

Rapid permafrost carbon degradation at the land-ocean-interface

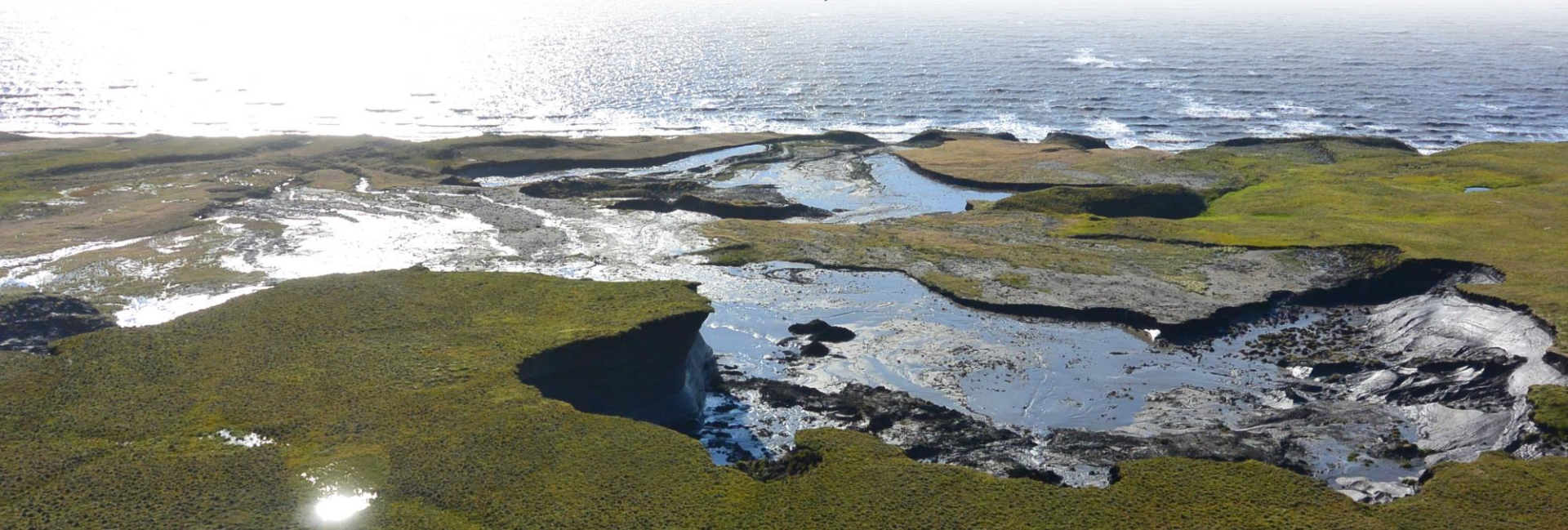
George Tanski, S. Ruttor, H. Lantuit , C. Knoblauch, J. Ramage,
B. Radosavljevic, G. Mollenhauer, and M. Fritz

