



Late Cretaceous subsidence and tectonic inversion in the Congo Basin from paleostress, organic matter maturation and thermochronometric studies of archived core and outcrop samples

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The Phanerozoic evolution of the African plate in Central Africa is still poorly known as Paleozoic and Mesozoic sediments are mainly lacking in East Africa and are largely buried under recent sediments in central part of the Congo Basin (Cuvette Centrale). The Royal Museum for Central Africa (Tervuren, Belgium) hosts a unique collection of geological archives from the DRC, including samples from outcrops and cored drill holes. A re-investigation and sampling of the Samba and Dekese ~ 2000 m deep fully cored exploration wells and archived outcrop samples combined with new structural field work along the western branch of the East African rift system allow to highlight the late Paleozoic – Mesozoic evolution of Central Africa. Three independent approaches combining paleostress, organic matter maturation and thermochronometric fission track and (U-Th-Sm)/He studies together with time-temperature and time-maturation modeling suggest an important stage of basin subsidence followed by basin inversion during the late Cretaceous, contemporaneously with the Senonian Basin inversion and rejuvenation event, evidenced elsewhere in Africa. This recent evolution was previously underestimated and provides new perspectives in terms of petroleum system of the Congo Basin.