

## ***Interactive comment on “Hydroclimate variability in Scandinavia over the last millennium – insights from a climate model-proxy data comparison” by Kristina Seftigen et al.***

### **Anonymous Referee #2**

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This paper generated a new field hydrological reconstruction over Scandinavia covering the last millennium based on a network of a few dendro-chronologies. The authors mainly compared this reconstruction with a few selected simulations from CMIP5 and PMIP3. The article is well written and prepared. I have only a few comments, as following: 1. The growth of tree-ring width (TRW) may be limited by the shortage of water. However, does the TRW positively and linearly depend on soil moisture/ precipitation? Can TRW proxies reflect floods/extreme wetness, especially when the study region is not arid? 2. I see you have another field hydrological reconstruction over Fennoscandia based on much more proxy records. Have you compared this reconstruction with that one over Scandinavia? Is there any difference for the northern part? 3. The com-

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parison between the reconstruction and the simulations is interesting. However some conclusions, from my point of view, are too strong. For example, “We find simulated interannual components of variability to be overestimated, while the multidecadal/longer timescale components generally are too weak.” I supposed the conclusion is drawn from the lines from 307-322. As far as I understand, the TRWs tend to have red biased spectra, please see the papers from Franke et al. (2013) and Bunde et al. (2013). So, is it possible that the TRW-based reconstruction overestimated low-frequencies? If that is the case, then the following conclusions are not solid. Especially, “Weak multidecadal variability in models also implies that inference about future persistent droughts and pluvials based on the latest generation global climate models will likely underestimate the true risk of these events.”

References: Bunde A, Buentgen U, Ludescher J, Luterbacher J and von Storch H (2013) Is there memory in precipitation? *Nat. Clim. Change* 174–5 Franke J, Frank D, RaibleCC, Esper J and Broennimann S (2013) Spectral biases in tree-ring climate proxies *Nat. Clim. Change* 360–4

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