ISAP NEWS

The newsletter of the International Society for Archaeological Prospection

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Contents

Editor's Note

louise.martin@english-heritage.org.uk

Welcome to the 14th issue of ISAP News. Please read on to discover for yourself the wide variety of projects ISAP members have been involved with recently. I'd like to thank all the contributors for their efforts.

Don't forget that membership subscriptions for 2008 are due now. Just go to http://www.bradford.ac.uk/acad/archsci/archprospection/renew.php to renew your membership.
The deadline for contributions to ISAP News 15 is 16th April 2008.

Geophysics and the IFA

Armin Schmidt, ISAP chair A.Schmidt@Bradford.ac.uk
Chris Gaffney, ISAP Hon. Secretary C.Gaffney@yahoo.co.uk

Those ISAP members who were at the AGM, or have read the minutes of the meeting on the web site, will know that a vigorous debate was centred around the UK based Institute of Field Archaeologists (IFA) and their interest in shallow archaeological prospecting. As a result the Chair (Armin Schmidt) and Hon. Secretary (Chris Gaffney) set up a meeting last November with two representatives of IFA, Tim Howard and Peter Barker. It was clear that many of the issues that were discussed were of general interest to the ISAP membership. As a result Tim and Peter have produced that short article to introduce the aims of the IFA in our research area. Also it was agreed that a joint open meeting would be held on the 22nd February at the University of Birmingham. If you are able to attend please come along, we need to hear your views on the direction that IFA is moving and how our group can benefit from the new ventures that are outlined below.

The Institute of Field Archaeologists is a professional organisation currently representing over 2,500 members involved in archaeology and related disciplines (predominantly but not exclusively within the United Kingdom). Membership is open to all historic environment practitioners who can demonstrate technical and ethical competence and that certainly includes those who practise in archaeological geophysics. Nevertheless, the IFA continues to be seen by some as the domain solely of those who carry out archaeological excavations.

Many members of the Institute fit this description, but many others do not and the IFA represents a much broader constituency involved with the historic environment. Indeed, in an increasingly multi-disciplinary environment (both commercially and academically), it is vital to communicate and co-ordinate not only knowledge and know-how but also standards within this wider community as well as to identify and pursue shared interests.

As a membership organisation, the Institute is self regulating. Members agree to abide by the IFA's *Code of conduct* and can be disciplined for its breach. Organisations can apply to register under the IFA's Registered Archaeological Organisations scheme - 59 organisations employing over 2,000 people in the historic environment have already registered – thereby submitting to compliance with IFA standards, monitoring and a complaints procedure.

Ideally the IFA would like to see every organisation working in the sector registered so that standards could be universally and consistently applied. Similarly, we would like to see all those practising in archaeological geophysics join as members of the Institute. This, we feel, is the best way to ensure that the discipline's professional interests are promoted within the wider archaeological community and that standards relating to geophysics are maintained and enforced 'from the inside' rather than 'the outside'.

Nonetheless, we recognise that many competent practitioners are not presently members of the IFA and this is one of the factors that have prompted proposals to form a Geophysics Special Interest Group within the IFA. Although one of its primary roles would be to advise the Institute on issues relating to geophysics, its membership would not be restricted to IFA members. (Non-IFA members can join upon the payment of a small annual subscription – typically £5-10) Although the formalities for the creation of such a group (which has to be promoted by existing IFA members and endorsed by the IFA Council) may have given rise to fears of a 'closed shop' promoting narrow interests, such fears are misplaced. The IFA is keen to encourage as wide a membership of the Group as possible.

Nor is the Group seen as an alternative to organisations such as ISAP whose work we support. On the contrary, the IFA recognises the need, wherever possible, to work in partnership with bodies such as ISAP, the heritage agencies, local and central government and universities, rather than simply replicating their respective contributions.

It is appreciated that there are many issues arising from the above proposals which practitioners may wish to discuss together and with representatives of the IFA. With this in mind an open meeting will be held at the University of Birmingham on 22nd February, 2008 where such discussion might take place. The meeting will start at 11am. If you are able and wish to attend please contact Kathryn Whittington (kathryn.whittington@archaeologists.net or 0118 378 6265) to confirm your place.

