



The role of lower mantle heterogeneity in dynamo action

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Earth's core convection is affected by lower mantle lateral heat flow variations. The mantle heterogeneity affects the structure of convection in the underlying core, and in the process, produces long-term non-axisymmetric components in the observed geomagnetic field. Previous studies have also shown that, under weak background convection, both equatorially symmetric and antisymmetric lateral variations at the core-mantle boundary (CMB) can support dynamo action. As the lower mantle seismic tomography is a complex mixture of several equatorially symmetric (and antisymmetric) spherical harmonic components, its effect on the geodynamo is not well understood. In this study, the tomographic heat flux variation at the CMB is decomposed into symmetric and antisymmetric parts and their effects on the geodynamo are considered separately. In particular, the surprising role of the equatorially antisymmetric heat flux in supporting the dynamo via an Ω -effect is examined.