This study deals with spore-pollen assemblages from two successions located in the northwestern Tethyan realm, both covering the positive Valanginian $\delta^{13}C$ shift. Study sites are located in the basinal part of the Vocontian Basin, SE France (30°N paleolatitude), and the central part of the Polish Trough, central Poland (40°N paleolatitude). During the Early Cretaceous the Polish Trough was part of the Carpathian seaway, which connected the Boreal with the Tethyan realm. The distance between the two sites is ~1000 km. Stratigraphic correlation is based on nannofossils and chemostratigraphy.

The assemblages from both localities show many similarities in terms of composition, diversity and abundances of taxa. Both are dominated by conifer pollen like *Callialasporites* and *Araucariacites*, and fern spores like *Cyathidites* and *Leiotriletes*, with a certain amount of cycad pollen like *Cycadopites* and *Eucommiidites*, and lycopod spores like *Echinatisporis* and *Leptolepidites*.

During the initial phase of the positive carbon isotope shift the palynological compositions of both sites are quite diverging. Here, the French site is characterized by a decrease in spore abundances which cannot be observed for the Polish site. This interval is followed by a peak in fern spores for both sites. The palynological record is interpreted to reflect an increase in aridity at the French site, whereas conditions become more humid in the hinterland of the Carpathian seaway during the initiation of the carbon cycle perturbation. The subsequent peak in fern spores may point to supra-regional hostile conditions favoring the massive appearance of fern plants. The results point to a complex pattern of vegetation changes during the Valanginian carbon anomaly and illustrate the importance of investigating continental archives.

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Funktionsmorphologie von Wirbeltiergebissen

The Occlusal Fingerprint Analyser (OFA) – Applications and Perspectives

Ottmar Kullmer[1], S. Benazzi[2], S. Lorsbach[1] & H. Zimmermann[3]

A comprehensive understanding of the occlusal relationship between tooth rows is essential to understand dental adaptations and the evolution of tooth function. In fossil species we can only hypothesize chewing dynamics based on dental analysis and reconstruction of jaw mechanics. Therefore palaeontologists must revert to live observations in modern analogue species, and additionally they attempt to extract signals of occlusal movements, e.g. encoded in the micro and macro tooth wear pattern. Mostly, we are not able to test and comparably render dental occlusion. This fact inspired us to develop a virtual software tool, the "Occlusal Fingerprint Analyser" (OFA), for the analysis and quantification of occlusion and kinematics derived from collision data extracted from virtual crown surface models. The quantification of spatiotemporal patterns of antagonistic contacts provides access to a variety of functional details. OFA traces the occlusal pathway of complementary wear facets. The collision trajectory results from approximation, deflation and breakfree algorithms, finding the simplest route through the crown relief to reach a predefined end point. The new virtual approach derived from a relief guided dynamic occlusal analysis visualizes functional details of specific occlusal structures and explores general differences in mammalian tooth morphologies.

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