Non-Destructive Evaluation of Historic Buildings: Zuccari Palace in Rome (Italy)

Pier Matteo Barone, Università degli Studi Roma Tre pmbarone@fis.uniroma3.it
Elena Pettinelli, Università degli Studi Roma Tre pettinelli@fis.uniroma3.it
Peter A. Annan, Sensors & Software, Inc. apa@sensoft.ca
Dave J. Redman, Sensors & Software, Inc. dr@sensoft.ca

The use of historical buildings for government offices, libraries, schools or universities requires particular preservation strategies. In a big city like Rome (Italy), a relevant damage of such architectures can be a consequence of both the intense traffic and the specific purpose of these buildings. The Zuccari Palace, built in 1591, and centre of the Hertzian Library since 1900, has structural problems and in the last few years has been the object of an intense repair work. One of the most important aspects of the restoration process was the investigation of the structural damage of the vaults, without affecting the precious frescoes as shown in Figure 1.

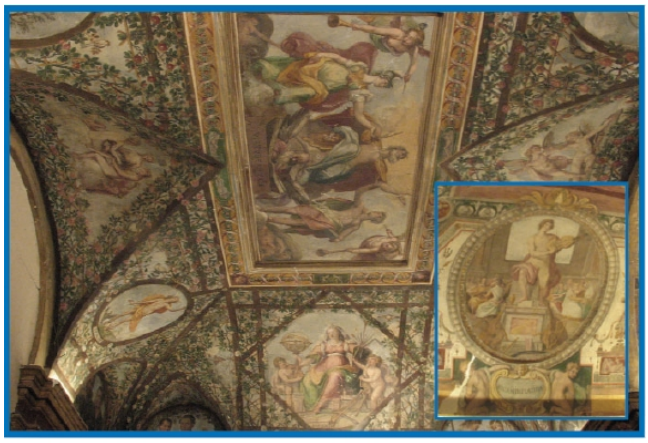

Figure 1: Frescos on vaulted ceiling in Zuccari Palace, Rome.

GPR provides a powerful means of investigating structures and gaining non-destructive insight on prior construction practice. Stone, wood and masonry materials are reasonably transparent to GPR signals. Voids, cracks and changes in water content can all create diagnostic signals on a GPR record.

We collected the data using a Pulsekko 1000 system, equipped with 900 MHz antennae. The measurements were performed along parallel profiles acquired on the floor of the rooms above the vaults (in both directions), with the antennas perpendicular to the profile direction, using a step size of 0.02 m, a trace stacking of 16 and a time window of 40ns. Parallel GPR survey lines were used to build up a cross-section view of the vault beneath. An example data set is shown in Figure 2. Figure 3 shows a series of cross-sections that allow the internal structure to be visualized.

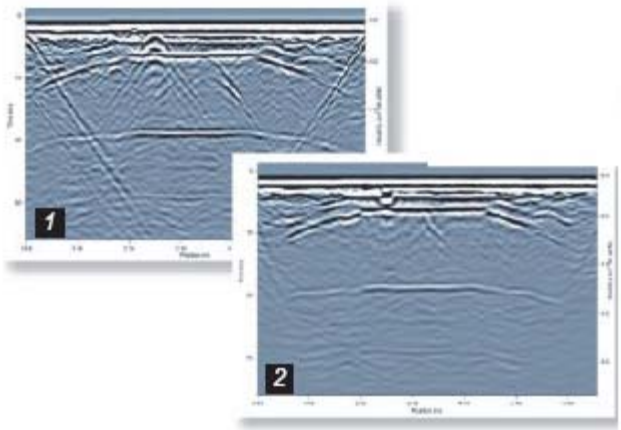

Figure 2: An initial GPR cross-section before (1) and after (2) migration processing to minimize diffraction traces and localise responses.

All GPR profiles show clearly the internal structure of the attics with two layers characterised by a strong contrast in dielectric properties and thus separated by a continuous reflector. Another well define reflector, always located few ns below the first one, is also detectable on each radar section; below such interface no other coherent event is visible.

