Boreal lake sediments as sources and sinks of carbon.

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Annually, lateral transport relocates a part of the terrestrial organic carbon (OC) to lake sediments. The quantification of the aquatic versus terrestrial OC sources plays an essential part in our understanding of the fate of the OC. However, the extent of the aquatic versus terrestrial OC sources in lake sediments is difficult to determine. We use non-exchangeable δ2Hn of the OC to trace the sediment OC sources and discuss the patterns across subarctic and boreal lakes.

The microbial processing of OC represents one of the main factors that regulate the balance between sequestration of OC and emission of green house gasses in boreal lake sediments. Temperature is key factor in regulating the metabolic activity of microbes. Hence, my questions have centered on the role of temperature and OC sources in regulating the balance between mineralization and burial, how quickly different types of sediment OC sources are mineralized with increasing temperature (i.e. temperature sensitivity) and over time, as well of temperature sensitivity of methanogenesis.