ArcticNet

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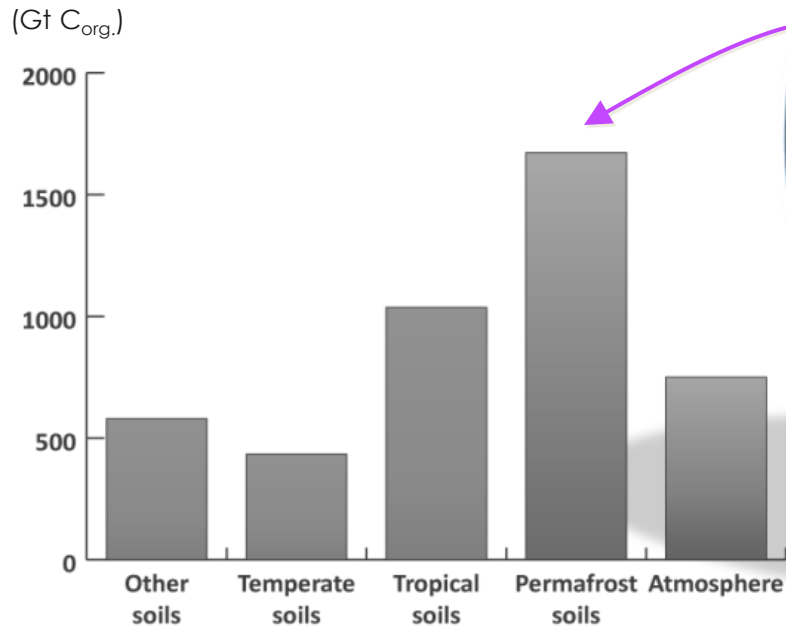
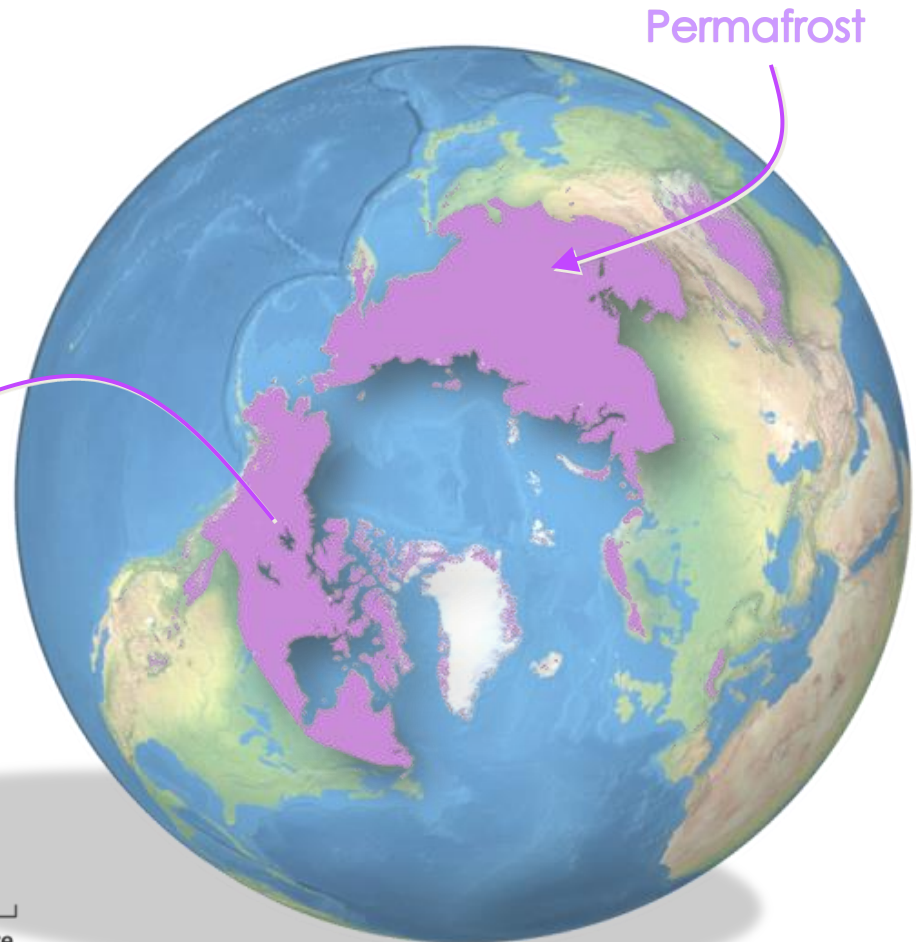
Annual Scientific Meeting 2015

7 to 11 December - The Westin Bayshore - Vancouver, BC



Background

24% of northern landmass
 34% of global coasts
 400,000 km of coastline

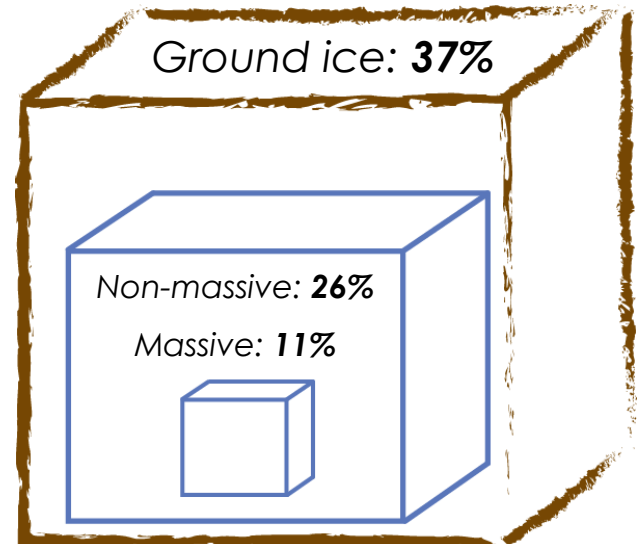
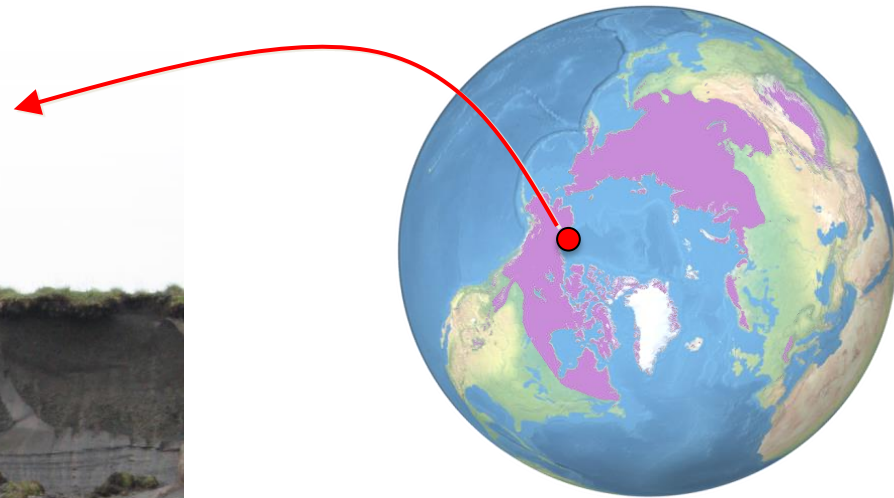


