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Abstract Book

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Impact of extreme weather events frequency and intensity in shaping phytoplankton communities

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Lake habitats and communities can often be correlated with general morphometric and geographic characteristics such as depth, latitude, altitude, or watershed area. Further, communities are typically correlated with average environmental conditions such as seasonal temperature and nutrient levels. The frequency and intensity of extreme weather events (rain and wind) are typically not encompassed by average environmental descriptors, yet, can modify the physical habitats of lakes, significantly influencing phytoplankton growth and survival. We tested the hypothesis that lakes with a higher frequency and intensity of extreme weather events have a functionally different phytoplankton assemblage from lakes with a lower frequency of extreme weather events. We compiled long-term (mean = 20±13 years, range 0.6-44 years) phytoplankton datasets for 22 lakes across a wide gradient of altitude, latitude, depth, and trophic state. We classified the phytoplankton genera into morpho-functional groups and C-S-R strategists, and compared among lake phytoplankton assemblages' characteristics across the gradient of wind and rain conditions experienced by the lakes. We discuss how the frequency of extreme weather events can affect phytoplankton functional groups, the dominance of differing life history strategies and ultimately community structure. The frequency and intensity of extreme events is expected to increase with climate change, with the potential to drive shifts in phytoplankton composition.