

## THE TEMPO OF THE DECCAN TRAPS FLOOD BASALTS RELATIVE TO THE END-CRETACEOUS MASS EXTINCTION

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Understanding the potential role of flood basalt volcanism in mass extinctions requires high-resolution eruption rates, from which inferred volcanogenic volatile fluxes such as CO<sub>2</sub> and SO<sub>2</sub> may be compared to biostratigraphic/environmental proxy records. We have determined the tempo of Deccan Traps volcanism across the Cretaceous-Paleogene boundary by applying ID-TIMS U-Pb zircon geochronology to ash-bearing paleosol horizons between basalt flows.

We have produced a record of ~25 dates spanning >90% of Deccan Traps stratigraphy with uncertainties typically <±50 kyr (2σ). These data are used to test existing regional stratigraphic correlations and build an age model for the Deccan eruptions. Volume estimates of each formation permit a probabilistic calculation of eruption rates across the ~700 kyr history of Deccan eruptions.

Our results indicate the Deccan erupted in 4 major pulses of ~100-150 kyr each, with pulses observed both before and after the main extinction phase and the Chicxulub bolide impact. Large uncertainties in volume estimates, volatile content and regional stratigraphic correlations hinder quantitative estimates of volatile release. However, new global Hg records from numerous stratigraphic sections broadly correlate positively with our Deccan eruptive model, corroborating both the accuracy of the eruption age model and the use of Hg as a proxy for volcanic eruptions.