

RECONSTRUCTING OLIGO-MIOCENE PALAEOENVIRONMENTS AND THE INFLUENCE OF SEA LEVEL FLUCTUATIONS ON THE SOUTH-WESTERN COAST OF SOUTH AFRICA

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The Cape Floristic Region (CFR) houses a diverse range of plant species that are characteristic of a Mediterranean-type winter-rain climate that was established in the Neogene. Palynomorphs recovered from early Neogene sediments of Core BH2 are identified to reconstruct the palaeoenvironment at Langebaanweg, ~120 km north of Cape Town in order to reveal the evolutionary history of fynbos vegetation. A preliminary study of Core BH2 was conducted by Sciscio *et al.* (2013), but many pollen grains were concealed by debris, the sample resolution was low and dinoflagellates were provisionally assigned to one genus. For the current study, 76 microscope slides were analysed with a light microscope and 104 palynomorph types including pollen, spores and dinoflagellates were recorded. Palynological and statistical results confirm a subtropical-tropical forest dominated by Podocarpaceae, palms, vines and ferns, indicative of annual rainfall with more summer rainfall than today. Wetlands comprising Sparganiaceae, Restionaceae, Cyperaceae and Poaceae were abundant, pointing to a high water table. Mangrove tree pollen were rarely recorded, possibly implying little input of brackish water conditions at the bottom of the section. Patches of proto-fynbos probably provided an understory component and co-fluctuated with the forest elements. A considerable marine influence was imposed on the terrestrial environment, inferred by three marine transgressions in the Late Chattian *Apteodinium spiridoides* zone and a fourth and final one in the Middle to Late Aquitanian *Operculodinium centrocarpum* zone, which are probably linked to global Late Oligocene to Early Miocene sea level changes. Savanna woodlands with *Psilatricolporites quenua* (*Alchornea*), Combretaceae and *Peregrinipollis nigericus* (*Brachystegia*) gradually replaced subtropical forests, possibly due to drier conditions and enhanced seasonality. A Late Oligocene (Early Chattian) to Early Miocene (Early Burdigalian) age is inferred for Elandsfontyn Formation at Langebaanweg based on the presence of *Mutisiapollis viteauensis* (Asteraceae) and dinoflagellates *Apteodinium spiridoides*, *Chiropteridium lobospinosum* and *Cordosphaeridium minimum*.