

EVOLUTON OF THE SOUTH ATLANTIC MAGNETIC ANOMALY OVER 0-3KA

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The present geomagnetic field and historical observations dating back to 1590 A.D. indicate westward drift and growth of an anomalous low intensity geomagnetic field structure known as the South Atlantic Magnetic Anomaly, and also manifest as a significant radiation hazard for low-earth-orbiting satellites. This growth has been interpreted in terms of a greater contribution to geomagnetic dipole decay from the southern hemisphere than elsewhere, fueled by active core processes beneath the S. Atlantic that might be viewed as likely to lead to a geomagnetic reversal. It also appears that the character of secular variation in the Pacific hemisphere is quite distinct from that in the Atlantic. We use a new series of continuous global magnetic field models spanning the past 3000 years, based on several subsets of available archeo- and paleomagnetic data, to investigate the millennial-scale evolution of current hemispheric asymmetries in the geomagnetic field and the possible influence of the South Atlantic Anomaly. The tools used to assess these asymmetries are based on re-parametrization of magnetic field models in terms of spherical triangle tessellations (STT models). It is also important to evaluate how the specific temporal variations in spatial coverage and their weighted spatial average (through the Green's function for the Laplacian operator) contribute to our ability to resolve interesting variations in core-field structure.

Geomagnetic field models; secular variation

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