

IMPROVING THE MODELLING OF THE LITHOSPHERIC FIELD AT ALL SCALES FOR THE BENEFIT OF GEOPHYSICAL INTERPRETATIONS

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During the last years, the geographical coverage of magnetic fields improved thanks to the release of old and new data acquired from the Earth's surface to the satellite altitudes. Concerted international efforts to compile and publish these data in a digital format, like the World Digital Magnetic Anomaly Map (WDMAM) project, represented a key motivation for also improving our methods for interpreting and modelling marine, airborne and satellite data. Thus, these unprecedented high spatial resolution data also challenged our ability 1) to extract accurately the contribution of the lithospheric field from the total measurements, 2) to represent the data with potential field modelling technique capable of merging locally all kinds of data, 3) and to interpret these models in terms of sources distribution and depth, heat flow, etc...

I will first briefly review recent advances made towards improving the marine and aeromagnetic compilations at the worldwide scale. Then, I will focus on the other end of the lithospheric magnetic field spectrum and discuss the consistency of various recent satellite-based lithospheric field models. This will allow me to illustrate the ambiguities and compatibility issues that remain to be addressed before we can successfully merge near surface and satellite data. Then, I will report on different studies carried out to interpret lithospheric magnetic field models in terms of tectonic, and discuss some original methods employed to estimate local and average properties of the Earth's magnetic crust.

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