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Lithospheric and external geomagnetic field contributions in European observatory annual means constant crustal contribution), an approach to estimate and to reduce them was established. Finally, we obtained and provide a dataset reflecting as much as possible the core contributions.

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We utilise data from 46 European observatories to investigate how accurately core-contributions can be separated. Comparisons between the annual means provided by the observatories and synthetic data obtained from the Comprehensive Model CM4 show an intriguing behaviour of the residuals, with clear short-term and long-term trends. Careful and detailed analysis of the residuals' behaviour surprisingly revealed long-term crustal biases trends, possibly associated with an insufficient description of the secular variation by the CM4 model, changes in the induced crustal magnetisation or induction effects in lithospheric conductivity anomalies. Concerning the remaining external fields (after subtracting the constant crustal contribution), an approach to estimate and to reduce them was established. Finally, we obtained and provide a dataset reflecting as much as possible the core contributions.