






[🏠 首页 \(.../.../\)](#) / [📰 新闻热点 \(.../.../\)](#) / [📁 学科热点 \(.../.../\)](#)

利用高频数据和生态系统模型研究温带湖泊冬季硅藻大量繁殖

 日期: 2021年04月07日

 打印 |  字体大小: 大 中 小

作者: Kong, Xiangzhen; Seewald, Michael; Dadi, Tallent; 等.

In temperate lakes, it is generally assumed that light rather than temperature constrains phytoplankton growth in winter. Rapid winter warming and increasing observations of winter blooms warrant more investigation of these controls. We investigated the mechanisms regulating a massive winter diatom bloom in a temperate lake. High frequency data and process-based lake modeling demonstrated that phytoplankton growth in winter was dually controlled by light and temperature, rather than by light alone. Water temperature played a further indirect role in initiating the bloom through ice-thaw, which increased light exposure. The bloom was ultimately terminated by silicon limitation and sedimentation. These mechanisms differ from those typically responsible for spring diatom blooms and contributed to the high peak biomass. Our findings show that phytoplankton growth in winter is more sensitive to temperature, and consequently to

climate change, than previously assumed. This has implications for nutrient cycling and seasonal succession of lake phytoplankton communities. The present study exemplifies the strength in integrating data analysis with different temporal resolutions and lake modeling. The new lake ecological model serves as an effective tool in analyzing and predicting winter phytoplankton dynamics for temperate lakes.

(来源: Water research 卷: 190 页: 116681 出版年: 2021 DOI:10.1016/j.watres.2020.116681)

Copyright 2020 中国科学院南京地理与湖泊研究所

地址: 南京市北京东路73号 邮编: 210008

电话: 025-86882010 025-86882020 025-86882030

传真: 025-57714759

电子邮件: niglas@niglas.ac.cn

(<mailto:niglas@niglas.ac.cn>)

苏ICP备05004319号 苏公网安备32010202010378号