Geophysical Research Abstracts Vol. 18, EGU2016-2936, 2016 EGU General Assembly 2016 © Author(s) 2016. CC Attribution 3.0 License.



Extraction, drainage, rewetting, flooding - Patterns of greenhouse gas turnover in restoring temperate peatlands

Stephan Glatzel

University of Vienna, Geography and Regional Research, Geoecology, Vienna, Austria (stephan.glatzel@univie.ac.at)

The disturbance of natural peatlands destroys carbon sink and is often associated with nitrous oxide emissions. Therefore, the general efforts to mitigate greenhouse gas sources and to create carbon sinks also include peatland restoration. The variety of peatland type (most importantly bog or fen), use (extraction or agriculture), and restoration technique (rewetting or flooding) result in specific patterns of greenhouse gas uptake or emission. Based on examples from own work, I present an overview of the greenhouse gas turnover of following sites:

• Cutover peat bogs in Eastern Canada and following rewetting, flooding, and abandonment

• Drained cutover and agriculturally used peat bogs in Northern Germany and following extensive agricultural management, paludiculture, rewetting, flooding, and abandonment

• Drained agriculturally used fens in Northern Germany and following flooding and paludiculture

I show that rewetting, but not flooding may succeed in re-establishing long-term carbon sinks with low methane release rates comparable to the greenhouse gas turnover known from natural peatlands. Flooding risks creating, at least in the short term, extremely strong methane sources. Extensive agricultural management and paludiculture may result in low methane, carbon dioxide and nitrous oxide release rates and could be a sensible option when aiming at reconciling peatland use and protection.