

Interactive comment on “Technical Note: Analytical sensitivity analysis of a two parameter recursive digital baseflow separation filter” by K. Eckhardt

Anonymous Referee #2

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This is a lovely little paper. I have only minor suggestions and corrections.

1. Equations (A3) and (A4) (and likewise equations (5) and (6)) should contain the term " $b + b_0 - b_n$ " rather than " $b - b_n$ ". The b_0 term can then be dropped in equations (7) and (8) in the same way that b_n is dropped.

(I suppose that in using the filter in equation (1), b_0 can be taken to be zero, but in general it can be any value; indeed a starting value of $b_0 = \text{BFI}_{\text{max}}$ might even be best? Not sure as I've never used this filter).

2. Are the "two catchments" referred to on line 23 of page 5 taken from the same pool
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of 65 catchments analyzed in this paper?

(I would imagine they are not, as the very different sensitivity indices obtained for these catchments would probably yield higher standard deviations than those reported in Table 1?).

3. I would not simply discount or "write off" the results for these two catchments (line 5 on page 6: "This, however, is obviously a non-representative result"). The fact is that these two catchments are real, and they show a behavior that is contrary to the mean behavior obtained for the analyzed 65 catchments. What makes the 65 catchments (not a huge sampling, after all, and taken only from North America) any more "representative" than these other two catchments?

If the author accepts this point, then I suggest the Abstract be made a bit more precise (for instance changing "...to a great number of catchments. It is found that..." to "...to 65 North American catchments. For this dataset it is found that...").

Line 22 of the Conclusions could likewise also be changed (to "...these values only characterise mean conditions derived for 65 North American catchments.").

4. Some typos:

- pg 3 line 10: change "neclected" to "neglected".
- pg 3 line 13: change "question how" to "question of how".
- pg 4 line 3: add a comma after " BFI_{max} ".
- pg 5 line 9: add "and" after the comma.
- pg 5 line 17: change "These are" to "This is".

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 9469, 2011.