

## **Sedimentological, stratigraphical and mineralogical evidence of the Cretaceous/Tertiary (K/T) boundary in the carbonate sequences of the Akveren Formation, western Black Sea, Kandira, Turkey**

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The Cretaceous/Tertiary transition was recovered within the carbonate sequences of Akveren Formation which is deposited in the platform edge and the deep marine environments near the Kandira town of Kocaeli city. The transition was determined on a 22 m stratigraphic section in a stone quarry. The investigated section shows a continuous carbonate sedimentary sequence. The measured sequence ranges in age from late Maastrichtian to early late Paleocene.

The K/T boundary is marked by the extinction of Cretaceous planktic foraminifera and the first appearance of globigerinid forms of early Paleocene age. Biostratigraphic investigations on the studied section revealed faunal assemblage of late Maastrichtian represented by *Racemiguembelina fructicosa*, *Pseudotexularia elegans*, *Globotruncanita conica*, *Globotruncanita stuarti* and that of Paleocene represented by *Parasubbotina pseudobulloides*, *Praemurica uncinata*, *Globanomalina compressa*.

Sedimentologically, the section changes from grainstone facies to packstone and wackestone facies of late Maastrichtian age (first 10 m of the section). Just above the K/T boundary, a 7 m thick wackestone/packstone sedimentary facies is followed by a 1 m thick dark red-colored carbonate conglomerate facies. These carbonate conglomerates include silicified gravels embedded in green-red colored clay matrix. The XRD analyses show that the matrix is composed of clay minerals of smectic group, as for silicified gravels quartz, goetit and koezite minerals. This carbonate conglomerate facies is followed by litho-bio calcarenite facies. The litho-bio calcarenites also include small glass globes ranging from 600 µm to 1 mm in size. Totally 2 m thick carbonate conglomerate and litho-bio calcarenites succession is overlain by a 3 m thick sandy, silty wackestone/packstone facies including chert lenses and nodules. The succession is ended by clayey limestones.

The findings in this study were compared with the carbonate deposits and facies in Mexico, Guatemala, Belize, Haiti and Brazil where the K/T transition had been studied. So the glass globes and silicified nodules identified in early Paleocene age (upper part of the studied section) are very similar to externally-originated 'spherules and tektites'. These findings as well as the presence of critical minerals such as smectic and koezite should be considered that a global effect of the asteroid impact at the K/T boundary is also seen in Turkey.