



## **CM5: A pre-*Swarm* magnetic field model based upon the comprehensive modeling approach**

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We have developed a model based upon the very successful Comprehensive Modeling (CM) approach using recent CHAMP, Ørsted, SAC-C and observatory hourly-means data from September 2000 to the end of 2013. This CM, called CM5, was derived from the algorithm that will provide a consistent line of Level-2 data products for the *Swarm* mission. This algorithm uses a special statistical treatment that allows certain parameter subsets to be determined from the best suited data subsets. Indeed, this allows for a co-estimation of parameters describing the magnetic field of the ionospheric Sq current system and the lithospheric with no contaminating leakage into the latter. The lithospheric field compares well with MF7 and CHAOS-4 at least to spherical harmonic degree 90. In addition, we have estimated the magnetic field generated by the oceanic M2 tidal constituent, which compares well with simulations using the known M2 tidal flow. This model will be useful for magnetic induction studies as well as providing a reference model for *Swarm*-based models coming soon.