

Supplementary Materials for
Two ocean states during the Last Glacial Maximum

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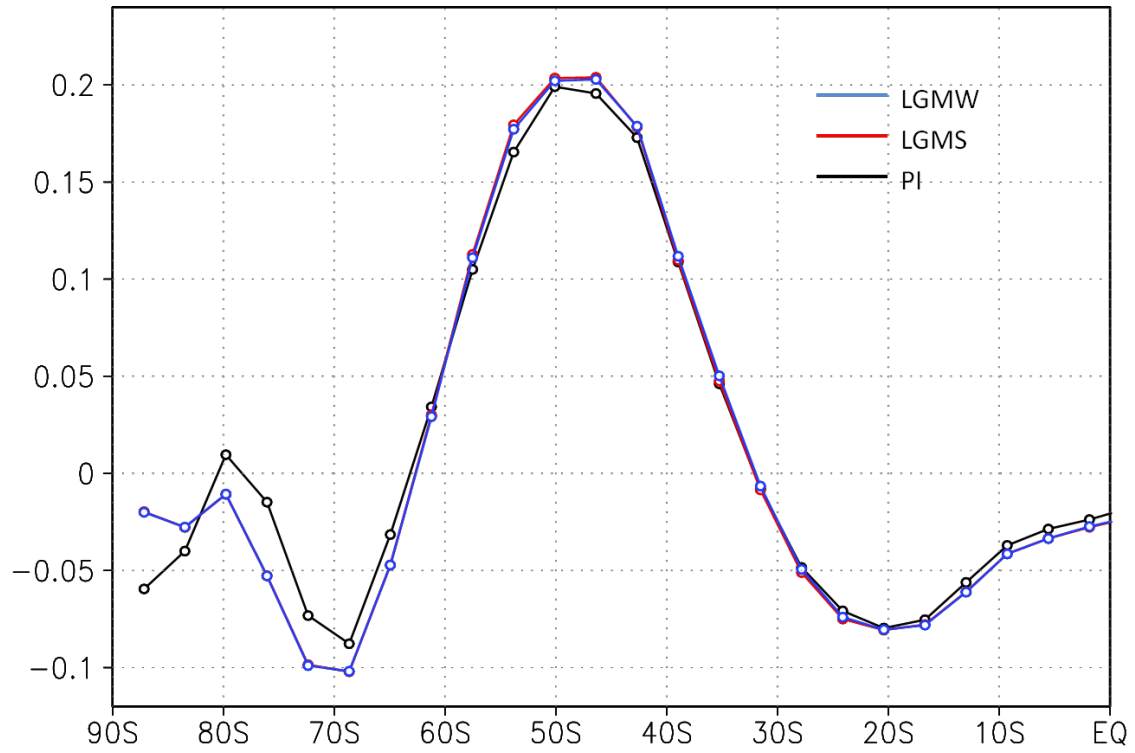


Figure 1S Zonal mean of wind stress in Southern Hemisphere (unit: Pa). PI: preindustrial run; LGMW: LGM simulation initialized from glacial Ocean; LGMS: LGM simulation initialized from Present Day Ocean..

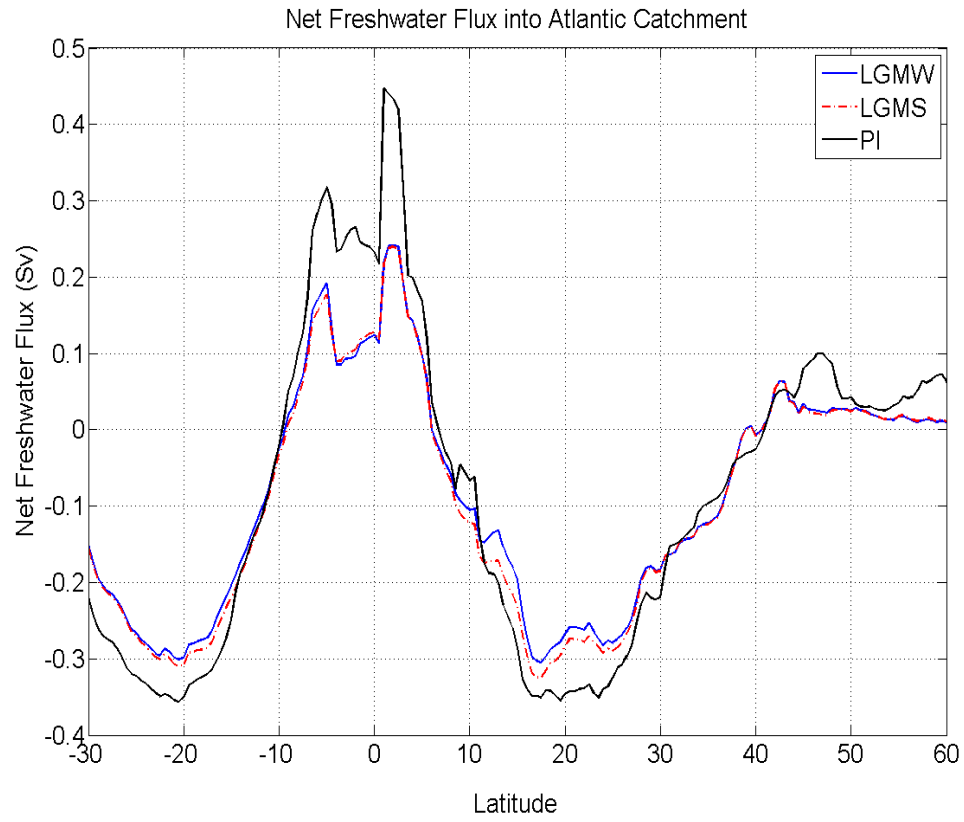


Figure 2S Zonal mean of net freshwater flux (FWF, unit: Sv, $10^6\text{m}^3/\text{s}$) in the Atlantic catchment area. Blue line represents LGMW, red for LGMS and black for PI.

