2 **Figure S1.** Surface changes of DFe (left) and NO₃ (right) from PI to LGM_clim (top), LGM_glac3% (middle), and LGM_all

3 (bottom).

4
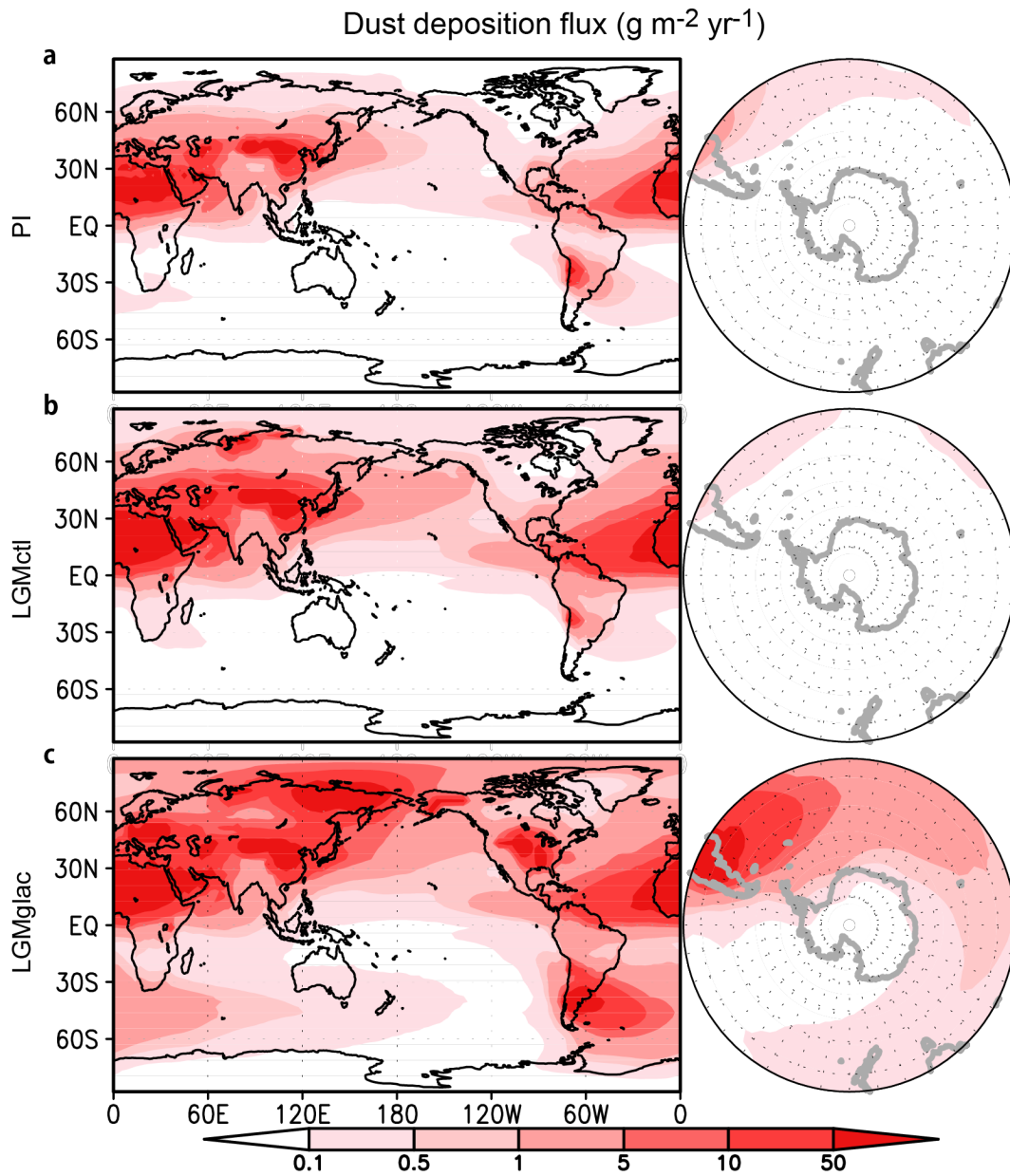
Figure S2. Dust deposition flux (g m^{-2} yr^{-1}) for (a) PI, (b) LGMctl, and (c) LGMglac. The left and right panel show the global and the high latitudes in the Southern Hemisphere, respectively.

1.