

Interactive comment on “Water supply patterns in two agricultural areas of Central Germany under climate change conditions” by M. H. Tölle et al.

Anonymous Referee #1

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Thanks for submitting this manuscript to BG. I think it's relevant and good that scientists start using climate projection data for science and application. One crucial requirement for a successful review process in BG is however the answer to 'does the manuscript represent substantial contribution to scientific progress within the scope of this journal (substantial new concepts, ideas, methods, or data)?'. Reading the manuscript I wasn't yet entirely sure how this work would contribute to the development of science in this area. You make an interesting data analysis, but the analysis stays descriptive and general scientific achievements from this study cannot yet be seen. You reveal much of your research ambition, but this makes the reader expect more than you actually provide in this manuscript. You should decide whether this is meant to be a study on vulnerability of future bioenergy cropping to altered climatic variability or rather a methodological study on the impact of the bias correction at the example of two regions

C901

that differ with respect to shading effects from mountain ridges. In the first case you might want to make sure that the SPI is especially relevant for bioenergy cropping (e.g. with a crop specific impact model analysis, which you mention as an outlook), in the latter case you should make sure that you have more to offer than previous work done from others that have developed, used and discussed bias corrections before. This would at least make it easier for me to answer the above question positively. I hope that a revised manuscript will demonstrate the scientific merits from this work stronger. The use of the English language needs to be improved (see some suggestions below).

Detailed comments: px, ly refer to page x and line number y of the print version of the manuscript The title is very clear but reflects only the climatological aspects of precipitation of your work. Was this intended? (C1)

Reading the abstract I didn't quite see the relationship between your analysis and carbon neutral bioenergy cropping and use in particular. You mention it only in the beginning, but during the rest you concentrate on climate change only. (C2)

The way you express the results from your study, e.g. 'highlight', 'emphasize', is very cautious, but this lets your statements sound speculative and vague. Try to concentrate on the robust findings from your study and reflect this in the wording (C3) p5154, l21: 'Increasing winter availability of water' consider: 'Increasing availability of water during winter'

p5154, l23: 'climate change signal of the SPI' reword

p5154, l23: indicate-> indicates

p5155, l11: 'highlighted' -> 'demonstrated'; 'this'-> 'these'

p5156, l6 – l8: consider: 'Therefore the joint research project BEST (BioEnergy regions STrengthening) started investigating the success of various bioenergy plantations in Germany at the example of the two investigated areas.'

p5157, l4: It's not exactly clear from the introduction what the scope of the study is -

C902

climatology or bioenergy cropping? (C4)

p5157, l4: replace 'in' by 'the'

p5157, l10: 1. 'For future water availability and its surplus or deficit over the two regions the SPI is analysed' this sentence doesn't sound correct. Please reword.

p5157, l14: The wording 'chosen for a case study for analyses' doesn't make sense to me

p5157, l 25: The wording 'These conditions serve these areas as a diverse agricultural base.' doesn't make sense to me

p5157, l 25: Why 'field areas'

p5158, l 14: The wording 'by the landform configuration. ' doesn't make sense to me, try 'topography'

p5160, l 10: in your introduction you mention explicitly bioenergy cropping; is the SPI especially relevant for this kind of land use? (C5)

p5160, l 25: why do you use quotation marks "minimizing ..residual" ? p5161, l 12: why '(R)' do you mean registered trade mark? Or do you want to abbreviate the abbreviation?

p5161, l20: please replace 'quiet' by 'quite' if not even using a more exact formulation (quantify how close observations and simulations were)

p5161, l26: consider use of 'values are' 'already'

p5162, l4: 'are significantly not different' -> 'are not significantly different'

p5162, l24-25: 'Changes in precipitation for SRES A1B and B1 in Göttingen and Großfahner area are less marked compared to the whole area (see Fig. 5a-d) in both seasonal time period differences.' difficult to understand, please reword.

p5162, l5: 'The climate change signal of SPI'-> 'The SPI'

C903

p5163, l20: less->smaller

p5164, l1 – 5: Why did you not test apply approaches and compare them with the method you selected. This would have strengthened the methodical aspects of your work (C6)

p5164, l6 – 8: are the data bases of you study and the IPCC assessment independent? (C7) p 5164, l 26: what do you mean with a 'high water gauge'?

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