Reconstructing the long-term dynamic of pigmented communities in freshwater ecosystems using qPCR

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The use of molecular biology tools in paleolimnological investigations provides promising opportunities to study the long-term dynamic of a broad spectrum of organisms and obtain a more comprehensive overlook at the overall lake biodiversity. In this study, we reconstruct the long-term dynamic of pigmented communities of three peri-alpine lakes (Leman, Annecy and Bourget) using the analysis of traditional paleolimnological proxies (i.e. diatom frustules, pigments) and quantitative PCR (qPCR) analysis of sedimentary DNA (sed-aDNA). We then compare the results with the phytoplankton data from decadal long limnological surveys. The goal being 2-fold: (1) to consolidate and reinforce the quantitative estimates derived from qPCR analysis of sed-aDNA, (2) reconstruct the long-term dynamics and identify the timing of changes of the pigmented communities in these lakes. We will present the preliminary results of this study and discuss the potential of this type of multi-proxy analysis to strengthen the application of molecular tools in paleolimnology.