



Patterns of glacial-interglacial vegetation and climate variability in eastern South Africa

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Vegetation is an integrated part of the earth system and our understanding needs records of its glacial-interglacial variability. Although the data coverage for South Africa is slightly better than for some other parts of Africa, there are only very few records that allow us a glimpse of the vegetation history and development through one or more late Quaternary climate cycles. The existing evidence is fragmentary and in some cases contradictory. Marine sediments can offer here continuous sequences that cover large periods of time and provide a record of a signal that integrates rather large continental regions.

Core MD96-2048 has been cored off the Limpopo River mouth at 26°10'S 34°01'E in 660 m water depth. This area is under the double influence of continental discharge and Agulhas current water advection. The sedimentation is slow and continuous. The upper 5 meter (down till 250 ka) have been analysed for pollen and spores at millennial resolution. The terrestrial pollen assemblages indicate that during interglacials the vegetation of eastern South Africa and southern Mozambique largely consisted of evergreen and deciduous forests with an increase of dry deciduous forest and open woodland during interglacial optima. During glacials open mountainous shrubland extended.

The pattern strongly suggests a shifting of altitudinal vegetation belts in the mountains primarily depending on temperature, although the decline of forested areas during glacial times might also be the effect of low atmospheric carbon dioxide concentrations. This pattern in eastern South Africa differs from that suggested for western South Africa, where extension of the winter rain climate seems likely, and corroborates findings of increased C4 vegetation during the Glacial of eastern South Africa. The spread of dry deciduous forest and open woodland suggests a hot and dry climate during interglacial optima. The vegetation and climate of eastern South Africa seems to follow a mid to high latitude rhythm, in which the glacial-interglacial contrast is more important than the precessional forced monsoon system of tropical Africa.