Geophysical Research Abstracts, Vol. 9, 07331, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-07331

The provision of an online neural network system for flood estimation in ungauged catchments

C.W. Dawson (1), R.J. Abrahart (2)

(1) Department of Computer Science, Loughborough University, Leicestershire, LE11 3TU, UK (c.w.dawson1@lboro.ac.uk / Fax: +44 1509-211586)

(2) School of Geography, University of Nottingham, Nottingham, NG7 2RD, UK (Bob.Abrahart@nottingham.ac.uk)

The provision of internet services or web-based solutions offers endless possibilities for the widespread promotion of hydrological models. The development of hydrological modelling web sites will also encourage tighter integration of different international research communities and provide a set of valuable resources that can be trialled and tested around the world. This paper reports the development of an artificial neural network web site for the estimation of floods in ungauged catchments. Neural networks have been applied to hydrological modelling problems for the last 15 years but limited attention has been paid to the use of these tools for flood estimation purposes. Neural network models were developed to predict T-year flood events (median, 10-, 20-, 50-, 100-year) based on catchment characteristics provided in the 'Flood Estimation Handbook' (Institute of Hydrology). 850 catchments were selected from the original set of records and neural networks were trained using catchment characteristics such as drainage area (km2), base flow index, longest drainage path (km), etc. The trained neural network models were then integrated into a web-based tool that permits participants to run the solutions and to predict T-year flood events based on their own set of input catchment characteristics that are entered into a set of boxes on the 'browser interface'. The problem of missing catchment characteristics is not a major issue; the requested solutions will in such cases be developed on default settings i.e. mean values of the original records.