OC05 - A survey of kettle holes in the young moraine landscapes of Eastern Germany and Western Poland

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Kettle holes are pond-like depressions wetlands in the pleistocene landscape of Europe, North America and Asia. These ecosystems are highly variable mainly due to their diverse hydrogeomorphologic features, which partly result in pronounced wet-dry cycles. There is an increasing awareness of the pivotal role of kettle holes as hotspots for biodiversity and biogeochemistry, mainly caused by their high spatiotemporal variability in hydrological processes. The resulting strong internal dynamic of kettle holes is additionally closely linked to the type of terrestrial surroundings that are usually characterized by an intensively used agrarian landscape. These conditions hamper a thorough understanding of these ecosystems. A survey based on a large dataset from different regions might help to gain a better insight into the structure of kettle holes. To date there has been no study that investigated kettle holes on a large spatial scale across national borders. Here, we first aimed to examine kettle holes from various transnational regions of north-east Germany and western-central Poland in accordance with their hydromorphological and physico-chemical variables as well as macrophyte community composition. Secondly, our objective was to identify the environmental variables that shape the macrophyte communities in these water bodies because macrophytes play a crucial role in these ecosystems, not only for biodiversity but also for biogeochemical processes.

The studied kettle holes are located in the same biogeographical region of Europe with a presumably high nutrient load from the agriculture that equally influences water quality and they show a similar genesis that should result in comparable hydrogeomorphological characteristics. Since a previous study conducted on kettle holes in north-east Germany revealed that hydromorphological variables explained most of the variance in macrophyte species richness, we further hypothesized that hydrogeomorphological variables most strongly determine macrophyte community patterns. The results help to better understand the structure of kettle holes as a basis for studying the functioning of these ecosystems.