
Author's response for review process of "Understanding variability in root zone storage capacity in boreal regions"

by Tanja de Boer-Euser, Leo-Juhani Meriö, Hannu Marttila

Dear editor,

Thank you for the quick evaluation of our revised manuscript. With regards to your final point, we would like to emphasize that indeed we have taken this comment from Reviewer #2 into account seriously and incorporated it into the paper.

We believe (given the mentioned line numbers) that this comment refers to the initial version of the paper (uploaded on 30 March 2018), where indeed such discussion on limitations and future direction was not extensively done. In our second version (uploaded on 20 August 2018) we had already corrected this, by extensively revising the discussion, but also in a more integral manner in the tone and approach throughout the paper. The track changes in this revision provide more detail and guidance on how we have processed this exactly. We also added the PCA, which deals with the intrinsic relationship between the different variables compared with S_r . For the latest revision (uploaded on 17 November 2018), we have done another check on this issue – as well as on the other comments - and made the subsequent final improvements to the paper.

Specifically, the issues raised by the reviewer can be found at the following places (section, figures and line numbers refer to the marked-up version of the latest manuscript).

Control vs correlation throughout the manuscript the term 'control' is replaced by either correlation or variability (see also first paragraph of page 18 of the author's response uploaded on 20 Augustus).

Relations between catchment variables and S_r to make these relations clearer, we have added the PCA analysis (Sections 2.4.4 and 3.4) and added correlation coefficients for all assessed relations between S_r and catchment characteristics (Figures 4-7).

Caveats and limitations of presented results Section 4 now contains a discussion of the limitations of the findings, for example in section 4.2 (p10, 1.28-30) and section 4.3 (p.11, 1.18-21) where reasons are discussed for the lack of a clear pattern in the comparison between S_r and vegetation

characteristics and types. Section 4.3 (p.11, l.21-29) poses further a set of questions about remaining interactions between catchment variables and derived S_r -values that are not yet considered in this study.

Relevant studies for future work Section 4.4 deals with an outlook for future use of S_r : it suggests repeating the study in other boreal and temperate climates to further investigate the threshold behaviour (p.12, l.25-27) and it discusses the need for further investigating the way (new) equilibriums between climate and vegetation are established in different catchments (p.12, l.29-31).

I hope this clarifies your doubts.

On behalf of all authors,

Kind regards,

Tanja de Boer-Euser