

## DIATOM-BASED PALEOLIMNOLOGICAL STUDY OF LAKE SUPERIOR

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Lake Superior, considered the most pristine and perhaps least understood Laurentian great lake, has nevertheless endured human disturbances. Recent physical, chemical and biological changes in the lake suggest anthropogenic drivers, but unfortunately, little is known about how human activity is affecting the lake as a whole. For instance, significant declines in microscopic biota and nutrients and an increase in chloride have occurred during the last decade. While these changes are disconcerting, whether they are outside the range of natural variability for the lake is not certain.

We are performing a retrospective analysis of environmental quality in Lake Superior using sedimentary diatom archives. In doing this, we intend to answer several questions:

- What are the driving factors behind changes that are occurring in Lake Superior?
- Are conditions improving due to rehabilitation efforts or deteriorating?
- Are inferred changes anthropogenic or within the range of natural variability for Lake Superior?
- Are there spatial variations in historical pelagic conditions?

Currently we are comparing diatom assemblages from a recent core obtained from the eastern basin with historical paleoecological results of a detailed diatom analysis performed by Stoermer et al. in the 1970s. We are focusing on long-term trends in diatom community assemblage, biovolume and accumulation rate as well as examining more recent changes and trajectories. Results will be incorporated into an ongoing study including a core collected in the central basin. Diatom results will be related to historical landscape changes using diatoms as a proxy for water quality fluctuations.

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