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Hydrology and Earth System Sciences
Discussions

Interactive comment on "The Wageningen Lowland Runoff Simulator (WALRUS): application to the Hupsel Brook catchment and Cabauw polder" *by* C. C. Brauer et al.

Anonymous Referee #1

Received and published: 27 April 2014

1. Does the paper address relevant scientific questions within the scope of HESS? YES 2. Does the paper present novel concepts, ideas, tools, or data? YES, however, the need for WALRUS or other new specific lumped conceptual approaches is not necessarily clear when approaches like SUPERFLEX are available. 3. Are substantial conclusions reached? Perhaps not substantial, but the conclusions are adequate. 4. Are the scientific methods and assumptions valid and clearly outlined? YES 5. Are the results sufficient to support the interpretations and conclusions? YES 6. Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? YES 7. Do the authors

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give proper credit to related work and clearly indicate their own new/original contribution? YES 8. Does the title clearly reflect the contents of the paper? YES 9. Does the abstract provide a concise and complete summary? YES 10. Is the overall presentation well structured and clear? YES 11. Is the language fluent and precise? YES 12. Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? YES 13. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? The number of Figures could easily be reduced to only capture the results that support the main conclusions of the paper. 14. Are the number and quality of references appropriate? YES 15. Is the amount and quality of supplementary material appropriate? YES

The manuscript by Brauer et al. (2014) puts a new rainfall-runoff model WALRUS to the test in the Hupsel Brook catchment and Cabauw Polder. Overall the paper is well written and easy to follow. The paper is clear and the objectives for assessing the WALRUS model and the conclusions drawn are made clear. Therefore I recommend that the paper be accepted for publication after some minor revisions. Below some comments on the paper and some minor errors are provided.

1. In the calibration section 3, the parameters are referred to as having physical connotations, which is questionable. The fact the parameter names have a sense of some physical connotation is merely a measure of convenience.

2. How were the ranges selected for the model parameters specified on Pg 2103 Ln 11-12?

3. It would be useful to see the Nash-Sutcliffe efficiencies for ET, dv and dg and to discuss these aspects of the model performance.

4. In Sections 4.3 and 4.4 the calibrated Hupsel Brook catchment model is tested on two extremes. Given that WALRUS is a lumped conceptual model, its application to events outside of the range of calibration events seems reason enough that issues arise with the model capturing the extremes.

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5. On Pg 2109 Ln 27-30. This last sentence is not clear. Also, relating point measurements to a catchment effective model parameter has no clear purpose. This sentence should be rewritten or removed.

Minor remarks:

Pg 2093 Ln 1: Replace “specially” with “especially”

Pg 2096 Ln 14: Avoid the use of “impossible” and use “extremely difficult” or some less definitive variant.

Pg 2103 Ln 2: Insert “the” after “as”.

Pg 2113 Ln14: Replace “in” with “is” in “cV in inversely proportional”.

Pg 2117 Ln 4: “Neverteless” spelt incorrectly

In Figure 6 and 7, labels should be given to identify the two catchments in the left and right hand side plots.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 2091, 2014.