



Lake ice cover history in subarctic Fennoscandia

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Finland has some of the world's longest records of lake and river ice cover duration. Break-up dates of the river Tornionjoki have been registered since 1693 and break-up dates of many lakes since the early 19th century. However, most of the lake records originate from southern and central Finland.

Ice cover records are considered to be even better indicators of past climate than temperature records. Direct human impact on ice cover dynamics is small, especially in Northern Finland. The projected climate warming will most probably lead to longer and warmer ice-free season and increased nutrient and carbon input from the catchment areas. In response, the total primary production is likely to increase and species composition changes will take place.

In this study, we will provide new insights on the variation of the ice cover dynamics in northern Fennoscandia by creating a new diatom-based ice cover transfer function.

The preliminary transfer function, based on 64 subarctic lakes, has been validated against measured historical records of ice cover duration comprising the last ca. 50 years and the results are promising. The final transfer function will consist of over 180 lakes and will, in addition to the historical ice cover test, be validated against the observed current ice cover data of 25 northern lakes.