

Extraction of fractures zones at the borders of Guinea, Mali and Côte d'Ivoire (West Africa) using LANDSAT7 ETM⁺ optical imagery, ERS Radar and SRTM: Support for gold mining research

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The present study focuses on a region at the borders of Guinea, Mali and Côte d'Ivoire (West Africa). Its main objectives are the mapping of fracture networks using the LANDSAT-7 ETM⁺, ERS Radar and DEM (SRTM) remote sensing imagery. The geological approach using multi-spectral spatial imagery, thanks to their synoptic and synthetic visions, has allowed improving the outline of the structural elements (discontinuities of images).

The results obtained reveal six (6) families of fractures. These are the fracture zones of Sassandra, Kalana, Siguiri and Mandiana of N-S direction; the Tintioulen and Minigan fractures of E-W direction; the fractures of Tiefinzo, Tindila and Kankan of direction NNW-SSE; the fractures of Komodou and Kourou-Kélé of NW-SE direction; fractures zones of Niandankoro and Bodougou with NE-SW direction and finally fractures of Kiniero and Moribaya of NNE-SSW direction.

The overall results contribute to a better understanding of the fracture networks of this key region of the West African Craton and can assist in the predominantly regional gold mining research.

Keywords: Remote sensing imagery, ERS Radar, - LANDSAT-7 ETM⁺, DEM (SRTM) Fracturing, mining research, Mali, Guinea, Côte d'Ivoire, West Africa.