Geophysical Research Abstracts
Vol. 15, EGU2013-12482, 2013
EGU General Assembly 2013

Cenozoic siliciclastic sediment budget at continent-scale, Africa.

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Siliciclastic sediment budget measurements was performed along the margins and onshore basins of Africa for Cenozoic times. Our objective was first to quantify the ratio between onshore and offshore sediment preservation in the case of a relief with mostly no mountain belt and secondly to understand the factors forcing the sediment supply along the passive margins of Africa that can be long to very-long relief deformation (mantle dynamics, ridge push. . .) or climate changes (with the major aridification of Africa since Middle Miocene).
This study is based on basin-scale regional sections (seismic reflection data from industry and academics, wells correlation), calibrated in age and lithology on different types of wells (industry, DSDP/ODP). Most of the effort was on the revaluation of the ages (calibration and uncertainties). The volumes of sediments and uncertainties on depth conversion velocity laws, lithology and ages were measured using software developed by J. Braun (Grenoble University, France).
• The sediment preserved onshore (750 000 km3) is one of magnitude less than was is preserved offshore
• The main deformations controlling the sediment supply are (1) the growth or the domes of the East African rift and (2) the marginal bulge of the central and equatorial segments of the South Atlantic Ocean (from southern Angola to Guinea).
• The aridification of Africa since at least Middle Miocene is very sensitive in the south (fossilization of the relief of the South African Plateau) and in the northwest, with a sharp decrease of the sediment supply.
• Some buffer effects are very important, for example for the Nile and the Zambezi, where sediments were first stored in onshore basins, Sudan or Malawi rift, and later drained because of a capture (Nile) or a regional stress change (Zambezi).

Keywords: Africa, Cenozoic, Siliciclastic sediment fluxes, Deformation, Climate