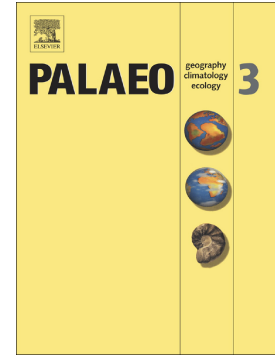


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The Cretaceous-Paleogene transition at Galanderud (northern Alborz, Iran): A multidisciplinary approach

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Abstract

We investigated the Cretaceous-Paleogene (K/Pg) transition at the Galanderud section, northern Alborz (Iran) to identify the pattern of mass extinction of planktic foraminifera and to unravel the associated paleoenvironmental changes in a little-studied area of the eastern Tethys. We applied a high-resolution quantitative and multidisciplinary study based upon benthic and planktic foraminiferal assemblages, clay mineralogy, rock magnetic properties, stable isotopes, and geochemistry. In this section, the K/Pg boundary is marked by an abrupt change in lithology from marl to a clay boundary layer, a marked decrease in magnetic susceptibility, a negative 2.2‰ $\delta^{13}\text{C}$ excursion, and a peak in iridium. In the uppermost Maastrichtian, foraminifera are well preserved and diversified suggesting a stable, mesotrophic environment. By contrast, the K/Pg boundary and basal Danian is marked by high values of epifaunal benthic morphogroups, low planktic diversity, and high percentages of opportunistic species (*Guembelitra cretacea* and *Cervisiella operculata*) suggesting highly stressed and variable conditions, partly due to the dramatic collapse of calcareous primary producers. Benthic foraminiferal assemblages indicate outer neritic-uppermost bathyal depths with slight bathymetric variations. The most peculiar and unique aspect of the Galanderud section is the occurrence of the three thin chalk layers interbedded within clays above the K/Pg boundary, each marked by positive shifts in $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ values, and consisting of more than 80% carbonate. We propose that the chalk/clay deposits in the basal Danian reflect changes in seawater chemistry and dynamic changes in

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