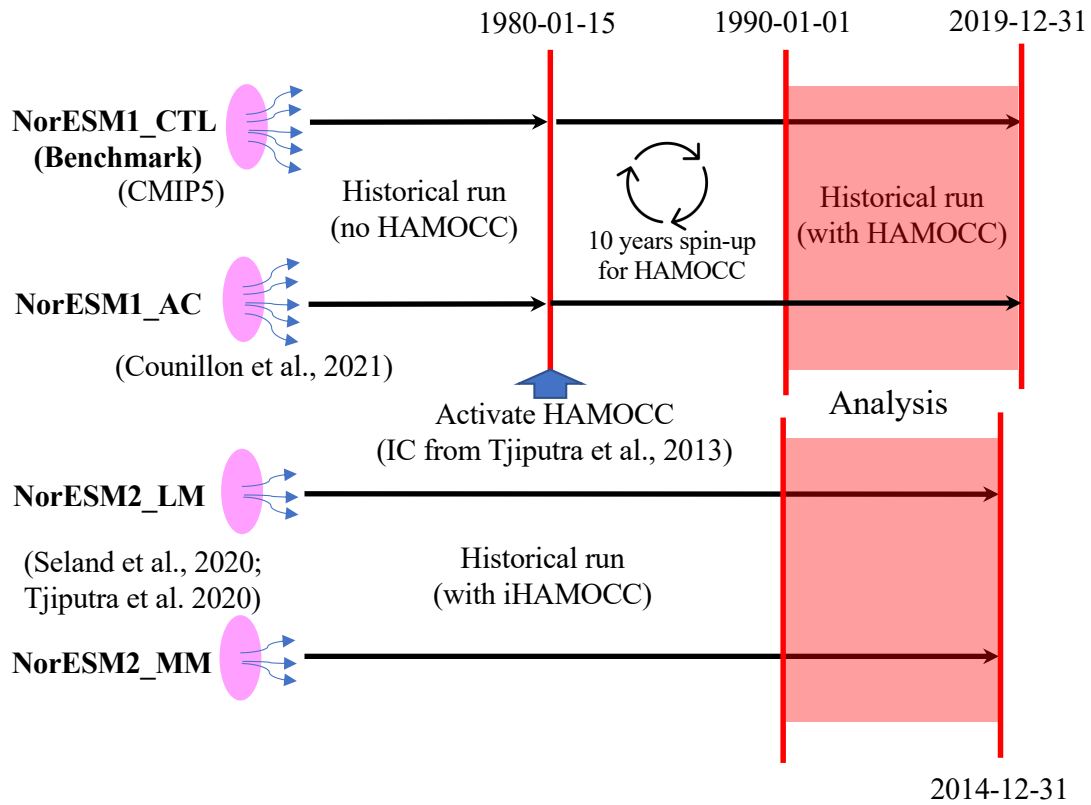
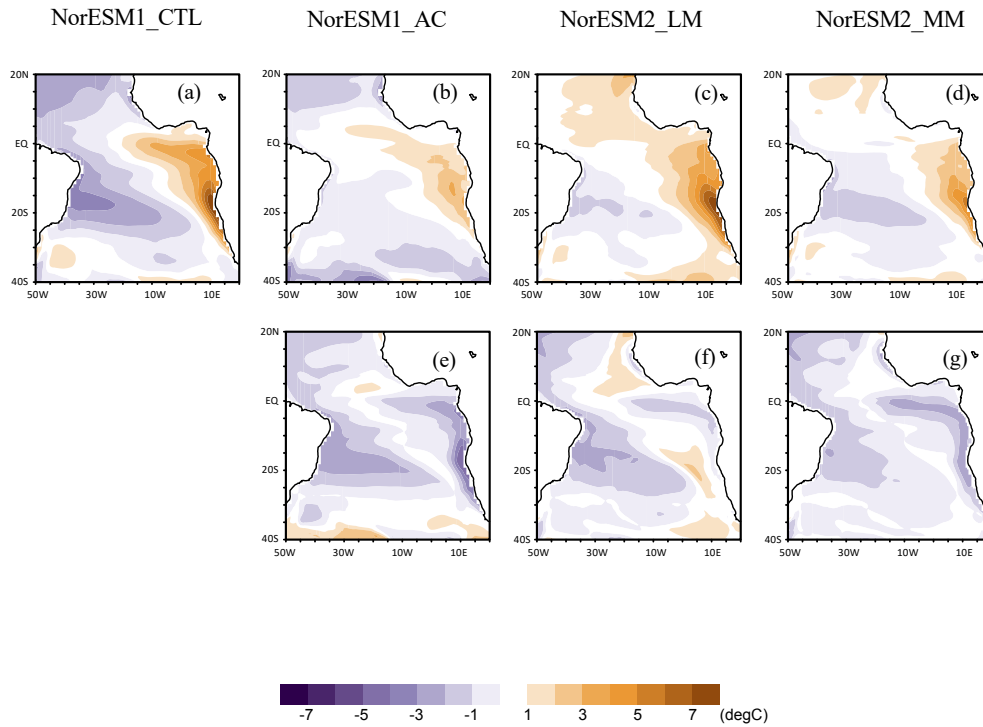


