Earth Syst. Dynam. Discuss.,
https://doi.org/10.5194/esd-2017-102-RC2, 2018

Earth System Dynamics
Discussions

Interactive comment on "Freshwater resources under success and failure of the Paris climate agreement" *by* Jens Heinke et al.

Anonymous Referee #2

Received and published: 3 April 2018

The manuscript "Freshwater resources under success and failure of the Paris climate agreement" is within the scope of the journal, novel, generally well written and state of the art.

However, there are some MAJOR issues that need to be addressed before publication:

* It is good that a manuscript is concise. However, in the description of the results I find it not really concise, as in the mean time the description of data used and methodology lacks information. A more detailed description of the latter is needed to better understand the results.

* Climate change projections: What I find particularly missing in the manuscript is the topic of sea level rise. Under all average global temp rise due to climate change,

Printer-friendly version

Discussion paper

the sea level will rise. The authors discuss temp rise until 5degrees C, so different sea level rises will occur. Why has this not been accounted for in the manuscript? E.g. coastal flooding will occur without appropriate adaptation. Is this included in the 10-year flooding scenario of the authors? Please discuss. Add a new section under section 4 on issues like this and other uncertainty/limitations of the study.

* The metric MAD, whether or not in combination with the water crowding indicator: The authors write on page 2 lines 22-23 on the important topic of "... seasonal shortages and changes in variability". They quote that it is important to address this. However, by using a metric like MAD, I do not see at all that seasonality or changes in seasonality due to climate change are addressed. Like in mountain regions, winter can have more water availability due to climate change but summer less. In a mean annual metric this is not accounted for. Also in the water crowding indicator this seasonality is not represented. Please discuss, and again in a new section under section 4 "other uncertainty/limitations of the study". A new publication in STOTEN about water stress partly discusses these issues - https://doi.org/10.1016/j.scitotenv.2017.09.056 . Please discuss relating to this paper.

MODERATE/MINOR COMMENTS

* Page 2 Line 4 "the water supply" delete "the"

* Page 2 Lines 32-34: "more significant". Why? I do not see this. Why is this change in water scarcity more significant in already stressed than unstressed regions. Is an increase in water stress not important in any region? Are water users and the environment not affected in both situations? Please justify this statement or alter it. * Page 3 Lines 2-4: same comment

* Population growth: give more information on quantities and assumptions in the scenario's used

* Page 7 Lines 1-17: Does the water crowding-indicator account for

ground water and environmental flows? Please discuss, again referring to https://doi.org/10.1016/j.scitotenv.2017.09.056

* page 8 line 11: increase in MAD, or is it decrease? Discuss in more detail - more precipitation but also ET, so what happens with resulting MAD

Interactive comment on Earth Syst. Dynam. Discuss., https://doi.org/10.5194/esd-2017-102, 2017.

Printer-friendly version

Discussion paper