Figure S1: Global mean surface air temperature, relative to preindustrial, of the A1_Comitw simulation (solid) and the A1_Comitw_sed run (dashed). The horizontal dashed black line denotes the 1.5°C climate target.
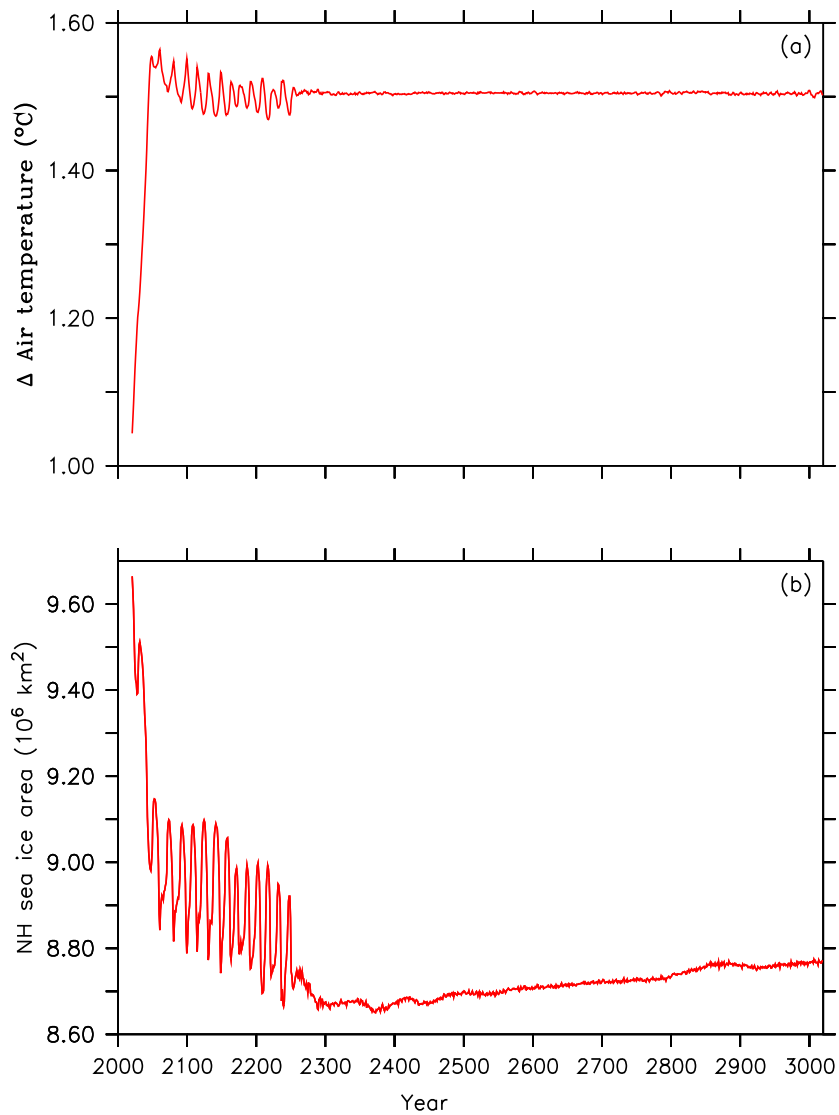
Figure S2: Time-series of the default A2 simulation for **(a)** global mean surface air temperature, relative to preindustrial, and **(b)** northern hemisphere (NH) sea ice area.
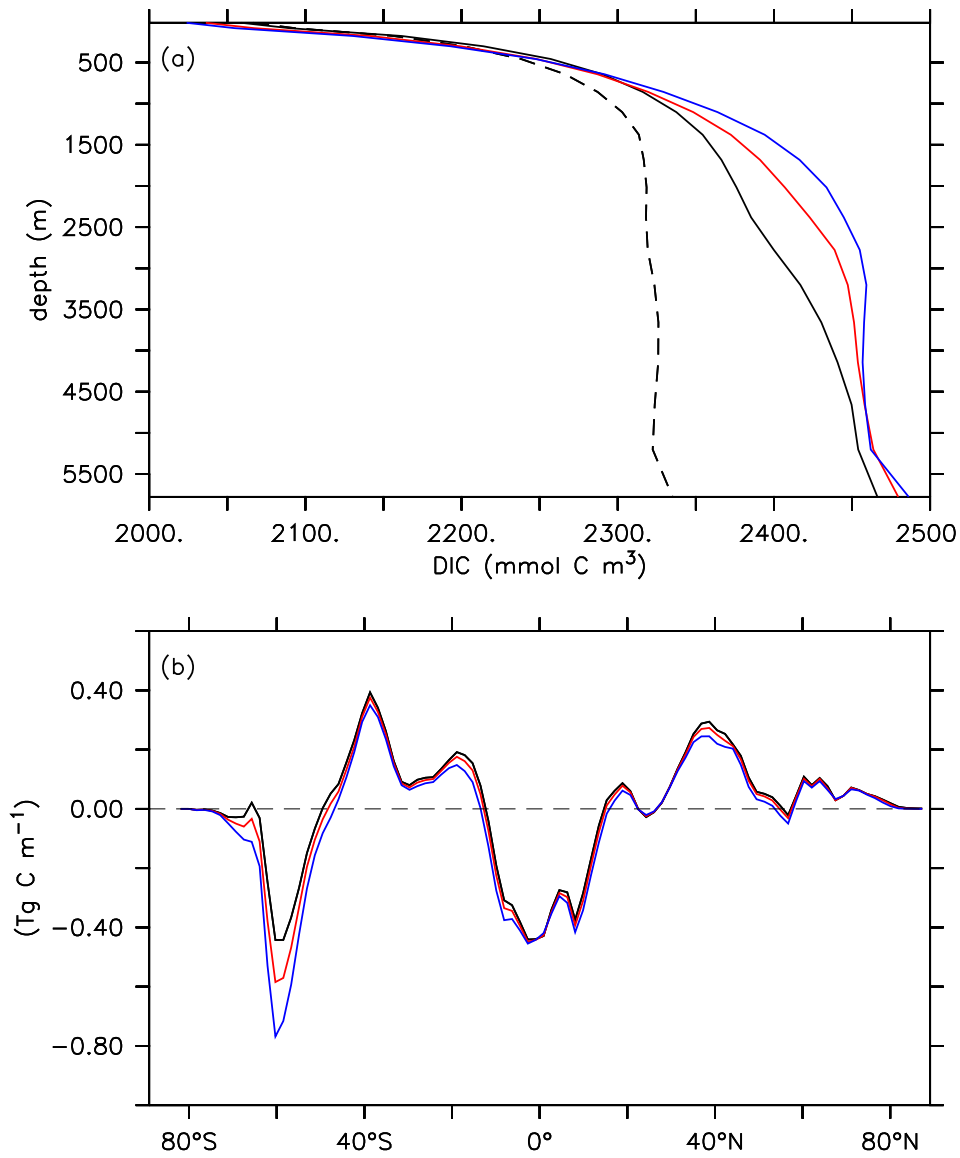
Figure S3: Comparison between the different default injection experiments, i.e., A1 simulation (black