Supplement of

AMOC stability amid tipping ice sheets the crucial role of rate and noise

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S1  Sensitivity of the reference AMOC ON state to WAIS meltwater fluxes

In this section, we use numerical continuation to assess the sensitivity of the AMOC box model in the reference ON state $(F_N = F_S = 0)$ when increasing the WAIS meltwater flux $F_S$. This is shown on Fig. S1, where the (stable) steady states of the AMOC model are shown in the $(q_n, F_S)$ space. In particular, we find that the overturning strength increases by approximately 0.94 Sv when $F_S$ increases from 0.00 to 0.06 Sv, representing an increase of $q_n$ of about 6.65%. This can be compared to Li et al. (2023), where a freshwater flux was applied uniformly around Antarctica in the upper 200 m during 150 years, using the GISS-E2.1-G coupled climate model. There, they found that the maximum of the Atlantic overturning streamfunction at 45°N is increased by approximately 0.63 Sv when the freshwater flux increases by 0.06 Sv, representing an increase of about 2.84%. Hence, the sensitivity of the AMOC box model is higher but comparable to the one found in Li et al. (2023), a difference which is partly expected due to the different experimental setup.

![AMOC steady state for increasing $F_S$](image)

**Figure S1.** Steady states of the AMOC model in the $(q_n, F_S)$ space, computed for $F_N = 0$. 


References