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Impact of the regional runoff Nitrogen Flux using the GFDL-TOPAZ simulation on the Arctic Ocean phytoplankton.

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Phytoplankton is closely related to the Arctic Amplification in a future caused by the biogeophysical feedback. In particular, the increase in nutrients, which is one of the limiting factors of phytoplankton, affected by the increased inflow of rivers due to the Arctic warming in the Arctic region. Since Arctic region is sensitive to the feedback, the biological feedback is still difficult to expect an accurate simulate in the modeling simulation. This study used the GFDL-TOPAZ model by prescribing a runoff nitrogen flux in the contemporary level to simulate the phytoplankton, then prescribing the nitrogen flux over the East Siberian-Chukchi Sea. The model results underestimate chlorophyll A concentration and nutrient compared to the ARAON ship observation. But, We showed that the experiment of prescribing a regional runoff nitrogen flux by the river is well simulatenges the chlorophyll A concentration and nutrients than the CTRL experiment. Also, a model result showed that the sea ice concentration in the Chukchi-East Siberian Sea and Kara-Barents Sea decreased, and it suggests that the regional change of the nutrient could, directly and indirectly, affect that Arctic sea ice concentrations