



GROWTH OF THE GREAT ESCARPMENT ACROSS THE INDIAN MARGIN OF SOUTH AFRICA: a couple stratigraphic-geomorphologic study

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The South African Plateau is formed by marginal bulges clustered around an intracontinental basin (the Kalahari Basin) with a mean elevation between 1000 and 1400 m. On seaward side, marginal bulges form major escarpments that can reach an elevation up to 3500 m in the Drakensberg area, bounding the high elevation continent from a dissected coastal region.

The factors controlling escarpment evolution of those high-elevation passive margins are highly debated. On the one hand, geomorphic studies interpret escarpments in term of pulses of uplift and scarp retreat (King, *The Natal Monocline*, 1982; Partridge & Maud, *S.Afr.J.Geol.*, 1987). On the other hand, thermochronological data and numerical models of escarpment erosion (Gallagher & Brown, *Phil.Trans.R.Soc.Lon.*, 1999; Van der Beek et al., *J.Geophys.Res.*, 2002) suggest that escarpments predate the breakup with a minimal escarpment retreat during post-rift margin evolution.

To answer this question, we studied the Indian margin of South Africa (from Bushveld area to Port-Elizabeth) using sequence stratigraphy analysis of industrial seismic lines and wells. This study is coupled with an analysis of the adjacent landforms, constrained by dated sediments and weathering deposits.

The first outcomes of our study are:

1. A first uplift during Late Cenomanian (95-90 Ma) created an initial escarpment along the Indian coast.
2. A second uplift occurred during the latest Cretaceous to earliest Cenozoic with a sequential tilting and truncations of the inner part of the margin followed by the incision of pediments on the seaward side of the initial escarpment,
3. A third uplift that occurred during Late Eocene – Early Oligocene and Miocene with the incision of two new generations of pediments.

These preliminary results suggest that the “Great Escarpment” along the Indian coast of South Africa results from the stepping of at least four generations of pediments which record the polyphasic uplift history of the South African Plateau during the last 100 Myr