

Prediction of streamflow from the set of basins flowing into a coastal bay

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Abstract Many coastal basins of the Brittany peninsula (France) display a high level of nitrate pollution, nine of them highlighted by the European Commission since 2007, as causing algal blooms in several coastal bays. To precisely diagnose and solve this issue the fluxes of every contributing basin have to be considered. However, this faces a strong data-scarce situation as most of the basins are ungauged. In this context, we propose to transpose hydrological information from one gauged basin to neighbouring points of interest. The methodology uses a simple geomorphology-based transfer function on the gauged basin, which allows assessment of the net rainfall time series through the de-convolution of the gauged discharge series. This net rainfall is then transposed and convoluted on the ungauged basin using its own transfer function in order to estimate discharge. This approach enables the quantification of the whole volume of freshwater entering the controversial Saint-Brieuc Bay.

Key words ungauged basin; model; geomorphology-based model; regionalisation; inversion; transposition