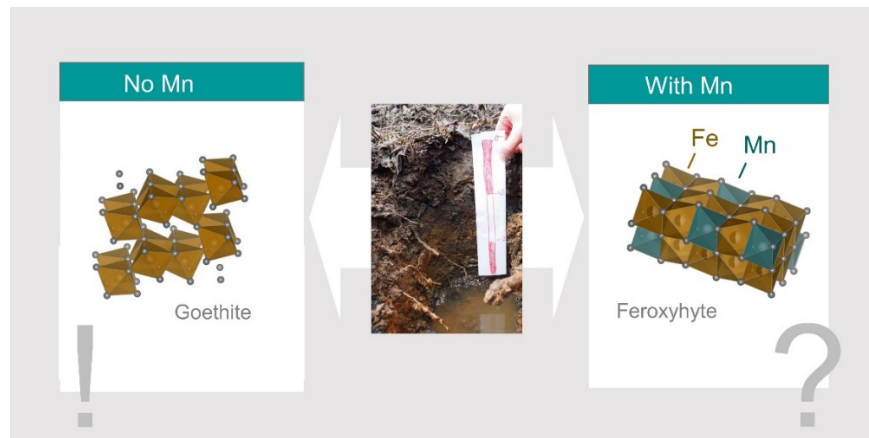




MSc thesis position

in the Hydrology Group, University of Bayreuth

“Impact of Mn on Fe mineralization pathways in wetland soils and sediments”



MOTIVATION: Iron (Fe) is the fourth most abundant element on the earth’s surface. Due to its redox-sensitivity and its sorption capacity for nutrients and contaminants, it plays a particularly important role in the environmental biogeochemistry of wetland soils and sediments.

In soils with a fluctuating water table, the microbial reduction of Fe(III) generates Fe(II). The produced Fe(II) may interact with the remaining solid phase, thus catalyzing the transformation of metastable Fe oxides (e.g. ferrihydrite) to stable minerals such as goethite. Interestingly, previous research has shown that the co-occurrence of manganese (Mn) in such soils appears to trigger the formation of feroxyhyte, a relatively rare Fe oxide that has been largely overlooked in the past. The factors and mechanisms driving the switch to feroxyhyte formation in the presence of Mn remain, however, elusive.

AIM: Using a controlled laboratory experiments and innovative analytical techniques, **this project will investigate the impact of Mn on the formation of secondary Fe phases** and resolve the specific structural mechanisms that control feroxyhyte formation at high Mn loadings.

WE OFFER individual supervision by enthusiastic researchers and of state-of-the-art approaches for the characterization of aqueous and solid phases (**XRD, Mössbauer analysis, SEM, TEM, FTIR**). You will become familiar with all practical aspects of science and learn how to design, run, analyse and present experiments that target at your research question.

YOU ARE a highly motivated student with a strong interest in experimental work in the geosciences and with passion for research. Previous experience with analytical and laboratory techniques is an asset, but no prerequisite.

If you are interested or if you need any further information, feel free to contact **Dr. Kerstin Hockmann** at kerstin.hockmann@uni-bayreuth.de or visit www.kerstinhockmann.com.