

## **DIATOM RESPONSE TO PALEOCLIMATE DRIVEN DUNE ACTIVITY ALONG THE LAKE MICHIGAN SHORELINE**

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Coastal dunes along Lake Michigan are not stable over time and changes are most likely tied to climate change (lake level, wind, and storm frequency and intensity). Timing of dune migration can be determined by optically stimulated luminescence dating (OSL) of minerals or radiocarbon dating of buried organic material, but these methods are limiting due to the inherent processes of dune migration. Previous work on Gilligan Lake near Holland, MI shows the presence of periodic sand layers in lake sediments related to lake-level change in Lake Michigan. Multi-proxy data (charcoal, pollen and % sand) from Gilligan Lake sediments were used to determine climate-related dune migration activity. Diatom microfossils were analyzed from a specific sediment region of interest. The diatoms indicate a diverse community in Gilligan Lake during this time period. Taxa are consistent with flora common in lakes associated with wetland habitats and contain many acidophilic species common to lower pH environments. Two major signals are evident from the diatom data in this section of the core, a decline in open lake condition, and a decrease in acidophilic taxa associated with littoral wetland or bog systems. Diatom data were then compared with other multi-proxy data (charcoal, pollen and % sand) to better understand climate-related dune migration activity.