



# Stable isotope chemistry for the analysis of organic matter in a meteoric lake in Greenland

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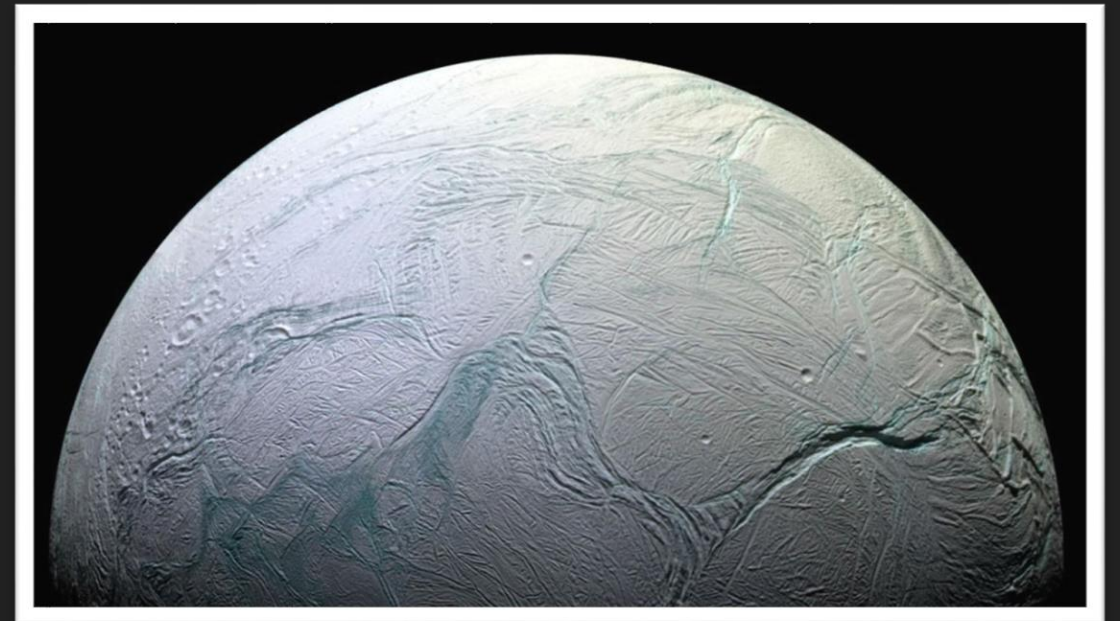
# Kangerlussuaq Field Site (Denmark)





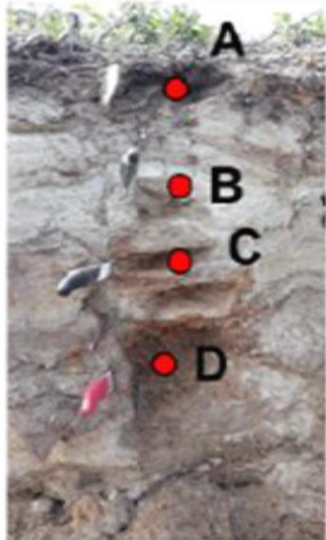
# Rationale

The characterization of glacier systems and surrounding cryo-environments may have implications for the search for extraterrestrial life in the Solar System, particularly in icy satellites such as Europa or Enceladus. Both with putative salty subglacial oceans.



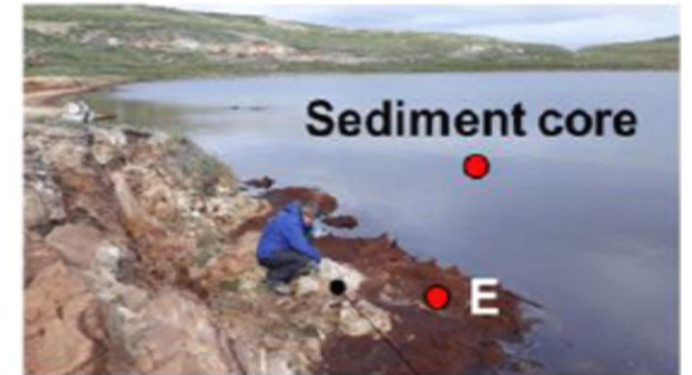
# A non-glacial meteoric Salt Lake

Shore profile



Sediment core

SALT LAKE (SL)