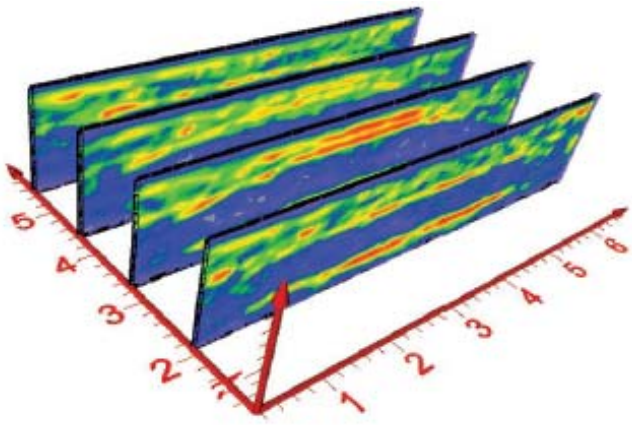

Figure 3: 3D slice view of vaulted attics cross-section created with EKKO_Mapper 3 and Voxler visualization.

Moreover, the GPR images show the presence of several hyperbolic events, located both in the first and the second layer. The majority of these hyperbolas has different dimensions and is randomly located along the radar sections; however, some others have the same dimension and position, and can be recognised in all parallel profiles acquired in the same direction.

The physical and architectonical nature of the attics structure was determined during the repair works made on Zuccari Palace, when the first layer of the attics was removed and the constructive technique built-up was visible. The dielectric stratigraphy detected by GPR corresponds to a first layer of inhomogeneous grouting materials overlaid to an edge brick layer. The brick fragments and small tuff blocks sometimes present in the grouting materials produce the randomly distributed hyperbolas visible above the first interface; whilst the scattered hyperbolic events present below such interfaces are probably due to lesions or fractures present between or inside the edge bricks. Furthermore, the coherent hyperbolic anomalies detected at the same location on each parallel profile correspond to some reinforcing structure present in the attic.

A Magnetic Survey of Crow Agency II, Montana, USA

Steven L. De Vore, National Parks Service, USA steve_de_vore@nps.gov

The Crow Agency II Site (24ST89) was the headquarters for the Crow Reservation between 1875 and 1883. Photographs and a water color drawing of the agency provided some clues as to the physical layout of the site (Annin 1964:217,137). Detailed descriptions of the agency complex were described by Indian Agent Dexter Clapp in his progress report to the Commissioner of Indian Affairs (Secretary of the Interior 1876:804) and by agency employee Tom La Forge (Marquis 1928). In July 1878, Agent G.W. Frost compiled a map of the Crow Agency II complex (Aaberg 2006), which included dimensions and a scale for numerous features and buildings within the agency complex (fig. 1). The agency complex contained an extensive stockade enclosing eight large buildings, seven 26-foot square houses, and a 100-foot by 150-foot corral. Two adobe mills and a portable sawmill were located outside the stockade along with several small cultivated fields, a series of small adobe buildings, and a large livestock containment and slaughter area. A variety of storage or refuse pits and fire hearths may also be present at the site suggesting locations for Crow encampments surrounding the main agency complex.

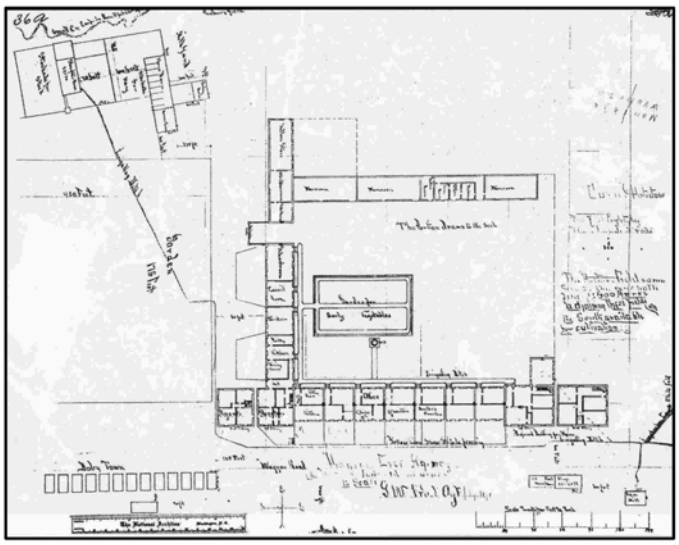

Fig. 1. Agent G.W. Frost's 1878 map of the Crow Agency II complex

A magnetic survey was conducted by the National Park Service at the request of Montana Department of Transportation in order to identify any buried archaeological resources in the

proposed Montana State Route 78 highway construction project area associated with the second Crow Agency complex (De Vore 2006). Previous archaeological investigations by Historical Research Associates in 1987 and 1988 (Caywood 1988; Caywood et al. 1988) and by Aaberg Cultural Resource Consulting Service (Aaberg 2006) provided little supportive evidence for the intra-site locations of buildings or their function. Eighty-four complete 20 meter by 20 meter grid units (33,600 m2 or 8.30 acres) were surveyed with a Geoscan Research FM36 fluxgate gradiometer (fig. 2). The magnetic data were acquired at eight samples per meter along one-meter traverses in a bidirectional fashion.

