



Genesis and dating of Late Pleistocene-Holocene loess-palaeosol sequences from the Lüneburg Heath, Northern Germany

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The Lüneburg Heath is known for its anthropogenic influenced landscape since Neolithic times. The present morphology was formed by Pleistocene glaciations. During the Saalian (Oxygen Isotope Stage 6-8) the area was covered three times by ice. Weichselian glaciers (Oxygen Isotope Stage 2-5d) did not reach the Lüneburg Heath which was strongly influenced by periglacial processes, like erosion and solifluction during the youngest glaciation. The landscape of the Lüneburg Heath is hence characterised by ground moraines, terminal moraines, outwash plains, glaciofluvial deposits and in some small areas by loess deposits.

The investigated section is located on a slip-off slope in a floodplain of a small watercourse close to the village of Seedorf, County of Uelzen, in the western part of the Lüneburg Heath.

The sequence consists of a 1.5 m thick silty and clayey deposit with gleyic and meadow chernozem-like features at the bottom. The age of this deposit and especially of the soil horizons within the sequence is controversial.

To investigate this section sedimentological, geochemical, palynological and geochronological methods are applied. The sediments were dated by Optically Stimulated Luminescence (OSL) to obtain the time since deposition. Organic material was dated using radiocarbon. The ages from Seedorf point to at least three phases of sedimentation and soil development. The bottom of the section composed of the gleyic, meadow chernozem-like horizon fAa+Gr has an OSL age of 10.5 ± 0.9 ka, its upper part a calibrated ^{14}C age of 5.960 BP. The fAh and Go horizons in the middle part of the section were OSL dated to 2.2 ± 0.2 ka years and the uppermost M-Go horizon has an OSL age of 1.11 ± 0.09 ka.

The palynological results are indicating periods of settlement, intensified agricultural land use and clearing accompanied by increased erosion in this area at particular times. The sedimentological and geochemical results strongly support the geopedological interpretation and contribute to a better understanding of the regional environmental and land use history up to recent times.