



## **Mid-latitude small-scale anomaly observed from CHAMP and Ørsted magnetic data**

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We investigate the rapid variations of the measured magnetic field along the orbits of Ørsted and CHAMP. To this aim, we use a simple technique which consists in two main steps: first, taking the along track, absolute second derivatives of the field with different time (or space) steps; second, averaging these absolute derivatives in bins  $2.5^\circ$  longitude and  $2.5^\circ$  latitude wide for a given time span (for example, the year 2002). For small values of the time step, typically 1 s for CHAMP (which corresponds to a satellite displacement of about 7 km), a fluctuating, small amplitude, uncorrelated field appears, whose longitudinal (i.e., along the main field) and transverse (i.e., perpendicular to the main field) components are analyzed. The amplitude distribution of this signal is large scale, worldwide and the same for Ørsted and CHAMP. Its seasonal variations, variations from one year to another, variations in universal time and variations with magnetic activity, are investigated. We find that the amplitude distribution is remarkably stable in form, but varies in global magnitude. We discuss the origin of this feature of the Earth's magnetic field.