
Paleoenvironmental signature of the Deccan Phase-2 eruptions

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Résumé

The environmental impact of the Deccan trap volcanism is poorly understood as yet. The paucity of geological markers that can unambiguously be attributed to the Deccan volcanism and the temporal coincidence of the volcanism with an asteroid impact make evaluation of volcanic contribution to the end Cretaceous mass extinction difficult. Here we briefly review environmental proxy records of two reference Cretaceous-Tertiary boundary (KTB) sections, Bidart (France) and Gubbio (Italy). In both sections, a change in colour of sediments located just below the KTB is systematically associated with very low values of (low-field) magnetic susceptibility (MS). Rock magnetic characteristics suggest that the decrease in MS values results from the loss (dissolution) of ferrimagnetic mineral in this intervals. In addition to the characteristic change in magnetic assemblage, akaganeite (chlorine-bearing iron oxyhydroxide) is commonly observed under the scanning electron microscope in the low MS intervals at Bidart and Gubbio, but has never been detected in the remaining sedimentary successions. We suggest that the association of granular akaganeite and iron oxides dissolution features can be explained by an ocean acidification and aerosol deposition event linked to the Deccan Phase-2 volcanism.

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