similar basins to make this approach promising when the receiver basin is ungauged. The approach is tested with simulated events for a set of four Tunisian basins (192, 180, 18.1 and 3.16 km²). Transposition performs correctly in terms of the timing, volumes and shapes of hydrographs.

Key words geomorphology-based transfer function; deconvolution; net rainfall; transposition; PUB