



Linking diagenesis to depositional facies and sequence stratigraphy enables better prediction of reservoir quality evolution in sandstones

Osama Hlal (1) and Ali Tekbali (2)

(1) University of Tripoli, Faculty of science, Geology Department, Tripoli, Libya (osama.hlal@gmail.com), (2) University of Tripoli, Faculty of science, Geology Department, Tripoli, Libya (atekbali@yahoo.com)

Linking diagenesis to depositional facies and sequence stratigraphy enables better prediction of spatial and temporal distribution of diagenetic alterations, and thus of evolution of reservoir quality in sandstones. The employment of this approach is possible because depositional facies and sequence stratigraphy can provide useful information on parameters controlling the near-surface diagenesis, such as changes in: (i) pore-water chemistry, (ii) residence time of sediments under certain geochemical conditions, (iii) detrital composition and proportion of extra- and intra-basinal grains, and (iv) types and amounts of organic matter.

It is therefore proposed here, based on studies of several siliciclastic sequences and literature survey that integrating depositional facies and sequence stratigraphy to diagenesis provides a powerful tool to better understand and predict the impact of early diagenetic alterations on reservoir quality evolution of sandstones, particularly along key sequence stratigraphic surfaces and within systems tracts. These early diagenetic alterations will then determine the reservoir quality evolution pathways during deep-burial diagenesis.