Revisiting the 3-D suboceanic upper mantle conductivity constrained by tidal magnetic fields

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SUMMARY

Šachl et al (2022) presented a new method based on the adjoint approach to reconstruct the three-dimensional (3-D) electrical conductivity of the suboceanic upper mantle using the tidally induced magnetic field (TIMF). In a series of synthetic tests, they demonstrated that the 3-D conductivity structure can be successfully reconstructed using a single tidal frequency M_2. Šachl et al (2024) applied this method to two different TIMF data sets derived from the Swarm measurements and showed that the conductivity reconstructed from the GO19 (Grayver and Olsen, 2019) data set gravitates towards the expected conductivity structures. In this contribution, we revisit their results using the latest versions of three state-of-the-art TIMF data products: KALMAG (Saynisch-Wagner et al, 2021), GFO24 (Grayver et al, 2024), and MTI10 (Sabaka et al, 2020, released as Swarm Level 2 products by ESA).

Keywords: motional induction, inverse theory, ocean tides

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