

Impact of early sea ice retreat on phytoplankton export in the Beaufort Sea

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Abstract

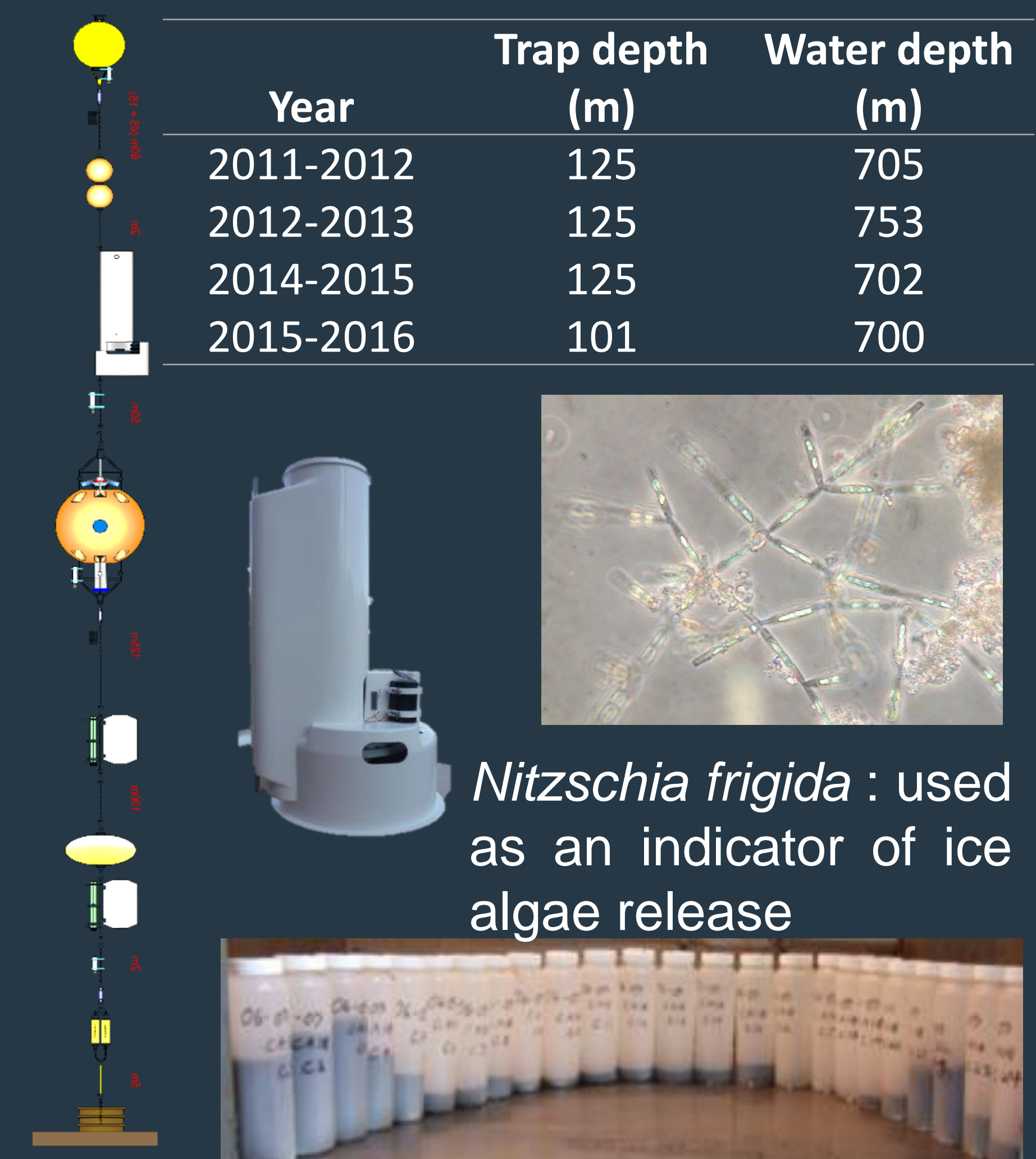
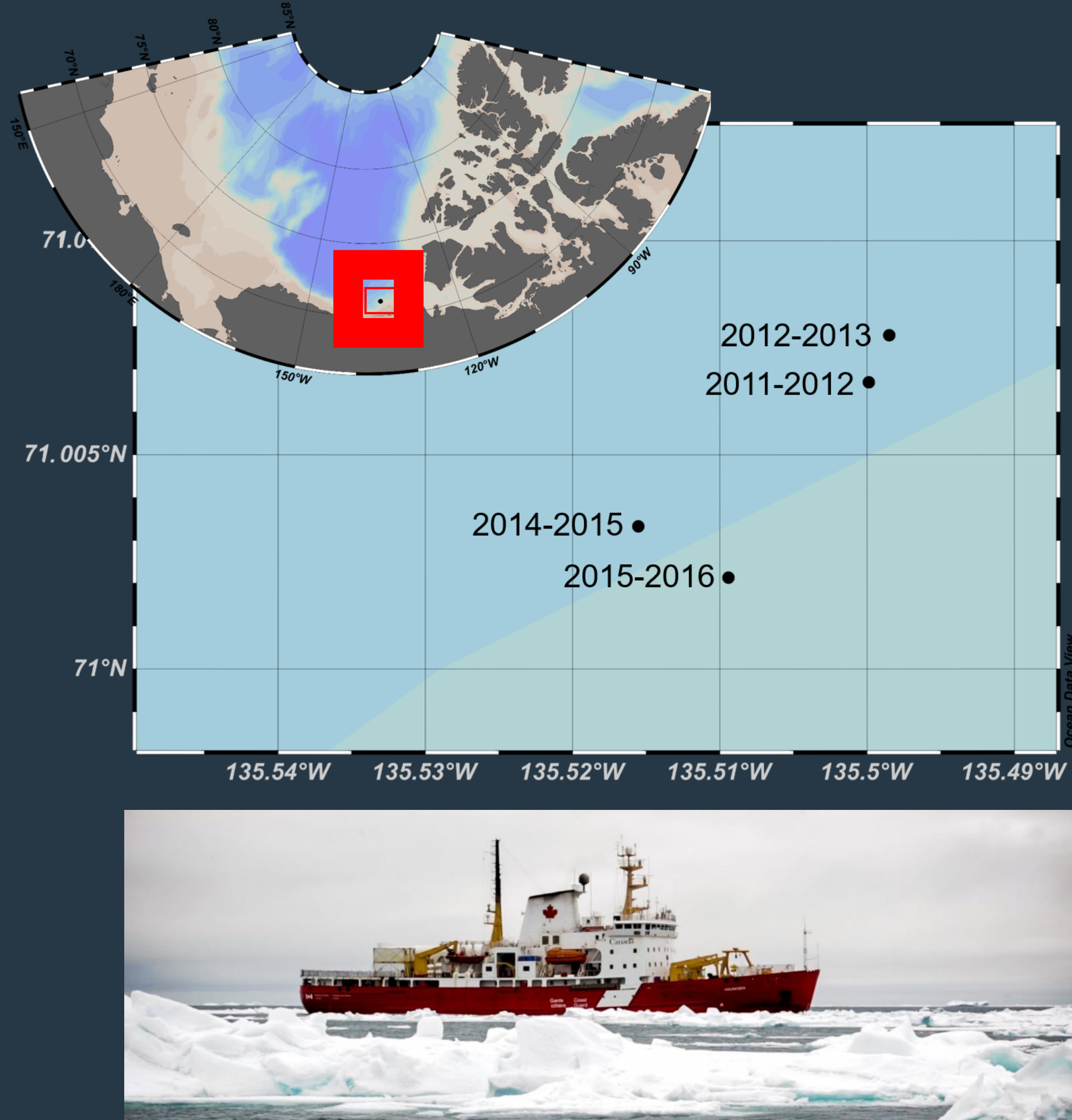
Recent satellite-derived observations suggest that the current lengthening in the ice-free season resulted in increased primary production during spring and/or fall on several Arctic continental shelves. This increase in phytoplankton biomass is likely to affect the entire food web as phytoplankton fuel the Arctic ecosystem.