Fig. 2. Magnetic survey with fluxgate gradiometer.

The data were processed in the Geoscan Research's Geoplot software (fig. 3). A zero mean traverse function was applied to the data to remove any discontinuities from operator or heading errors. The data were interpolated to provide a regular 4 x 4 matrix for the application of a low pass filter, which removed any high frequency, small scale spatial detail. This transformation may result in the improved visibility of larger, weak archaeological features.

The resulting magnetic gradient data provided definitive evidence for the location of the Crow Agency compound, irrigation ditches, trash dumps, and artifact scatters associated with the agency buildings and activity areas.

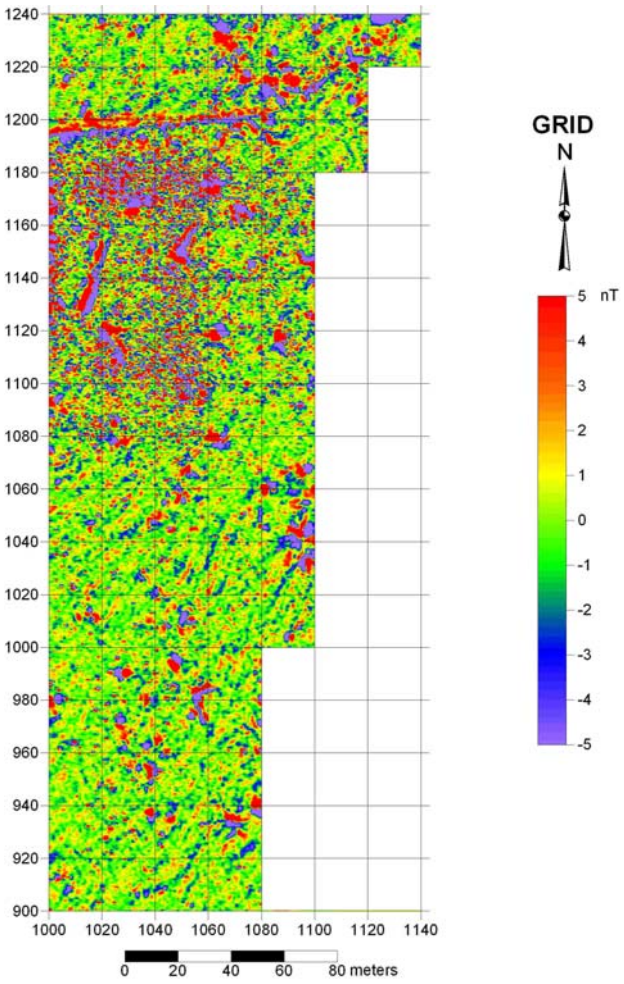

Fig. 3. Magnetic data map of project area.

The magnetic gradient data reveal a major concentration of magnetic anomalies or massive artifact cluster in mid to upper portion on the left side of the project area, which closely matches the 1887 drawing of the agency (fig. 4).

Some of the linear anomalies to the north of this concentration appear to represent the location of the irrigation ditches. There is a light to medium density of magnetic anomalies south of the main agency concentration that may be associated with campground areas of the Crow families during their visits to the agency.

