



Buried soils and dune sediments as archives of human-induced aeolian activity in the vicinity of historic glassworks, South Brandenburg, Germany

O. Bens (1), T. Raab (2), R. Spröte (2), S.L. Forman (3), R.F. Hüttl (1,2)

(1) Helmholtz Centre Potsdam, German Research Centre for Geoscience GFZ, (2) Chair of Soil Protection and Recultivation, Faculty of Environmental Science and Process Engineering, BTU Cottbus, (3) Department of Earth and Environmental Sciences, The University of Illinois at Chicago

Within the scope of the Transregional Collaborative Research Centre (SFB/TRR) 38, funded by the Deutsche Forschungsgemeinschaft (DFG), inland dunes in South Brandenburg were used as comparison sites to study structures and processes of the initial ecosystem development phase in an artificial water catchment. Here, we present first results of the pedostratigraphy of two dune systems nearby Glashütte which is about 50 km south of Berlin. The applied methods range from field description of soils and sediments, laboratory analyses to characterize physical and chemical properties, thin section analyses of buried soils to numerical age determinations. Based on twelve Optical Stimulated Luminescence (OSL) and six radiocarbon (14C) datings a chronology of the landscape development for the last c. 10000 years is derived.

Data prove that both dune systems – even though they are just c. 1 km apart and have similar morphological features like height, width, and orientation – have a completely different history in aeolian sand deposition and pedogenesis. At dune “Glashütte 1” a well established podsol forms the topsoil. At dune “Glashütte 2” soil development is clearly in a more initial state showing only some humus accumulation and weaker podsolization processes. OSL and 14C ages of sand from “Glashütte 1” range between about 11.4 ka cal. BC (3.9 m below surface) and 9.4 ka cal. BC (0.7 m below surface). Against that, the sands in “Glashütte 2” are mainly dated to about 0.8 ka cal BC (3.4 to 0.7 m below surface).

Our results prove that in the vicinity of former glasswork sites the dune landscapes possess quite young stratigraphic disturbances with fossilized horizons and weakly developed top soils. It is concluded that in the sand-rich North German Lowland human-induced deforestation resulted in a quite extensive remobilisation of Late Pleistocene to Early Holocene sand dunes.