

Supporting Information for

**Increasing Arctic River Discharge and Its Role for the Phytoplankton Responses  
in the Present and Future Climate Simulations**

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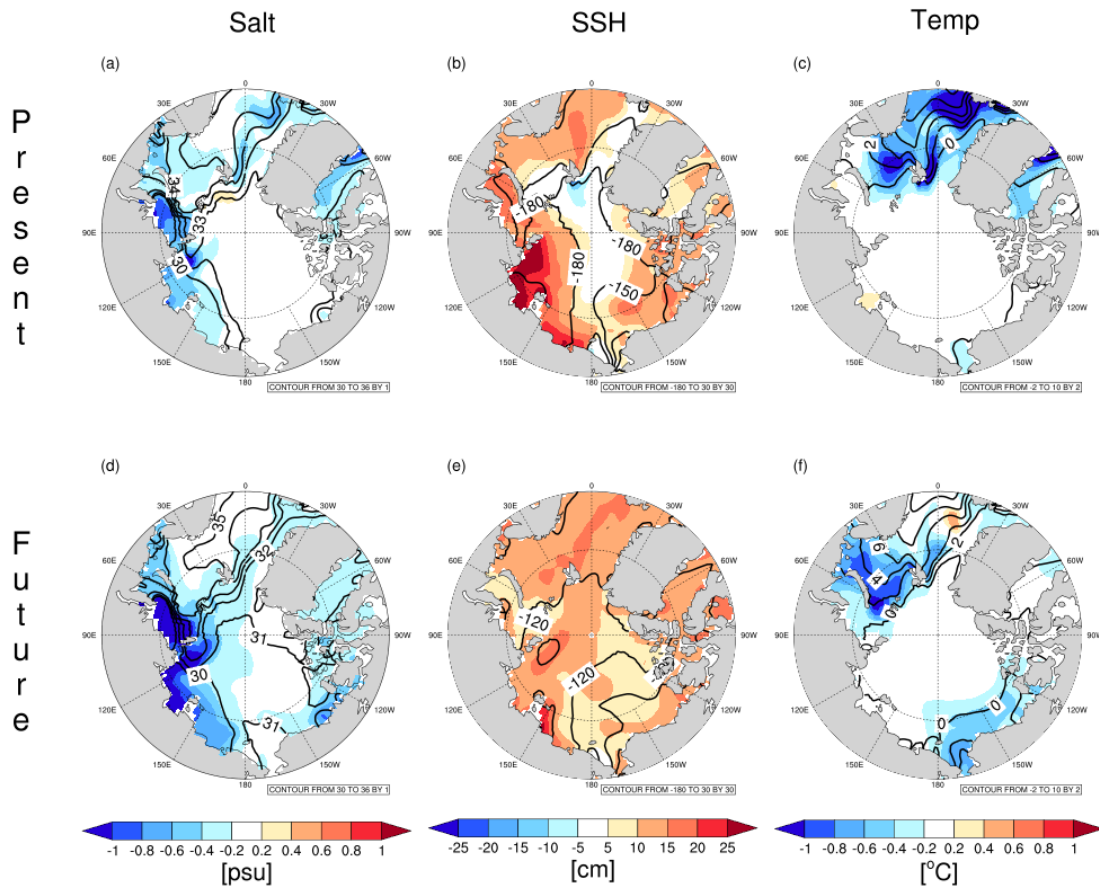
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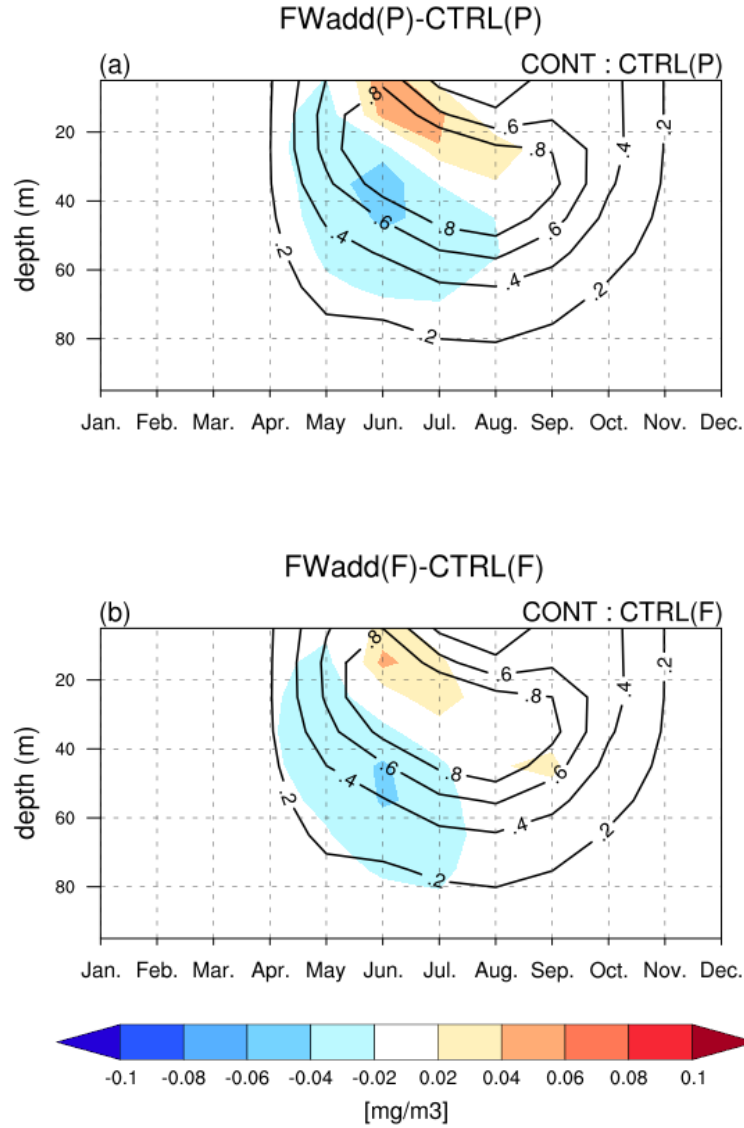
Figures S1 to S4

