Examination and removal of repetitive noise on MT time series

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A magnetotelluric survey was conducted in Ireland to study the conductivity of Iapetus suture zone to lithospheric depths. In the first phase of data acquisition during February-May 2004, data were collected at 22 stations using Broad band (BBMT) and long period (Lims) instruments in the frequency range 300 Hz to 10000 sec. Due to mild a winter in 2004, the farmers in Ireland choose to allow their cattle roam in fields with electric fences in operation on farm land. As a consequence the data collected during that time was contaminated by electric cow-fence noise. The electric cow-fences have a repetitive pulse with a fundamental frequency of approx. 0.7 Hz. The pulses are not perfectly repetitive and change their frequency in time, due to changes in electrical system characteristics. Neighbouring fences are not synchronized, nor display the same frequency characteristics. Thus, the conventional processing techniques fail to correct the data for noise. In this paper we present the nature of problem and various methods to remove noise from time series data.