



## **The global character of excursions: Insights from empirical and dynamo models**

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A better understanding of the range of geomagnetic field characteristics possible during excursions can help constrain whether the rapidly changing field behaviour of today is related to the initiation of an excursion. We present a new empirical model of the global geomagnetic field spanning the time of the Laschamp excursion. This model incorporates a greater number of volcanic and sediment records than used previously. We describe the global structure of the field and its variation through time, and discuss the caveats of the model. An important consideration in the model's construction is the uncertainties on the age and palaeomagnetic data. The inclusion of these data within a database, e.g., GEOMAGIA50, allows for the factors that may affect data quality to be readily assessed and for palaeomagnetic records to be reconstructed to account for, e.g., the revision of age data. Although the Laschamp excursion is the most well recorded of all excursions it is only one example of what could be a large range of excursions. To gain a greater understanding of the diversity of excursions we have analysed the temporal and global variability of a number of excursions generated by a suite of numerical dynamo simulations. We conclude that the geomagnetic field during excursions can be significantly non-uniform globally and temporally, in both direction and strength. Indeed, a cornucopia of excursions is possible.