

## **Sediment budget on African passive margins: a record of margin bulges and far field very long wavelength deformations**

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The post-rift siliciclastic sediment budget of passive margins is a function of (1) the deformation (uplift) of the upstream catchment, of (2) the climate (precipitation) regime and of (3) the oceanic circulation (mainly since Miocene times). The main questions in source to sink studies are (1) to quantify the relative importance of the erosion due to uplifts or to precipitation changes and (2) to characterize the source of the sediments.

A source to sink study was carried out in Western, Central and Austral Africa, characterized by anorogenic relief (plains and plateaus) that record long (several 100 km) to very long (several 1000 km) wavelength deformations respectively of lithospheric and mantle origin.

The sink measurement was based on seismic lines and wells (industrial – IODP) using the VolumeEstimator software including the calculation of the uncertainties (Guillocheau et al., 2013, Basin Research). The source study was performed using dated stepped planation surfaces (etchplains and pediplains), mappable at catchments-scale (Guillocheau et al., in press, Gondwana Research).

Results: (1) Deformation (uplift) is the dominant control of the sediment budget. Climate (precipitation) changes only enhance or inhibit a deformation-controlled flux. (2) The sources of siliciclastic sediments are either closed marginal bulges or far field domes due to mantle dynamics with river by-passing over long-lasting polygenic surfaces located between the bulges and domes.

Two main periods of African-scale deformations (contemporaneous with an increase of the sedimentary flux) are confirmed, one during Late Cretaceous (Turonian-Coniacian) and the second around the Eocene-Oligocene boundary with a gap and intense chemical erosion from 75 Ma and mainly from 65 to 40 Ma.