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Ancient Monuments Laboratory
Report 2/96

FEN FARM, PINCHBECK, LINCOLNSHIRE. REPORT ON GEOPHYSICAL SURVEY, JANUARY 1994

M Cole

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Summary

Geophysical survey was undertaken over a Middle Iron Age site at Fen Farm, Pinchbeck, Lincolnshire, in response to a request from the Fenland Management Project (FMP). The survey, undertaken whilst a FMP excavation was in progress, was intended to place any excavated features in their wider context. Although failing to detect any obvious features adjacent to the excavation, the magnetometer survey did map a rectilinear field system of probable Roman origin. The magnetometer results support the evidence from the excavation which suggests that the site is unlikely to have been in the immediate vicinity of a contemporary settlement

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FEN FARM, PINCHBECK, LINCOLNSHIRE

Report on geophysical survey, January 1994

INTRODUCTION

The Fenland Survey (Hall and Coles 1994) demonstrated that conditions on the Lincolnshire silt Fens during the Middle Iron Age were sufficiently favourable for exploitation of the silt-land resources to have taken place. The site subsequently selected for further investigation as part of the Fenland Management Project (FMP) was at Fen Farm, Pinchbeck, (site code PIN 55). Here, a spread of over 100 sherds of pottery, large amounts of animal bone and a quantity of burnt stone had been collected suggesting a purely domestic function for the site (Trimble 1994). The finds were concentrated in a small area on a band of dark soil about 5m wide.

In January 1994 a 'T' shaped trench (550m^2 in area) was excavated by the FMP over the densest part of the scatter. The geophysical survey (centred on grid reference TL 190 219) was undertaken whilst the excavation was in progress with the aim of placing any excavated features in their wider context.

The site is located in an area where an extensive deposit of marine clay is dissected by silted former creek channels (or roddons). Indeed, the site at Fen Farm is one of several of Iron Age date situated on the levees of a Bronze Age roddon (T Lane *pers comm*).

METHOD

With the intention of mapping any buried archaeological features associated with the surface scatter of finds, a magnetometer survey was undertaken over an area of approximately 2.5ha surrounding the FMP excavation (see Fig 1).

A grid of 30m squares was laid out based on the same grid used for the excavation. Each of these squares was then surveyed using Geoscan FM36 fluxgate gradiometers. Measurements were recorded at 0.25m intervals along traverses 1.0m apart. The data was periodically down-loaded to a microcomputer in the field. The resulting data is illustrated in this report using both greyscale and graphical trace plots (see Figs 2, 3 & 4). Presentation of the data has been enhanced by the application of a local median filter to reduce the intense response to ferrous material (Scollar *et al* 1990).

To complement the magnetometer survey, samples of topsoil were retrieved at 15m intervals along two transects across the survey area (see Fig 1) in order to measure their magnetic susceptibility (MS). These samples were subsequently air-dried back at the laboratory before measurements of their mass specific MS were taken using a Bartington MS1 meter and MS2B bench sensor. The results of this work are presented in figure 4.

RESULTS

Magnetometer Survey (Figures 2-4)

The magnetometer response, as with other surveys undertaken over the silt Fens for the FMP, was quite subtle (see for example the magnetometer survey at Mornington House Farm, Gosberton: Cole 1995). Analysis of the frequency distribution of the data (see Fig 3) shows that the majority of the readings lie within ±1 nanotesla (nT) which is close to the maximum sensitivity of the instrument[1].

Despite the weakness of the response, the magnetometer has succeeded in clearly mapping a rectilinear pattern of enclosures, aligned roughly east-west, across the southern half of the survey area. These latter presumably represent part of an extensive field system, identified from crop marks on aerial photographs as Roman, which share the same alignment. Along the northern edge of the enclosures, the course of a former trackway has apparently been detected by virtue of the parallel ditches to either side.

Acting on the results of the survey, a hand-dug trench (measuring 1m by 3m) was subsequently excavated over one of the enclosure ditches. The latter was found to be at least 1.6m wide with a highly organic upper fill. Due to the height of the water-table, however, it was only possible to excavate the ditch to a depth of 0.6m. Unfortunately, no datable evidence was forthcoming from the part of the ditch which it was possible to excavate.

