On environmental models of everywhere

Prof. Keith Beven – Lancaster Environment Centre

Integrated environmental models of everywhere are demanded by the requirements, for example, of implementing the Water Framework Directive in Europe, but are constrained by the limitations of current understanding and data availability. The possibility of implementing such models widely raises questions about system design requirements to allow modelling as a learning and data assimilation process in the representation of places. It is suggested that places might be treated as active objects in such a system. The new NERC “virtual observatory” project might allow some of these ideas to be tested out. Epistemic uncertainties in both data and model predictions also pose some interesting questions about testing environmental models as hypotheses, the value of different types of data in characterising places and constraining predictive uncertainty, and also how best to present the pedigree of such uncertain predictions to users and decision makers.

Keith Beven is Distinguished Professor of Hydrology and Fluid Dynamics at Lancaster University where he has worked since 1985. He had previously worked at the Universities of Leeds and Virginia and the Institute of Hydrology, Wallingford. His PhD thesis (at UEA ENV) and very first journal paper in 1977 were concerned with modelling hillslope hydrology. He has published over 300 papers, edited 6 books (including the first in the IAHS Benchmark Papers Series) and written texts on Rainfall-Runoff Modelling (Wiley, 2001; also translated into Chinese in 2006) and Environmental Modelling: An Uncertain Future? (Routledge, 2009). He has worked on the development of Topmodel, the SHE model and the Institute of Hydrology Distributed Model (IHDM). He is a Fellow of the American Geophysical Union, has been awarded the John Dalton medal of the European Geophysical Union; the Horton and Langbein Awards of AGU; and visiting chairs by the Françqui Foundation in Belgium, and King Carl XVI Gustaf of Sweden. He currently holds visiting positions at Uppala University and EPFL, Lausanne. He is listed as one of the ISI Most Highly Cited Scientists in both Ecology/Environment and Engineering.

Predicting microbial pollution concentrations in UK rivers in response to land use change

Danyel Hampson – UEA ENV

The Water Framework Directive has caused a paradigm shift towards the integrated management of recreational water quality through the development of drainage basin wide programmes of measures. This has increased the need for a cost-effective diagnostic tool capable of predicting riverine faecal indicator organism (FIO) concentrations. This seminar will outline the potential of models developed to fulfil this need. Several scenarios, predicted to reduce livestock rates, are investigated: increasing fertilizer taxes and milk quota prices, designating highly polluted catchments as Environmentally Sensitive Areas, and adopting a nutrition driven food policy. Changes in FIO concentrations due to shifting livestock patterns, attributable to climate change, are also analysed. The results provide insights into FIO source apportionment, the optimal mix of pollution remediation strategies and the spatial differentiation of land use policies which could be implemented to deliver river quality improvements. This work addresses an important knowledge gap of interest to a range of stakeholders including researchers, government agencies and the water industry.

Danyel is a 2nd year PhD student in ENV. He will give this presentation at the IWA Water Research Conference in Lisbon in April.

Flooding and adaptation in the Thames Estuary

Prof. Jim Hall – Newcastle University

Jim Hall is Professor of Earth System Engineering and Deputy Director (Engineering) of the Tyndall Centre for Climate Change Research. His research interests include uncertainty representation in modelling and risk analysis, decision support tools, flood risk analysis and management, coastal cliff recession prediction and appraisal, climate impacts, adaptation and mitigation. He is contributing author for the Fourth Assessment Report of the
Intergovernmental Panel on Climate Change and advisor to the Stern Review on the Economics of Climate Change.

Friday 19 March 2010
4-5.30pm – Zicer Exhibition Room 2.02

**Rethinking water scarcity: The role of storage**

**Dr. Richard Taylor** – University College London

In this seminar, Richard Taylor will elaborate on his recent article in Eos with the same title (Vol. 90, No. 28, 14 July 2009), in which he calls for new methods to assess water scarcity. In particular, Richard argues for the inclusion of intra-annual changes in freshwater storage into water balance calculations, which have so far been neglected. The article concludes that failing to account for storage will limit our understanding of the magnitude and spatial dimension of the global water crisis, its impacts and interrelations with development and climate change.

Richard Taylor is Reader in Hydrogeology at UCL as well as Adjunct Lecturer in Geology at Makerere University, Uganda. Richard’s research interests include the impact of climate change and development on freshwater resources with a particular focus on basin stores of freshwater; and the role of groundwater in improving food security and access to safe water in sub-Saharan Africa.

Friday 23 or 30 April 2010
4-5.30pm – Zicer Exhibition Room 2.02

**Title tbc**

**Peter Ravenscroft** – Entec UK Ltd

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All staff, students and members of the public welcome!

To find the Zicer building (S7) and the Thomas Paine Study Centre (Academic Building East) see [www.uea.ac.uk/polopoly_fs/1.91534!/campusmap_April09_V9.pdf](http://www.uea.ac.uk/polopoly_fs/1.91534!/campusmap_April09_V9.pdf)

For further information contact Tobias Krueger (t.krueger@uea.ac.uk)