

## **CORRECTING GEOMAGNETIC OBSERVATIONS FROM BRORFELDE, DENMARK, FOR DISTURBANCES CAUSED BY NEARBY POWER LINES**

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The magnetic field observations made at the Brorfelde Observatory are being disturbed by two long distance, high voltage DC power lines. The disturbances are offsets, which are up to 5.5 nT on the H-component and up to 2 nT on the Z-component and vary on an hour-to-hour basis. First inspection suggests that the magnetic disturbances caused by the power lines are proportional to the strength of the currents. The factors of proportionality between the currents and the magnetic disturbances were determined by linear regression on carefully selected minute data, as the linear regression requires stationary time series. First we reduce a large part of the contribution by natural variations to the observed field in Brorfelde, by taking the difference between the field measured at Brorfelde and at the variometer station at Roemoe, not affected by the power lines. Next we take the time derivatives of the time series to remove trends. To gain stationarity we use only data from quiet times, here defined by a K-index of zero. In order to reduce interdependency of the data points, we only select data from time intervals when the current in at least one of the power lines is changing. From these highly reduced data series we have determined the factors of proportionality. These can together with the current in the power lines be used to correct the magnetic field observations made at Brorfelde for the disturbances caused by the power lines. It seems possible to correct past hourly mean values of Brorfelde data as far back as power line data are available, which is until 2001. For the future our aim is to provide real-time online correction of the Brorfelde minute data.

Magnetic observations, power lines

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