Global carbon storage in soils

TARNOCAI et al. 2009

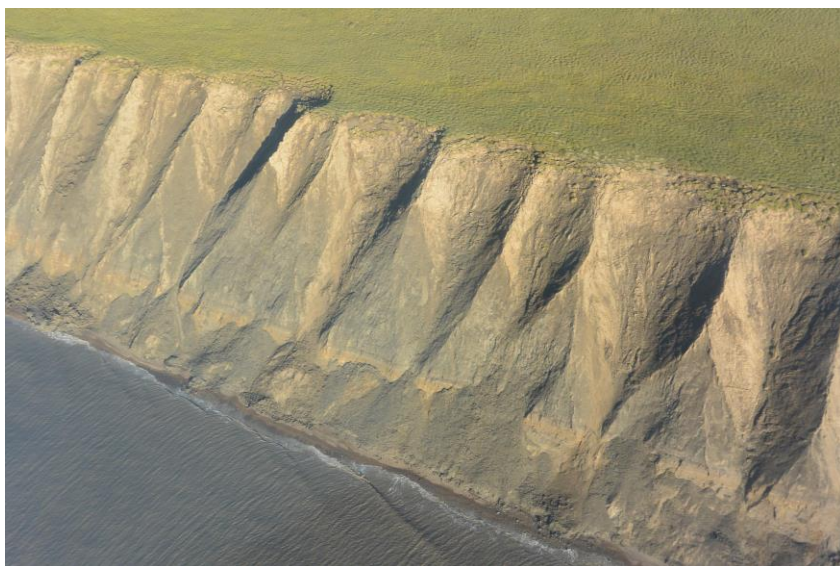
Study area

Yukon coast, Canada

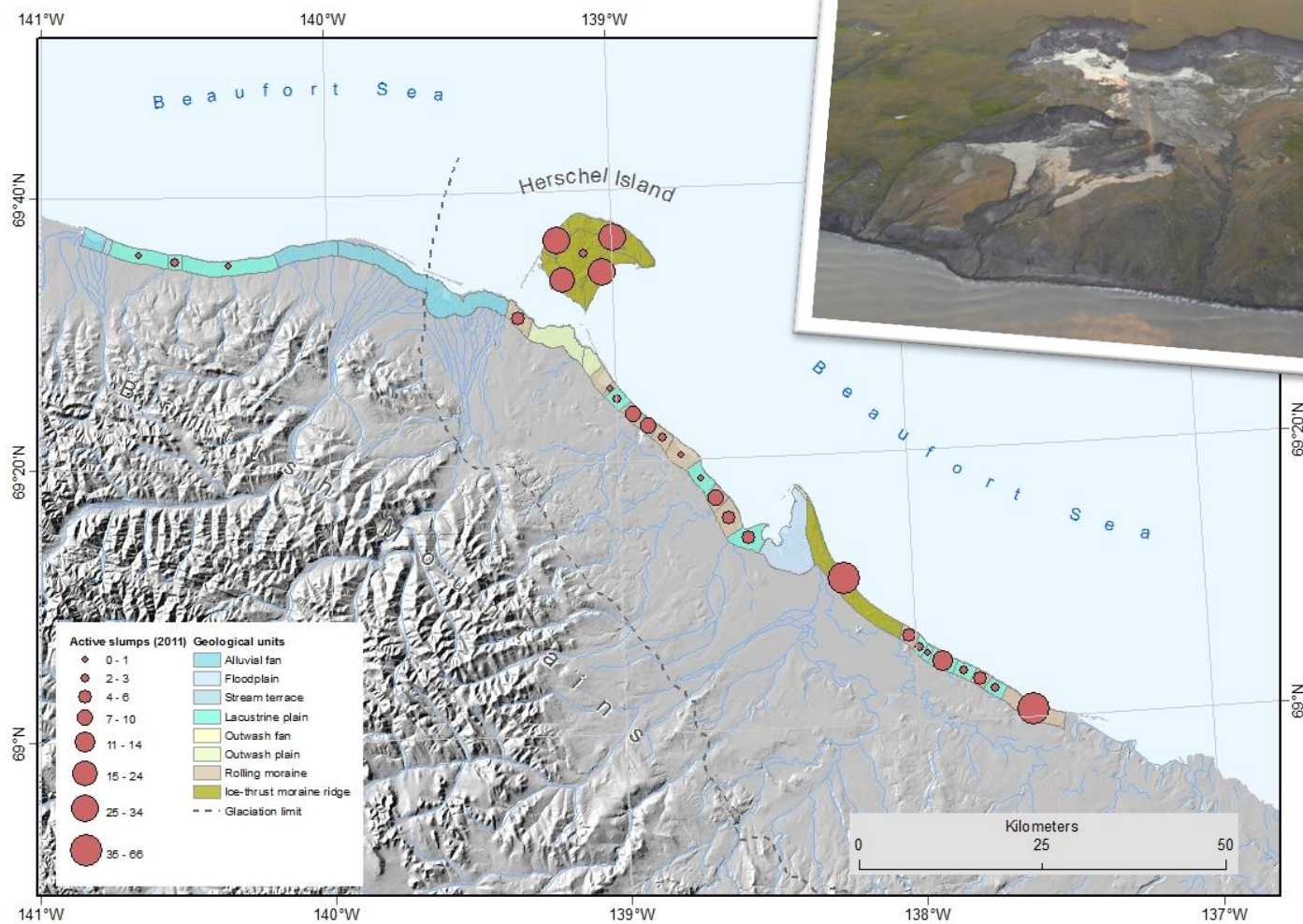


