PROCESSES IN THE FORMATION OF THE OKAVANGO FAN DELTA.

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Over the last six years, a multidisciplinary team from the University of the Witwatersrand has been carrying out research to establish the nature of the processes which underpin the Okavango Delta. From this work it has become evident that the environmental factors controlling the Delta can be divided into two broad categories:

(i) External variables, which include graben faulting, which is the ultimate reason for the Delta's existence; the geology of the catchment area of the Okavango River, which controls water quality and the nature of the particulate sediment; the semi-arid nature of the environment, which is responsible for the high evapotranspirational rate; and groundwater leakage which prevents the accumulation of hypersaline groundwater;

(ii) Internal processes which operate within the constraints imposed by the external variables and have produced the present form of the Delta. Biotic processes dominate this latter category, with specialized plant communities fulfilling specific functions. These various communities regulate the dispersal of particulate sediment and water. They also control water loss through transpiration, thereby regulating chemical sedimentation, which is the dominant aggradational process in the Delta at present. The action of biological agencies induces even aggradation of the land surface and shapes the topography of the Delta, ensuring widespread distribution of water, and localizing, and hence minimizing the impact of, the accumulation of toxic salts. Far from being catastrophic, changes in water distribution are actually brought about by plant communities and constitute an essential self-renewal strategy in the system.

CHRONOSTRATIGRAPHY IN THE KALAHARI GROUP - RELEVANCE TO INTRACRATONIC BASIN MODELLING.

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Tertiary age strata of the Kalahari Group occur as largely semi- to unconsolidated sediments in southern and central Africa. These terrestrial sediments have a mixed fluvial and lacustrine origin and are covered by aeolian sands. In Namibia the Kalahari Group is present in the eastern, northern and southern parts of the country. Two broad basins are present in the north - the Owambo Basin (Miller, 1990) and the Herero Basin (Albat, 1978). The southeastern parts of the country are separated from the north by the Ghanzi Ridge which extends from Witvlei through to Maun in Botswana. This prominent topographic high formed during the Damaran Orogeny and appears to have been an important boundary since then.

Three units of formational status are recognised to comprise the Kalahari Group in the Owambo Basin. Post-Karoo sediments such as the Nanzi Formation underlie these units and can also be considered to be part of this sequence. The Kalahari sediments are from the base upwards; the Beiseb Formation which consists of red clays, gravels and grits; the Olukonda Formation, which consists of red and brown calcareous sandstones; and the Andoni Formation consisting of green, usually non-calcareous clay-rich sands and sandy clays (SACS, 1980).

Similar units were identified in the Herero Basin (Albat, 1978). These are the Tsumkwe Formation consisting of reddened gravels, grits and sand; the Eiseb Formation consisting of silcretized quartz sands and the Omatako Formation consisting of ferricretes. All are overlain by recent, unconsolidated aeolian sands of the Gordonia Formation (SACS, 1980).

In the Kavango region red clay is usually noticed below fluviatile sandstones and grits which are discontinuosly covered by green clay-rich sands possibly