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**QUANTITATIVE BIOSTRATIGRAPHIC CORRELATION BASED  
ON FOSSIL MEGAFLORA FROM MACEDONIAN FORMATION  
OF DOBROUDJA COAL DEPOSIT - NE BULGARIA**

**Key words:** Quantitative methods. Biostratigraphic correlation. Data Base. Time - thickness relationships. Fossil megaflora. Transit taxons. Binary matrix. Cluster and R-mode factor analysis. Seriation analysis. Lateral tracking method.

**(S u m m a r y)**

A number of practical procedures of quantitative biostratigraphic correlation are developed. These methods are based on **2902** samples of fossil megaflora collected from **63** boreholes in sediments of **Late Carboiniferous** age in Dobroudja Coal Deposit. Data is presented in **dichotomous scale** and is commanded by relation data base. Fossil megaflora is presented by **105** species belonging to the divisions **Articulatae, Lycophta** and **Pteridophyllia**. The fossil megaflora samples are distributed according to Poisson's distribution. The theoretical riation between the formation time of sediments and their thickness is examined and presented by linear and nonlinear functions. An original heuristic model of biostratigraphic correlation is based on Werner's model by means of exclusive usage of transit taxons. Quantitative methods are applied in the context of the **strategies: multinomial - cluster and R-mode factor analysis; relationships - lateral tracking method; order - seriation analysis**. Associations (clusters) of taxons are groped through multinomial analysis. Their spatial interactions in sections is based on seriation analysis and shows in detail space sequences in biostratigraphic subzones.

**The main results could be summarized as following:**

1. The relationship time - thickness of sediments are described by nonlinear functions.
2. The procedures of cluster analysis using the coefficient of similarity as a measure of similarity are much more efficient than the ones using the coefficient of correlation.
3. Space relationships of transit taxons clusters detected by seriation analysis and showing in detail stratigraphic sequences in subzones allow carrying out of correct correlation procedures.
4. The methods referring to correspondences conception at certain fossil megaflora data provided and in regions with complex geological structure are more efficient than the methods referring to the conception of events.
5. The information obtained by quantitative methods allows reconstruction of phylogenetic relations between certain species of fossil megaflora.

**All computer programs in interactive microcomputer version for IBM PC, etc. could be received from the author.**

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