Hydrology and
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Sciences

Discussions

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Interactive comment on "Developing a Decision Support Tool for Assessing Land Use Change and BMPs in Large Ungauged Watersheds" *by* Junyu Qi et al.

Junyu Qi et al.

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Reviewer#1 The manuscript entitled "Developing a Decision Support Tool for Assessing Land Use Change and BMPs in Large Ungauged Watersheds" presents development of decision support tool to estimate the impacts of land use change and best management practices on both water quantity and quality related issues of ungauged watersheds from Canada. The authors are putting their great efforts in this study. This type of research can help for making better informed decisions regarding future watershed management strategies.

Thank you for your kind comment.

C1

Since calibration and validation of process-based models are crucial steps for further model simulation studies I suggest the authors to provide more details of these processes. I expect to have some text about model parameters' sensitivity analysis and model prediction uncertainties.

We replied these comments along with several related topics in detail below.

I suggest to include more concrete outputs of the research in "Abstract" section, not the general statements.

We revised the abstract part according to your suggestion.

Title: The term "Large Ungauged Watersheds" in the title is confusing to me because the larger watershed taken for this study is only 380 km2 and I don't find any statement to define a criteria whether a watershed is large or small in size.

Compared with the small experimental watershed, the LRW is considered large. We accepted your suggestion and remove large from the tile to reduce confusion.

Abstract section, line 3: The term "water resources" should have some specifics

We revised that

Materials and Methods section, line 104: "statistical equations". This should be clearly defined.

We revised that.

Materials and Methods section, line 107: "water quantity and quality". These should be defined.

We revised that.

Study Sites and Data Collection section, lines 123-124: I also want to include both minimum and maximum temperature and precipitation.

We revised that.

C2

Figure 3: I suggest making topographic slope in degrees.

We follow the setup of SWAT using percentage which is commonly used in SWAT papers.

Study Sites and Data Collection section, lines 159-161: I suggest either to include website of data source or citation.

We added website link.

Study Sites and Data Collection section, lines 161-162: I suggest to include more details.

We revised that.

Modification of SWAT section, lines 176-177: Include some supportive document for this.

We added references.

SWAT Setup, Calibration, and Validation section, lines 197-198: Need more details of this SWAT Setup, Calibration, and Validation section, lines 202-203: What are threshold values of land use, soil, and slope categories to define 32 sub-basins in the watershed? Need to explain.

We understand your suggestion on this part. However, we do not think adding more details regarding calibrated and validation SWAT for BBW and sensitivity analysis is necessary in the present paper as those processes can be find in a published paper (Qi et al. 2017b). Also the reviewer#2 has already pointed out that the paper needs to be shorten and more materials (which can be found easily in another paper) would not be helpful. The most important reason why we can not easily detail those processes in present paper is that the SWAT model was not just set up, calibrated and validated for BBW as did in other papers. We modified several modules in SWAT and tested them in separate papers and set up SWAT using filed-boundary based HRU configuration.

We think too much detail would divert readers attention from the objective of this paper.

Please also note the supplement to this comment:
https://www.hydrol-earth-syst-sci-discuss.net/hess-2017-423/hess-2017-423-AC1-supplement.pdf