

## ***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 #2**

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### **GENERAL COMMENTS**

There is a concrete need for climate change information that is relevant for specific sites and sectorial uses by policy-makers and practitioners. It is also clear, that downscaling may be a useful technique for this, not least in areas with marked topographic features. Due to systematic biases in (all) climate models, bias corrections may still be needed. Research on such has increased over the past few years not least among the climate change impact study community, where the so-called “delta-change” method has for a quite a long time being used to a large extent.

The current manuscript makes an effort on this and focuses on two specific areas in Germany, looking into precipitation in light of some regional climate change scenarios, and making some inferences on possible consequences for agriculture including

C1672

energy crops.

It seems, however, that the study would deserve various improvements. First, the specification and analysis of the regional climate scenario information is very brief and could be developed. Second, in order to analyse changing water supply patterns in an “available water” sense, precipitation alone does not necessarily provide a complete picture. Third, it is likely that the referenced literature is not optimal for the study at hand, nor provides a good overview of the relevant topics.

The English should be revised. Some of the sentences are difficult to follow which may be due to the choice of terms, punctuation and sentence construction.

Overall, the manuscript could either be developed further along the lines of providing assessment for specific users, or be focused on the bias correction method development and elaboration on this so as to report on methodological development.

### **SPECIFIC COMMENTS**

The quote of the AR4 results (page 5155, line 6-8) is not clear. Does it refer to ensemble best estimates and the preindustrial as the baseline?

The referenced literature on, for example, page 5155 and in the discussion-section consists of fairly old entries, many of which are rather remotely related to the study region (e.g. regions in China, the New York metropolitan area). There is more and more appropriate literature to consider for Europe.

On page 5156, there are aspects which would need to be developed (or omitted) as their relation to the study at hand is not clear. Rather, the thoughts are left “hanging”. For example, the, precipitation trend study mentioned on lines 17-18, and the results of Hirschi et al. on lines 21-24.

Concerning the regional climate scenario information, it would be good to develop some what is now on page 5159, lines 2-8 (which scenarios and how many are used?) and on page 5156-5157, lines 28-29 and 1-3, respectively (what is the overall “skill” of

C1673

the COSMO-CLM model and how known biases may affect the result?)

Page 5159, under “Bias correction” could be developed a bit more on considering the delta-change approach, and other bias correction methods from the international literature. On page 5164, lines 1-5, the bias correction literature is referred to with two articles from 2011 and from 2001, respectively.

Page 5161, it is stated that the bias correction improves greatly the results for the Göttingen area. At face value, however, Table 1 shows for the winter season, that the bias goes from +8% to -12% (i.e., increases in magnitude). See also page 5163, lines 15-17.

Page 5162, line 15; what does “only marginally insignificant” mean? Almost significant?

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Interactive comment on Biogeosciences Discuss., 9, 5153, 2012.