

B33A-2080: Variability of Plant Wax Concentrations and Carbon Isotope Values in Surface Lake Sediments Provide Clues into Their Transport and Deposition

Wednesday, 13 December 2017

13:40 - 18:00

📍 *New Orleans Ernest N. Morial Convention Center - Poster Hall D-F*

Plant wax compounds preserved in lake sediments are used as proxies for paleohydrologic reconstructions. Despite their presence in lake sediments, little is known about their transport from plants to their deposition in lake sediments. By drawing on the leaf and pollen taphonomy literature combined with sediment focusing models, it is possible to develop several working hypotheses for the transport and deposition of plant waxes in lake sediments. An improved understanding of plant wax transport and deposition into lake sediments is necessary to increase the accuracy of paleohydrologic reconstructions.

To better understand the controls on plant wax transport and deposition in lake sediment, we analyzed the sedimentary plant waxes from 3 lakes in the Adirondack Mountains of New York. These lakes were chosen to capture a range of basin-specific properties to evaluate their influences on the transport and deposition of plant wax compounds in surface sediments. We spatially characterized sediment properties with surface sediment samples and high-resolution underwater imaging, acoustically profiled the sub-bottom, and measured temperature profiles. From each site, we measured *n*-alkanes, bulk organic content (loss-on-ignition), bulk carbon and nitrogen concentrations, C:N ratios, and bulk carbon isotopes.

Preliminary *n*-alkane concentrations and chain length distributions, as well as bulk carbon isotopes, are variable within each lake basin suggesting a mix of aquatic and terrestrial sources. The bulk carbon isotope values for two of the three lakes show a similar range of -2‰ compared to a range of -6.3‰ at the third lake. Likewise, the range of total *n*-alkane concentrations is much higher in the third lake suggesting that the controls on the distribution of *n*-alkanes and organic carbon are different between lakes. For terrestrial plant waxes, we find low *n*-alkane concentrations in sandy nearshore sediments relative to higher *n*-alkane concentrations in deeper fine-grained sediments. Combined, this information suggests that littoral processes focus organic compounds and fine sediments towards the main depo-center of the lake. These and other observations highlight important relationships between basin-specific properties and processes controlling the transport and deposition of plant wax compounds.

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