



## **Sequential extraction analyses of Hg speciation in northern lake sediments undergoing primary production increases due to recent warming.**

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The “algal scavenging” hypothesis has been proposed to account for the discrepancy between increasing Hg fluxes in northern Canadian lake sediments while atmospheric Hg concentrations over recent decades have been declining. We propose that increased algal scavenging, due to higher phytoplankton growth caused by a change in lake ice regimes, can increase the sedimentation rate of available Hg from the water column. One consequence would be that sediment Hg fluxes are disconnected from the rate of atmospheric Hg deposition in northern regions. A prediction which flows from this hypothesis is that higher Hg concentrations would be found in the organic-bound fraction in sediments deposited during recent and medieval warm periods, compared to sediments deposited during cooler periods. Here, we present sequential fractionation data on sediment Hg, from recent decades in three Arctic lakes and from the Medieval Warm Period in one of these lakes. The veracity of the hypothesis will be evaluated in the light of these data.