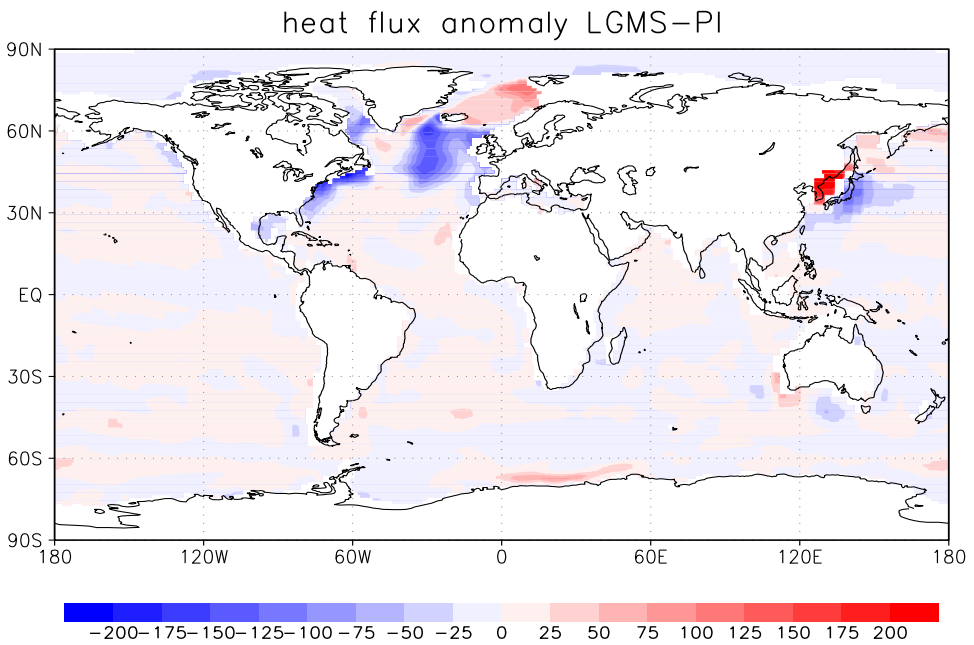
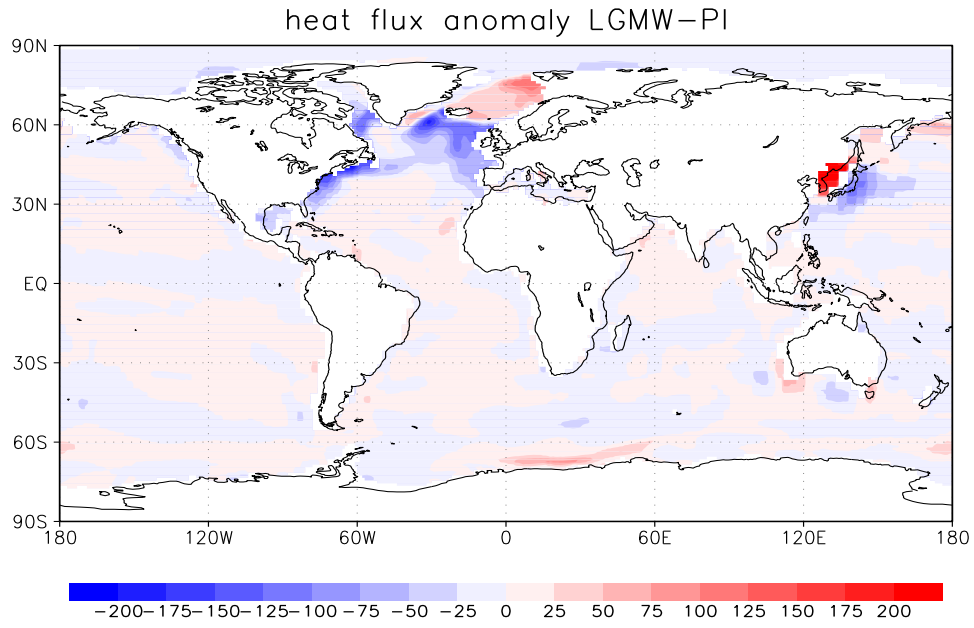


Figure 3S Anomaly of heat flux (unit: W/m^2) between A) LGMW and PI, B) LGMS and PI. Negative values mean heat loss from the ocean. The reduced heat loss from the ocean in Nordic sea and in Japan Sea is attributed to the enhanced sea ice cover (Fig. 2).