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Characterization of the Late Barremian in north central Tunisia: is it a prelude to the oceanic anoxic event 1a?

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Abstract

The Late Barremian-Early Aptian of the Jebel Serdj was studied in detail regarding to lithology, microfacies, mineralogy and geochemistry in order to reconstruct the paleoenvironmental change of the Pre-Selli Event. The studied section is about 37 m-thick and it is consisting of limestone and marlstone interbeds spanning the latest Barremian-Early Aptian.

During the latest Barremian, kaolinite/illite intensity ratios show high values possibly indicating a warming trend followed then by decreasing values that may indicate a cooling trend. During the Early Aptian, this cooling trend is reverted into humid/warming trend during the Selli event.

During the Late Barremian, the low abundance of Ti/Al and K/Al ratios and the enrichment of some elements such as Ba, Cu and Ni suggests that the studied section is characterized by a high productivity, and a minimal detrital inputs.

During the Late Barremian, the $\delta^{13}\text{C}$ increases sporadically and is associated with enrichments in some redox-sensitive indices U/Th, V/V+Ni, Ni/Co and V/Cr indicating the presence of intermittent dysoxic to anoxic conditions.

Keywords: Petrography, mineralogy, major and trace elements, carbon and oxygen isotopes, paleoenvironment.

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