



Coastal sediments from Portugal: Low-latitude climate archives for the Aptian-Albian

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Research on mid-Cretaceous climate dynamics has mainly focused on the interaction between the marine carbon cycle and the oceanic biosphere. In contrast, sparse information is available on environmental response and atmosphere/biosphere interactions of terrestrial environments during this greenhouse time. Here we present geochemical and palynological results from two coastal successions located in the Portuguese Algarve and Lusitanian Basins, continuously covering the Aptian to Middle Albian. Precise dating of the studied near-shore deposits has been achieved by combining age-diagnostic palynological findings with carbon and strontium isotope chemostratigraphy. To study the response of continental weathering and terrestrial vegetation to variations in climate and to decipher major trends in aridity-humidity patterns, a variety of proxies was used including spore-pollen assemblages, clay minerals and sedimentary characteristics. Our results indicate that the Algarve Basin experienced episodes of increased humidity during certain parts of the Early Aptian. In contrast, the Late Aptian-Early Albian interval was characterized by low precipitation rates and an arid to semi-arid climate as indicated by strong dominance of *Classopollis* pollen (mean of ~ 70 %) and high detrital clay mineral abundances (mica and chlorite). In the Lusitanian Basin, the observed pattern is more variable with *Classopollis*, *Exesipollenites*, *Inaperturopollenites* and trilete spores in fluctuating abundances during the Early to Middle Albian. The marked difference in humidity-aridity patterns observed between the two localities might reflect the waning and waxing of the equatorial hot arid cli-

mate belt. Whereas the Algarve Basin seems to be almost permanently situated within this zone of increased aridity, the northward Lusitanian Basin might only be affected during certain episodes.