



Can distributed catchment models provide reliable predictions at the scales relevant for the Water Framework Directive and the Flood Directive?

Jens Christian Refsgaard

Geological Survey of Denmark and Greenland (GEUS), Copenhagen, Denmark (jcr@geus.dk)

It is recognised that there is a mismatch of spatial scales between our process knowledge (dm), the modelling grids of our distributed catchment models (50 – 500 m) and the water management problems, where the relevant scale often is claimed to be the catchment (e.g. 10 – 5000 km²). Based on an assessment of the spatial scales at which the Danish water authorities want answers for implementation of the EU Water Framework Directive and the EU Flood Directive, it is concluded that the relevant scales vary from one issue to another and for some issues are in the order of 100 m. This implies a demand for model predictions not only at catchment scale, but at spatial resolution sometimes down to the computational grid size. Although distributed catchment models technically can provide results for each computational grid, the predictive capabilities of models at such small scale are often quite poor due to lack of field data at that scale. The presentation will discuss the relationship between spatial scale, data availability and model predictive uncertainty.