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DISCUSSION ON: NUMERICAL METHODS IN THE DEFINITION OF PALYNOLOGICAL ASSEMBLAGE ZONES IN THE LOWER KARROO (GONDWANA) OF RHODESIA

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by

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Subsequent to the publication of the above paper (in which a number of errata appeared) certain points of discussion have been raised regarding the interpretation of the single axis spatial ordinations. In particular delineation of the numerical assemblage zones based upon the spacings between the clustered groups has been in question. In order to understand fully the significance of these groupings the following points should be borne in mind.

The degree of resolution (or spacing) between, and the detailed associations within, these groupings have been seen to vary depending on the reference samples chosen. However, the overall pattern of major grouping of stratigraphically adjacent samples into the major microfloral biozones appears to occur repeatedly, irrespective of stratigraphic bias or distance, in high D_{jk} valued reference pairs.

Theoretically, these results may be explained as follows: the projections of the data onto different reference axes will provide different arrangements of the sample points. If, in fact, the data points *are* clustered into a number of broad groups in n-dimensional space, this clustering will be evident when the data is projected onto a number of different axes, although some projections will tend to highlight the clusters while others will tend to obscure them. If the same basic picture emerges from each axial projection (remembering that some of the clusters could overlap on some projections) then the observed clusters are likely to represent true clusterings of the data. This is the case in the present exercise, where in fact the reference pairs chosen herein do emphasize the clusterings of adjacent or associated samples with a maximum of resolution between them thereby highlighting the constant overall pattern seen in other reference projections.

The concepts may therefore be summarised as follows: the repeated clustering together of stratigraphically adjacent samples is regarded in this context as constituting a numerical biozone or unit. However, the delineation of such a group by means of spatial definition, although distinct in pairs with high D_{jk} values, must be regarded as a variable factor due to a certain degree of overlap on certain other projections.

The same philosophy and approach applies to the double axis ordination technique, with the exception that an added dimension may enhance the clusterings so far shown.