

Geosci. Model Dev. Discuss., referee comment RC1
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Comment on gmd-2021-103

Anonymous Referee #1

Referee comment on "MPR 1.0: a stand-alone multiscale parameter regionalization tool for improved parameter estimation of land surface models" by Robert Schweppe et al., Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2021-103-RC1>, 2021

This paper describes the stand-alone version of MPR and its adaptation for two different land surface models. MPR is a well-established regionalization technique to estimate spatially explicit model parameters, and the availability of a stand-alone version could potentially contribute to significant model improvement in some land surface models and hydrological models. For modelers who already plan on incorporating MPR, this paper would provide much needed guidance. However, if the purpose of this paper is to convince other large-scale environmental modelers to adapt MPR (which would surely merit publication in GMD), significant improvement in paper organization and results presentation is needed.

Paper Organization:

Some parts of the paper read more like a technical document than a scientific paper. For example, a lot of material in sections 3.1-3.3 is better suited for supplementary materials. Instead of these nitty gritty details, the readers may prefer to see things such as the concept of MPR explained (like how to apply TF), computing time required at a representative configuration (hardware and spatial resolution), why the experiments have to be performed online, and the pros and cons of the MPR method.

In Section 3.4: Please also explain the difference with old MPR release. What issues prevent the old version from being used by other models (I assume other models can also use the parameter files)? Which improvements were made to solve these issues?

Results Presentation

For other LSM modelers, Figure 5 would be most interesting. One would naturally ask whether the use of MPR result in better ET, which transfer function (TF) was used (and how to choose appropriate TF), and whether the authors have noticed some similarities (i.e., if improved results are shown in both cases) in these two LSMs. These issues are important for new users to judge the applicability of MPR. I would recommend the authors to consider using some open-source benchmarking tools such as ILAMB to comprehensively assess whether the simulation results of the two LSMs have improved in various key variables.

Figure 3: The examples presented in this paper discussed θ_s and K_s , while LAI was not discussed. So why not show dependency graphs for these two parameters instead?

Some Minor Points:

L372-376: Have you contacted that paper's authors for this issue?

L429-L430: How?

L514: "optimization applications is low" do you mean "optimization applications is high"?

Code availability: please provide sample data and installation guild if possible. Data to reproduce the figures cannot be downloaded without contacting UFZ.