



## **Towards an inventory of historic charcoal production fields in Brandenburg, Germany**

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The historic production of charcoal is an important component of the late Holocene fire history for many landscapes. Charcoal production can have numerous effects on ecosystems, e.g., through changes in forest area and structure, or through the effects of pyrolysis, charcoal and ash addition to soils. To assess such effects, it is necessary to understand the spatial extent and patterns of historic charcoal production, which has so far hardly been approached for the Northern European Lowlands.

In the forefield of the open-cast mine Jänschwalde (north of Cottbus, Germany), archaeological excavations have revealed one of the largest charcoal production fields described so far. For this area, we applied and evaluated different methods for mapping the spatial distribution of charcoal kiln remains. Based on our results from this exceptionally well-described charcoal production field, we attempted to detect and map other large occurrences of charcoal kiln remains in the state of Brandenburg.

For the mine forefield, archaeological excavations provide certain and exact information on kiln site location and geometry. Using airborne laser scanning elevation models, the mapping of kiln sites could be extended to areas beyond the mine forefield, using a manual digitization for thorough mapping in forest areas north of Cottbus, and an automated mapping approach for detection of kiln sites for additional areas in Brandenburg. Potential areas of large-scale production were identified in a GIS-based analysis of environmental and historic data.

By manual digitization from Shaded Relief Maps, more than 5000 kiln sites in an area of 32 km<sup>2</sup> were detected in the Jänschwalde mine forefield. First results of mapping for larger areas indicate similar densities, but smaller diameters of kiln sites in other charcoal production fields; and show that charcoal production is a so far underestimated component of the land use history in many parts of the Northern European Lowlands.