



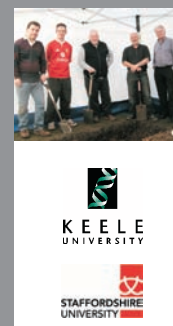
SOIL FORENSICS
INTERNATIONAL

The Midlands Burial Research Group

¹Applied & Environmental Geophysics Group, School of Physical Sciences & Geography, Keele University, Staffs, ST5 5BG. UK

²Dept. of Forensic Science, Faculty of Health Sciences, Staffordshire University, Staffs, ST4 2DE. UK

www.esci.keele.ac.uk/geophysics/Research/forensic_geophysics.html



1. Background

Formed in 2006, the Burials Research Group was established by Keele & Staffordshire Universities to provide a national centre of excellence in the Midlands for the detection of clandestine burials, & brings together four complementary disciplines of forensic geophysics, forensic geoscience, forensic pathology & crime scene investigations.

Members are academics, researchers & post-graduate students, with three Staffordshire University Lecturers (Roger Summers, Dave Rogers & Hilton Middleton) having 105 years combined experience in forensic investigations in the UK Police Service. Ongoing research projects take advantage of top-class at both universities (e.g. Staffs Crime Scene House & Keele forensic campus site). Research is presented at international conferences & findings published in peer-reviewed academic journals.



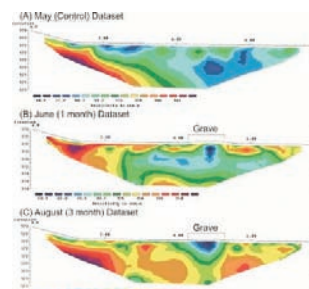
2. Ongoing Projects

A. Time-lapse forensic geophysics over a simulated clandestine grave.

Fully-clothed, resin human skeleton, animal products & physiological saline were placed in anatomically correct positions & placed within a simulated clandestine grave-site in an urban environment. The site was geophysically surveyed 1 month prior to burial (act as control), then 1 & 3 months post-burial. Techniques included: GPR, bulk ground conductivity & resistivity, magnetics, self potential magnetic susceptibility & Electrical Resistivity Tomography. Resistivity & SP showed optimal results, with GPR surprisingly poor (possibly due to made ground). A paper is currently in review for the Journal of Forensic Sciences.



Fully-clothed, resin human skeleton, animal products & physiological saline



Control, 1mth & 3mths 2DERT profiles over the 'grave'

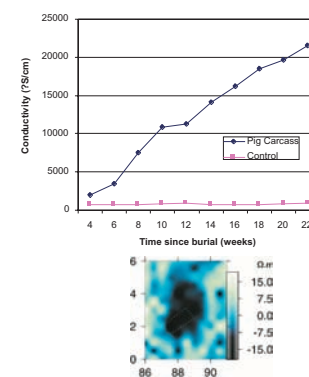
B. Quantitative monitoring of decomposing pig cadavers.

Two simulated clandestine burials (using pig cadavers) were created. The site was geophysically surveyed (bulk ground resistivity) every 2 weeks for 6 months. Pig fluid & background soilwater were collected & analysed (conductivity, element analysis), as well as rainfall, soil temperature, soil saturation & water content.

Preliminary results suggest optimum surveying time-period post-burial is 4-12 weeks. Resulting baseline data extracting will be used to model for other environments. This project will be presented on Wednesday 31st Oct at the Geoforensics Session of the 2nd International Conference on Soil Forensics.



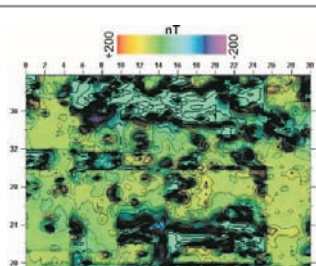
Measuring conductivity of pig carcass fluid, soil-water & basic elements, with conductivity & bulk ground resistivity (10 week) results



C. Forensic Geophysics for medieval monk remains.

Hulton Abbey, in Stoke-on-Trent, was flourishing until 1534 with the dissolution of the Monasteries. The monk cemetery still holds an estimated 100 remains, which will provide important clues on diet, etc etc.

Forensic geophysical surveys have been recently undertaken to try & locate remains before intrusive investigations.



Fluxgate gradiometry & surveying



Conference sponsors



Members

John Cassella (Co-PI), Staffordshire University
Jamie Pringle (Co-PI), Keele University
John Jervis, Keele University

Dave Rogers, Staffordshire University
Hilton Middleton, Staffordshire University
Nigel Cassidy, Keele University