Computer-assisted Interpretation of Depositional Palaeoenvironments Based on Foraminifera

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In Sarawak Shell's Geological laboratory, well samples are analysed in part for their foraminiferal content and this information is used for interpreting the depositional environment as well as the age where possible. This paper addresses the former usage of foraminiferal data.

Recognition of the palaeoenvironments in samples of well sections is mainly based on the presence/absence and frequency of particular benthonic foraminifera which are considered to reflect the depth and nature of their living environment. Other guidelines used are the planktonic/benthonic ratio as well as species diversity.

The large number of species found in this area (~1,500) and the uniqueness that each sample assemblage possesses in terms of species content, frequencies, diversity and preservation, make objective and consistent interpretations of depositional palaeoenvironments a difficult task. The problem is accentuated when interpretations are made by several investigators since personal concepts and criteria tend to be developed in addition to established ones depending on the knowledge and experience of particular investigators.

With the aim of minimising the subjectivity involved and of attaining a consistent basis for interpretations, cluster analysis, environmental range charts, identification matrices and a set of interactive programs have been worked into a scheme which enables probabilistic computer-assisted interpretation to be carried out on samples utilising the presence or absence of species. Results are listed with their corresponding probability values and aid the investigator in making consistent environmental interpretations.

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