

Weather Clim. Dynam. Discuss., referee comment RC2  
<https://doi.org/10.5194/wcd-2022-38-RC2>, 2022  
© Author(s) 2022. This work is distributed under  
the Creative Commons Attribution 4.0 License.

## Comment on wcd-2022-38

Anonymous Referee #2

---

Referee comment on "Warm conveyor belts in present-day and future climate simulations – Part 1: Climatology and impacts" by Hanna Joos et al., Weather Clim. Dynam. Discuss., <https://doi.org/10.5194/wcd-2022-38-RC2>, 2022

---

Review of Joos et al; Warm conveyor belts in present-day and future climate simulations. Part 1: Climatology and impacts.

In this study the authors investigate how the global frequency, intensity, and characteristics of warm conveyor belts (WCBs) are represented in a state-of-the-art climate model, and how they change in a high emission warming scenario. The study is thorough, considering not only the spatial distribution of the WCBs, but also the changing characteristics and how these relate to the key impacts of WCBs - namely precipitation and large-scale dynamics. I find the paper to be very well written, clear, and easy to read.

I have only a few minor comments/edits.

- Page 3, Lines 13-14: I think it's not clear yet what "corresponding signals" might refer to. I understand having read the paper, but when I first saw this I was unclear. Could this be reworded?
- Data: Could you say something about the different resolution of the datasets, and whether this has an impact on the results? For example, does the "intensity" of the WCBs, i.e., the number of trajectories in a grid box, depend strongly on the resolution?
- Page 6, line 17: "chapter" should be "section".
- Figure 3: Does the winter figure include DJF in the NH and JJA in the SH? It might be good to clarify in the caption.

- Page 14, line 5 (and elsewhere): "inner-quartile" should be "inter-quartile".
- Page 17, line 6: I think there is a typo and "50mm/48h" should be "5.0mm/48h".
- Page 17, line 8: Which percentile is this referring to? It only says "extreme".
- Figure 11: The panels on the right, it is not possible to read the y-axis labels. I think for this and Figure 12, it would also be good to have the "WCB parcels at the end of the ascent" or "during time of max diabatic heating" at the start of the caption. It took me a while to work out the difference between the two figures.