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Climate of the Past Discussions

Interactive comment on "Two millennia of Main region (southern Germany) hydroclimate variability" *by* Alexander Land et al.

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Comments to Referee #2 by Alexander Land

Dear Referee #2, Thank you for these critical comments.

RC#2: Review of previous studies/reconstructions In a previous version of the manuscript we deeply reviewed other accessible reconstructions from Europe as well as from southern Germany. For example: Wilson et al. 2013 (DOI 10.1007/s00382-012-1318-z), Cooper et al. 2013 (DOI 10.1007/s00382-012-1328-x) or Wilson et al. 2005 (DOI 10.1002/joc.1150) to place much more stress on spatio-temporal differences between them and how important it is to get a long (two millennia) highly-resolved precipitation reconstruction entirely developed from a small region (here the Main region,

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southern Germany). But this was criticised by a colleague, which caused us to use reconstructions only from the same grid box (here from Pauling et al. 2006, Cook et al. 2015) and for Central Europe (Büntgen et al. 2011).

RC#2: Mechanism and origin of the precipitation variability (e.g. influence of NAO) To my best knowledge the NAO has a strong influence during the winter period on the weather in Central Europe. Thus I would assume that there should be no significant influence. As can be read in Qian et al. (2000, https://doi.org/10.1029/2000JD900102): [. . .The North Atlantic Oscillation plays an important role in nonseasonal variability over the sector and leaves a significant signature in precipitation. But it does not seem to be the most important signal of atmospheric variability in precipitation over Europe, although it does in winter.]. But, to be honest, I did not analyse it, but I will.

RC#2: TRW chronology does not track extremely low/high precipitation rates This is a crucial point. In most of the tree-ring studies dealing with oaks this fact is present in the data. But only in a few of them it is explicitly mentioned/shown that extreme low rainfall is only poorly modelled by oak ring-width data (e.g. see Wilson et al. 2013 (Fig. 7, DOI 10.1007/s00382-012-1318-z), Copper et al. 2013 (Fig. 10, DOI 10.1007/s00382-012-1328-x)). In my opinion this point needs more attention in general and thus it is explicitly mentioned in our work.

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