



## **Timing and Paleoenvironmental Implications of Deccan Volcanism Relative to the KPg Extinction**

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Several studies evaluated the relationship between Hg anomalies in sediments and LIP activity across mass extinction horizons. The bulk (80%) of Deccan Traps eruptions occurred over a relatively short time interval in magnetic polarity C29r. U-Pb zircon geochronology reveals the onset of this main eruption phase 250 ky before the Cretaceous-Tertiary (KT) mass extinction and continued into the early Danian suggesting a cause-and effect relationship. Maximum eruption rates occurred before and after the K-Pg extinction, with one such pulse initiating tens of thousands of years prior to both the bolide impact and extinction.

We present the first comprehensive high-resolution analysis of Deccan Traps Hg loading, climate change and end-Cretaceous mass extinction from a transect, which includes 25 sections deposited in both shallow and deep environments. In all sections, results show that Hg concentrations are more than 2 orders of magnitude greater during the last 100ky of the Maastrichtian up to the early Danian P1a zone (first 380 Ky of the Paleocene). These Hg anomalies are correlative with the main Deccan eruption phases. In several section, the highest Hg anomalies correlate with high shell fragmentation and dissolution effects in planktic foraminifera indicating that paleoenvironmental and paleoclimate changes drastically affected marine biodiversity especially during the last 25 ky preceding the KPg. These observations provide further support that Deccan volcanism played a key role in increasing atmospheric CO<sub>2</sub> and SO<sub>2</sub> levels that resulted in global warming and acidified oceans, increasing biotic stress that predisposed faunas to eventual extinction at the KPg