



(Very) long wavelength deformations of Africa since late Cretaceous times

Francois GUILLOCHEAU and the TopoAfrica working group

Université Rennes 1, Geosciences, UMR6118 CNRS, Rennes, France (francois.guillocheau@univ-rennes1.fr)

The African continent is characterized by a bimodal topography. The 900-1100m elevation peak mainly corresponds to the Southern African (Kalahari Plateau) and the East African Domes, whereas the 300-400 m peak is the mean elevation of the Sahara. Those reliefs are characterized by very long wavelength (x1000 km), similar to the scale of mantle dynamics. The origin of this relief, dynamic topography or more local controls (e.g. old lithospheric inheritance), are highly debated and more geological controls are required.

To answer those questions - in the frame of the TopoAfrica project - we performed a geomorphical study of Africa coupled with the tectono-sedimentary study of the sedimentary basins or the magmatism.

- (1) Most of the African reliefs are younger than the Early-Middle Eocene (55-40 Ma).
- (2) The only significative old relief of Africa is the Southern African Plateau that experienced a two steps evolution, a first uplift during Late Cretaceous contemporaneous with high erosion under humid climatic conditions, followed by a second uplift during Late Eocene – Early Oligocene. The present-day arid to semi-arid climate could explain its preservation.
- (3) Most of Africa is uplifted during Miocene times (20-10 Ma), age of most of the present-day reliefs.
- (4) The African magmatic provinces (Virunga-Kivu, Cameroon Volcanic Line, Hoggar, Air...) are associated with local uplifts that started around Late Eocene times (40-35 Ma).

The relationships of those reliefs with the migration of the African plate over the African superswell will be discussed.