

## **New geological structures in the Brobo region (Central Ivory Coast). Helping to understand the Paleoproterozoic tectonics of the West African Craton**

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A lithostratigraphy study for gold mineralization in the Birimian Formations of the Brobo region (central Ivory Coast) was the works of Equigold mining, LGL Resources and Newcrest Mining. Despite the results obtained from the investigations, very few structural data were obtained or provided. Pre-existing maps mention faults (such as the N-S Brobo-N'Zi shear zone), but these do not allow regional interpretations of tectonic evolution. Our work aims to bring new structural data for this region.

The lithological and structural observations of the Brobo region indicate a succession of metasedimentary rocks (sandstone with mica cordierite and graphite) intercalated by volcanic rocks (rhyolite, dacite, andesite, basalt and volcanoclastic), reflecting volcanic activities. The whole is intruded by granitic rocks sometimes porphyroids, granodiorites, gabbros and gneissic granites.

The interpretations of the Landsat ETM<sup>+</sup> and RadarSat-1 remote sensing, as well as the field data, permit to identify several directions of lineaments. These directions are: N-S, NE-SW, NW-SE and E-W. Among these fractures, new ones are identified. These are: the fault of east Tiébissou (Fa) with NE-SW direction. This fault intersects the N-S Brobo-N'Zi shear zone; E-W faults were also identified (Fd, Ff, Fg and Fh).

The region has been subject to several phases of deformation marked by folds in older sediments, the result of a regional compression phase. Sedimentary flaps are thus found in the granitoids of the western part. The Brobo-N'Zi shear zone, with N-S direction, resulted in the mylonitization and foliation of the granitoids. The results show C/S shear zone structures (N010° to N030°) with sinistral movements, as well as stretches, mineral lineations and quartz veins, mainly in granitoids. The resulting general metamorphism is in the greenschist facies.

**Keywords:** Lithostructural mapping, Landsat ETM<sup>+</sup>, RadarSat-1, Remote Sensing, Birimian formations, Brobo area, Central Ivory Coast, West Africa