Significantly, the enclosures appear to be superimposed on a broad zone of amorphous positive magnetic disturbance which, due to its shape, is unlikely to be of archaeological origin. A very similar response was recorded over the course of a former river channel at Hoe Hills, Dowsby, some 11km to the north-west, and this perhaps suggests that the former zone may also represent a former river course[2]. The interpretation favoured here is, therefore, that accumulations of relatively high MS sediment have been deposited alongside and within sediments of lower MS.

Unfortunately, the magnetometer has failed to detect any obvious features adjacent to the main excavation trench. This reflects environmental evidence collected from excavated features which indicates that they were unlikely to have been located in the immediate vicinity of a settlement (Trimble 1994).

Magnetic Susceptibility (Figure 4)

The values of topsoil MS show a moderate and broadly uniform level with an average of approximately 35 $x10^{-8}$ m^3Kg^{-1}. One sample, recovered from an area immediately adjacent to the excavation trench, yielded a particularly low value of MS (15 $x10^{-8}$ m^3Kg^{-1}) presumably due the admixing of low MS subsoil from the trench. The general constancy of MS values is also evidence of a lack of settlement activity at the site.

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[1] A problem with one of the magnetometers has impaired the quality of some of the data, particularly within the northern half of the survey area. However, the overall integrity of the data has not been affected.

[2] See also the results of the geophysical survey at Yarnton, Oxon: Linford 1994.

CONCLUSION

The magnetometer survey has failed to detect any obvious evidence of buried archaeological features adjacent to those of ?Middle Iron Age date revealed by the FMP excavation. However, the survey did manage to map part of a rectilinear field system (of probable Roman origin) despite what is otherwise a generally muted response. The results suggest that these enclosures may be located over the course of a former water channel. Additionally, the results support evidence from the excavation that the site is removed from any settlement activity.

Surveyed by: Mark Cole
Tom Williams (Bradford University)
Dates: 24-26 January 1994

Reported by: Mark Cole
23 February 1996

Archaeometry Branch
Ancient Monuments Laboratory

References

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Hall, D, and Coles, J, 1994 *The Fenland Survey: An essay in landscape and persistence.* London: English Heritage.

Linford, N T, 1994 Mineral Magnetic Profiling of Archaeological Sediments, *Archaeological Prospection*, **1**.

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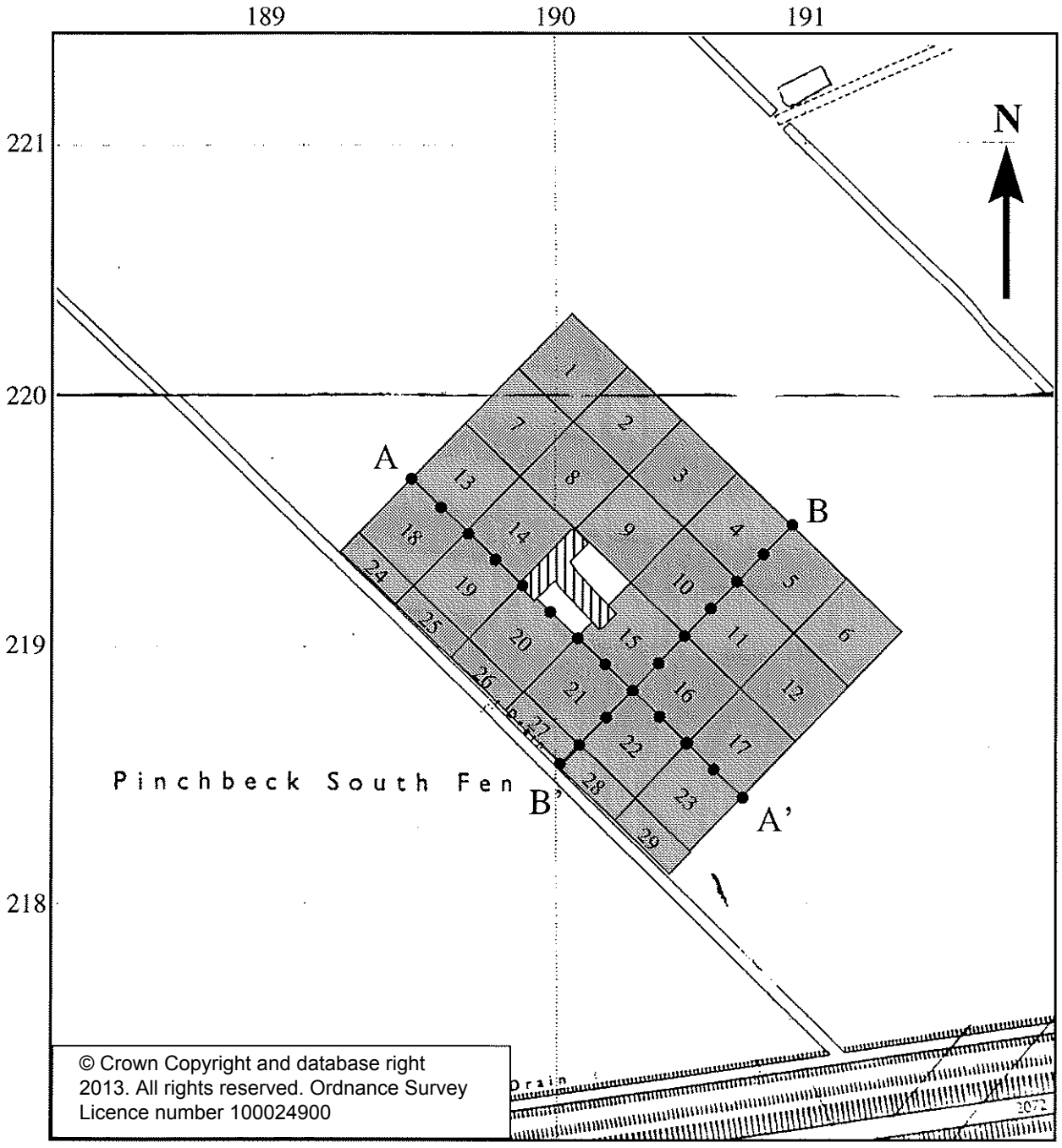
List of figures

