



## UFZ-Seminar „Water and Environment“



24. October 2016, 3 pm

Seminar room 1, Brückstr. 3a, Magdeburg

### Martyn Futter

Swedish University of Agricultural Sciences, University Uppsala gives a talk on:

#### **Conceptual, empirical and process-based approaches to modelling surface water dissolved organic carbon**

Dissolved organic carbon (DOC) is a cornerstone parameter for aquatic ecosystem function, contaminant and nutrient transport, drinking water supply and the global carbon budget. Surface water DOC concentrations have been increasing in many parts of the northern hemisphere due to a combination of factors including climate change, recovery from acidification and land management. These increases are a concern as they can reduce lake productivity, increase the transport of heavy metals and persistent organic pollutants and lead to higher costs for drinking water treatment.

Conceptual, empirical and process-based models all are needed, both to understand present day controls on surface water DOC and to project possible future changes. Here, I will present a generic conceptual framework for modelling catchment-scale organic carbon dynamics based on production, mobilisation, transport and loss processes. The framework can be used to resolve apparently contradictory observations of DOC behaviour, to make qualitative projections of future conditions and to guide the design of empirical and process-based models.

Using examples from Scandinavia and North America, I will discuss the strengths and weaknesses of empirical and process-based modelling approaches to simulating the behaviour of surface water DOC. Specifically, I will highlight the tension between the goals of parsimony and completeness as they relate to environmental modelling. I will conclude with some open questions about DOC modelling in particular and catchment biogeochemical simulation in general.