



Comparative study of three methods for palaeoclimate reconstructions based on fossil plant macro remains

Сравнително изследване на три метода за палеоклиматични реконструкции, базирани на фосилни растителни макроостанки

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Obtaining quantitative data about palaeoclimate characters using macrofossil plant remains is a question that has given rise to much controversy and different techniques has been developed in order to solve this problem. Many studies on the application of these methods were published and it's clear that there are differences in the way these techniques work when applied on different fossil macrofloras. Results can be influenced by some specific characteristics of the particular area and that's why each technique should be preliminarily tested. The present study purpose is to compare the palaeoclimate reconstruction potential of three methods for obtaining quantitative palaeoclimate data (Leaf Margin Analysis, CLAMP and Coexistence Approach) when applied to the composition of a particular fossil macroflora. The first and the second of these methods are based on the correlation

between some physiognomic characters of the leaves and the climate parameters and the last one is based on the assumption that fossil species and their nearest living relatives (or recent analogues) have identical ecological requirements. The three methods are based on different mathematical techniques so results are expected to vary within certain limits. It's known that these reconstruction methods could be influenced by factors not related to climate but they can produce consistent results. Such a comparative study is needed before using the obtained results for making interpretations. For this purpose we used the composition of the fossilflora of Baldevo Formation. Fossil materials were collected during the period of 1993 to 2007 from the flora bearing sediments of “Kanina” coal mine located between the villages of Baldevo and Ognyanovo (Gotse Delchev district – SW Bulgaria).