As part of ArcticNet's Long-Term Oceanic Observatories (LTOO) project, moored sediment traps were re-deployed over several years in the Beaufort Sea. In this study, phytoplankton cells collected in sediment traps were quantified and identified to investigate changes in abundance and composition associated with variations in the sea ice regime.

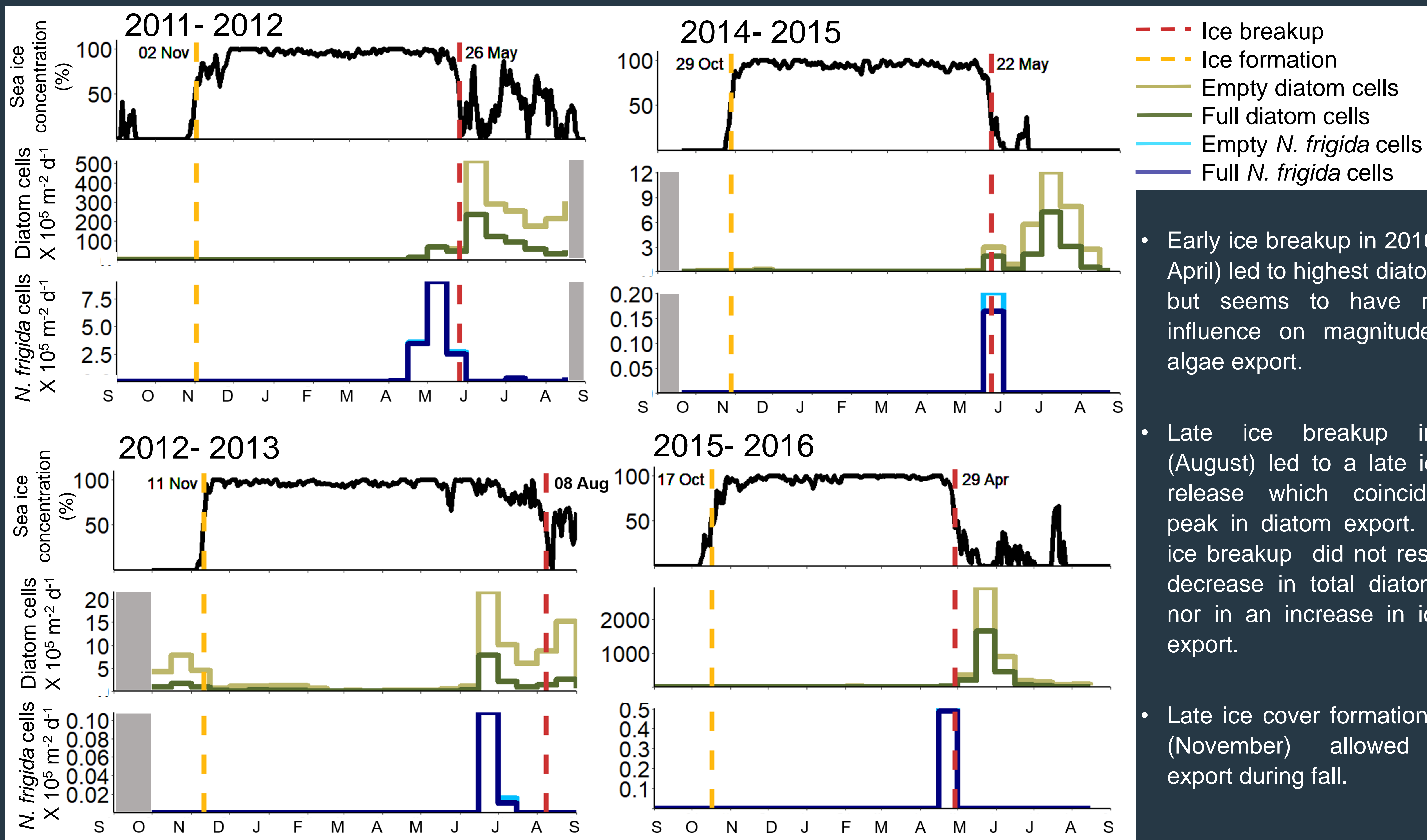
Hypothesis

- Early ice breakup will result in an increase in total diatom export.
- Early ice breakup will result in a decrease in ice algae export.
- Late ice cover formation will result in an increase in total diatom export.

Methods



Results



- Early ice breakup in 2016 (end of April) led to highest diatom export but seems to have no clear influence on magnitude of ice algae export.
- Late ice breakup in 2013 (August) led to a late ice algae release which coincided with peak in diatom export. The late ice breakup did not result in a decrease in total diatom export nor in an increase in ice algae export.
- Late ice cover formation in 2012 (November) allowed diatom export during fall.

Acknowledgments

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