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Houda Khaled, Fredj Chaabani, Frederic Boulvain, Mouez Mansoura

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

KHALED Houda*[,a], CHAABANI Fredj[a], BOULVAIN Frederic[b], MANSOURA Mouez[c]

[a] Département de Géologie, Faculté des Sciences de Tunis, Université de Tunis El Manar, 2092 Tunis, Tunisie

[*]**Auteur correspondant, Adresse e-mail: houd.kha32@yahoo.fr**

[b] Pétrologie Sédimentaire, B20, Université de Liège, Sart-Tilman, Liège, Belgium

[c] Office National des Mines, 24 Rue de l'énergie, 2035 La Charguia- Tunis, Tunisie

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 $\delta^{13}C$ 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.