Geosci. Model Dev. Discuss.,
https://doi.org/10.5194/gmd-2017-33-RC1, 2017
© Author(s) 2017. This work is distributed under
the Creative Commons Attribution 3.0 License.

Geoscientific Model Development Discussions
Open Access
EGU



# *Interactive comment on* "Changes in regional climate extremes as a function of global mean temperature: an interactive plotting framework" *by* Richard Wartenburger et al.

**B. Sanderson (Referee)**

bsander@ucar.edu

Received and published: 3 June 2017

The submitted manuscript outlines a tool, based on the prior work of Seneviratne et al (2016), which provides a convenient visualization for regional climate extremes changes as a function of global mean temperatures. The paper serves as documentation for an accompanying online tool, which allows end users to quickly produce regional relevant climate data.

The paper is well written, and the web-based tool appears to nicely perform the functions advertised in the paper - which will doubtless be very useful for end users as an easily accessible source of multi-model climate data. As such, the paper provides a



Printer-friendly version

Discussion paper

nice resource for the wider community, and should certainly be published as a result.

As a scientific paper - the results are accurate, and though they are not groundbreaking - this is clearly a paper whose major function is to provide documentation for a useful tool, and so the results serve primarily as illustrations of the tool's capabilities.

Minor points: - The breakdown of the importance of multi-model variability and internal variability is not particularly meaningful. The authors compare an ensemble of r1i1p1 members, with an ensemble using all initial condition members from all models. Unsurprisingly, the results are very similar, as one would expect both ensembles to be subject to both initial condition and structural uncertainty. Perhaps a more meaningful comparison would be to look at the spread in initial condition members from a single model version, where a significant sample is available - this would give a more meaningful interpretation of what fraction of the multi-model spread is due to initial condition variability alone.

Section 3.1: would the authors like to comment a little on potential mechanisms for why different regions exhibit different gradients of response. The NEU response seems likely associated with polar amplification. Is the Amazon response typical of the tropics in general - or is there a particular feedback associated with this region?

- Could the authors comment a little on how sensitive the 1.5 / 2 degree results are to the scenario chosen? Establishing whether there are significant differences in the distributions of response using different scenarios in any regions arising from the method would be a useful result for the pattern scaling community which could be trivially assessed from the analysis already done here.

- the shaded regions in Figures 7/8 are a little confusing, and could do with a little more explanation. Presumably - discontinuities arise because some models never reach some levels of warming in some scenarios, but the fact that the number of models change along the x-axis makes the grey bars difficult to interpret. Are some of the apparent nonlinearities mainly due to the fact that the ensemble sample is changing





CC BY

along the x-axis?

---

Interactive comment on Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2017-33, 2017.





CC BY