



Some geostatistical models on hydrographic networks

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Estimating concentrations or flow rates along a stream network requires specific models. Two classes of models recently proposed in the literature [1,4,5], can be generalized, among others to the non stationary case along segments [3]. We present a global construction by “streams”, i.e. on the whole set of paths between sources and outlet. Combining any stationary or intrinsic one dimensional random functions leads to stationary or intrinsic models on segments, with discontinuities at the confluences. The construction in the opposite sense, from outlet to sources, leads to stationary [1,4] or intrinsic models on each stream, without any discontinuity at the confluences. The extension to the linear model of coregionalization is immediate, allowing a multivariate modelling of concentrations.

To model water discharge, it is advisable to introduce hydrological models or additional information (as the surface of the upstream watershed) in a multivariate modeling. Some consistency conditions at the confluences are then necessary. Different models are examined. The application to the Moselle basin is presented in another contribution.

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