After COUTURE 2010

Study area

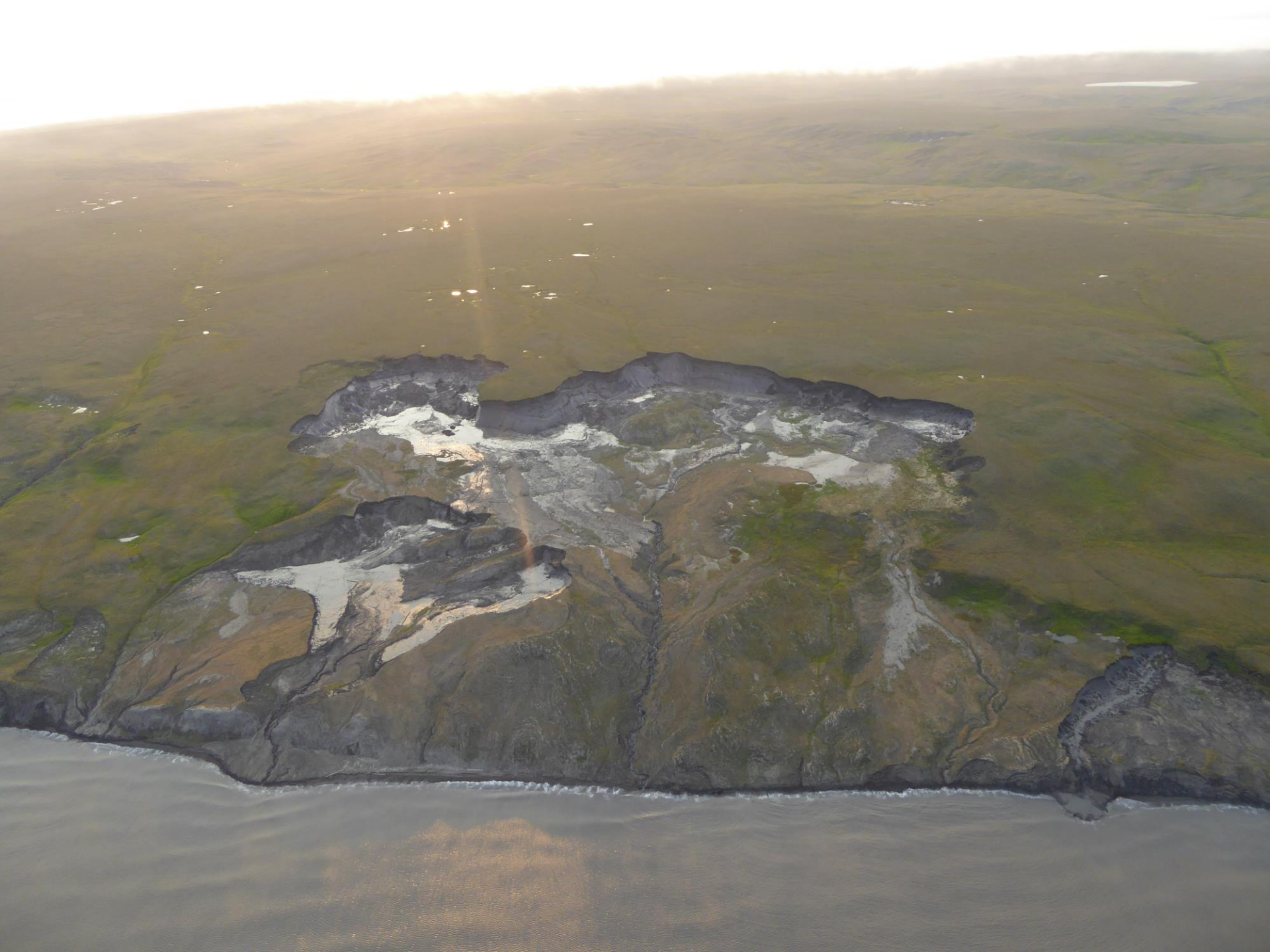


Study area



Active thaw slumps

RAMAGE et al. (in prep.)

