

Response to the editor after its decision on July 03<sup>rd</sup>, 2021.

Robustness of a parsimonious subsurface drainage model at the French national scale

(hess-2021-168)

By A. Jeantet et al.,

Dear Dr. Stamm,

Thank you for your relevant comments on the manuscript after the discussion with the reviewers. We are glad that most of the proposed corrections to the reviewers' comments properly address the raised issues. They have been integrated in the revised manuscript and highlighted by a specific comment mentioning the corresponding reviewer. The comments from N.JARVIS were detailed with the notation SC for "Specific Comment" and TC for "Technical Comment". A point-by-point answer is proposed for the remaining comments as well as a suggestion for correction accordingly hereafter:

Comment 2 from the reviewer 1:

The argument has been included as requested at the line 185 of the revised version:

"A sensitivity analysis on the SIDRA-RU model has revealed that  $\alpha$  is not sensitive to the KGE' criterion (Henine et al., in review), used in this study as OF (see section 2.4.1), and moreover can be set at 1/3. Hence, to limit uncertainties relative to the calibration process for a non-sensitive parameter, this approach has been conserved herein."

Comment 6 from the reviewer 1:

A paragraph has been included in the Discussion part describing the potential application of the SIDRA-RU model for pollutant leaching and the required improvements or couplings with other modules at the line 601 of the revised version:

"In the perspective of long-term management on drained plots, predicting flows in order to better monitor the use of agricultural pollutants is a major concern, pollutant transfers occurring with drainage flow (Kladivko et al., 2001; Trajanov et al., 2018). Thus, a good model can be used as a decision-making tool, for example to restrict pollutants' application during flow period for the case of pesticides (Lewan et al., 2009; Zajíček et al., 2018; Kobińska et al., 2020). In this context, using SIDRA-RU may be quite relevant. However, the current form of the RU module is not optimal to accurately represent the fate of pollutant in soil profile, being too simple to precisely represent the behaviour of the water table inside the unsaturated zone. To overcome this problem, this model type is generally coupled with pedotransfer functions (Jury and Roth, 1992; Magesan et al., 1994) to transfer water and pollutant stock from the unsaturated zone to the saturated zone. Within this framework, the perspective of the PESTDRAIN module (Branger et al., 2009), coupled with the SIDRA-RU model, should allow simulating pesticide leaching by including two reservoirs: fast reservoir to mimic preferential flow above the drain area and slow reservoir through the matricial compartment. Based on a similar approach, combining SIDRA-RU with a nitrate leaching module might also be useful in order to correctly assess water pollution on French drained plots."

Comments for both reviewers regarding the linguistic issues:

The native speaker Robert Sachs has corrected the revised version of the manuscript, as attested by the certificate attached to this document. A final reading has been made on the manuscript to handle terms specific to the scientific field.

We hope this version fulfils your request and provides a fair correction for the raised issues.

Best regards,

Alexis Jeantet

Robert Sachs  
Translator / Copy-editor

July 29, 2021

To whom it may concern,

This certificate is intended to inform you that I, Robert Sachs, a professional French-English translator, proofreader and copy-editor with over 20 years experience working in close collaboration with the French research community, have reviewed and modified this article ("Robustness of a parsimonious subsurface drainage model at the French national scale"), on behalf of its lead author Alexis Jeantet. My assigned role was to correct the spelling / grammar / syntax of the manuscript in addition to improving its readability. I was naturally not involved in any of the strategic decisions regarding the article's outline, subject matter or dissemination of results. The scope of my function was primarily at the word / sentence level, in ensuring a quality of expression that would not detract from the authors' emphasis.

As a resubmission to your journal, this article has already been reviewed by myself earlier in the year and, in the meantime, I have worked with Mr. Jeantet on its revisions in order to satisfy your quality specifications, in terms of both content and presentation.

I remain at your entire disposal for any subsequent exchange you feel could be fruitful for this particular submission: [robert.sachs@wanadoo.fr](mailto:robert.sachs@wanadoo.fr)

Many thanks for your attention and consideration.

Best regards,



Robert Sachs  
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