



The lacustrine record of the Dan-C2 hyperthermal event of the Boltysch Impact Crater, Ukraine

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Vegetation response to rapid climate change in the geological record is a fundamental element in our understanding of ancient environments; however, the relationships between climate change, plant ecosystems and geological processes are still not fully understood. The filling of the K/Pg Boltysch meteorite crater, Ukraine, comprise a complete terrestrial sedimentological, palynological and $\delta^{13}\text{C}$ record of the negative carbon isotope excursion of the early Danian hyperthermal episode.

The meteorite impact formed a crater of c. 24 km in diameter at c. 65.2 Ma, which was filled with more than 500 m of organic- and fossil-rich claystones, siltstones and marls, interbedded with sandstones and less frequently gravelly sandstones. The sedimentary succession indicates a deep lake setting that was characterised by fluvial input of reworked basement material via a marginal delta system. Palynological investigations indicate a post-impact early- to mid-successional flora followed by a barren zone which coincides with the age of the Chicxulub impact and therefore argues for a series of impact events at the K/Pg boundary. This barren zone was succeeded by a fern spike marking an initial plant re-colonization. The following palynoflora suggests moisture availability oscillations (MAOs) reflecting 41 k.y. obliquity cycles, which can be correlated with lithological fluctuations during lake evolution.

The aim is to conduct a detailed, complete facies analysis, and to correlate lake evolutionary aspects with climatic oscillations and vegetation change within the catchment area. This study will be compared with records of similar hyperthermal events, such as the Paleocene-Eocene Thermal Maximum (PETM) in the Western Interior in North America. This integrated approach will help to better understand the controlling factors of global warming events, and their effects on ancient sedimentary environments and ecosystems.