

Interactive comment on “Water balance estimation in high Alpine terrain by combining distributed modeling and a neural network approach (Berchtesgaden Alps, Germany)” by G. Kraller et al.

Anonymous Referee #2

Received and published: 27 April 2012

Overall quality

The paper presents modelling results of high Alpine hydrological system localised in the Berchtesgadener Ache river catchment area representing highly heterogeneous karstic groundwater system. The authors applied distributed hydrological model (WaSiM-ETH) coupled with Artificial Neural Network module to take into account subsurface water transfer in a karstic environment.

C1126

The paper is well structured, description of the study area and applied techniques is clear and well referenced. The method of improvement modelling results in the complex area proposed by the authors seems to be novel and promising approach however detailed description of methodology used for ANN modelling in my opinion is not sufficient.

Specific comments

1. The geometry of ANN used in the manuscript is well described but there is no specific comment why such geometry was used (what kind of tests has been performed and what results were obtained)
2. The origin of input parameters is not clear. In one place authors write that “Input variables are distributed model outputs” and few lines below the inputs are described as exogenous. It is not clear if temperature and RH is distributed model output of input.
3. It is not described what is the difference between network validation and testing.
4. What represent the weights and biases presented in the table 5? Usually the training procedure is repeated several times with stochastic initial weights values to check if obtained results are consistent.

Technical comments

1. p. 228 Number of datasets used for training/validation step is inconsistent (56+11=67 not 65)

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 215, 2012.

C1127