FIGURE 1.

FEN FARM, PINCHBECK, LINCOLNSHIRE.

Location plan of geophysical survey.

TL 18/9 21/2



FMP excavation

Topsoil MS sample

0 90m

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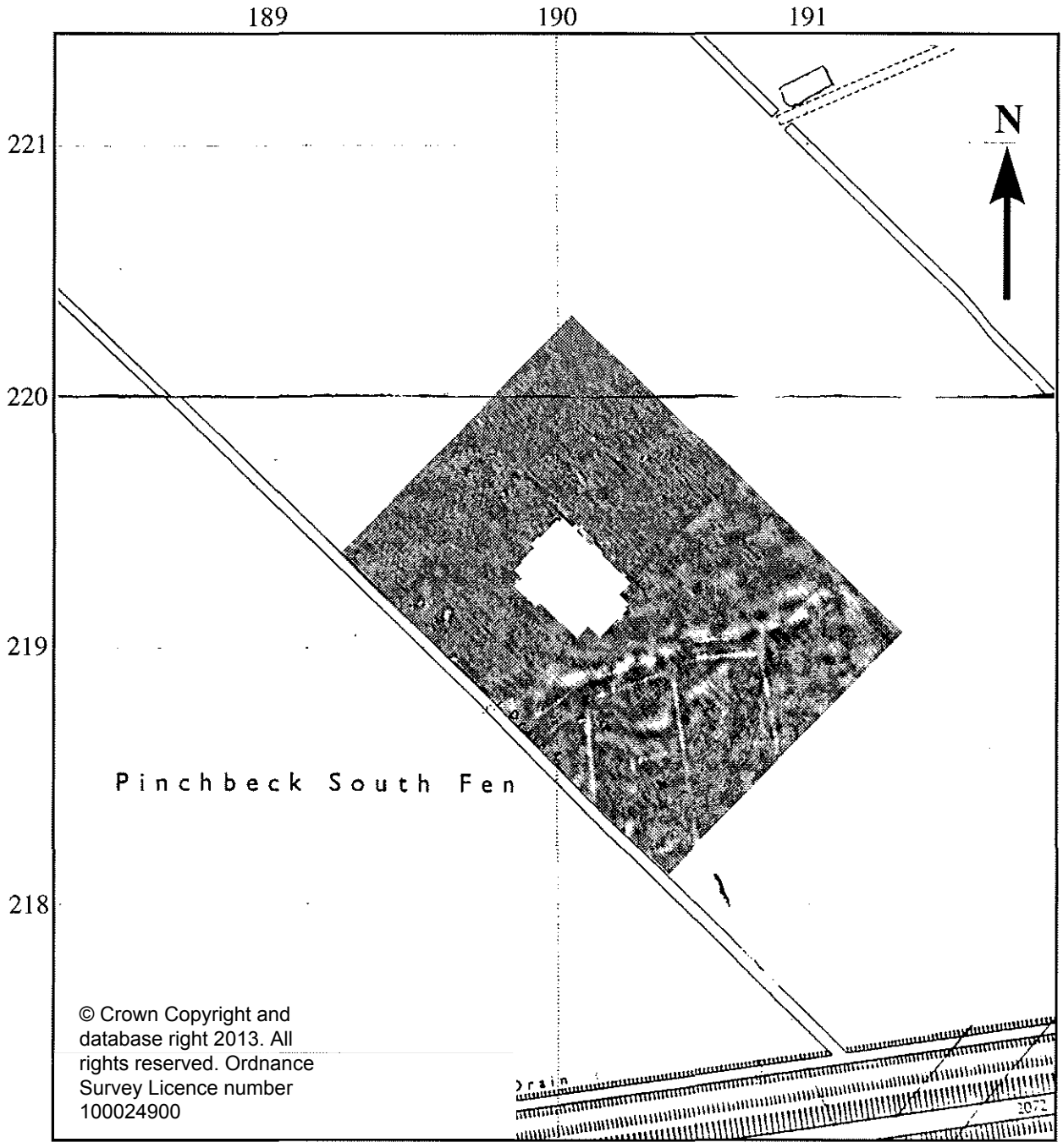
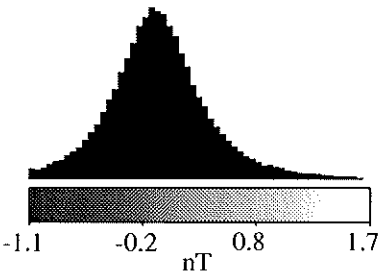
FIGURE 2.

