

A Late-Glacial forest in the lignite mine of Reichwalde – An interdisciplinary project

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Since 1997 the „Landesamt für Archäologie Sachsen“ has been excavating a vast and very well conserved Late-Glacial pine and birch forest (c 14.000 YBP) in an open-cast lignite mine in Reichwalde (Oberlausitz, Saxony). Its discovery led to an interdisciplinary research project for the reconstruction of the climate, vegetation and landscape of Oberlausitz in the Late-Glacial, in which ecophysiologicals, geologists, isotope researchers, archaeologists, palynologists, vegetation historians and dendrochronologists collaborate. In this poster we present some dendrochronological aspects and the future aims of the project. In some parts of the moor, increasing water levels have resulted in the ideal environment for good preservation of wood. Since the Late-Glacial forest is situated in an area predestined for winning lignite, it was possible to excavate these sites on a large scale. This provided us with more than 2000 samples, which enhances the relevance of the dendro-ecological research. Based on the data of the trees already examined, we found that 87% of the pines were less than 110 years old and that only a few attained an age of 150 years or more. This is the typical age structure for regularly disturbed forests, e.g. fire-dominated forests, which implies that it has been frequently rejuvenated by fires. When we examine the anatomical features of the wood, we often find sudden decreases in tree-ring width, which can indicate a raise of the ground-water level. A combination of charcoal rests, overgrowing callous tissue, a decrease in tree-ring width and missing rings is known as a fire scar. Based on this feature, we made a local fire chronology (fig.1). Fire-events of 24 synchronized pines are marked with arrows. This chronology could not yet be fit onto the pine chronology of Central Europe, because the influence of the fires has been more important for tree growth than climate influence. However, age verification was achieved through 14 C-analysis (11890 ± 31 BP). The fire frequency of c 10-20 years is remarkably high.

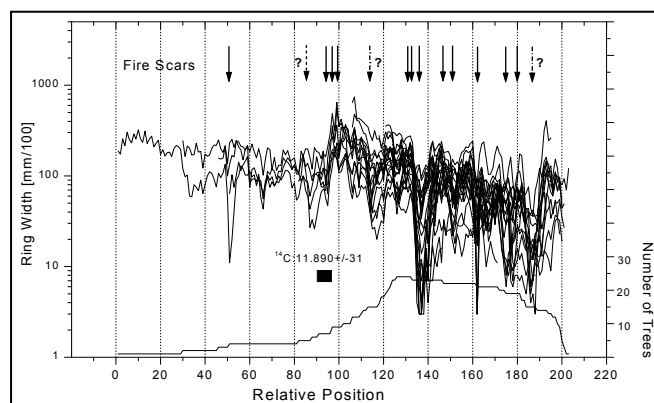


Figure 1: Late-glacial fire-chronology of the Reichwalde-Forest

In the next few years, the goals of this project are:

- Reconstruction of structure and composition of the late-glacial woods including their undergrowth (shrubs and herbs).
- Highly resolved climate reconstruction of the Late-Glacial in the Oberlausitz region by multiproxy data (palaeo-geography, stable isotopes, tree-ring width, pollen, botanical macrorests, modelling of the tree growth)
- Landscape and sedimentation history and their connection as a model for the Oberlausitz
- Testing recent ecophysiological relationships in other climate circumstances (late-glacial), in an era of high climate-fluctuation.
- Extension of the tree-ring-chronology and the tree-ring based ^{14}C -calibration in late-glacial

References

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