Geophysical Research Abstracts, Vol. 7, 06984, 2005
SRef-ID: 1607-7962/gra/EGU05-A-06984

An expanded system theoretic rainfall runoff model

R. Teschl and W. L. Randeu

Institute of Broadband Communications, Graz University of Technology, Austria

(reinhard.teschl@tugraz.at / Fax: +43-316-463697)

In hydrological modelling wide-coverage rainfall depths are undoubtedly the most important input parameters. To obtain rainfall measurements that provide both, high spatial resolution and high accuracy, a combination of weather radar and rain gauge data is indispensable. However following parameters among others are main factors that affect the runoff: temperature, humidity, global radiation and sunshine duration. These parameters are crucial for the evaporation. An already existing system theoretic model using gauge calibrated weather radar data as input only, has been expanded to process also the climate data mentioned above. The paradigm of artificial neural networks is used to model the complex input-output relationship.

The study area is the river Sulm-basin in the southwest of the province of Styria, Austria. Weather radar data from the station on Mt. Zirbitzkogel and data from a network of telemetric weather stations within the catchment were available. These datasets were divided into subsets for training, validation and test purposes. The performance was determined with the mean squared error function and it shows stable conditions for randomly selected test datasets.