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Paleoenvironmental perturbation across the Cenomanian/Turonian boundary of the Kopet-Dagh Basin (NE Iran), inferred from geochemical anomalies and benthic foraminiferal assemblages

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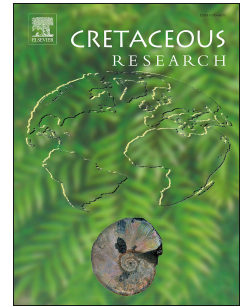
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1 **Paleoenvironmental perturbation across the Cenomanian/Turonian boundary of the**
2 **Kopet-Dagh Basin (NE Iran), inferred from geochemical anomalies and benthic**
3 **foraminiferal assemblages**

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14 **Abstract**

15 A Cenomanian/Turonian boundary succession in the northeastern Tethyan realm, Kopet-Dagh
16 Basin in NE Iran, was studied to examine the effects of biological productivity, atmospheric CO₂
17 concentration, and sea water temperature on the benthic foraminiferal assemblages. Our $\delta^{13}\text{C}_{\text{carb}}$
18 and $\delta^{13}\text{C}_{\text{org}}$ chemostratigraphy of the Gharesu section reveals three positive peaks that can be
19 correlated with carbon isotope peaks in the CTB reference sections (Eastbourn, England; Pont
20 d'Issole, France; Rock Canyon, USA). Two intervals of suspected high sea surface temperature
21 were distinguished according to $p\text{CO}_2$ maxima ($\Delta^{13}\text{C}$; difference between $\delta^{13}\text{C}_{\text{carb}}$ and $\delta^{13}\text{C}_{\text{org}}$),
22 low $\delta^{18}\text{O}$ values, and high TOC bearing deposits. These intervals are followed by falling $p\text{CO}_2$
23 and cooling caused by enhanced burial of organic matter into the sediments. Patterns of changes
24 in the benthic foraminiferal assemblages are correlated with these climatic changes. Warm
25 intervals are characterized by low diversity of benthic foraminifera, dominance of agglutinated
26 forms, and high abundance of infaunal morphogroups or opportunistic epifauna due to

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