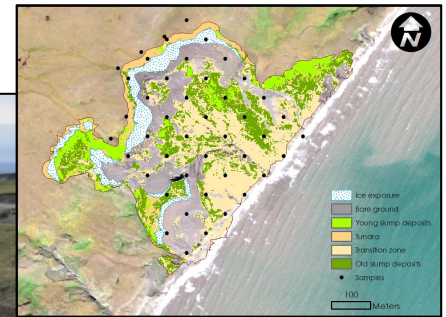


Topic II: Degradation of organic matter

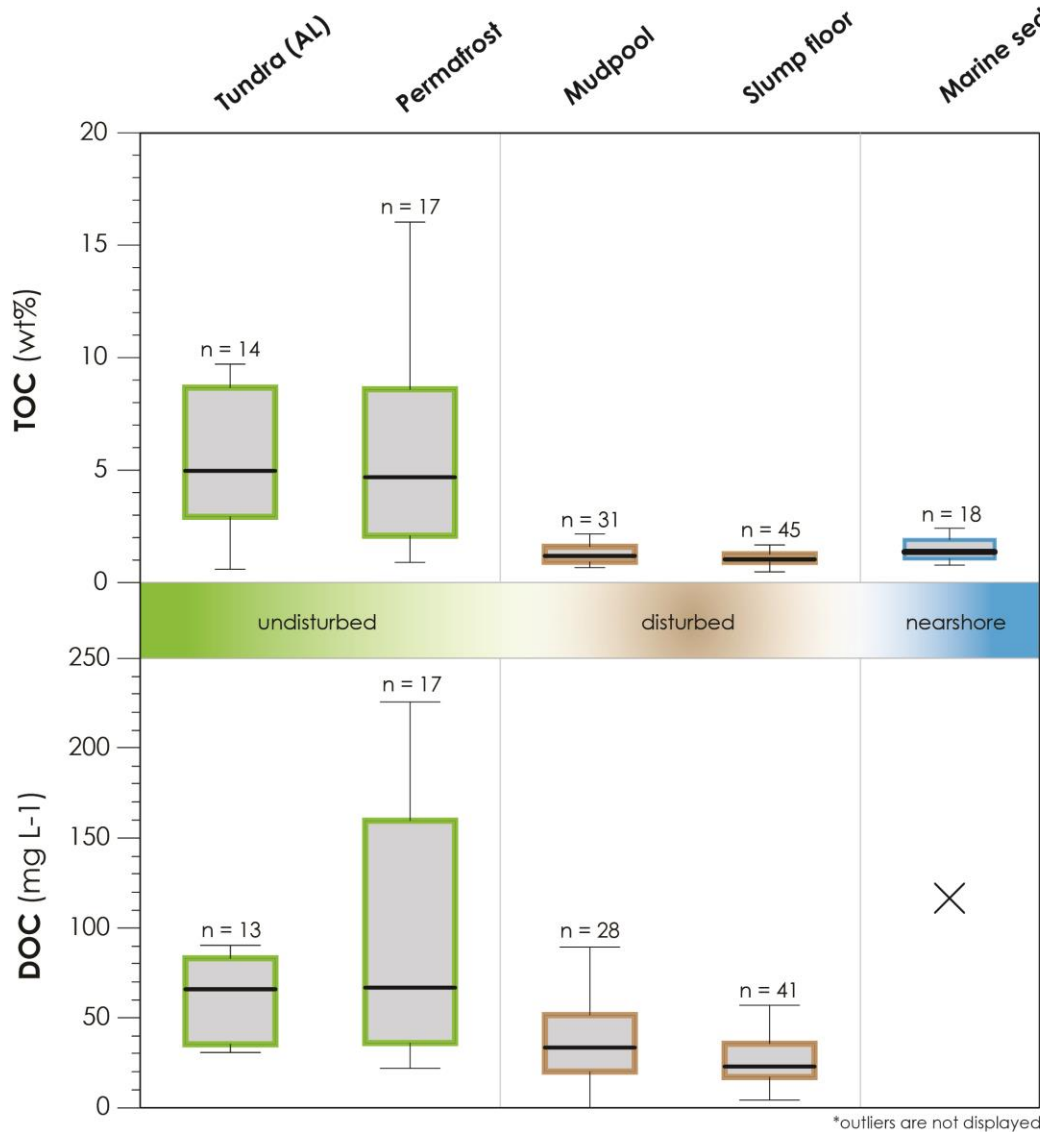


Retrogressive thaw slump: „Slump D“

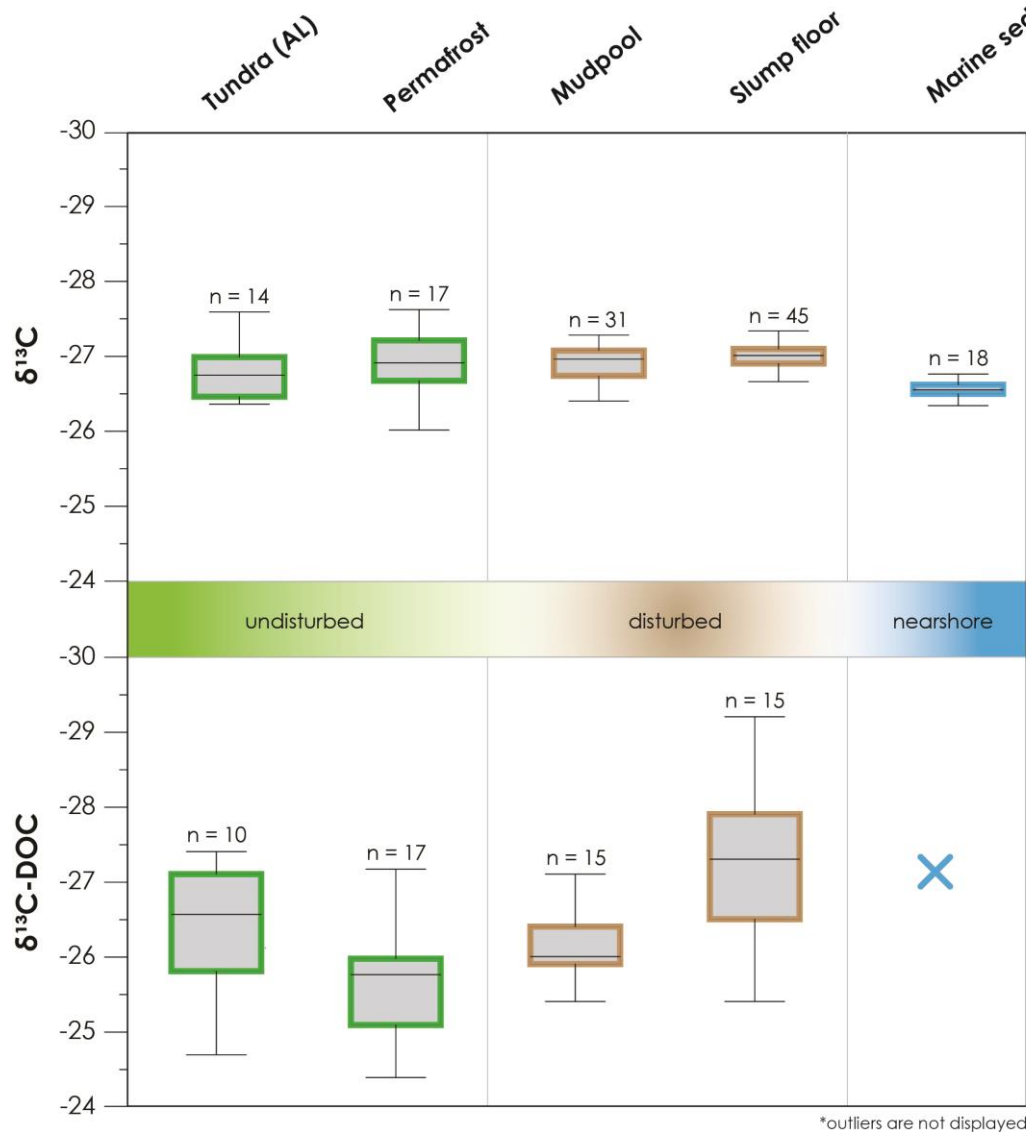
Background



Organic matter inventory (TOC and DOC)

