



Evidence of (pre-) historic to modern landscape development and land use history in Lower Lusatia (Brandenburg, Germany)

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In the apron of three active lignite opencast pits in Lower Lusatia (Brandenburg, Germany), archaeological survey trenches were investigated in areas where Quaternary aeolian sand deposits are widespread. The investigated palaeoenvironmental archives in Jänschwalde, Cottbus-Nord and Welzow contain evidence of fluvial and aeolian morphodynamics, soil formation and agricultural land use from (pre-)historic to modern times. To study the age and the causes of sand drifting and landform stabilization, standard soil physical and chemical laboratory analyses as well as optically stimulated luminescence (OSL) and radiocarbon dating (^{14}C) were carried out. Two main sedimentological units were identified: Unit 1 consists of glacio-fluvial and Late Weichselian aeolian sands representing the parent material for the native Podsol-Braunerde and Podsol development, while Unit 2 represents the Late Holocene aeolian deposits. Four periods of Late glacial and Holocene aeolian activity and three phases of geomorphological stability have been identified: (i) Aeolian sedimentation during the Late glacial, (ii) Mesolithic reactivation of aeolian processes, (iii) soil formation until Late Roman Iron Age settlers intensified the agricultural land use, (iv) intensive drift sand formation during the High Middle Ages due to agricultural expansion, (v) stabilization of the drift sands and weak soil formation, (vi) reactivation of aeolian processes due to the increasing wood consumption and charcoal production from the early 16th until the mid-19th century, (vii) surface stabilization and formation of Regosols since the mid-19th century due to afforestation.