FEN FARM, PINCHBECK, LINCOLNSHIRE.
Magnetometer Survey, January 1994.

Location plan of survey. TL 18/9 21/2





0 90m

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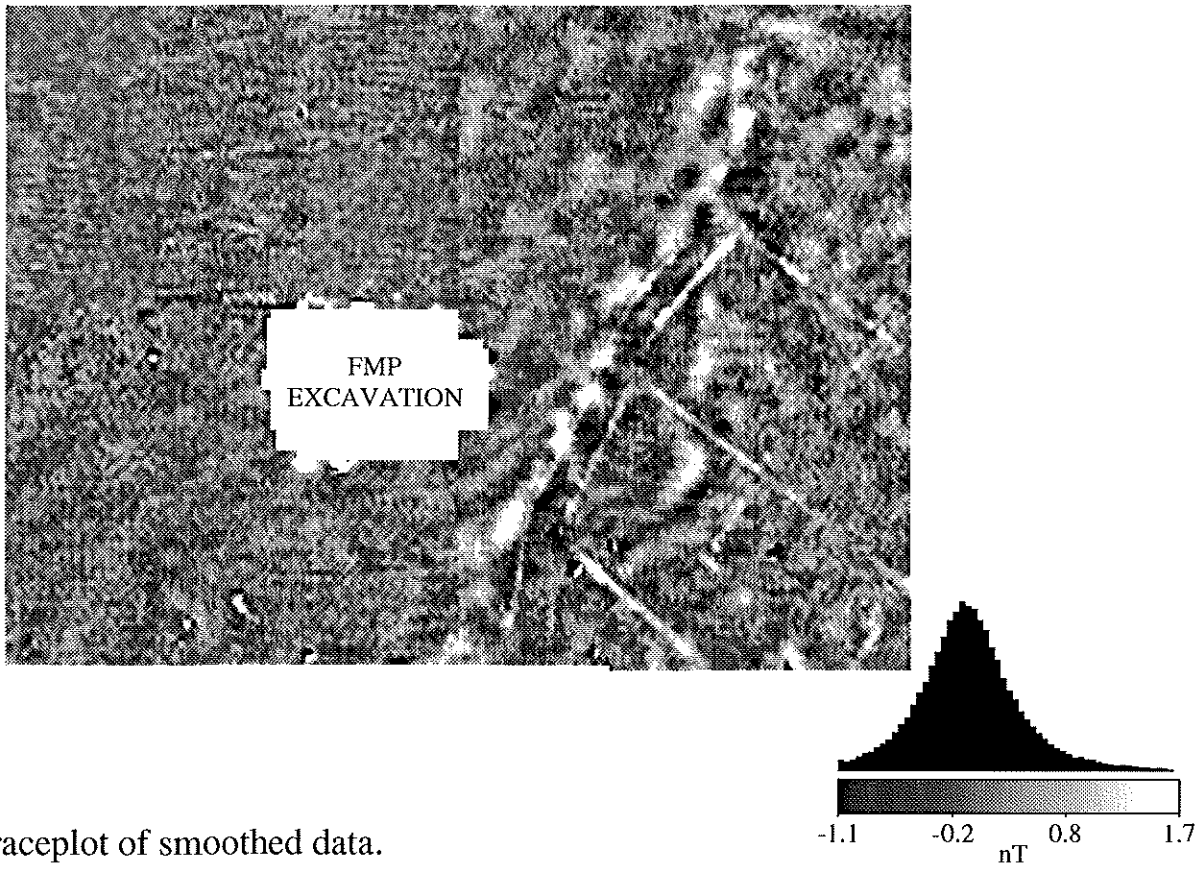
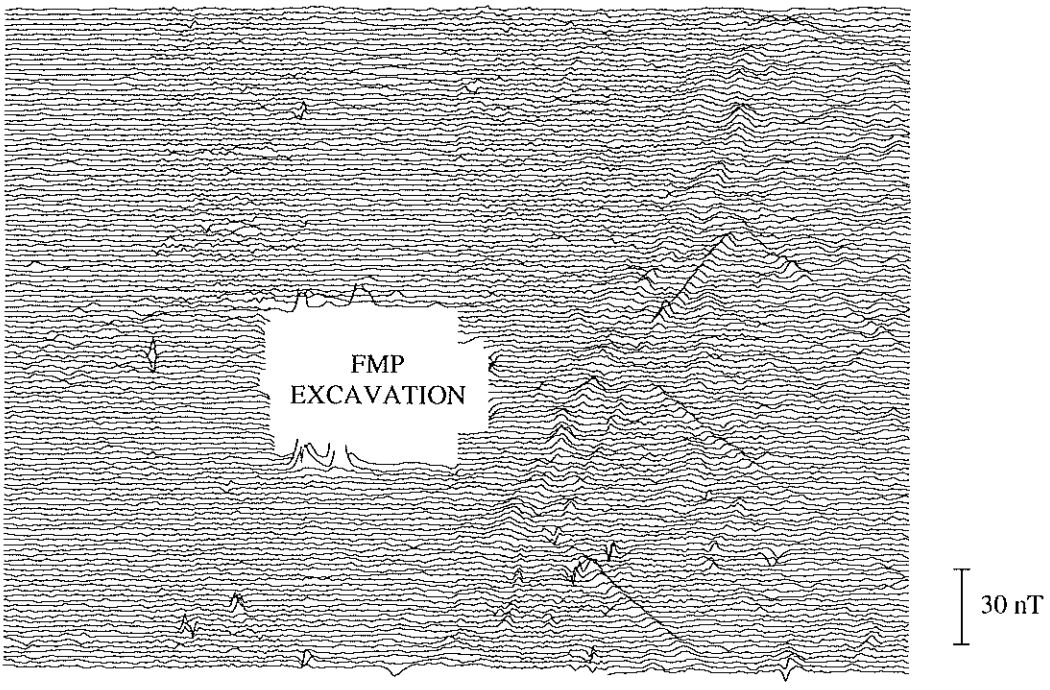
FIGURE 3.

FEN FARM, PINCHBECK, LINCOLNSHIRE.
Magnetometer Survey, January 1994.

1. Greytone of smoothed data.



2. Traceplot of smoothed data.



N

Scale

0 45m

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FIGURE 4.

FEN FARM, PINCHBECK, LINCOLNSHIRE.
Geophysical survey, January 1994.