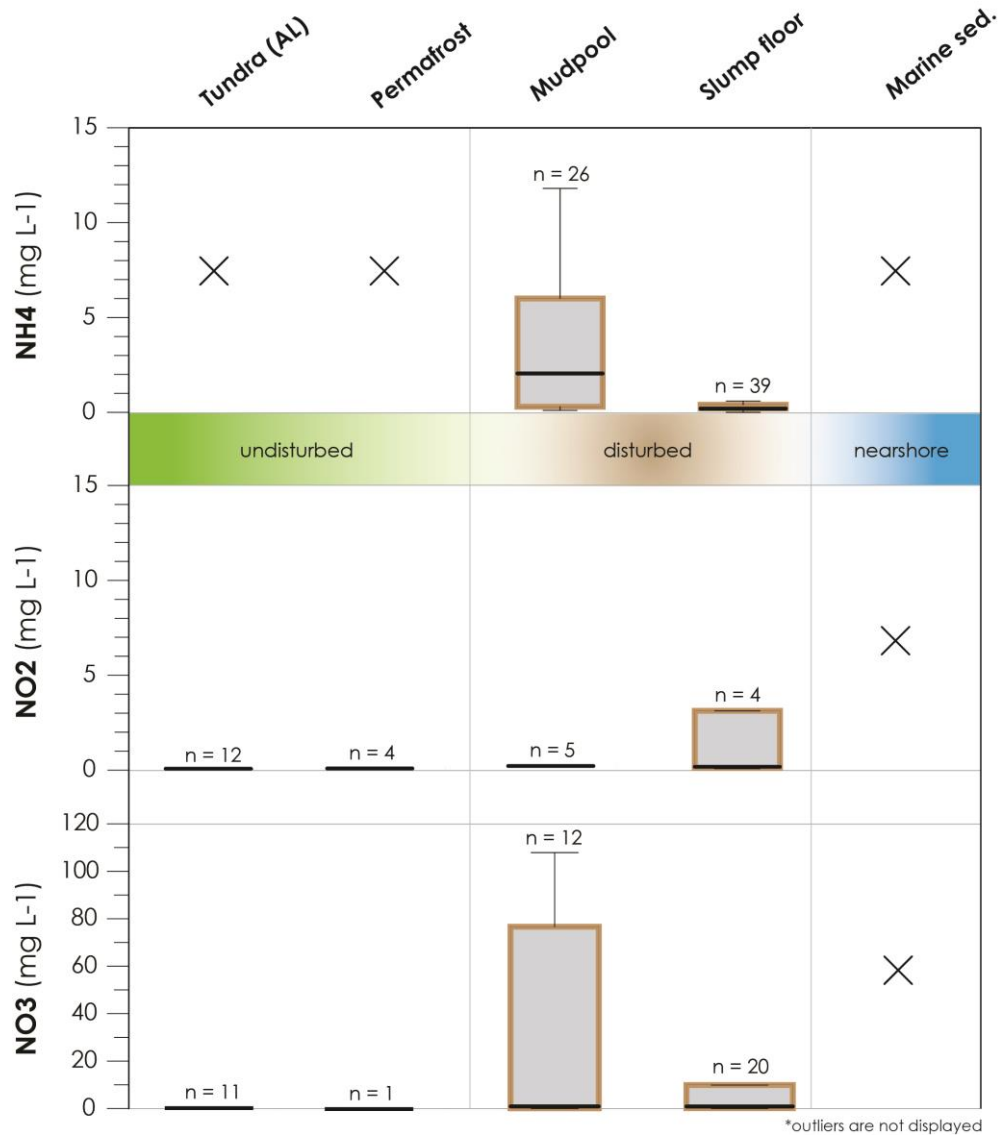


Degradation of organic matter ($\delta^{13}\text{C}$, $\delta^{13}\text{C-DOC}$)



