

## ***Interactive comment on “Anthropocene Climate Bifurcation” by Kolja Leon Kypke et al.***

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The authors wish to thank Referee #1 for a careful reading of the manuscript and for insightful comments.

The referee recognizes the delicate balance between making the paper self-contained, and requiring the reader to consult earlier work. The authors will improve the readability of the manuscript, with the following clarifications and additions, as suggested by the referee.

1. The confusing asymmetry between equations (1) and (2) will be explained, and the use of  $I_A$  instead of  $T_A$  will be better motivated.
2. Eq. (10) for the vertical heat transport  $f_C$  will be simplified, and its derivation will be given in the Appendix.

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3. The crucial dependence of eta on mu will be clarified in eqs. (15)(16).
4. The relationship between the EBM responses to the year 2100, shown in Fig. 6(a), to the GCM scenarios presented in IPCC AR5, Fig. AI.8, will be clarified. Both are largely determined by the RCPs.
5. The bifurcation for the Arctic EBM depends critically on the ocean heat transport F\_O. The referee suggests that it would be useful to compare this EBM with classical 1D EBMs where meridional heat transport is modelled as a diffusion. The authors would be grateful if the referee could cite a paper (or papers) with which the meridional heat transport can be compared.

The authors assume that there will be a second referee report and will resubmit a revised manuscript after the second report.

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