

Metadata Details

Title

Functional Diversity of Microbes in Antarctic Lakes.

Science Keywords

Category	Biosphere
Topic	Ecological Dynamics
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Summary

Abstract

The significance of freshwater systems in global manganese cycles is well known. However, the polar systems, which encompass the largest freshwater repository in the world, have been least studied for their role in manganese cycling. Here, we present results from a study that was conducted in the brackish water lakes in the Larsemann Hills region (east Antarctica). The rate of in situ manganese oxidation ranged from 0.04 to 3.96 ppb day⁻¹. These lakes harbor numerous manganese-oxidizing bacteria (10⁵ to 10⁶ CFU l⁻¹), predominantly belonging to genera *Shewanella*, *Pseudomonas* and an unclassified genus in the family Oxalobacteriaceae. Experiments were conducted with representatives of predominant genera to understand their contribution to Mn cycling and also to assess their metabolic capabilities in the presence of this metal. In general, the total and respiring cell counts were stimulated to a maximum when the growth medium was amended with 10 mM manganese.

Purpose

Our studies suggest that cobalt could have a more profound role in manganese oxidation, while nickel promoted manganese reduction in polar aquatic systems.

Data Center