*outliers are not displayed

Degradation of organic matter (Nutrients)

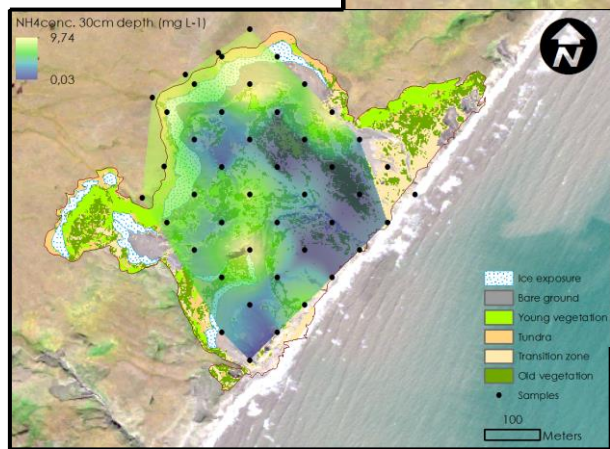
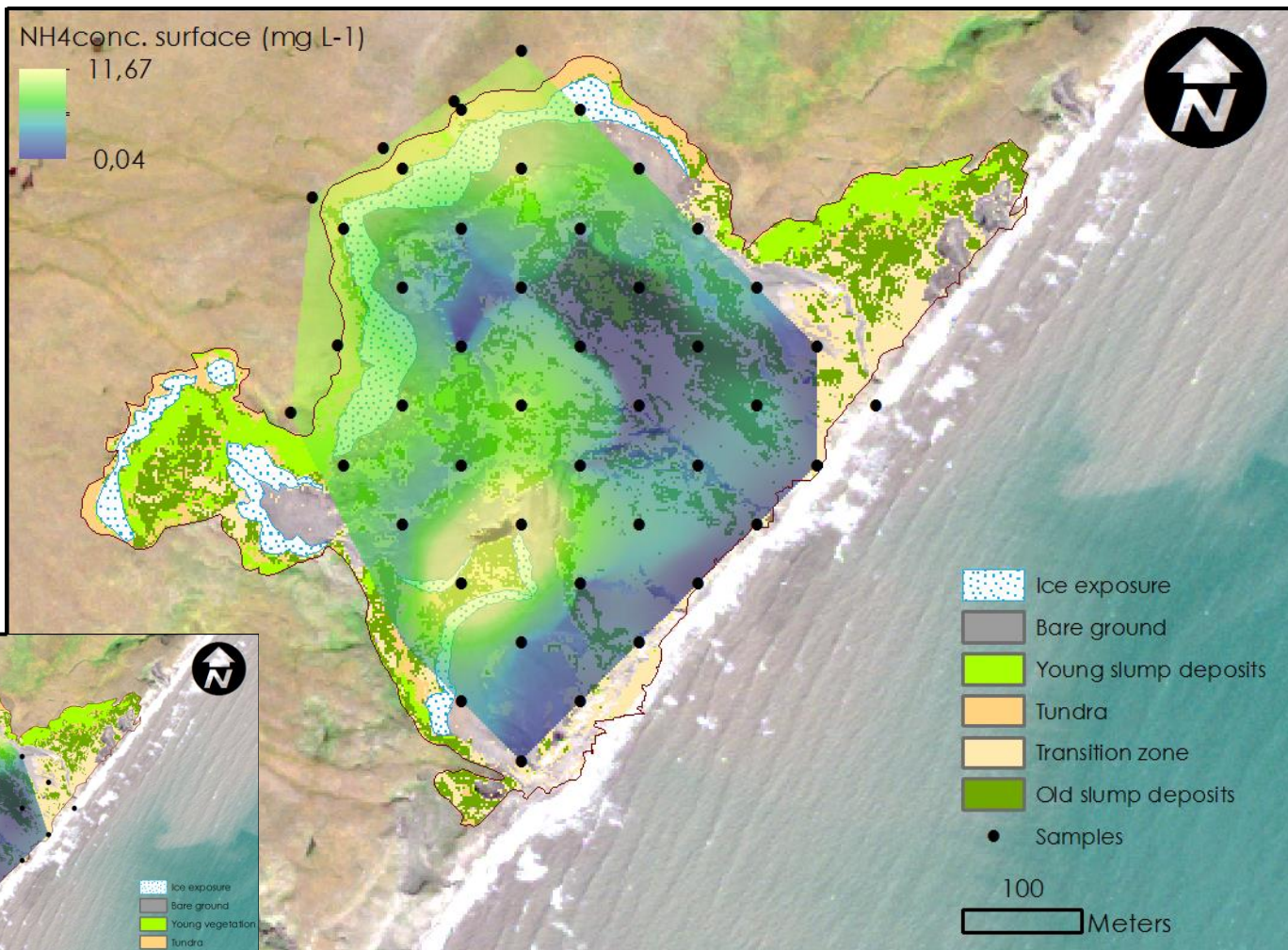


