



Porous City : a multiscale modelling of peri-urban hydrology.

D. Schertzer (1,2), I. Tchiguirinskaia (1,3), E. El-Tabach (1)

(1) U. Paris Est, ENPC/CEREVE, Marne-la-Vallee, France [Daniel.Schertzer@enpc.fr], (2) Météo-France, Paris, France, (3) CEMAGREF/HOAX, Aix-en-Provence, France [I.Tchiguirinskaia@cemagref.fr]

The hydrological functioning of peri-urban catchments is complex and still poorly understood. In no respect, these catchments can be understood as classical urban catchments and considered as impervious and fully constrained by the drainage networks. These hypotheses, which are already questionable in the urban case, are certainly not relevant in the peri-urban case: infiltration is a key process, land use is very heterogeneous and blends natural and man-made flows. This is particularly important to adequately model the runoff. The kernel of the peri-urban modelling, which we call Porous City, consists of stochastic models to represent the nonlinearly interacting components of the hydrological functioning that were historically classified into two separate groups: urban hydrology defined by drainage networks and rural hydrology simulated by a series of reservoirs to represent the complex interactions of precipitation, surface runoff, groundwater and basin geomorphology. The corresponding elements are usually strongly scale dependant, particularly in the latter case, and therefore require a multifractal framework to be successfully handled. In this communication, we will present the first results obtained in the direction of this multiscale modelling and its application to Seine-Saint Denis county (northeast of Ile-de France) in the framework of the R2DS/SISTEO project.