

# Organic carbon sources and accumulation rates along a regional transect of meromictic lakes, Maine (USA)

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The study of organic matter deposition in modern meromictic lakes enables a deeper understanding of past processes involved in the formation of lacustrine source rocks. Our work offers a better understanding of the source of lacustrine organic matter in eleven Maine lakes, and utilizes sediment cores to unravel depositional cycles of organic matter in two meromictic lakes with laminated sediments. Results include:

- The geochemical signature of particulate organic matter filtered from modern lakes in Maine suggests mixing of lacustrine algae and terrestrial C3 plants (below). Associated surface sediments display enrichment in the C/N ratio, suggesting early diagenetic loss of nitrogen during the sedimentation process.
- Low frequency variability in organic matter deposition in lakes hundreds of kilometers apart (red curve to right) are coherent, suggesting regional influences on the production and preservation of organic matter in meromictic lakes. Ongoing work is utilizing the annually-laminated sediments and additional radiocarbon dates to better constrain the age models, allowing for the examination of higher frequency coherency in the region.