*outliers are not displayed

Topic II: Degradation of organic matter

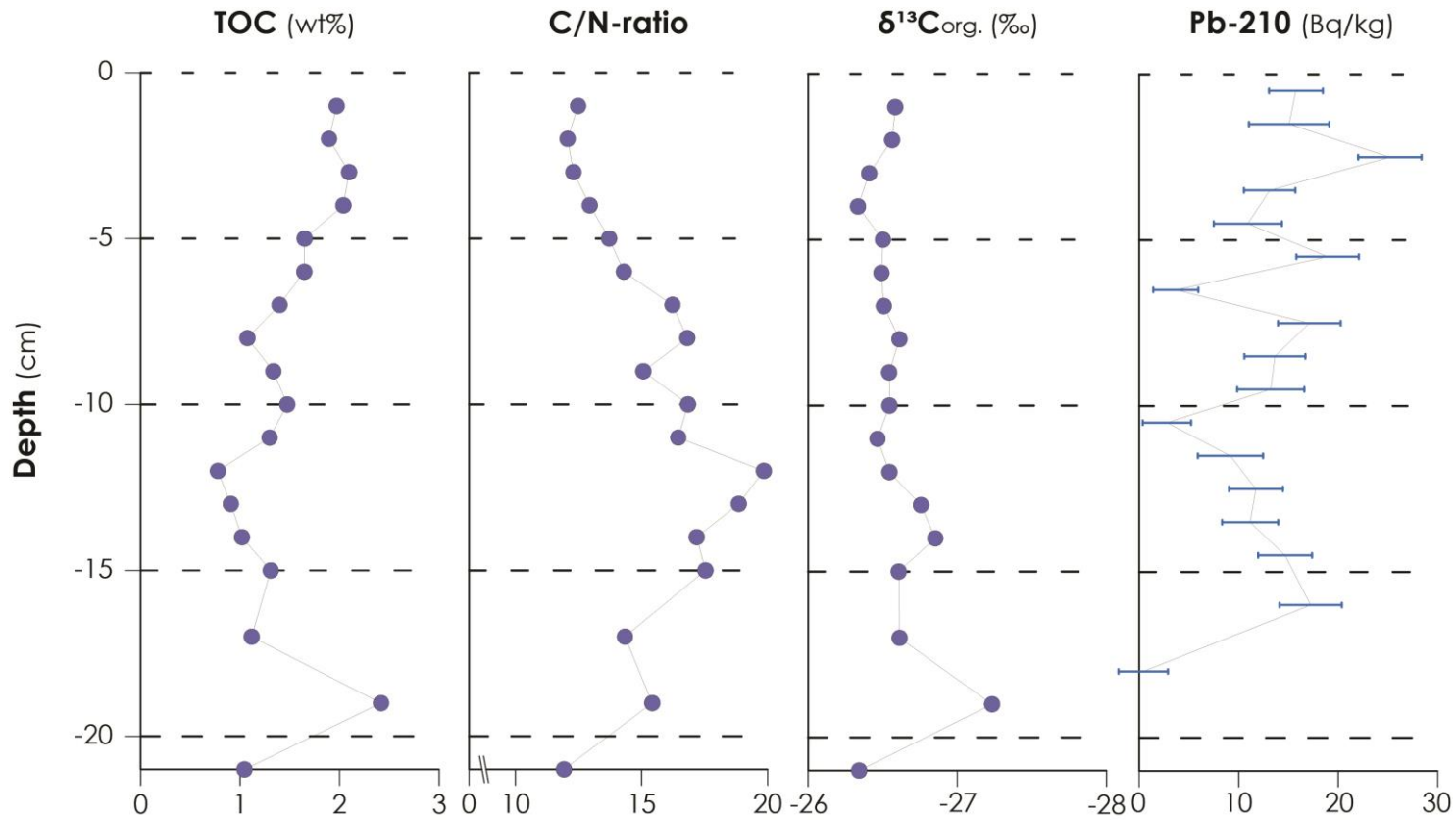


NH₄



Topic II: Fate of organic matter

Marine short core, CTD: Pb-210, TOC, $\delta^{13}\text{C}_{\text{org.}}$, C/N



Outlook and open questions

What are the degradation mechanisms?

What are the **degradation** patterns of **POC**?

What happens with permafrost carbon after **transport** into the ocean?

What are possible **impacts** on nearshore marine **ecosystem**?

How is OC incorporated into local **food webs**?

Thank you very much for the attention!

Questions?



Topic II: Origin of organic matter

