

Answer to the reviewer's report #1

Dear reviewer,

Thank you for the careful check of our revisions. We are happy that the updates could satisfy your major points raised in the initial round of reviewing. For the remaining minor points, we answer in the following:

I.657-659 I am not sure I understand what you mean with the second part of this sentence. Does it mean you suggest inferring hydrological changes based on climate changes for other GCM-RCM's using the figures in this paper? I think the system is too complex to allow that (rainfall intensities, dry-wet-spell durations, interaction between rainfall and temperature, ...).

We follow your suggestion and remove this recommendation from the main article. Even though the large ensemble covers a wide space of climatological variability, other GCM-RCM combinations might indeed simulate rainfall intensities or dry-wet-spell durations outside of the large ensemble range.

I.684 suggest "slightly more than 3°C above pre-industrial levels"

Thanks, that reads better, we updated the sentence accordingly.

Regarding the flow duration curves in the Supplement:

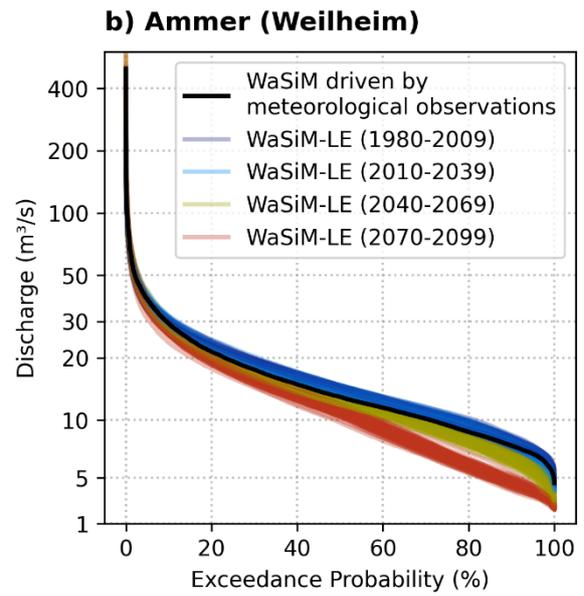
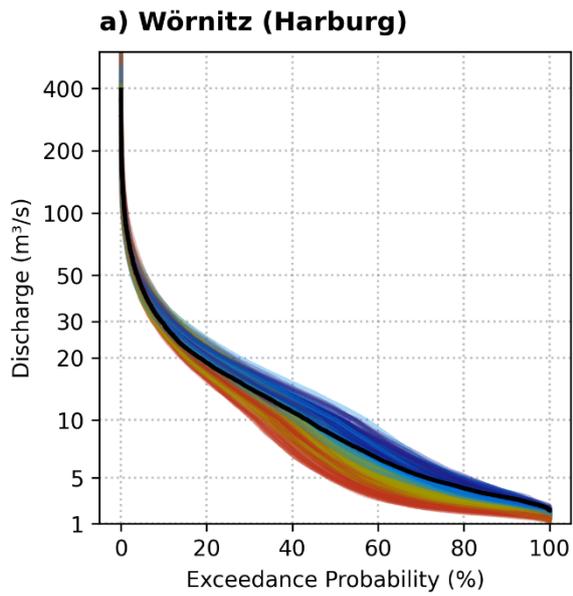
The WaSiM meteo-obs-driven flow duration curve is at the "dry" end in both catchments, while almost all CRCM5-LE simulations are "wetter". This seems counterintuitive as the entire paper argues that droughts will increase. What are the reasons for this discrepancy? Is this not all the data for the entire period (only the subset baseline shown here)? Is it bias corrected or raw CRCM5-LE? Please explain/discuss this issue.

Thanks for pointing at this issue.

The WaSiM simulations driven by the 50-member CRCM5-LE are driven by the bias-adjusted CRCM5-LE and cover the period 1981 – 2010. Hence, this does not contradict the core message of the article, which is that river droughts will become more intense in the future (after 2010). Furthermore, the issue that "WaSiM meteo-obs-driven flow duration curve is at the "dry" end in both catchments, while almost all CRCM5-LE simulations are "wetter" holds for the moderate flows, but not for the high and low flows, where the WaSiM meteo-obs-driven simulation is well in the centre of the 50-member WaSiM-LE simulations.

We clarify the observation & simulation periods in the revised supplement within the Figure caption of Figure S1.

To show you how the change of FDCs under climate change would look like, we briefly created this figure for you, which is however out of scope for the article:



Colouring is not optimal, but you see the strong changes across the full range of flow intensities and the variability of the large ensemble, agreeing with the drought projections of the main article.