Geophysical Research Abstracts
Vol. 17, EGU2015-9330-1, 2015
EGU General Assembly 2015

Evidence of volcanic induced environmental stress during the end-Triassic event

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The end-Triassic biotic crisis is generally explained by massive input of CO_2 and/or methane to the atmosphere linked to the formation of the Central Atlantic Magmatic Province. Such massive volcanism can be compared to industrial pollution releasing large amounts of the greenhouse gases CO_2 and SO_2 to the atmosphere. Indeed, the fossil record provides evidence of major perturbations in the δ^{13}C-record of both calcareous and organic material. In the marine realm loss of calcifying organisms provides evidence of ocean acidification due to the increased pCO_2, while in the terrestrial realm physiological responses in fossil plants indicate intense global warming across the Triassic-Jurassic boundary. Changing climatic conditions is further indicated by charcoal records from Greenland, Denmark, Sweden and Poland showing increased wildfire activity. Increased reworking of palynological material and marked changes in fluvial style in terrestrial successions seem to indicate an increased hydrological cycle. Here we examine and compare two proxies, Mercury and palynology, that may both, each in their own way, indicate volcanic induced environmental stress. Mercury (Hg) is one of the most toxic elements on the planet, with volcanic emissions being the largest natural input to the Hg-cycle. The temporal distribution of Hg in relation to organic matter can provide evidence of atmospheric Hg loading on the marine ecosystem. In the terrestrial realm, pollen and spores are known to be sensitive bioindicators of atmospheric pollution and environmental stress. Quantitive abundances of aberrant, and thus probably non-viable, pollen and spores are often used to assess environmental impact on polluted sites today. We present, compare and discuss Hg and aberrant spore/pollen records from the stratigraphically well-constrained Triassic-Jurassic boundary succession at Stenlille in the Danish Basin, and the possible impact of these data on the interpretation of events during end-Triassic biotic crisis.