



Deciphering the magnetic and mineralogical record of the Deccan Traps at the Cretaceous-Paleogene boundary of the Zumaia section, Basque-Cantabric basin (Spain)

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The Deccan Traps Magmatic Province coincides with the Cretaceous-Paleogene (KPg) boundary and probably contributed to the associated mass extinctions by inducing rapid and abrupt climate changes, including continental and superficial seawater acidification. However, how such environmental acidification is expressed in the marine sedimentary record is still poorly constrained. Recent environmental magnetic studies of the Bidart (France) and Gubbio (Italy) sections proposed new benchmarks to identify the Deccan Traps fingerprint in the marine sedimentary record, namely anomalous concentration in mercury, presence of akagenéite (a Cl-rich oxy-hydroxide forming in hyper-chlorinated and acid conditions) and the loss of detrital and biogenic magnetite by acid reductive dissolution. Here we test this scenario on the Zumaia section, Spain, a reference KPg section cropping out in the Basque-Cantabric basin. Our results confirm the presence of an iron-depleted interval located just below the KPg boundary, similarly to Bidart and Gubbio, and which contains significant amounts of akagenéite grains as well as high content in mercury. These results consolidate the use of the previously cited benchmarks to identify environmental and climate changes induced by the Deccan volcanism. It also suggests that the main eruptive Deccan phase began just before the KPg extinction, reinforcing its contribution in the KPg mass extinction.

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