



Contributions of regional modelling techniques to the *Swarm* mission

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The resolution of former missions was insufficient to image the entire crust. Between the spherical harmonic degrees 90 and 150, there remain a spectral gap that the *Swarm* mission is designed to fill. Considering simultaneously ground-based, airborne and satellite *Swarm* data, will require new strategies. The philosophy of regional modelling will prove to be useful for integrating all magnetic data and provide our first ever top-to-the bottom view of the crust in particular regions.

In this paper, we present some results obtained using a revised expression of the spherical cap harmonics. Combining in a joint inversion all available data over a region, we are able to represent the magnetic field up to a 30km resolution at the Earth's surface. Using CHAMP data only, we also investigate the ability of the method to represent time-varying field at a regional scale or to represent the crustal field at a global scale.