



New insight toward intermediates involved in iron-coupled anaerobic oxidation of methane

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The release of methane to the atmosphere from sediments is controlled by its aerobic and anaerobic oxidation. The most common electron acceptor in marine sediments for the anaerobic oxidation of methane (AOM) is sulfate, however, in fresh water lake sediments, where sulfate concentrations are low, iron-oxides can become the dominant electron acceptor. In lake Kinneret (Sea of Galilee, Israel), microbial iron-coupled AOM was evident, however, the mechanism has been only partly understood, including the intermediates involved species. Molecular data from the lake sediments and previous experiments suggest that several microorganisms take part in this process. Here we present new incubation experiments containing iron oxides, $^{13}\text{C-CH}_4$ and different inhibitors, that were set up to investigate further the potential intermediate species (i.e. nitrate/nitrite) that are produced and their role in the methane oxidation process.