Review of

Parameterization adaption needed to unlock the benefits of increased resolution for the ITCZ in ICON

Kroll et al.

General

This is my second review of this work, where the authors examine the double intertropical convergence zone (IITCZ) bias in ICON XPP across model resolutions. A turbulent threshold wind parameter is used as a tuning parameter. Increasing the parameter enhances evaporation, which compensates for the weak bias in moisture transport into the deep tropics, but also influences drag and convection invigoration. The paper is much improved and the authors have adequately addressed my comments. I therefore recommend accepting the paper following some minor editorial comments.

Comments by line number

9 (abstract) "low bias" is ambiguous (it can interpreted as a weak bias). I suggest "dry bias"

15 (abstract) non-discardable

31 why "return" flow? "poleward flow" seems more appropriate

38 I would add Adam et al. 2018 who explicitly show the energetic contributions to the bias from various factors

85 ICON or ICON XPP? Are the results generalizable to other ICON versions?

101 what do you mean by "real world atmospheric representation"? Do you mean observational data?

Figure 1 walker —> Walker

145 $\mathrm{U} \rightarrow U$

188 Here again "high biased" is ambiguous. Do you mean highly biased or too high?

Eq. 3 No need to specify $0^{\circ}N$ and $0^{\circ}S$, you can simply use 0°

243 $20^{\circ}N$ and $20^{\circ}S$

251-252 This explanation is speculative and not convincing. If this were true, we would see a contrast between rising and descending regions (in the lower troposphere), which I don't see. Another possibility is that energy input into the lower atmosphere is similar in all cases, and therefore it translates to higher temperatures for the drier atmosphere. Showing zonal mean moist static energy biases would help in that regard.

291 remove comma

Figure 10 caption Inconsistent slanting of variables

559-561 I think this is a critical point worth elaborating on. Specifically, beyond the surface heat fluxes examined in this work, changes in surface wind stress critically affect ocean dynamics and vertical structure (e.g., the depth of the mixed layer) which would then influence the climate system through multiple mechanisms.