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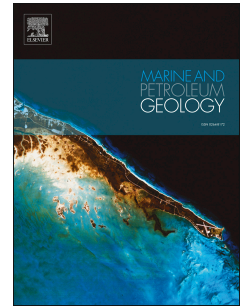
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**The use of cyclic stratigraphic pattern of peridinioid and gonyaulacoid dinoflagellate cysts in differentiating potential thick monotonous carbonate reservoirs: a possible ecostratigraphic tool under test**

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**Abstract**

The current work used the conventional peridinioid-gonyaulacoid ratio (P/G) to devise a new concept of dinoflagellate cyst zonation called the dinoflagellate ecological zone (DEZ), which is based here on the peridinioid ecological zone (PEZ) and gonyaulacoid ecological zone (GEZ). The PEZ and GEZ were used successfully to further divide the thick monotonous carbonate succession (mid-Cenomanian to Campanian) in Q-72-1X well in the Eastern Desert of Egypt into smaller ecozones. PEZ and GEZ are practical and easy to use in subdividing large conventional biozones of the carbonate reservoirs into distinguishable, smaller ecozones when a finer resolution is necessary on a reservoir scale for production demands. This tool is suggested to be used in the hydrocarbon exploration industry with minimum knowledge of the taxonomy of the dinoflagellate cysts. The proposed PEZ and GEZ are related to local ecological conditions within the basin/hydrocarbon field (i.e. can be traced out laterally in an intra-basinal scale). This tool can be applied to any carbonate reservoirs in any petroliferous basin worldwide.

Moreover, the P/G ratio, the relative abundances of the dinoflagellate cyst assemblages and other palynological parameters were used successfully to reveal the palaeodepositional settings of the identified PEZ and GEZ. Alternating, transgressive and regressive phases were identified, although a dissimilar species composition is observed in each of these ecozones. Environments were interchanging between the regressive, marginal marine to proximal inner neritic and the transgressive, distal inner to middle shelf settings. Three peridiniacean dinoflagellate cyst peaks were recorded, the middle Cenomanian *Subtilisphaera* peak, the middle Coniacian *Isabelidinium*, *Chatangiella*, and *Manumiella* peak, and the middle Santonian *Isabelidinium* peak.

**Keywords:** Upper Cretaceous; dinoflagellate cysts; biozones; ecozones; reservoir; stratigraphy; Eastern Desert, Egypt.

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