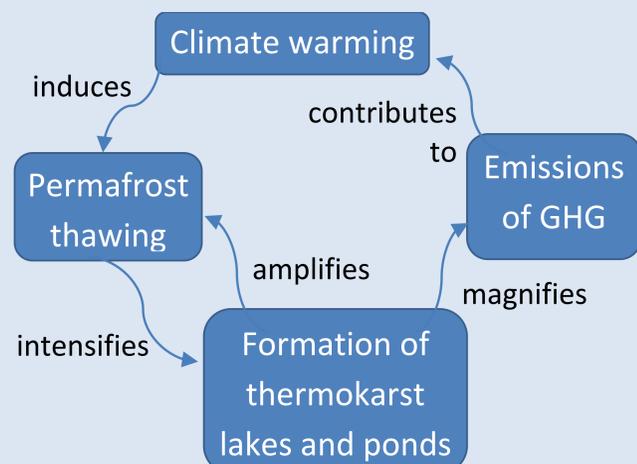


Rationale

Modern global climate warming is known to be particularly rapid in Arctic regions. This has induced extensive permafrost thawing and the mobilization of immense reserves of organic carbon frozen for millennia. However the rate of mobilization and the way the different carbon pools are being cycled in arctic ecosystems are not fully understood yet.



One of the least understood processes is the emissions of greenhouse gases (GHG) from thermokarst lakes and ponds. It is especially needed to determine if the old pool of carbon is labile and at which rate it is transferred to the atmosphere through this aquatic system, because of its potential to act as a positive feedback mechanism on climate warming.

Emission rates can be affected by:

1. climate-sensitive limnological properties
2. carbon age and availability to local biota
3. permafrost properties
4. surrounding geomorphology.



Study site



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Objectives for this summer

- Define the bathymetry of studied lakes and ponds (6-9)
- Study the thermal structure of the lakes and ponds with thermistor chains
- Obtain detailed stratigraphy of lake sediments by coring
- Verify the presence of taliks under larger lakes
- Better describe chemical and physical properties of peat deposits by coring
- Measure ebullition and diffusion of GHG from the lakes and ponds
- Investigate carbon lability of different carbon pools by performing in-situ incubations

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