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Magnetotelluric study of the Neoproterozoic 4°50' Hoggar shear zone

Aboubakr Deramchi^{1, 2}, **Abderrezak Bouzid**¹, **Abderrahmane Bendaoud**², **Abdeslam Abtout**¹, **Mohamed Hamoudi**², **Khadidja Ouzegane**², **Abdelhamid Bendekken**³, **Zakaria Boukhalifa**^{1, 2} and **Walid Boukhrouf**³.

¹ Centre de recherche d'astronomie d'astrophysique et de géophysique, CRAAG. Alger, Algérie. aboubakrderamchi@gmail.com ab.deramchi@craag.dz

² Faculté des Sciences de la Terre, de la Géographie et de l'Aménagement du Territoire, USTHB, Alger, Algérie.

³ Unité de recherche de Tamanrasset, CRAAG, Tamanrasset, Algérie.

The orogenic belt of the Hoggar is a product of the assembly of Gondwana. The greatest 4°50' Hoggar Shear zone is also known in Nigeria as Kandi fault and in Brazil as Transbrasiliano lineament (TBL). The Neoproterozoic 4°50' fault played an important role in the structuration of Hoggar during the Panafrican orogeny. It's considered as a major suture zone between two domains (Caby 2003, Liégeois et al., 2003): LATEA and ISKEL forming part respectively of the Central Hoggar and the Western Hoggar. According to Liégeois et al., 2005, LATEA is a metacraton constituted of five terranes (Laouni, Azrou N'fad, Tefedest, Egéré-Aleksod and Assodé Issalane) with an Archean-Paleoproterozoic basement (Betrand et al., 1986; Peucat et al., 2003) and affected by a high grade rocks (Amphibolitic to granulitic facies) (Bendaoud et al., 2008), and the Iskel terrane corresponding to a Panafrican arc material, showing a low metamorphism grade (greenschist to amphibolite) (Caby 2003).

To image the 4°50' shear zone resistivity deep structure, the magnetotelluric (MT) method has been used. Thus, new MT data were collected in November 2015 at 15 stations along a NW-SE profile of 100 km with a step of ~7 km crossing the 4°50' shear zone and the other linked faults. The collected MT signals cover a wide frequency band from 10⁴ to 10⁻³ Hz. The collected data imaged the variation of electrical resistivity down to a depth of about 100 km and resolve three distinct highly conductive structures that most probably represent the mainly shear zones in the area including the 4°50' fault. Analysis and first conductivity 2D modeling will be presented and discussed in this work.

Key words : *Neoproterozoic, 4°50', Magnetotelluric, shear zones, LATEA, ISKEL, suture.*

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