**Figure S1.** (a) Annual mean Arctic salinity for each experiment. (b) Annual average Arctic sea surface height for each experiment. The solid blue line denotes the trend line.

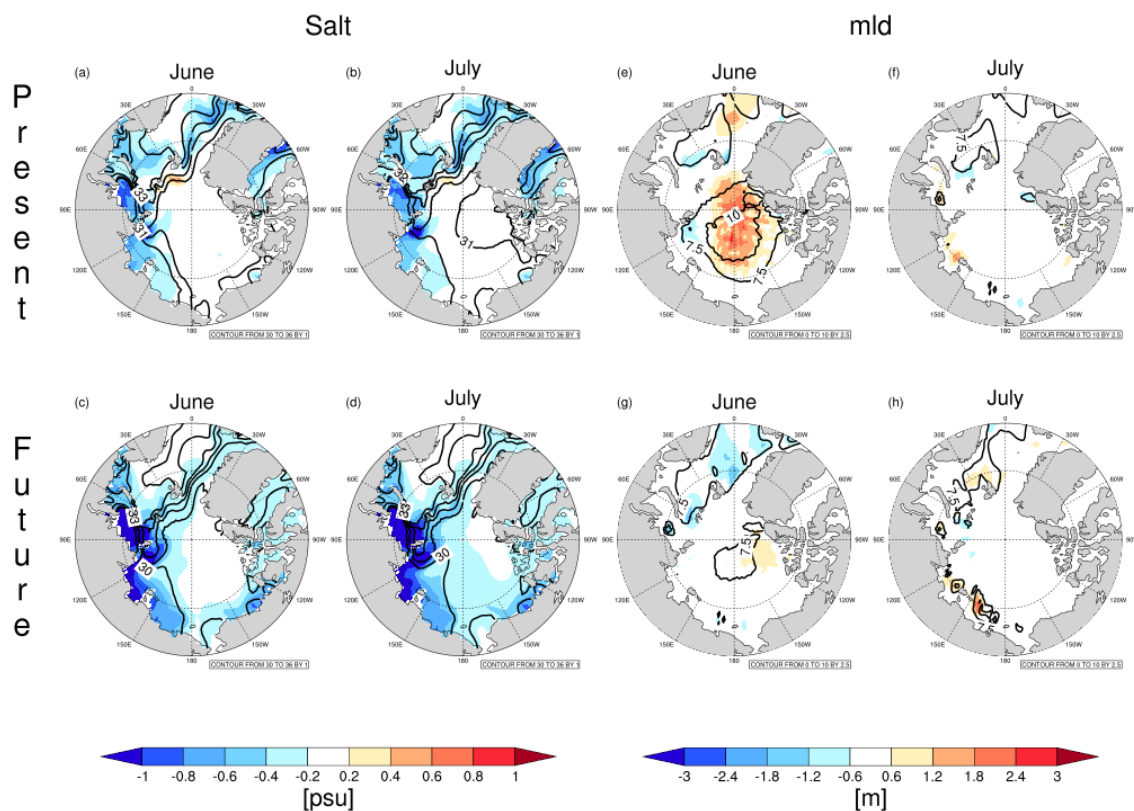


**Figure S2.** Impact of increased river discharge on April–July mean ocean environment variables in the present climate simulation. Difference between FWadd(P) and CTRL(P) for (a) salinity (salt) (shaded) and averaged salt on CTRL(P) (contour), (b) sea surface height (SSH), (c) ocean temperature (Temp). (d) Same as (a); (e) Same as (b); and (f) Same as (c), but for future climate simulation.





**Figure S3.** Impact of increased river discharge on the vertical structure of monthly chlorophyll concentration in the Arctic Ocean (>65° N). (a) Difference between FWadd(P) and CTRL(P) for chlorophyll concentration (shaded) and the averaged chlorophyll concentration. (b) Same as (a), except for FWadd(F) and CTRL(F).



**Figure S4.** Impact of increased river discharge in summer mean salt and mixed layer (mld) in the present climate simulation. Difference between FWadd(P) and CTRL(P) of Salt (shaded) and the climatological salt on CTRL(P) (contour) in (a) June and (b) July. (c), (d) The same as (a) and (b), but for future climate. (e), (f) same as (a) and (b) but for mld. (g), (h) same as (e) and (f), but for future climate.