

Mantle conductivity model derived from 8 years of CHAMP, Ørsted, and SAC-C magnetic data

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Three years ago we presented a global 1-D conductivity model obtained by analysis of five years (2001-2005) of simultaneous magnetic data from the three satellites Ørsted, CHAMP and SAC-C. In the present work we have augmented the data set by including three additional years (2006-2008). This allows estimating transfer functions at longer periods, and consequently inferring the conductivity at greater depths. After removal of core and crustal fields as predicted by the xCHAOS field model we used non-polar (dipole latitude below 50 deg) scalar and vector observations from the night-side sector (18 to 06 MLT). We interpret these residuals as large-scale contribution from the magnetospheric ring current and its induced counterpart. We compare our new conductivity profile with previous ones and discuss differences and similarities. We make an attempt to detect lateral variations of conductivity from the satellite data. Following (Kuvshinov et al., 2006) we construct global maps of C-responses in the period range between 10 and 30 days and find systematical difference between C-responses obtained in Northern and Southern hemispheres. We detect a similar difference in C-responses derived from ground-based data. We discuss possible reason for that.