



Global magnetic field modelling using local multipolar expansions

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The satellite era brings new challenges in the geomagnetic field modelling. To deal with the constantly increasing amount of measurements, the modellers have to choose new strategies, which avoid numerical and statistical problems (caused by decimation or means of measurements). Recently, a moment-based data reduction technique, using local multipolar approximations of the modelling functions, has been proposed (Minchev et al., 2006). The method allows to 'compress' the total amount of potential field data used in the inversion process. We consider spherical harmonic geomagnetic field models and discuss how the data compression rate depends on the order of the multipolar expansion and on the size of the local cells (Chambodut et al., 2006). We also show what is the optimal compression rate, which can be achieved, for a given a priori modelling error. The results obtained for CHAMP vector magnetic data are presented.