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Mapping Fault Zones and Structural Lineaments in the Aït Zikki Region (Tizi-Ouzou, Algeria) Using Remote Sensing and GIS

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Abstract.

The Aït Zikki region (36°32'N–36°36'N; 4°20'E–4°25'E) lies within the Kabylia domain of the Tellian Atlas in northern Algeria. It is shaped by sedimentary rocks spanning from the Jurassic to the Quaternary and by the imprint of Atlasic tectonics. The landscape is marked by folds and fault systems oriented mainly NE–SW and E–W, giving the area its complex structural character.

In this work, we use remote sensing and GIS tools to map fault zones and structural lineaments across Aït Zikki. By analyzing satellite images and digital elevation models, we were able to detect and trace linear features that reveal the hidden tectonic architecture of the region.

The results provide a refined structural map that not only improves the geological understanding of Aït Zikki but also offers a useful basis for applied studies in geological engineering, hydrogeology, and natural hazard assessment.

Keywords: Aït Zikki, Fault zones, Structural lineaments, Remote sensing, GIS.