Numerical Earth Science Modelling:

A short course and seminar with...

Dr. Simon Mathias, Reader in Computational Geoscience Durham University, U.K.

Computationsal Geoscience - Short Course

Thursday & Friday (June 8 - 9, 2017)

University of Saskatchewan

Dr. Simon Mathias will deliver a short course in Numerical Earth Science Modelling at the University of Saskatchewan. This course will be especially interesting for those involved in data analysis and modelling using MATLAB. If you have taken modelling classes before, this will be a great complement. Anyone interested can contact Dr. Andrew Ireson, Assistant Professor of Subsurface Hydrology, Global Institute for Water Security and the School of Environment and Sustainability:

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A study of non-linearity in rainfall-runoff response using 120 UK catchments (seminar)

Thursday, June 8, 2017, 3 - 4 pm
National Hydrology Research Centre (Seminar Room)
11 Innovation Blvd., Saskatoon, SK

This study presents a catchment characteristic sensitivity analysis concerning the non-linearity of rainfall-runoff response in 120 UK catchments. Two approaches were adopted. The first approach involved, for each catchment, regression of a power-law to flow rate gradient data for recession events only. This approach was referred to as the recession analysis (RA). The second approach involved calibrating a rainfall-runoff model to the full data set (both recession and non-recession events). The rainfall-runoff model was developed by combining a power-law streamflow routing function with a one parameter probability distributed model (PDM) for soil moisture accounting. This approach was referred to as the rainfall-runoff model (RM). Step-wise linear regression was used to derive regionalization equations for the three parameters. An advantage of the RM approach is that it utilizes much more of the observed data. Results from the RM approach suggest that catchments with high base-flow and low annual precipitation tend to exhibit greater non-linearity in rainfall-runoff response. In contrast, the results from the RA approach suggest that non-linearity is linked to low evaporative demand. The difference in results is attributed to the aggregation of storm-flow and base-flow into a single system giving rise to a seemingly more non-linear response when applying the RM approach to catchments that exhibit a strongly dual storm-flow base-flow response. The study also highlights the value and limitations in a regionlization context of aggregating storm-flow and base-flow pathways into a single non-linear routing function.

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