Hydrol. Earth Syst. Sci. Discuss.,
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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Providing a non-deterministic representation of spatial variability of precipitation in the Everest region" *by* Judith Eeckman et al.

Anonymous Referee #1

Received and published: 9 June 2017

Review of

Eeckman, J., Chevallier, P., Boone, A., Neppel, L., De Rouw, A., Delclaux, F., and Koirala, D.: Providing a non-deterministic representation of spatial variability of precipitation in the Everest region, Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2017-137, in review, 2017.

The authors address an important issue in analyzing precipitation with high impact on hydrological discharges in complex terrain, the effect of altitude on the spatial and temporal distribution of precipitation analysis in the Himalayan region. Non deterministic water budgets on an annual basis are given for two mountainous regions, indicating the

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Discussion paper

uncertainties associated with orographic effects for annual total precip and simulated run-off.

The paper is well written and clearly structured. Apart from some issues, which are listed below, the analysis and results are reasonable. Before publication, I would suggest to take into account the following comments:

1. The choice of the altitudinal beta-factors is crucial. How sensitive is the optimization to the choice of initial beta values? Some minimization algorithms suffer from inadequate initial values since they converge towards local minima which could be far away from the global ones. Did you make sensitivity studies with different initial values?

2. In 3.2, 3.2.1, it is stated that the precipitation analysis has been done by applying an IDW scheme. On which grid resolution is it done?

3. The ISBA surface scheme is used to simulate the exchange between atmosphere and soil/surface, using ECOCLIMAP surfaces. Why did the authors not use ECOCLIMAP2 data? They should be higher resolved and available.

Some minor remarks and typos (but not all of them) are listed below:

P3L107: "... are presented in TABLE 2 ..."

P3L108: "These time series present up to 61% missing values" sounds odd.

P4L121: replace "aleatory" by "random"

P7L201-202: The decrease of precipitation with altitude is characterized by various functions.

P8L229: "Optimal values that optimally fit ..." sounds odd.

P12L344: "Based on values proposed in the literature, ..."

P12L349-362: What are behavioral and nonbehavioral parameter sets? Please explain more detailed.

P13L373: The years 2013 and 2014 are used as spin-up period. Why such a long spin up time??

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2017-137, 2017.