SUPPLEMENTARY FIGURES
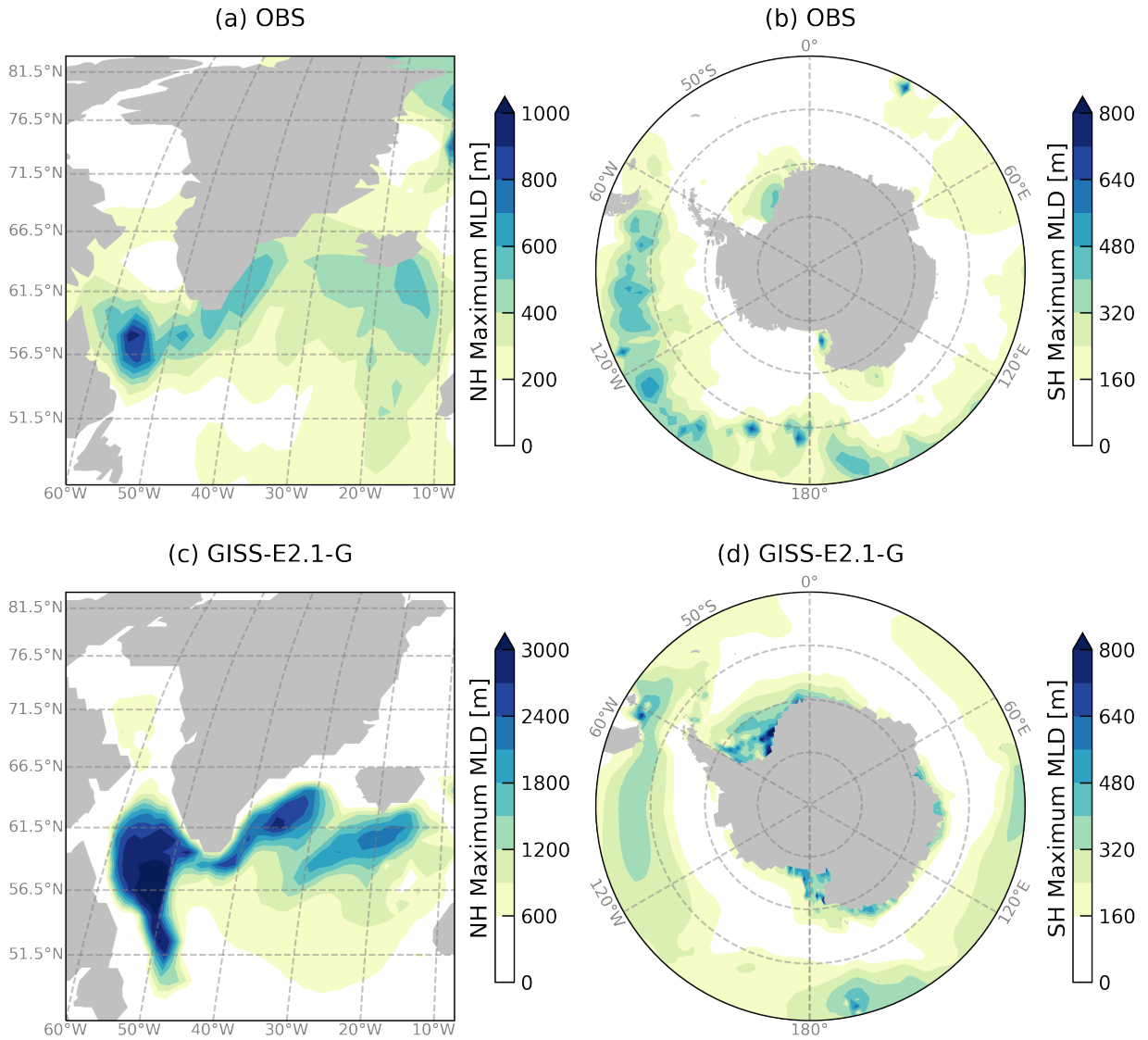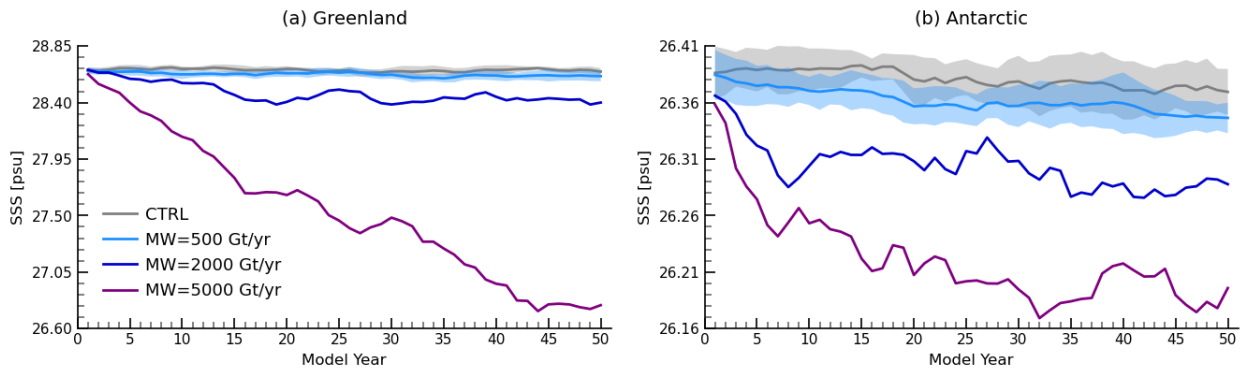

FIG. S1. The maximum mixed layer depth (MLD; m) in the a, b) Northern Hemisphere (NH) and c, d) Southern Hemisphere (SH) from the observations (de Boyer Montégut et al. 2004) and GISS-E2.1-G baseline control run, respectively. The observational and modeled MLDs are defined based on a density criterion of $\Delta=0.03$ kg m^{-3} (de Boyer Montégut et al. 2004).

FIG. S2. Time series of SSS (psu) averaged over a) the North Atlantic sector (45°–80°N, 5°–65°W) in the Greenland scenario and b) the Southern Ocean sector (50°–90°S, 0°–360°E) in the Antarctic scenario. Lines represent the SSS simulated from the control (gray line) and perturbation experiments with meltwater forcings of 500 Gt yr^{-1} (light blue line), 2000 Gt yr^{-1} (blue line) and 5000 Gt yr^{-1} (purple line), respectively. Gray and light blue shadings (lines) represent one standard deviation model spread for ten ensemble members (the ensemble-mean) in the control and 500 Gt yr^{-1} cases, respectively. No standard deviation envelope is shown in 2000 Gt yr^{-1} and 5000 Gt yr^{-1} cases, due to only one ensemble member being employed.

Data availability statement. The mixed layer depth data from observations were obtained for the annual climatology at `https://cerweb.ifremer.fr/deboyer/mld/Surface_Mixed_Layer_Depth.php`.

References

de Boyer Montégut, C., G. Madec, A. S. Fischer, A. Lazar, and D. Iudicone, 2004: Mixed layer depth over the global ocean: An examination of profile data and a profile-based climatology. *Journal of Geophysical Research: Oceans*, **109 (C12)**, https://doi.org/https://doi.org/10.1029/2004JC002378.