



## **Inner Core Translation and the Hemispheric Balance of the Geomagnetic Field**

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Bulk translation of the Earth's inner core has been proposed as an explanation of observed quasi-hemispheric seismic structure. An important consequence of inner core translation would be the generation of a spherical harmonic degree one heat flow anomaly at the inner core boundary (ICB) that would provide an inhomogeneous forcing for outer core convection. We use geodynamo simulations to investigate the geomagnetic signature of such heterogeneity. Strong hemispheric heterogeneity at the ICB is found to produce a hemispheric signature in both the morphology of the magnetic field and its secular variation; in particular, we note the formation of high-intensity flux patches at high-latitudes and American longitudes in our model with the strongest ICB heterogeneity. We propose new measures to characterise the hemispheric balance of the geomagnetic field. Of our simulations, the model with the strongest ICB heterogeneity provides the best match to the structure of the Earth's field over the past 400 years according to previously proposed measures; however, that model produces the poorest match to the hemispheric balance of the historical geomagnetic field as characterised by our new measures.