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Supporting Information for

Ocean heat storage rate unaffected by MOC weakening in an idealised climate model

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Introduction

This document provides additional figures to clarify and support arguments presented in the paper.

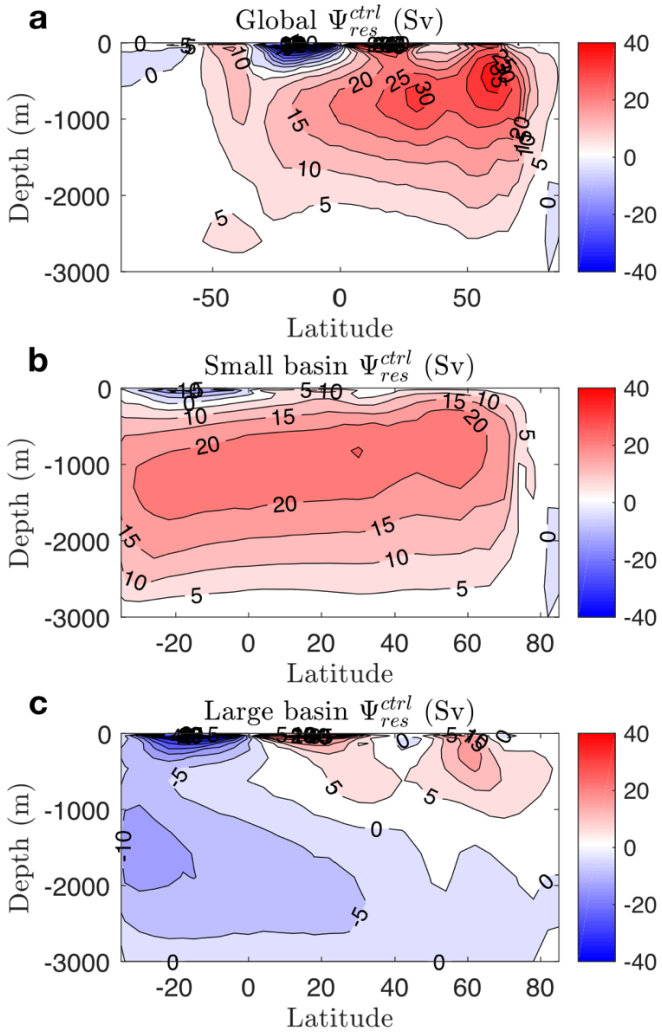

Figure S1. Control residual overturning streamfunctions for the (a) global, (b) small basin, and (c) large basin regions of DDrake (in Sv).

