Accepted Manuscript

Campanian-Maastrichtian paleotemperature and paleodepth changes along Tethyan transect, North Sinai, Egypt

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PII: S1464-343X(18)30079-7

DOI: 10.1016/j.jafrearsci.2018.03.019

Reference: AES 3171

To appear in: Journal of African Earth Sciences

Received Date: 18 October 2017
Revised Date: 10 March 2018
Accepted Date: 14 March 2018

Please cite this article as: Hassan, H.F., Nassif, M.S., Campanian-Maastrichtian paleotemperature and paleodepth changes along Tethyan transect, North Sinai, Egypt, *Journal of African Earth Sciences* (2018), doi: 10.1016/j.jafrearsci.2018.03.019.

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ACCEPTED MANUSCRIPT

Campanian-Maastrichtian paleotemperature and paleodepth changes along Tethyan transect, North	1
Sinai, Egypt	2
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	6
ABSTRACT	7
Planktic foraminiferal analyses of the Campanian-Maastrichtian sediments from four sections a long a	8
Tethyan transect in north Sinai, enabled to recognize twelve planktic foraminiferal zones and subzones	9
ranges from CF11 to CF1, in addition to Globotruncanita elevata Zone. The planktic morphotypes were	10
basically subdivided into three groups, Deep taxa (DT), Surface taxa (ST) and subsurface e Taxa (SsT) to	11
provide insights into paleotemperature changes. Q-mode cluster analysis as well as the relative dominance	12
of planktic groups revealed the recognition of long term warming in the Campanian with warmest interval	13
in Globotruncana ventricosa. Whereas minor cold events intervened at 80, 78.4, 75.4, 73.6 and particularly	14
at 72 Ma indicates the Campanian/Maastrichtian boundary. The Maastrichtian (CF7-CF1) were	15
characterized by successive warm-cool intervals superimposed on long term cooling, the late Maastrichtian	16
(CF3-CF1) in particular, is characterized by alternate warm cold interval, where the last event was cooling,	17
prior to K/T boundary. The Campanian- Maastrichtian paleodepth in North Sinai indicate that the cooling	18
event much consistent with regression phases and equivalent to global eustasy whereas, the warm interval	19
is consistent with the transgression phases. It is concluded that the late Maastrichtian was much controlled	20
with local tectonics since CF3 and prior the K/T boundary.	21
Keyword; Campanian- Maastrichtian; planktic morphotypes; paleodepth; paleotemperature; North Sinai;	22
Egypt.	23
1. Introduction	24
Planktic foraminifera form the basis of many marine biostratigraphic zonations in the Cretaceous and	25
Tertiary intervals (e.g., Caron, 1985; Bralower et al., 1995). The evolution of planktic foraminifera from	26
the Turonian to the Maastrichtian were characterized by an increasing richness of species and	27
morphological complexity (Hart, 1999; Premoli Silva and Sliter, 1999). Paleotemperature analysis	28
encountered two approaches, the isotopic ratios analyses (O and C) have updated Mesozoic and Cenozoic	29
paleoclimatology and paleoceanography (Barrera and Huber, 1990; Barrera, 1994; Barrera et al., 1997; and	30
Li and Keller, 1998a; Clarke and Jenkyns, 1999 and Huber et al., 2002). Caron and Homewood (1983) and	31

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