

Dear Referee #2,

We are very grateful for your constructive review of our paper. We will try to take advantage of your advice for improving the manuscript. We respond below to your comments item by item:

This manuscript presents a study in which the value of different rainfall interpolations was assessed by hydrological modeling. While this is an interesting topic and a valuable approach, I am afraid I have major concerns with the manuscript in its current form, mainly because so much remains unclear in the presentation. I find this a pity, because I really like the approach and it is rather unfortunate that the authors were not able to present their work in a better way.

We were trying to shorten the paper, that's why all methods are very briefly described but the references are precisely cited, if the readers need to know details about the methods. However, we will make clearer about the details techniques in the revised manuscript.

Mainly, I had problems to fully understand what actually had been done. The hydrological model is a central part of the study, but very little information on this is given. Important questions to me include: How has the model been parameterized? Was there any calibration involved? If yes, how? What was the temporal resolution of the runoff model in this study? How well did the model perform for extreme events? How well were internal variables reproduced? With the central role the hydrological model plays in this study, the results cannot be fully understood and interpreted, if this information is missing!

The important and concise information of the hydrological model have been presented in the manuscript while the application of this model in the region has also been published in several papers (Sohier et al., 2009; Sohier and Degre, 2010; Sohier, 2011). EPIC-GRID model is extended from the original EPIC model by Williams et al., 1984 to the catchment scale and regional scale. The EPIC-GRID model has been parametrized, calibrated and validated for all catchments of the Walloon region (Sohier et al., 2009; Sohier and Degre, 2010). For full details on the description, calibration and validation of the EPIC-GRID model, we refer to Sohier (2011).

As mentioned in the Line 157 of the manuscript, the model is a physically-based, fully distributed, hydrological model that works on a **daily time step** for runoff simulation.

The revised manuscript will present performance indicators of the model in order to help the reader to understand and interpret the results.

Even after reading the manuscript several times, it remained unclear what exactly had been done in this study. This makes it basically impossible to assess the manuscript. As a reviewer you do not want to have to guess the methods. This also means that I was not able to really review the study.

We will present clearer about the method in the revised manuscript.

Partly rather basic things are described in great detail (e.g. p 7 , plotting position), but then at other places important detail information is missing. The method section needs a major revision to allow understanding what actually has been done. I also found section 3 hard to follow, the mix between results and discussion is just confusing!

We will revise the manuscript to make it understandable and we will separate the result and discussion sections.

While the authors are right about the limitation of the model efficiency it is not too helpful to just compute the volume error (here called PBIAS) does not solve the issue. Rather one should use some combined measure (e.g., Lindström 1997).

We use the model evaluation guidelines for systematic quantification of accuracy in watershed simulations by Moriasi et al., 2007 which is most recent publication.

The equations are poorly written (NSE is no suitable variable name!)

We will check the equations but in this case we think it is correct. We can rename NSE.

The text switches (randomly) between present and past tense (as example see section 2.4). Also in other aspects, the manuscript would largely benefit from improving the quality of the language.

We will improve the quality of the language.

References:

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Sohier, C., Degre, A., and Dautrebande, S.: From root zone modelling to regional forecasting 591 of nitrate concentration in recharge flows - The case of the Walloon Region (Belgium), *J Hydrol*, 369, 350-359, DOI 10.1016/j.jhydrol.2009.02.041, 2009. 593

Sohier, C., and Degre, A.: Modelling the effects of the current policy measures in agriculture: 594 An unique model from field to regional scale in Walloon region of Belgium, *Environ Sci Policy*, 13, 754-765, DOI 10.1016/j.envsci.2010.08.008, 2010.

Sohier, C.: Développement d'un modèle hydrologique sol et zone vadose afin d'évaluer 597 l'impact des pollutions diffuses et des mesures d'atténuation sur la qualité des eaux en région 598 wallonne, Ph.D thesis, Gembloux Agro-Bio Tech, University of Liege, Gembloux, 338 pp., 599 2011.