lines), A2 simulation (red lines) and the A3 simulation (blue lines) for **(a)** global mean profile of DIC in year 2020 (dashed black line) and global mean profiles in year 3020 (solid lines), and **(b)** cumulative atmosphere-to-ocean carbon flux in year 3020.
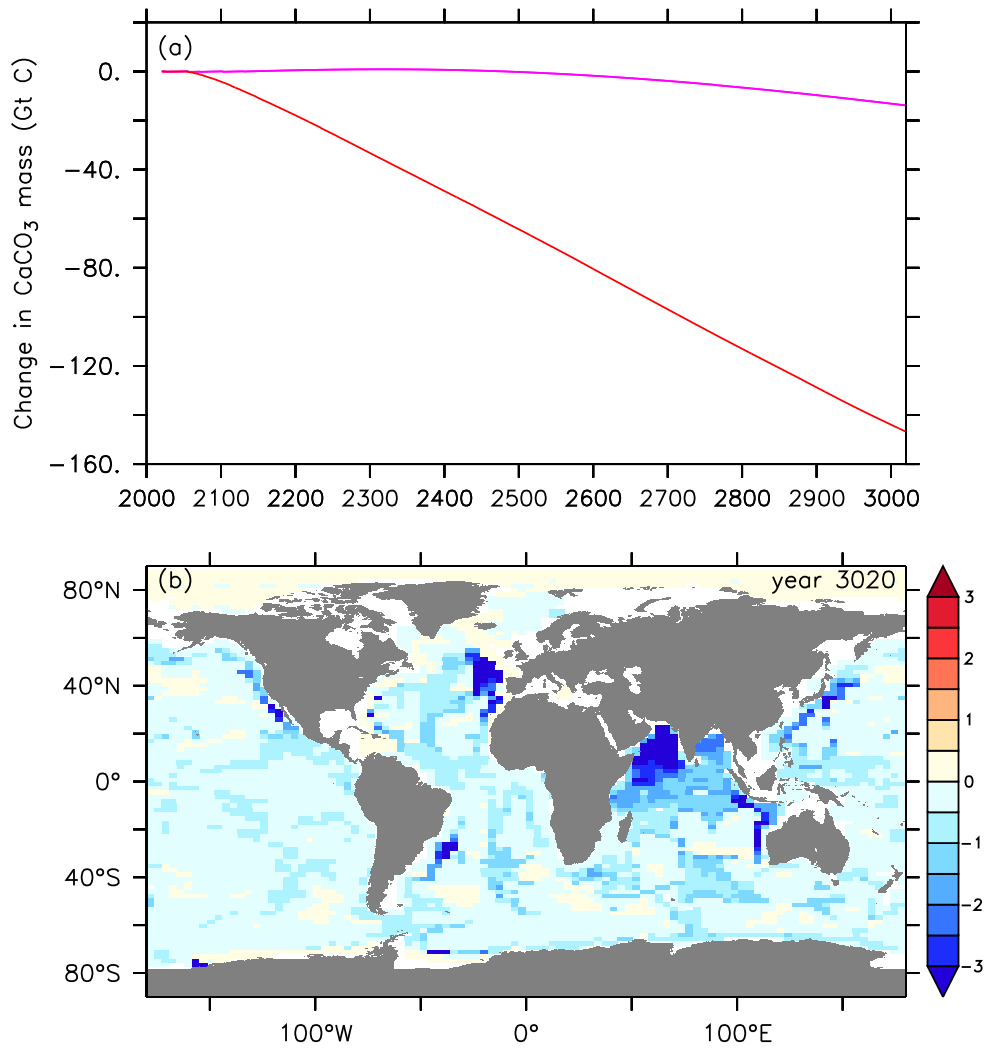
Figure S4: (a) Time-series of change in CaCO$_3$ mass for the RCP 4.5 control_sed simulation (purple line) and the A2_sed run, relative to the year 2020, and **(b)** global distribution of change in CaCO$_3$ mass (Kg C/m^2) in the 1.5°C_target_sed run (year 3020 minus year 2020).