

Sea Ice and the Biogeochemistry of Ice-Covered Oceans

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Will the future Polar Oceans be more biologically productive than today? Will the pumping of carbon through the dissolution of CO₂ increase or decrease in the future near the Poles? How the ocean contributed to past climate variations? Scientists usually address this question by simplifying the role of sea ice as much as they can. Is this right to do so ? Maybe not.

A clear observational fact – which has emerged over the last two decades – is the existence in the sea ice zone of specific biological and chemical processes at work, of previously unknown pathways for atmosphere-ocean gas exchanges, and of potential biophysico-chemical interactions.

Unravelling and upscaling those observed processes is the focus of recent research, including field, lab, remote sensing and modeling studies. As the first process parameterizations could be part of the next generation of Earth System Models, we should soon be able to further elaborate the future of the polar oceans.