EGU21-7016
EGU General Assembly 2021

Integration of flower structures in strike-slip fault damage zones classification – examples from the West-Congo belt and foreland

Hardy Medry Dieu-Veill Nkodia[1], Timothée Miyouna[1], Florent Boudzoumou[1], and Damien Delvaux[2]

[1]Marien Ngouabi University, Brazzaville, Republic of Congo (nkodiahardy@gmail.com)

[2]Royal Museum for Central Africa, Geology - Mineralogy, Tervuren, Belgium (damien.delvaux@africamuseum.be)

Damage zones around strike-slip faults constitutes important site of earthquake initiation, propagation, rupture or barrier. They also constitute important sites that host and conduct fluids. Most investigations of these strike-slip damage zones focus on plan view geometries and little attention is paid to subsurface or profile geometries associated. Depending on the presence of a shortening or extensional component during deformation, strike-slip faults do not often show straight path in cross-section. Understanding the expression of damage zones in cross-section is therefore important in predicting subsurface strike-slip faults features. The Paleozoic red feldspathic sandstones of the Inkisi Group in the foreland of the West-Congo Belt show beautiful examples of strike-slip faults with damage zones in both the Republic of Congo and the Democratic Republic of Congo (Nkodia et al., 2020). These strike-slip faults are organized in two major faults system developed in a pure strike-slip regime. The oldest system is dominated by NNW–SSE trending sinistral strike-slip faults and minor E–W striking dextral strike-slip faults. The youngest system consists of dominant NE–SW trending dextral strike-slip faults and minor NW–SE trending sinistral strike-slip faults. Field investigation show four arrangement of flowers structures along the strike-slip faults: (i) those associated with wall damage zones; (ii) those associated with linking damage zones; (iii) those associated with tip damage zones; and (iv) “hourglass” flower structures. Further investigation of strike-slip faults in the Schisto-calaire Group of the West-Congo Belt show also similar flower structures arrangement in limestones. In the Inkisi Group, these arrangements are dependent on the fault growth and propagation. Both strike-slip faults system in the Inkisi Group show an evolving pattern, from closely spaced short faults segments, to highly spaced long faults segments with few interactions of pattern.

Nkodia, H.M.D.V., Miyouna, T., Delvaux, D., Boudzoumou, F., 2020. Flower structures in sandstones of the Paleozoic Inkisi Group (Brazzaville, Republic of Congo): evidence for two major strike-slip fault systems and geodynamic implications. South African Journal of Geology 123(4), 531-550. Doi: 10.25131/sajg.123.0038.