

## EPILITHIC DIATOMS FROM WEST GREENLAND LAKES ACROSS A CLIMATIC GRADIENT: IMPLICATIONS FOR PALAEOCLIMATE RECONSTRUCTIONS

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The widest ice-free land mass in Greenland around Kangerlussuaq straddles a climate gradient which influences the physical properties of the region's lakes. Coastal lakes have a shorter ice-free season than those inland because snow cover is more extensive and summers are cooler. Lakes close to the ice sheet are strongly influenced by katabatic winds from the ice sheet which also prolong the ice-covered period relative to the inland lakes. Epilithic diatom samples were taken from 18 lakes in the inland, coastal and ice sheet areas of this region to investigate the role that variability in length of ice-free season has on rock-dwelling diatom assemblages. We hypothesized that epilithic diatom communities in lakes close to the coast and ice sheet would be less diverse with simpler growth forms because of the shorter growth season. However, diatom diversity proved to be lowest in the inland lakes, suggesting that longer growth seasons favoured the success of a smaller range of more competitive diatoms (*Cymbella microcephala* and *Nitzschia fonticola*). Rock scrapes from coastal lakes and ice sheet lakes with shorter ice-free seasons were dominated by colonial diatoms such as *Staurosira pinnata* and *Tabellaria flocculosa*. Comparison of epilithon communities with diatoms from two 2000-year lake sediment core records showed that epilithic diatoms comprised a small (<20%) proportion of the sedimentary diatom assemblages. However, the 'Little Ice Age' cooling in this area was associated with an increase in the relative abundance of epilithic diatoms that are now associated with coastal and ice sheet sites. Therefore, investigation of diatom communities associated with the marginal rocks of these arctic lakes might assist palaeoenvironmental interpretations and provide information about likely shifts in lake phytobenthos communities with future warming.