

## **Effects of Eustasy on the Facies and Sedimentary Environment of the Lower Cretaceous Deposits in the East of Kopet Dagh, NE Iran**

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Global sea level rise events in the Aptian-Turonian have been more important than other stages in the Phanerozoic. In order to study the effects of eustasy on the sedimentary system, the Lower Cretaceous deposits were investigated in the East of Kopet Dagh (NE Iran). The sedimentary succession (Neocomian-Albian) consists of the Shurijeh, Tirgan, Sarcheshmeh and Sanganeh formations. This interval overlies on a well known unconformity and starts with the clastic and evaporitic facies of the Neocomian (Shurijeh Fm.) then follows with shallow-water carbonates and marls of the Barremian-Early Aptian (Tirgan Fm), Early-Middle Aptian deep-water grey to dark grey argillaceous limestone and marl (Sarcheshmeh Fm) and the Late Aptian- Albian dark grey shale, silty shale and sandstone interbeds (Sanganeh Fm). A comparison made between the curves of facies and global sea level changes show that, the Lower Cretaceous facies are very coincide with the global sea level variations. This interval represents a deepening trend up to Albian and then shallowing trend onwards. Green-house event in the Cretaceous period which has been caused by increasing the rate of sea floor spreading was the main reason of increasing the amount of CO<sub>2</sub> in atmosphere. The lack of oxygen has caused an anoxic environment in deeper part of sea and grey to dark grey shale have been deposited (Sarcheshmeh and Sanganeh fms.). This study reveals that minor extinction in Early to middle Aptian corresponded with grey argillaceous limestone and dark grey shale deposition. In dark sediment of this part, intense decrease or lack of foraminifera especially planktonic foraminifera are observed. This study reveals that although tectonic setting, rate of uplift/subsidence and carbonate production influence on facies distribution but efficiency of eustasy has been more impressive.

**Key words:** *Eustasy, Sedimentary environment; Facies, Lower Cretaceous, Aptian, Albian*