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## Using high-resolution portable OSL (POSL) profiling to characterize Holocene beach ridges at Lake Schweriner See, NE-Germany

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Beach ridges are a promising geoarchive to study lake-level variations as they indicate former lake-level maxima. Detecting paleo-shorelines and knowing their elevation, inner structure and age. This helps to quantify lake-level highstands, the duration of elevated lake levels as well as to reconstruct sedimentation processes as important indicators of either external forcing (e.g., higher precipitation/lower evaporation) or anthropogenic impacts (e.g., mill stowage) in the past. In this study, a quantitative paleohydrological reconstruction of lake Schweriner See, NE-Germany, should be achieved by a combination high-resolution multi-proxy analysis on sediment cores from both distal and littoral but also from onshore parts. This poster focuses on the onshore part of the eastern shoreline where a succession of beach ridges is located within a distance of up to 600 m away from the recent shoreline and up to 1.5 m above today's lake level. This indicates both a greater extension and a higher water level in the past. Here we examine these beach ridges using high-resolution luminescence profiling (POSL, 5-15 cm intervals) with a SUERC portable OSL unit combined with full OSL dating (coarse grain quartz SAR protocol) and independent radiocarbon dating to obtain ages of lake-level maxima as well as a (relative) age distribution within and between individual beach ridges. We measured the water content, loss-on-ignition and grain size variation to characterize the beach ridges and their depositional processes but also to estimate the influences of these parameters on the luminescence signal.

The sandy beach ridges are deposited on peat, which overlays mainly lacustrine silty and calcareous sediment. The upper 20-40 cm are enriched in humus. This stratigraphy demonstrates a silting-up sequence and development of a wetland, which was affected by a dynamic lake-level development. The dominating grain size within the ridges is coarse grained sand with small gravel and occasionally thin organic layers in between. The initial results of full OSL dating gives a hint that all beach ridges were deposited during the Holocene. The luminescence profiles typically show an increase in photon counts with depth in the upper part, which was influenced by humus enrichment. The luminescence in the otherwise mainly organic and lime free sands below behave differently with depth in each beach ridge. The total photon count either 1) decreases perhaps influenced by a higher groundwater table in the past or reworking of older nearby beach ridges, 2) increases, offering the possibility to extract relative sedimentation rates, but sometimes has leaps to smaller values or 3) fluctuates around a mean value indicating a potential rapid sediment accumulation. Fluctuating values might also occur due to bioturbation.

In this study, high resolution POSL profiling in combination with grain-size analysis proved to be a promising tool to investigate lacustrine beach ridges and their depositional processes. The method turned out to be valuable to not only select the right sample for OSL dating but also to get a better understanding of beach ridge deposition at Schweriner See.