Geophysical Research Abstracts
Vol. 16, EGU2014-8896-2, 2014
EGU General Assembly 2014
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Environmental magnetism of KT sections worldwide: unravelling the imprint of Deccan Phase 2

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The Deccan Phase 2 is a potential trigger of the Cretaceous-Tertiary (KT) mass extinction but its contribution has been hampered by the lack of sedimentary marker in marine section where the iridium anomaly is generally identified. Recently, aeolian akaganeite has been found at Bidart (Biscay) and Gubbio (Tethys), in stratigraphic levels located just below the KT boundary and correlated to the Deccan Phase 2. Here we conducted an environmental magnetic study of several KT sections worldwide (Bidart, Uruxa, Sopelana, Gubbio and India) in order to study paleoenvironmental and paleoclimatic changes during the Deccan Phase 2. In Bidart and Gubbio, our results confirmed the presence of the low magnetic susceptibility interval coincident with the presence of akaganeite and show that it well corresponds to a loss of detrital magnetite. In Uruxa and Sopelana (Basque Country), results are inconclusive, probably due to the tectonic deformation and chemical alteration that affected the area. In the continental (lacustrine) sediments interbedded within the Deccan lavas, higher weathering rates are observed in the Podgawan section (Phase 2) and inferred from the presence of more than four magnetic phases identified after unmixing Isothermal Remanent Magnetization curves.

Key-words: Deccan, environmental magnetism, mass extinction, KTB