



## Climatic warming causes regime shifts in lake foodwebs

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**ABSTRACT:** Spring clear water phases caused by grazing of zooplankton on algae are among the most spectacular and well-studied events in lake plankton dynamics. Such clear water phases are also important as windows of opportunity for recovery of aquatic vegetation and biodiversity in shallow waters. Here we use long time series from 71 shallow lakes to demonstrate that the probability of clear water phase increases with the temperature of lake water. We demonstrate that lake temperature has risen significantly over the past decades and is highly correlated with oscillations in the North Atlantic climate system. We also show a distinct climate-related shift in the timing of clear water phases in the shallow lakes as well as in an independent set of central European lakes. Simulations with a seasonally forced plankton model confirm that temperature rise is a plausible explanation for the observed changes.

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