



Active deformation of the Congo intracratonic basin and its eastern margin

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The Congo basin, one of the largest intracontinental sedimentary basin in the world, developed in Central Africa since the early Neoproterozoic during successive tectonically controlled stages. It formed over an heterogeneous basement as highlighted by aeromagnetic data, composed of Archean cores welded by Proterozoic mobile belts. It contains an average of 4 km and locally up to 8 km of Neoproterozoic to Mesozoic sediments. Since late Mesozoic (Cenomanian), it was submitted to intraplate stresses due to the action of ridge-push forces related to the spreading of the South Atlantic. As a result, most part of the basin entered in an erosional stage while only a small part is still accumulating sediments.

Active deformation of this vast region (5°N - 11°S and 12 - 27°E) is indicated by a certain level of seismic activity, with about 270 earthquakes instrumentally recorded with magnitudes ranging from 2.2 to 5.5 inside the basin and up to up to 6.3 along its NW (Gabon) and NW (Katanga) margins. The dozen available focal mechanisms indicate that the basin is under ENE-WSW horizontal compression, under a compressional regime in its center and strike-slip regime along its northern and western margins. Low-angle slickensided fault planes are observed in the Samba cored well, constraining the onset of the recent compressional setting in the late Albian, at a time when South America was already separated from Africa and the South Atlantic Ridge was already functioning. Although subtle, recent tectonic deformations (faulting and buckling undulations) can also be inferred from the reflection seismic profiles and the topography and river network. The overall neotectonic picture is inferred as reflecting the development of compressional tectonic instabilities in the basin fill and its margins under the action of intraplate stress field and the control of the basement heterogeneity.

This is a contribution to preparation of the Seismotectonic Map of Africa by the working group of the UNESCO-IUGS IGCP 601 project "Seismotectonics and seismic hazards in Africa".