## Supplementary Information of Koseki et al.

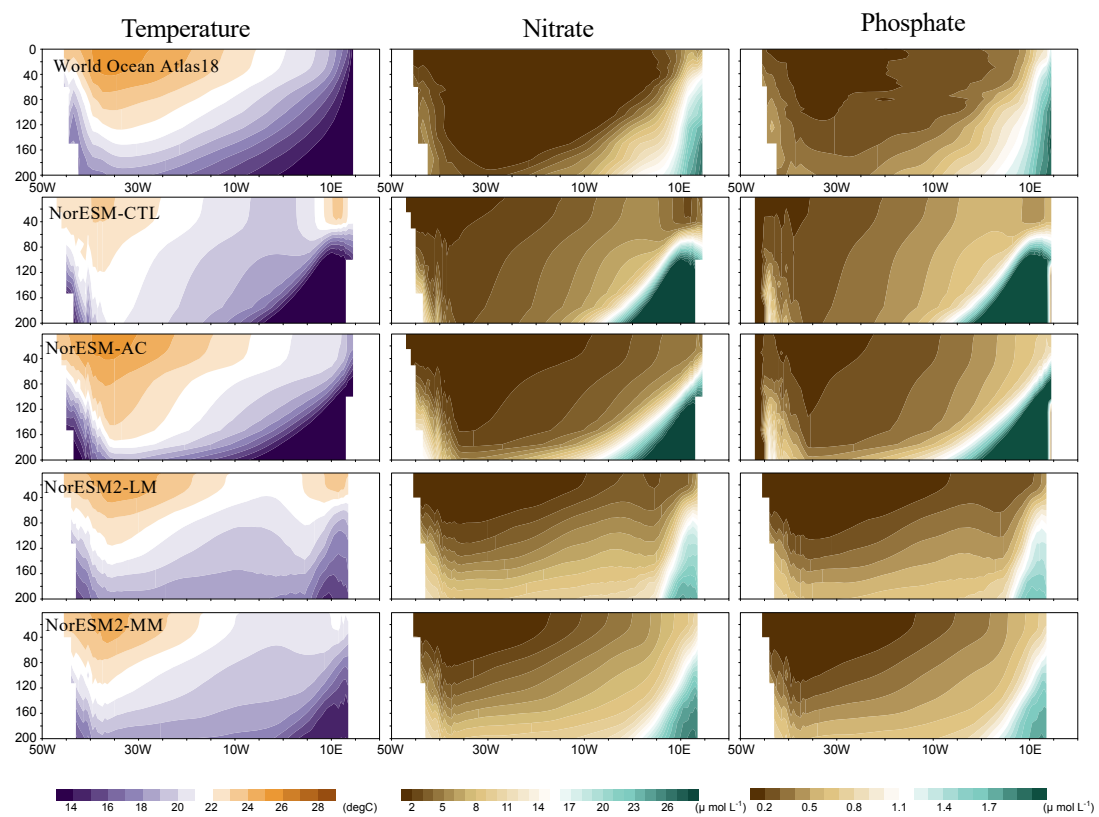
Here, we would like to have supplementary figures for Koseki et al. This information consists of 5 figures.