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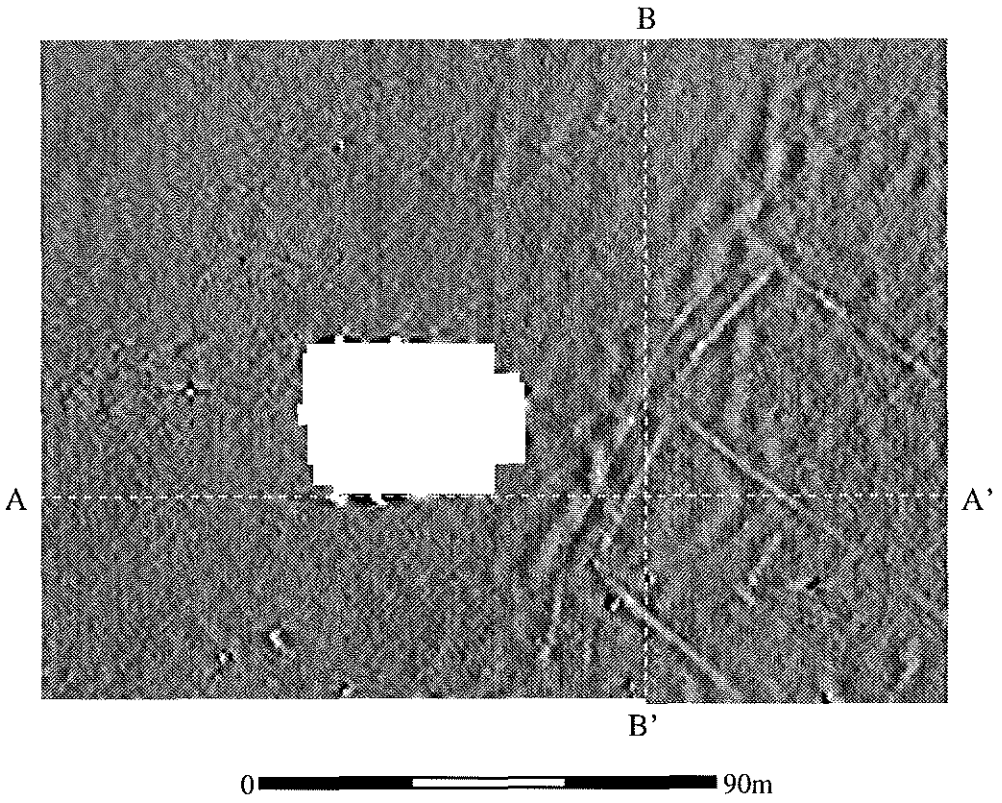
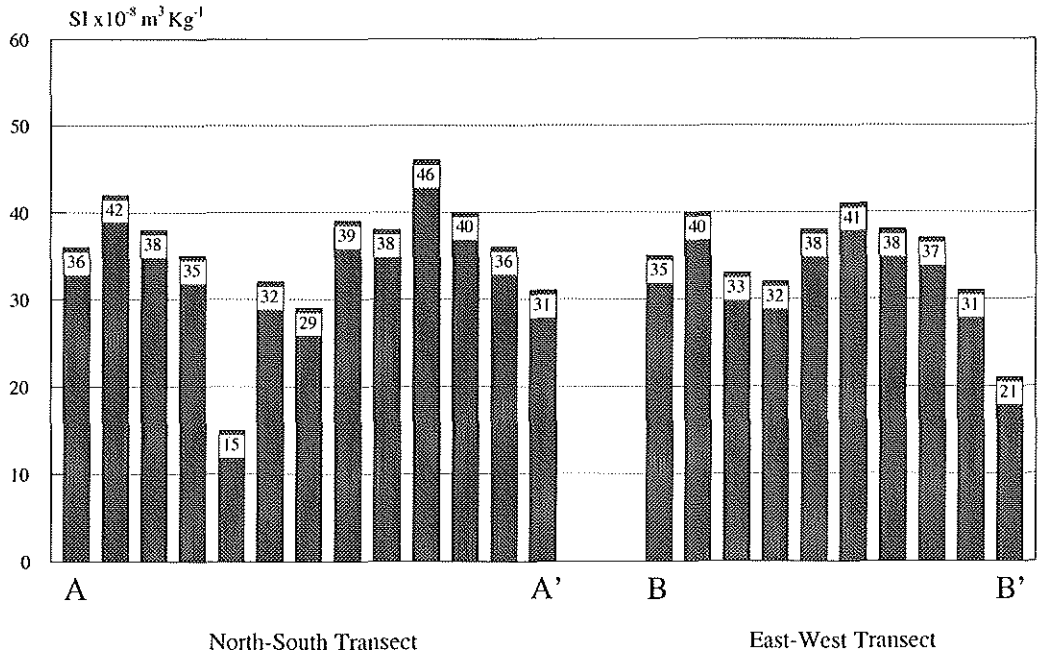
1. Greyscale of filtered magnetometer data.



2. Results of topsoil magnetic susceptibility measurements.



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