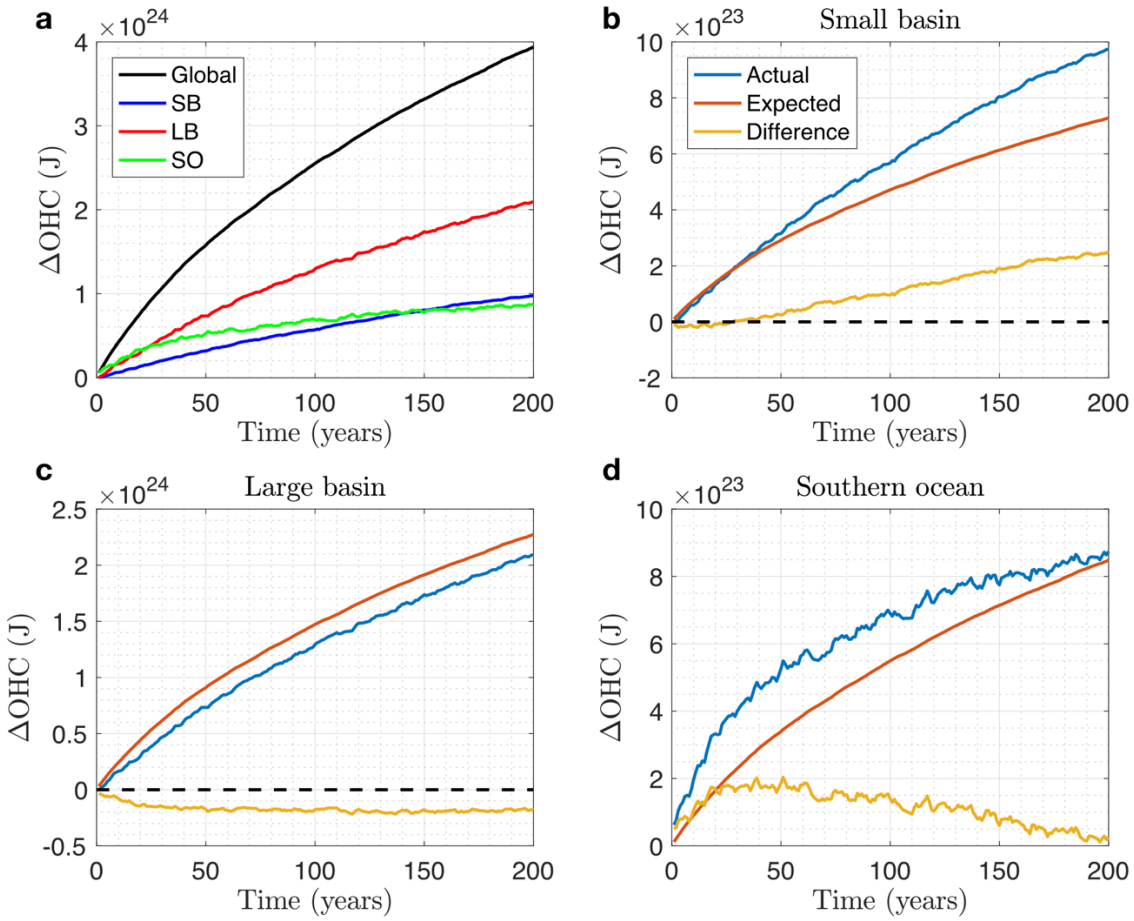

Figure S2. (a) Time-series of heat storage responses (in J) for all DDrake basins. (b-d) Comparison of actual versus expected heat storage responses (in J) considering the fractional coverage of the total surface area for (b) the small basin (SB), (c) the large basin (LB), and (d) the southern ocean (SO) of DDrake. For each basin B, the 'expected' curves are (B's surface-area/global surface-area)*(global response) i.e. the surface-area-weighted fraction of the black curve in (a). From this perspective, we see that the SB overperforms (while the LB underperforms) with respect to its size.

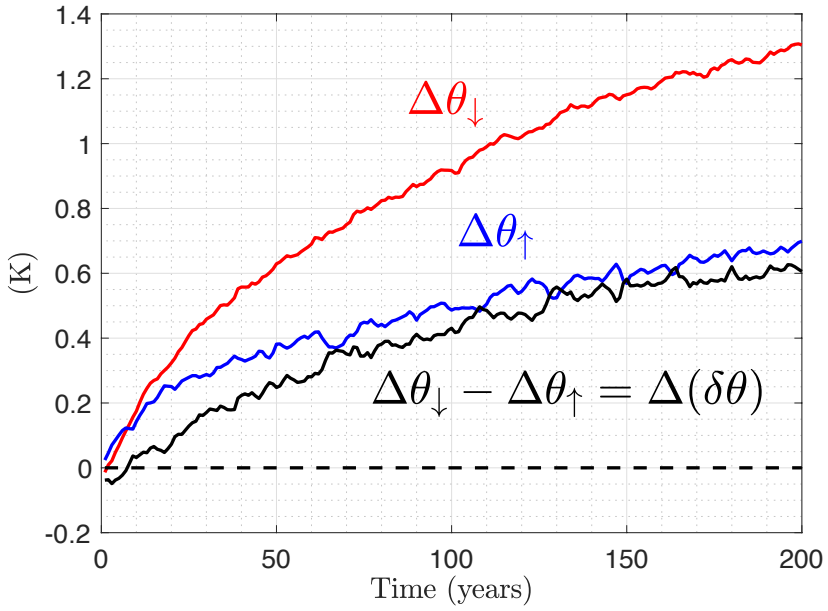

Figure S3. Time series of warming responses for the small basin MOC downwelling ($\theta_{\downarrow}$, red) and upwelling ($\theta_{\uparrow}$, blue) regions (as defined in the text), and their difference $\Delta(\delta\theta)$ (in K). The downwelling region warms at a faster rate than the upwelling region.