

## **A Comprehensive Geophysical Study of The Lithospheric Dynamics of Multi-Plate Interactions and Their Relations with the 2023 Kahramanmaraş-Türkiye Earthquakes: Part I: Magnetotelluric Preliminary Results**

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### **SUMMARY**

In February 2023, Türkiye suffered two strong earthquakes with a scale of more than 7  $M_w$ , causing serious human and property losses. Previous studies on seismology and magnetotelluric deep imaging have been conducted close to this area, indicating that lithospheric deformation is mainly controlled by the strong interaction of the surrounding converging plates and is significantly influenced by the distribution of deep fluids. As the preliminary result of the study, we aim to describe the 3-D resistivity models obtained as a result of the inversion of new long-period MT data measured along three lines in the field. The constraint of deep fluid's content and spatial distribution, the deformation mechanism, and the fluid behaviour of the lithosphere under plate interaction will be discussed. In the continuation of this study, where Magnetotelluric results are given first, seismology and gravity data will be integrated, providing insight into the occurrence of the 2023 Türkiye earthquake and similar intracontinental strong earthquakes.

**Keywords:** Magnetotelluric, Türkiye, Earthquakes, Lithospheric dynamics, multi-plate interactions.

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