

Geobody Modelling Using Seismic Attributes and Multi-Point Geostatistics in Fluvial and Coastal Plain Environments in the Kharita, Bahariya and Abu Roash Fm (Albian-Coniacian, Egypt)

By

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Abstract

For Geobody and facies modelling, the ideal objective is to generate a model that has a consistency to the reality with respect to geological shapes and their facies architecture. The combination of 3D seismic attributes volumes with Multi Point (geo) statistics (MPS) algorithm is a powerful technique to reproduce sedimentary models.

The workflow presented in this study was conducted in the Albian-Coniacian succession of the Alamein basin (Western Desert, Egypt), conformed by the Bahariya, Kharita and Abu Roash formations, they were deposited during and overall transgressive setting, from fluvial to shallow marine environments. The ocean oscillation had a profound influence on the sedimentation of the interval.

In this study physical and geometrical 3D seismic attribute volumes were generated, showing different outcomes depending on the impedance contrast. The results were integrated with well data using the MPS algorithm in order to construct a facies model. The MPS uses a training image which delivers the relationship and occurrence of the sedimentary facies, for this case the seismic facies provide this relationship, they offer the channel morphology and facies types currently being deposited. A facies model was made in the most suitable interval, the Abu Roash G member. The model shows the evolution through time of the carbonate platform and its transition to a coastal plain setting.