



## **On the lateral distribution of electrical properties of crust and mantle in Europe**

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The method used in the present work is based on the observation that an external variable field induces inside the Earth variable magnetic fields not only through electromagnetic induction in conductive structures of the crust and mantle, but also by magnetic induction in rocks above the Curie temperature. In the pure magnetic induction case, the temporal variation of the field components at a certain observation point is given by a linear combination of the components of the inducing magnetic force. As inducing magnetic force we use the temporal variation of the geomagnetic field during geomagnetic storms. The calculated values of the model represent the component of the observed signal produced by pure magnetic induction, while the residuals contain the information related to the electromagnetic induction in the Earth at the given point. To get information on electrical properties ( $L$ , the electrical inductance and,  $R$ , the resistance), the residuals in case of the vertical component of the field have been used.  $L$  and  $R$ , that characterise the crust and mantle under the given observatory, can be determined for each observatory by means of the least squares method. Mapping of the obtained values reflects the lateral distribution of the Earth interior electric properties. The results are based on a study of nine intense geomagnetic storms in the solar cycle 23, recorded at the network of European geomagnetic observatories.