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Summary

My research work focuses on how physical factors, i.e., temperature, light attenuation, turbulent mixing and their interactions affect the competition between *Cylindrospermopsis raciborskii* and *Microcystis aeruginosa*. *C. raciborskii* and *M. aeruginosa* are two of the most notorious cyanobacterial species as they both spread throughout the world and produce toxins that present great risks to living creatures. They both possess a range of unique eco-physiology traits to highly adapt to environmental changes, but vary with each other. *C. raciborskii*, due to its filamentous shape, it requires low light for growth but has less mortality in turbulent mixing layers. It can tolerate a wide range of temperature but prefers higher temperatures and more stratified waters. Compared to *C. raciborskii*, *M. aeruginosa* needs high light intensity for growth and prefers lower temperatures. The large colonies can regulate vertical distributions and overcome turbulent mixing to some extent due to gas-vesicle production. In addition, there is evidence that *C. raciborskii* is replacing *M. aeruginosa* or becoming co-dominant in some tropical lakes. Hence, the competition strategy between them should be considered, thus approaches for bloom control needed to be figure out as basis.

Research Expertise

- Cyanobacteria
- Freshwater ecology
- Numerical modelling