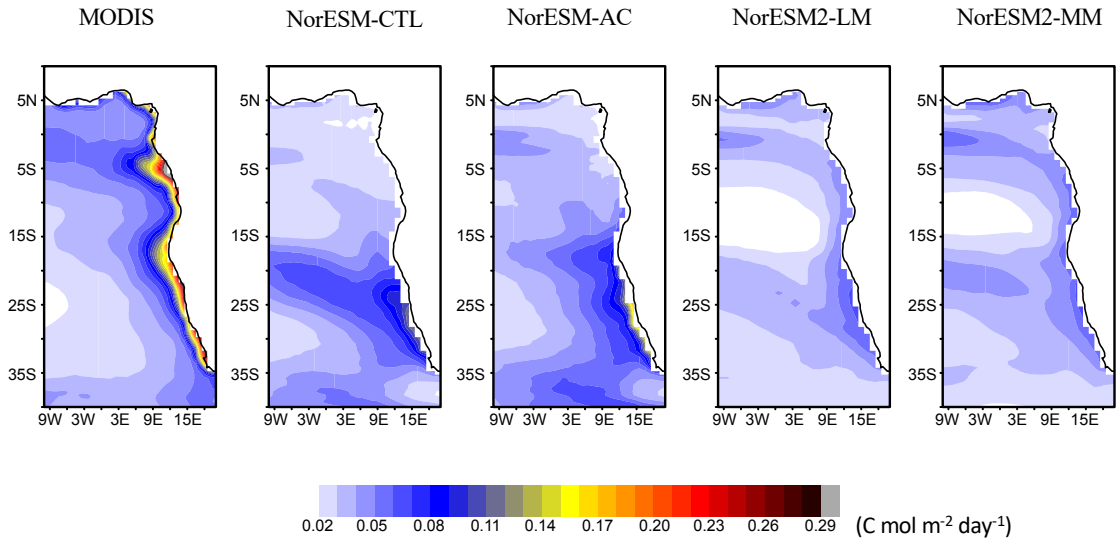
**Figure S1.** Schematic of experimental designs of NorESMs



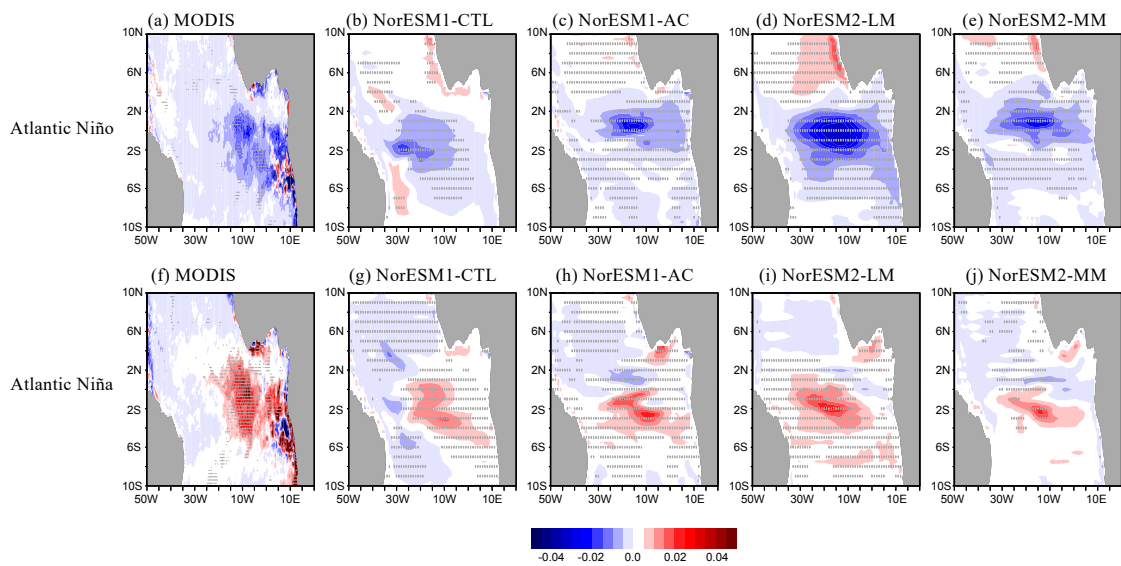
**Figure S2**  
Same as Fig. 1, but for summer (June-July-August) climatology



**Figure S3**  
Depth-longitude section of annual-mean climatology for (left) temperature, (middle) nitrate, and (right) phosphate averaged 25°S and 18°S in observations and each NorESM simulation.



**Figure S4**  
Annual-mean climatology for primary production in observations and each NorESM simulation.



**Figure S5**  
Composite anomalies of primary production for observation and NorESM simulation for (top) Atlantic Niño and (bottom) Atlantic Niña in June-July, respectively.