White  
crust



600m long and 500m wide salty lake

# Objective

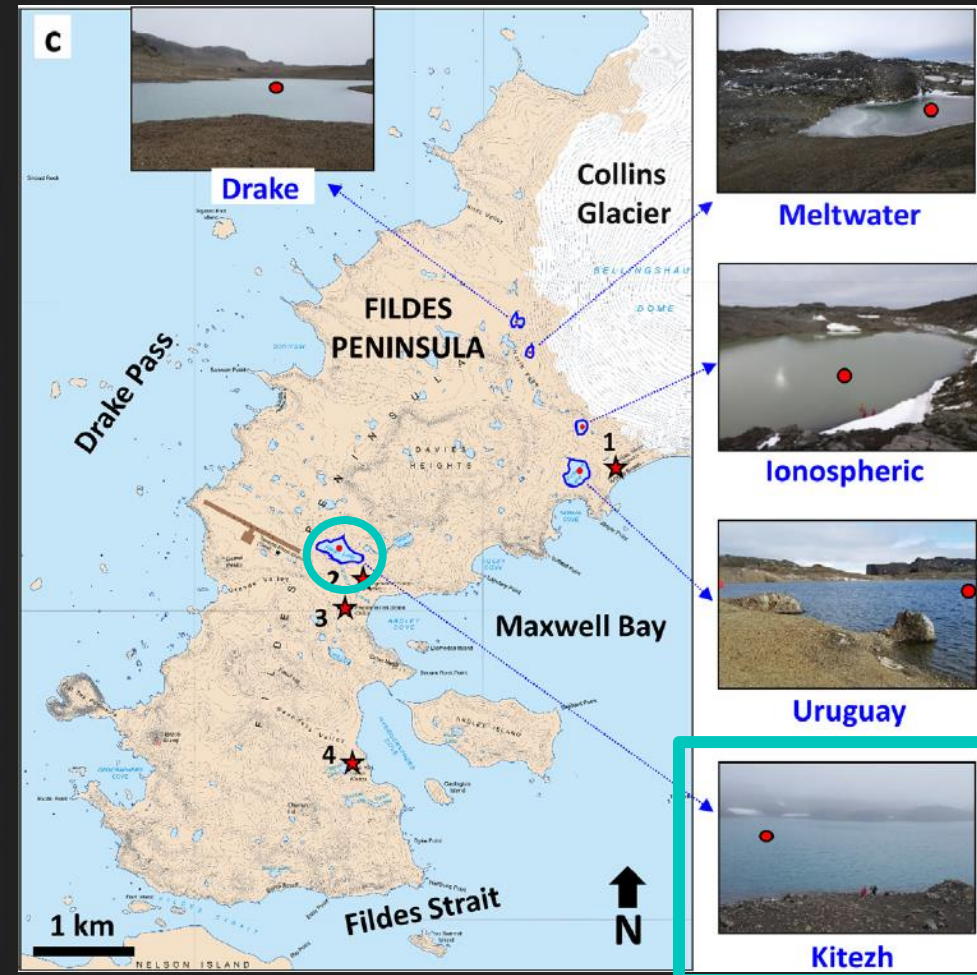
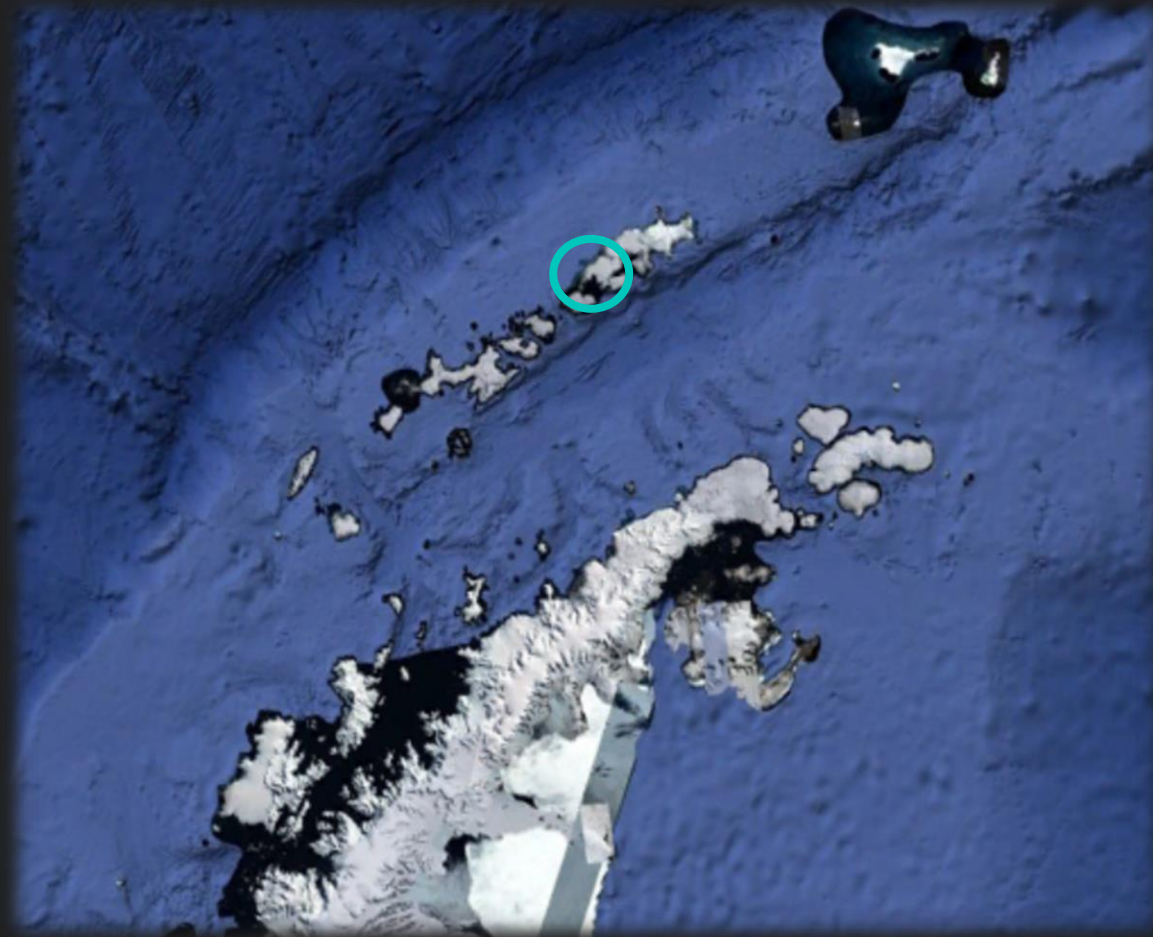
To compare the organic composition of non-glacial lakes like Salt Lake to that of glacial lakes besides the Issunguata Sermia glacier system.

