



Timing of the Southern African Plateau uplift : a couple landforms-margin study of Southern Namibia

François GUILLOCHEAU (1), Olivier DAUTEUIL (1), Guillaume BABY (1), Martin PICKFORD (2), and Brigitte SENUT (2)

(1) Université Rennes 1, Geosciences, Rennes, France (francois.guillocheau@univ-rennes1.fr), (2) Muséum National d'Histoire Naturelle, UMR 5143 MNHN - CNRS, Case postale 38, 8 rue Buffon, 75005 Paris

The timing of the uplift of the Southern African (or Kalahari) Plateau is debated, with four scenarios of uplift: (1) at time of rifting (Early Cretaceous), (2) during Late Cretaceous, (3) around the Eocene-Oligocene boundary and (4) during Pliocene times. This knowledge is of primary importance for a better understanding of the mantle processes at the origin of this very long wavelength structure.

To answer this question, we studied the key area of the northern Orange Margin (sequence stratigraphic analysis of seismic lines and wells), offshore of the Sperrgebiet. This study is coupled with an analysis of the landforms dated with associated sediments and volcanics.

(1) The first uplift of the Plateau was during Late Cretaceous times, with a first increase of siliciclastic sediments supply during Late Cenomanian (95-90 Ma) in response to the beginning of the uplift along the Indian Ocean side that propagates eastward around the Campanian (85-70 Ma).

(2) Because of the humid climatic conditions prevailing since Santonian (85 Ma), most of the relief of this first plateau is removed by erosion. At the end of the planation of this topography, chemical erosion is dominant with the growth of thick lateritic profiles (55?-45 Ma).

(3) A second uplift of the Plateau occurred during Late Eocene-Early Oligocene (30-40 Ma - paroxysm) and Miocene with the incision of at least three generations of pediments that shape the present-day "Great" Escarpment.

(4) This "old" Oligocene relief is probably preserved because of the decrease of the erosion due to the climate aridification, starting at Middle Miocene times (around 15 Ma).