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Abrupt and gradual vegetation changes associated with Toarcian global change inferred from high resolution palynological study of the Korsodde section on Bornholm (DK)

J. Wade-Murphy (1), W.M. Kuerschner (1), S.P. Hesselbo (2)

(1) Laboratory of Palaeobotany and Palynology, Section Palaeoecology, Utrecht University, Budapestlaan 4, 3584CD, Utrecht, The Netherlands, (j.wade-murphy@students.uu.nl), (2) Department of Earth Sciences, University of Oxford, Parks Road, Oxford OX1 3PR, UK

The negative carbon isotope excursion of Early Toarcian sediments has been related to carbon cycle perturbations that correlate with crises among the marine biota. Still, very little is known about the response of the continental ecosystem despite contemporaneous large scale volcanism. Here, we present a high-resolution palynological study of a bio- and chemostratigraphically well constrained shallow marine section on Bornholm (DK). Our results reveal the regional vegetation history during the time period of the marine ecological crises. Preceding the negative C isotope-excursion pollen assemblages are dominated by Taxodiaceae pollen types such as *Perinopollenites* and *Cerebropollenites* associated with Cycad pollen types (*Chasmatosporites*, *Cycdopites*). At the start of the initial C isotope shift these pollen assemblages are replaced by spore dominated associations indicating a higher abundance of ferns, tree-ferns and lycophytes. The changes may be the result of a long-term increase in humidity. An abrupt increase in *Corollina* accompanied by *Spheripollenites* coincides with the main negative C isotope shift. It indicates a sudden warming associated with a change from a wet fern dominated landscape to seasonal dry Cheirolepidiaceae dominated vegetation. Our preliminary results show evidence for significant changes in the land plant community contemporaneously occurring with the ecological crises in the marine realm. Our results imply that the mechanisms that were involved must have affected synchronously both the marine and continental ecosystems and favors a primary role for large-scale volcanism in the Toarcian. Subsequently, C-isotope perturbations may be

the result of palaeoceanographic events in an already unstable system.