



## **Investigating the influence of the Greenland Ice Sheet on marine primary productivity**

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Primary production in the ocean basins surrounding Greenland are largely thought to be limited by nitrogen, and in smaller regions by phosphorus, silica and iron. Recent work indicates that these biologically limiting elements are found in highly labile forms in glacial runoff from the Greenland Ice Sheet. Freshwater fluxes from the Greenland Ice Sheet have been increasing since 1992, and are projected to continue rising into the foreseeable future. Over the past decade limited evidence on small glacial catchments postulates that this meltwater impacts the biogeochemistry of the environment which they discharge into affecting productivity. However, the net impact of meltwater from the Greenland Ice Sheet on seasonal and annual marine productivity remains unclear; in large part due to diverging interests between modellers and field scientists. Joining together field and modelling approaches, this study is the first of its kind to be used to assess the effects of glacially derived meltwater from the Greenland Ice Sheet on ocean biogeochemistry and primary production of the North Atlantic Ocean. This study has identified spatial and temporal areas of nutrient limitation, and worked to quantify the influence of glacially derived nutrients on primary productivity in these regions, concluding in particular that meltwater could account for about 15% of primary production around the coast of Greenland in the summer.