Geophysical Research Abstracts,
Vol. 10, EGU2008-A-02506, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-02506
EGU General Assembly 2008

Stomatal frequency analysis and carbon isotope stratigraphy from the Germanic Basin: changing CO_2 levels during the end Triassic

M. Ruhl, N.R. Bonis and W.M. Kürschner

Palaeoecology, Institute of Environmental Biology, Faculty of Science, Utrecht University, Laboratory of Palaeobotany and Palynology, Budapestlaan 4, NL-3584 CD Utrecht, the Netherlands (m.ruhl@uu.nl)

The Triassic-Jurassic transition is a period of major biotic turnovers in both the marine and terrestrial realm. This period is characterized by significant perturbations of marine carbon records in Europe and North America. These perturbations are thought to be related to changes in the global carbon cycle, which result from massive input of CO_2 during deposition of the Central Atlantic Magmatic Province, the largest igneous province on earth.

The relationship between large fluctuations in shallow marine carbon records and changes in the global carbon cycle can be equivocal. We present organic carbon isotope data from terrestrial records in the Germanic Basin that show a similar isotope signature as in established marine records, with distinct negative shifts of up to 5 per mille. Turnovers in end-Triassic palynological and paleobotanical records indicate changing climatic conditions on land. A major increase of pCO_2 values up to 2400 ppmv, is evident from stomatal frequency analysis on leaves from several plant species. In this study we present stomatal frequency analysis data from leaves of a single plant species, *Lepidopteris ottonis*. Fossil leaves of this extinct seed fern were collected from three stratigraphically different organic rich levels in a single outcrop in the Germanic Basin. Decreasing stomatal index values indicate rising CO_2 concentrations in the transition to the Jurassic that are probably related to CAMP volcanism.