Geophysical Research Abstracts, Vol. 9, 07353, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-07353


# Hydroinformatics Forecasting Contest I: motivation, catchment description and performance benchmarking

**R.J. Abrahart** (1), C.W. Dawson (2), D. Han (3), P. Coulibaly (4), A. Jain (5) and A.Y. Shamseldin (6)

(1) School of Geography, University of Nottingham, UK; (2) Department of Computer Science, Loughborough University, UK; (3) Department of Civil Engineering, University of Bristol, UK; (4) Civil Engineering/School Geography & Earth Sciences, McMaster University, Canada; (5) Department of Civil Engineering, Indian Institute of Technology Kanpur, India; (6)Department of Civil and Environmental Engineering, University of Auckland, New Zealand (Email: bob.abrahart@nottingham.ac.uk)

The last two decades have seen a virtual explosion in the number of different hydroinformatics methodologies that have been used to perform rainfall-runoff modelling. There is a constant stream of model development exercises reported in peer-reviewed outlets; but limited effort has been made in terms of conducting broader or more substantial intercomparisons. The reported solutions are instead developed on different inputs and outputs or applied to different catchments. The upshot of such individualities results in no clear method that could be used to compare and contrast the different computational mechanisms in anything other than a simplistic or case specific manner.

The need for hydrologists to undertake rigorous intercomparisons has been debated at previous EGU meetings and the scientific motivations for such pragmatic undertakings can be found in past World Meteorological Organization projects for the intercomparison of hydrological models used in operational hydrological forecasting (1974; 1977-1983; 1987). To establish combined findings with regard to different solutions will require different experts to be engaged in the modelling exercise and for a series of multiple controlled experiments to be performed. It must be stressed that the object of such exercises is not to find the single best model that performs well under all circumstances. It is instead intended to provide a set of open access tests and results and to support the subsequent empowerment of potential users through the provision of personal opportunities to inspect the different performances of the tested methodologies

and approaches on different catchments and under various environmental conditions. The present project will also attempt to compile a register of current approaches and to record and compare the different methodologies in terms of model structure, data requirements, computational requirements, statistical accuracies and level of end-user skill required.

This poster will present background catchment material and provide a statistical analysis of the contest dataset(s). It will record the rules that were provided to the participants and describe the procedures that were used to assess their submitted model outputs. The participants were provided with six hour rainfall and runoff datasets for Bird Creek, Oklahoma, USA. Each participant was required to produce runoff forecasts for t+6 and t+24 hour ahead i.e. for one and four time steps ahead. No dataset was withheld; modellers were provided with simultaneous access to the calibration and test datasets. The contestants were allowed a free reign in the processing and development of their models subject to constraints being placed on use of the test data set. The relevant trust model that was used in this competition is in consequence more akin to that of 'standard research practice' as opposed to 'forecasting competitions'. This particular poster will also present a set of basic results produced using: [1] a traditional linear transfer function model; [2] a naïve model that produced outputs based on the assumption that predicted discharge values will be equal to the current ones i.e. a no change situation; and [3] a trend model that produced outputs based on a linear extrapolation of the two previous discharge values. The last two forecasting comparisons in this list equate to the lower thresholds that have been used in previous hydrological model intercomparison exercises.