Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

The Effect of Small Scale Turbulence on the Physiology of *Microcystis aeruginosa* cyanobacterium[1] ANNE WILKINSON, MIKI HONDZO, MICHELE GUALA, University of Minnesota — *Microcystis aeruginosa* is a single-celled blue-green alga, or cyanobacterium, that is responsible for poor water quality and microcystin production, which in high concentrations can be harmful to humans and animals. These harmful effects arise during cyanobacterium blooms. Blooms occur mainly in the summer when the algae grow uncontrollably and bond together to form colonies which accumulate on the surface of freshwater ecosystems. The relationship between fluid motion generated by wind and internal waves in stratified aquatic ecosystems and *Microcystis* can help explain the mechanisms of such blooms. We investigated the effect of small scale fluid motion on the physiology of *Microcystis* in a reactor with two underwater speakers. Different turbulent intensities were achieved by systematically changing the input signal frequency (30-50Hz) and magnitude (0.1-0.2V) to the speakers. The role of turbulence is quantified by relating energy dissipation rates with the cell number, chlorophyll amount, dissolved oxygen production/uptake, and pH. The results suggest that turbulence mediates the physiology of *Microcystis*. The findings could be instrumental in designing restoration strategies that can minimize *Microcystis* blooms.

[1]This work was supported by the NSF Graduate Research Fellowship and University of Minnesota start-up funding.

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Date submitted: 01 Aug 2014 Electronic form version 1.4