

**AAPG Annual Meeting
March 10-13, 2002
Houston, Texas**

Michael D Simmons¹ (1) CASP, Cambridge University, Cambridge, United Kingdom

Biostratigraphic Recognition of Sea-Level Change and Sequence Stratigraphy in Middle East Mesozoic Carbonates

Microfossils and, to a lesser practical extent, macrofossils, provide valuable data to help identify and correlate key stratal events related to relative sea-level change.

At a gross level, in the Mesozoic, dominantly carbonate, succession of the Arabian Plate 37 approximately 3rd order maximum flooding surfaces have been recognised by a combination of biostratigraphic, wireline log and sedimentological characteristics. These are correlated within the framework of microfossil-based biostratigraphic zonations.

At a finer, parasequence/reservoir horizon scale, variations in biofacies permit the recognition of shallowing-up parasequences. Foraminifera and calcareous algae are relatively precise indicators of palaeobathymetry through their association with light dependence. Different genera of foraminifera and algae have different water depth associations and even the basic shape of foraminifera can be used as a palaeobathymetric guide. For example in the upper Thamama Group of NE Arabia, wackestones with flat orbitolinids and Everticyclammina, pass up into wackestones with conical orbitolinids and Buccicrenata, in turn passing up into dasyclad and miliolid rich packstones. This represents a simple shallowing up parasequence. These parasequences can be used as a tool for correlation and their stacking patterns as a means of defining systems tracts and larger sequences.