1. Our group will focus on biomarkers of lipidic nature.
2. We will perform bulk and lipid compound-specific **carbon** isotope analysis on certain lipid families.

What do we expect?



# Carbon isotope chemistry in five Antarctic lakes

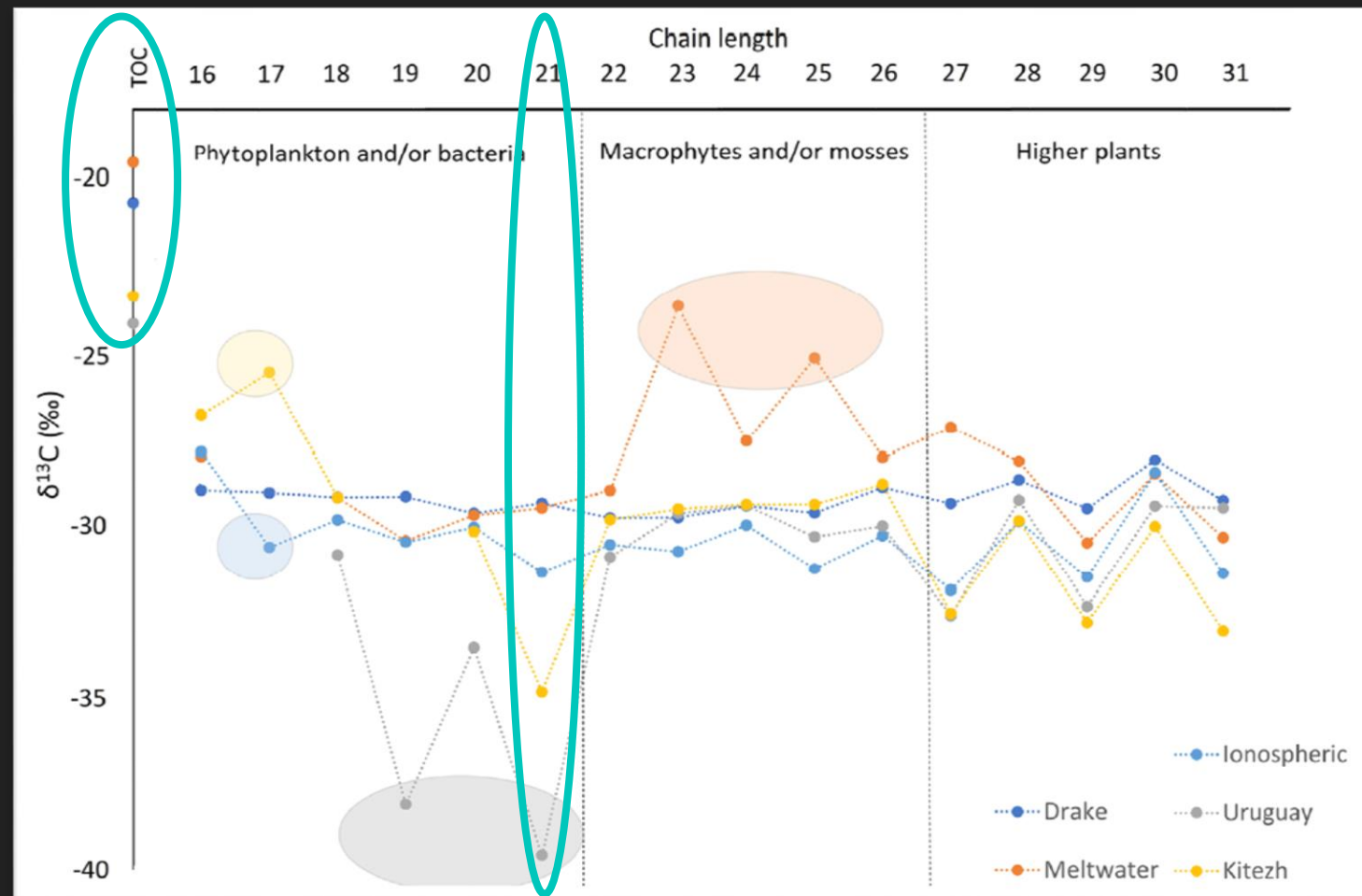


# Compound-specific isotopic composition of alkanes

Depleted TOC C-13 values in meteoric lakes correspond to terrestrial carbon sources.

21-carbon alkanes are highly depleted in C-13 in both meteoric lakes.

High C-13 discrimination in lakes with low primary productivity means low competition for carbon.





# Expectations



1. Salt Lake in Greenland will display distinct  $\delta^{13}\text{C}$  bulk values compared to other proglacial lakes.
2. More biogenic contribution and terrestrial inputs than proglacial lakes.
3. Compound-specific  $\delta^{13}\text{C}$  values of bacteria as an indicator for halophilic metabolisms?



**Thank you  
very much!**

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