



## **Development of a spacious (pre- and proto) historic inland dune landscape in Lower Bavaria, Germany**

J. Voelkel, S. Doetterl, A. Schneider, M. Leopold and K. Huerkamp

Department of Geomorphology and Soil Science, Technical University Munich, Freising, Germany (geo@wzw.tum.de)

The dune fields in Bavaria are generally supposed to have been developed during the last glacial maximum (LGM). Derived from our research project new results show, that developing a real dune landscape Holocene and anthropogenic influences have been more important. Based on the geological field mapping of Bavaria, there are several areas of sanddrift and inland dune fields known all over the country, especially from Franconia. In the context of geo-archaeologic excavations on neolithic flintstone mining nearby in Arnhofen, the phenomena of glacial period aeolian sand accumulations got into the focus of geoscientific research into the region again.

In 2005 detailed geomorphologic research on the dune bodies were started. The basics of the stratigraphic composition of the dunes, the transition from dune bodies into thinner areas of sanddrift, a description of the dune basins, the shape of the dunes and their alignment could be compiled. Furthermore several dunes and sanddrift fields could be dated by means of OSL on sediments and radiocarbon dating on charcoals found in fossil soils.

The results show clearly, that the anthropogenic influence as enduring settlement, agriculture and forestry are of major importance for the development of the dune fields and their holocene phases of mobilization.

The sanddrift fields and inland dunes in the vicinity of the cities of Abensberg and Siegenburg (Lower Bavaria) developed in an area of transition from later tertiary delta deposits of the ancient Naab river system and pleistocene, complex structured gravels of the Danube River and the Abens River, which have changed their stream courses

several times during the quaternary. Besides alluvial gravels, the sanddrift and dune fields consist of tertiary sands of feldspar with high concentrations of mica from southern parts of Bavaria (Tertiary Hills of Lower Bavaria).

Beginning with the bronze age the dunes got mobilized again during phases of extensive clearing. There is evidence for these processes in form of several buried soils in the dune bodies. The most common dune forms in the region are longitudinal dunes with a great variety in altitude (up to 15 m of maximum height).

Open questions are related to the morphodynamic relevant wind field during times of dune mobilization (glacial and interglacial periods) and the concretization of the exact time of the mobilizations themselves and the causes for them.

Based on the works mentioned above, a complete description of the development processes of the dune fields and a characterization of different phases of the landscape evolution between the cities of Abensberg and Siegenburg is aspired.

High resolution landscape models have been created, based on field work and laser-scanning data. Resulting from geophysical prospections, selected dunes and the surrounding areas of sanddrift are structured according to different times and types of mobilization and characterized sedimentologically.