

Appendix 8B Assessment of the success of magnetic susceptibility for large area surveys.

Stratascan Ltd

The geophysical survey specialist firm Stratascan were asked for their expert opinion of magnetic susceptibility as a technique for initial landscape reconnaissance. Their report is as follows.

Why use magnetic susceptibility?

Magnetic susceptibility (MS) is a reconnaissance technique which being rapid and cost effective allows large areas to be surveyed in a very short space of time.

How does it work?

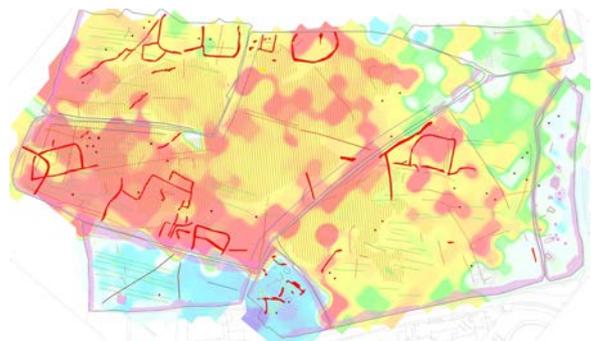
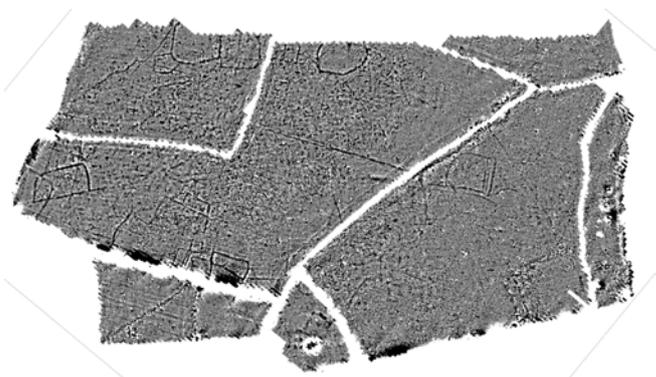
Alteration of iron minerals in topsoil through biological activity and burning can enhance the MS of that soil. Measuring the MS of a soil can therefore give a measure of past human activity and can be used to target the more intensive and higher resolution techniques of Gradiometry and Earth Resistance.

Measurements of MS are carried out using a field coil which provides a rapid scan and has the benefit of allowing 'in situ' readings to be taken. The field coil assesses the top 200mm of the top soil. As readings are only at 10m or 20m centres this results in a coarse resolution but adequate to pick up trends in MS variations.

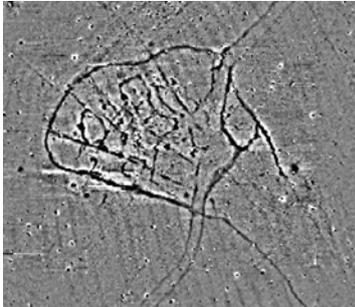
Example survey

The magnetic susceptibility data shown below was collected over 20 hectares of arable land which formed part of 172 hectare site. The survey identified large areas of enhancement (shown in red and yellow) and so the whole site was surveyed with detailed gradiometry.

The abstraction of the gradiometer data has been overlaid onto the MS plot and this shows a clear correlation between the areas of enhanced MS and the areas of archaeological activity. A complex arrangement of ditched rectilinear enclosures was identified which is likely to be related to settlement activity.



The MS data shown below is taken from an 80 hectare site which was surveyed with magnetic susceptibility. A subsequent 35 hectares were targeted with detailed gradiometry. The plot shows an area of moderate magnetic enhancement which when targeted with a gradiometer survey revealed the remains of a Romano-British settlement.



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