



Noise cancellation in magnetotelluric time series using adaptive methods

M. Moorkamp, X. Garcia, C.K. Rao and A. G. Jones

Dublin Institute for Advanced Studies, 5 Merrion Square, Dublin 2, Ireland (mm@cp.dias.ie)

Contamination by noise generated by human activity is a common problem in magnetotelluric recordings in populated areas. Cow fences are particularly problematic in that respect, because they continuously generate strong signals with changing characteristics in both electric and magnetic channels. In most cases these signals are present throughout the entire recording and even modern robust remote reference methods fail. Filtering the time series prior to processing can improve the data quality and adaptive filtering methods can, to a certain degree, adjust to varying noise characteristics. We present results from both "blind" methods, where the noise source is not known, and conventional methods, in which an estimate of the noise source exists. While these methods can improve the overall appearance of magnetotelluric sounding curves, they are not a general panacea and special care has to be taken to achieve results that are meaningful and result in an impedance tensor that reflects the conductivity distribution in the earth.