Improving the utility of leaf wax δD for arctic paleohydrology: Quantifying n-alkane distributions and apparent isotope fractionation in modern samples

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Abstract.
This proposal seeks funds to examine leaf waxes from a variety of arctic plants and surface sediments from arctic lakes. The hydrogen isotopic composition (δD) of plant leaf waxes preserved in sediments can be used as a proxy for δD of past precipitation (Sachse et al., 2012 and references therein) and can thereby provide important quantitative data for examining past climate change. However, there are large uncertainties in the apparent isotopic fractionation between precipitation and leaf waxes ($\varepsilon_{wax/p}$) that arise from lack of data and limit the utility of this approach. The proposed research will take advantage of a unique collection of arctic leaf and core-top sediment samples to quantify $\varepsilon_{wax/p}$ for different plant types and geographic locations in the Arctic. The resulting data will be publishable and will prove valuable as preliminary data and proof-of-concept data in future proposals to NSF or other external funding agencies.