THE USE OF NON-MARINE PALYNOMORPHS AS CORRELATION TOOLS IN RAPIDLY-DEPOSITED LATE TERTIARY SEDIMENTS OF THE GULF OF MEXICO

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ABSTRACT

Rapidly-deposited late Tertiary sediments can pose significant correlation problems for the biostratigrapher using foraminifera or calcareous nannoplankton, as the abundance of marine organisms is often greatly diluted. In contrast, such sediments often contain abundant pollen and spores. This palynological population was collected by the proto-Mississippi and perhaps other rivers from a huge hinterland source area, probably comparable to that of the Mississippi drainage today. It therefore reflects a general floral population over a large region, and may be expected to record important fluctuations in constituent elements of the flora due to climate changes over time. A secondary overprint of physical sorting may also influence the relative distributions of certain forms.

Although not strongly useful as an age-dating tool (the vast majority of forms occurring in Miocene or younger strata represent parent plant types that still exist today), these palynomorph populations do show strong potential as tools for correlation based on quantitative analyses. Palynological "logs" can be produced using inexpensive standard spreadsheet software and various mathematical evaluation techniques. An example from the Pliocene offshore Louisiana demonstrates that numerous potential correlation horizons can be defined in a relatively brief time interval in a section in which standard marine microfossils are of little use owing to their scarcity.