



## **Mercury anomalies across the Cretaceous-Paleogene mass extinction in northern China: Links to Deccan volcanism and palaeoecosystem impacts**

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The Cretaceous-Paleogene boundary (KPB) mass extinction is commonly attributed to both the Deccan Traps volcanism and Chicxulub impact, although the exact mechanism is still controversial, the mercury (Hg) as a new proxy could help us to better interpret the relationship between large igneous provinces and mass extinctions. Here we present new Hg geochemical data from the terrestrial Songliao Basin, northern China. Our results show one significant Hg concentration anomaly which occurred  $\sim 120$  ky before the Chicxulub impact, is temporally corresponding to the second (main) phase of Deccan eruptions with maximum eruption rates and high losses of charophytes and ostracods in the Songliao Basin. There is no correlation between the Hg concentration and total organic carbon (TOC) & clay content, which suggests that the Hg anomaly was potentially caused by volcanic activities. We therefore suggest that the Deccan Traps volcanism triggered the latest Cretaceous warming  $\sim 300$  ky prior to the Chicxulub impact and then the initial KPB mass extinction  $\sim 120$  ky prior to the Chicxulub impact. We also speculate that the brief eruptions with extreme eruption rates (e.g.  $\sim 66.1$  Ma) would be tend to heavily disturb the ecosystem than those long-term eruptions with limited intensities (e.g.  $\sim 66.3$  Ma).