Chair of Hydrogeology

Masterarbeit

LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

Impact of bottlenecks on the microbial degradation of nitrate in groundwater (2 Master-Thesis, cooperation between LMU Prof. W. Orsi, Professor for Geomicrobiology and TUM, Chair of Hydrogeology)

Background: Globally, increasing nitrate concentrations can be detected in groundwater. As part of this master thesis, we want to clarify the bottlenecks of denitrification in groundwater using a 2D-flow through tank experiment. This project will help to understand links between hydrocarbon and nitrogen cycling in groundwater.

Description:
Implementation of biogeochemical studies (denitrification) linked to the microbial community to assess the bottleneck of methane dependent (as a potential electron-donor) nitrate reduction in a model aquifer. To reach the goals of the thesis the project is separated in two parts, the first student will perform the injection experiments and will study the hydraulics while the second one will perform the microbiological investigations including measuring of microbial biomass and diversity as a function of nutrient availability and redox potential.

Supervisors:
Prof. Einsiedl (TU, Hydrogeology)/ Prof. Orsi,LMU, Geomicrobiology)

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Abb. Existing 2D-model aquifer for experiments in Obernach

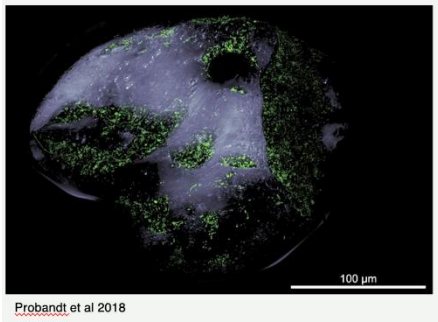

Abb. Microbial cells (green) attached to a single grain of sand