Hydrology and Earth System Sciences Discussions

Interactive comment on "Technical Note: Real-time updating procedure for flood forecasting with conceptual HBV-type models" *by* Th. Wöhling et al.

G. Bertoldi

giacomo.bertoldi@ing.unitn.it

Received and published: 18 July 2006

Comments to the manuscript submitted for publication in Hydrology and Earth System Sciences (HESS):

Technical Note: Real-Time Updating Procedure for Flood Forecasting with conceptual HBV-Type Models

Author(s): Th. Wöhling, F. Lennartz, and M. Zappa

General comments:

This short technical note presents a very simple, rather trivial updating procedure for

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

EGU

a conceptual distributed rainfall - runoff model. It does not present relevant new concepts or ideas, nor an extensive validation: if the prediction of the stream-flow is wrong, the most important parameter of the model, which controls the initial conditions, is updated. However, as technical note, it might be acceptable, because it shows an easily implementable improvement of a previous model (PREVAH-HVB-Model), suitable for an operational application. Anyway, a more systematic analysis of the benefits of the new updating procedure presented is, on my advice, required.

Specific comments:

1. Introduction

- Authors refer to "small quick reacting mountainous catchments", but then the application is made on quite large basins, at least for the Alps (180 - 600 sq. km). Being the definition of small or large catchment rather subjective, I suggest to define in a more quantitative way the typical basins dimension and the corrivation times suitable for this application.

2. Methods

- The article refers to Gurtz et al., 1999 and to Lindstrom et al., 1997 for the description of the model and the runoff generation mechanism. A few more lines on the HVB model basic principles and on the meaning of the SUZ parameter could be useful to improve the clarity.

- Nothing is written regarding how the precipitation and the other meteorological forcings are spatially distributed, which are key issues, as underlined by Gurtz at, 1999.

- Table 1 reports the results of the calibration and the verification of the model. From the context, I infer that a continuos simulation for the calibration and verification period has been performed. However, because the discussion of the results is only on a few events, it does not appear clear in the paper if the model was running in a continuous mode or as an event based model. In the second case, a more detailed discussion on

how the initial conditions are calculated is required.

3. Updating procedure

- I would suggest to reorganize the paragraph for more clarity: 1. first introduce the temporal structure of the model; 2. explain the temporal cycle of the update; 3. first introduce eq, 1 and then comment on the equation.

4. Results and discussion

- This is my major observation. In this part only two events for both basin are discussed. The paper would improve greatly if , for the whole period of Table 1, the error reduction of the updating procedure is shown. For example: if the model is continuously updated, what is the overall NSE improvement? If, for all the events of Table 1, the model is updated up to 6h before the peak, what is the benefit in the estimation of the peak flow?

- In the discussion it is told that the updating procedure is useful to reduce the uncertainty of the initial condition. The model used is a conceptual model, and the parameters have only a limited physical meaning. However, the paper would become much more interesting if, while analyzing when a model update is needed, more insights on the model structure and the basins soil moisture dynamics could be found.

Technical comments:

- The acronym HVB should be defined at the beginning.

- Are the units of the factor F in eq. 1 1/[Q] ?

- Figures 2 - 5 could be improved putting some arrows (like Fig 2) at the beginning and at the end of the updating periods and also showing just the difference between modeled and simulated streamflow.

- I think the third line of the legend of Figure 5 should be 22.8.2005 instead of 23.8.2005.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

EGU

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 3, 925, 2006.