Abstract

This thesis presents an analysis of fossil plants from the Cenomanian Peruc-Korycany Formation of the Bohemian Cretaceous Basin and from the Bückeberg Formation of the Lower Saxony Basin in Germany. Based on earlier studies, both areas provide sediments that are considered to have developed in tidally influenced fluvial systems. Studied fossil plants are represented by ginkgoalean plant leaves (*Ertemophyllum*, *Tritaenia*), branches of conifers (*Frenelopsis*) and lauroid angiosperms (*Eucalyptolaurus*). *Frenelopsis*, *Eretmophyllum* and *Tritaenia* are considered to be halophytic plants, while Lauroid angiosperms were considered to grow in fresh water conditions.

The fossil plants were studied using cuticle analysis and two methods of stable carbon isotope analysis: Bulk carbon isotope analysis and Compound Specific Isotope analysis. For cuticle analysis samples were observed and documented macroscopically and microscopically.

To specify the environmental conditions, recent samples from three salt marshes in Great Britain were studied and analysed using the same methods as the fossil samples.

The data from all observations and measurements were processed and their interpretation supported the modelled environment based on the sedimentological data.

Frenelopsis were growing in a haline environment with low water availability, like today's *Halimione portulacoides*.

Pseudoaterophyllites grew in localities similar to today's localities of *Salicornia*, the pioneer zone of the salt marsh and microhabitats with both low and high water availability. It is interpreted as a plant with a good buffering ability which can grow in many various microhabitats.

Eretmophyllum is a tree which grew in a haline environment with low water availability and low change of salinity. It occupied similar habitats as *Frenelopsis*. Lauriod angiosperms grew in conditions of high water availability on the edges of river system, higher on the saltmarsh. As an alternative hypothesis of Lauroid angiosperms a model of mangrove-like environment is suggested, where the Lauroid angiosperms would grow directly on the sea shore. There, water availability is high in comparison with the more saline environments farther away from the sea shore.

Tritaenia from the Lower Saxony Basin in Germany is suggested to have grown in more fresh water ecosystems with good water availability. *Triteania* occupied the high marsh and was slightly salt tolerant.

Zonality of the salt marsh has been taken into account, but rather than precise zonation, the environmental conditions were specified for each studied fossil plant.

The data from the Compound Specific Isotopic Analysis brought further information about the environmental conditions and the method can be used as a new tool in palaeoreconstructions.