

## ***Interactive comment on “Calibration of hydrological model parameters for ungauged catchments” by A. Bárdossy***

**A. Montanari (Referee)**

alberto.montanari@unibo.it

Received and published: 22 June 2006

The paper describes an interesting analysis aimed at testing a new technique for calibrating hydrological models in ungauged catchments. The topic is extremely interesting, as the numerous contributions recently proposed by the scientific literature demonstrate.

The work presented here conveys two original ideas that in my opinion are interesting: 1) the full parameter vector of the hydrological model, and not the individual parameter values, is transferred from catchment to catchment. 2) The parameter transferring technique is coupled with a regional study for performing model calibration. I think this method is valuable as I believe that ungauged basins should be treated by using all the available information, including regional databases.

I believe this study is very interesting for readers of HESS. I have only minor suggestions that are listed here below.

1) The catchments description is not detailed. It would be interesting to know whether some catchments are nested. The proposed method should work better for the case of nested catchments for which parameter transferability is more feasible from a physical point of view.

2) The discussion about the Hausdorff dimension is difficult to follow with respect to the other parts of the paper. Is this discussion worth including? I would suggest to consider the possibility to eliminate the text from line 14, page 1111, to line 11, page 1112.

3) I think a discussion should be included about the physical motivations that may support the transfer of parameters from catchment to catchment. The above mentioned case of nested catchments is an example of application in which the transfer of parameters would be fully justified. The physical motivation for transferring the parameters should always be carefully evaluated.

4) In my opinion the paper is missing some relevant references, such as Campbell and Bates (2001), Mc Intyre et al. (2005).

The following are technical comments.

5) Please define symbols  $a$  and  $b$  in equations 3 and 4.

6) I would suggest to specify the range for the generated parameters.

7) I would suggest to specify the main behaviours of catchments 1 and 11.

8) About the first sentence of the abstract, in my opinion regional methods are not the only way to parameterise hydrological models in ungauged basins.

9) I would suggest to define all the symbols in equation 1, including  $t$  and  $\gamma$ .

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

I would like to congratulate with the author for his nice work.

## References

E. P. Campbell, B. C. Bates, Regionalization of rainfall-runoff model parameters using Markov Chain Monte Carlo samples, *Water Resour. Res.*, 37, doi:10.1029/2000WR900349, 2001.

McIntyre N., H. Lee, H. Wheeler, A. Young, T. Wagener (2005), Ensemble predictions of runoff in ungauged catchments, *Water Resour. Res.*, 41, doi:10.1029/2005WR004289, 2005.

---

Interactive comment on *Hydrol. Earth Syst. Sci. Discuss.*, 3, 1105, 2006.

**HESSD**

3, S330–S332, 2006

---

Interactive  
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper