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Landscape History of Grosses Moos, NW Swiss Alpine Foreland.

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The western Swiss Plateau with Lake Neuchâtel is part of the alpine foreland and among the key areas for the reconstruction of environmental changes since the last postglacial. This study was carried out in a landscape located NE of the lake and called Grosses Moos (The Large Fen) - currently designated the Swiss largest, continuous farming area, after the fen was drained in course of landscape engineering projects performed in Switzerland at the end of the 19th century.
The study contributes new results from nine excavations of littoral ridges identified in Grosses Moos, and integrates sedimentology, paleo-environmental analysis and three independent chronological methods. Radiocarbon dating, pollen analysis and optically stimulated luminescence (OSL) were applied to the sediments. While pollen and radiocarbon follow the standard procedures, the evaluation of the luminescence age estimates demanded adjustment according to the physical and microdosimetric properties of the alpine quartz, and consideration of the peculiarities of the changing littoral environments of Grosses Moos.
The Grosses Moos landscape developed on the temporary surface of the post-Last Glacial sedimentary infill of the over-deepened glacial Aare valley. In this study the landscape history has been fitted into the existing supraregional time scales of NGRIP, the Swiss bio-zones system and the human history based on archaeological and historic records and covers a time span of up to 15'000 yr b2k. The wide-ranging suite of geomorphic features and sedimentary sequences, including littoral lake sediments, beach ridges, dunes, palaeo-channels, peat and colluvial deposits, enable the extensive reconstruction of spatially and temporally variable natural shaping processes. In addition, our results indicate remobilization of soil, colluvium, and sediment due to human settlement activities since the Neolithic - with an important increase in sediment load and spatial variability since the Bronze Age woodland clearings in the River Aare Valley and around the Lake Neuchâtel. The development of several dune belts in the study area are attributed to various periods since the Lateglacial, e.g. the turn of the Holocene, the lake level drop in the Mid-Holocene, and the beginning of the Little Ice Age, and can thus be related to surprisingly varied environmental conditions. Despite the eventful past of the Grosses Moos, a Holocene Luvisol has preserved until recently on top of the oldest dune belt called Isleren Dune.