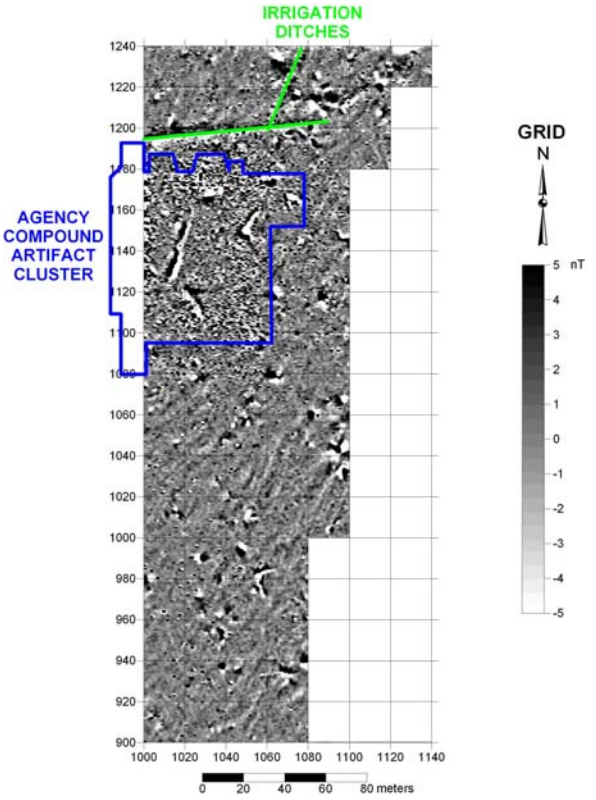

Fig. 4. Interpretation of the location of the Crow Agency II facility within the magnetic project area.

The magnetic gradient data provides substantial baseline data for the evaluation of the archaeological deposits, the integrity of the site, and its importance to the history of the Crow Tribe during the period from 1875 to 1883. Based on the geophysical data alone, the site has integrity and the potential to yield information about the activities at the site and the relationship of the site to the Crow Tribe and its interaction with the rest of the United States during the Indian Wars period.

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Archaeomagnetic Turkey-shoot in the Trent Valley

Ian Hill[1], Keith Challis[2], Kip Jeffrey[1], Chris Leech[3], Neil Linford[4], David Knight[5], Barry Smith[6] and Duncan Wardrop[7]
[1]University of Leicester, [2]University of Birmingham, [3]Geomatrix Earth Science, [4]English Heritage, [5]University of Nottingham, [6]British Geological Survey, [7]Lafarge Aggregates
iah@leicester.ac.uk

Geophysical techniques in archaeology are continuously developing to try to meet the twin goals of collecting precise data, and doing it as fast as possible. During the autumn of 2007 test surveys were conducted on a listed archaeological site in the Trent Valley. The set area of some 4 hectares was surveyed by Neil Linford and Louise Martin of English Heritage using the English Heritage “Cart” system, and also by Ian Hill of Leicester University using the “GEEP” system.

While we can be fairly certain that the EH version of the data will provide the benchmark of data quality, the GEEP system which caries out surveys some 5 to10 times quicker, has considerable attractions for its ability to cover large areas rapidly. The data from both surveys is currently being processed.

This comparison forms one aspect of the ALSF funded FASTRAC project, which glories in the

rather fuller title “A Whole-site First-assessment Toolkit for combined Mineral Resource and Archaeological assessment in Sand and Gravel deposits”.

Fig. 1: English Heritage’s caesium magnetometer cart

The main aim of this project is to create an evidence base to demonstrate the advantages of integration of first-assessment ground investigations for both Mineral Assessment and Archaeological evaluation, using a combined multi-sensor geophysical survey platform and airborne remotely sensed data. The advantage of this approach is the ability to cover large areas rapidly providing information early in the development cycle to mitigate the impact of mineral extraction on the historic environment. Furthermore the project will demonstrate that the detailed early assessment of a site allows issues such as geodiversity, habitat, maintenance of soil function, flood risk, and groundwater resource, to be addressed in a development project in the interests of both local authority and developer.

Fig. 2: The GEEP system

The project, based at University of Leicester, brings together personnel from the universities of Leicester, Birmingham and Nottingham, English Heritage, the British Geological Survey, Geomatrix Earth Science ltd, and Lafarge Aggregates plc. Data interpretation is currently in progress and a final report will be available about April 2008. One important output of the project will be a GIS database incorporating all the field results which will give a very clear comparison of the different methods incorporated in the project. This will be publicly available on an archive website

Geophysical Survey in the Archaeologically Un-investigated Parts of Czech Oppida

Roman Křivánek, Institute of Archaeology of the Academy of Sciences of Czech Republic
krivanek@arup.cas.cz

The archaeogeophysical project has been supported by the Grant Agency of the Academy of Sciences of the Czech Republic during five years 2003-2007 (IAA8002301). The research team cooperation of geophysicist and more archaeologists from Institute of Archaeology in Prague, National Museum Prague and Mining Museum in Příbram brought a new possibility of study of different large areas of bohemian Celtic oppida outside of older archaeological excavations. In terms of the areas of the oppida, only small fractions of the total have been subjected to detailed excavation (approx. 1-2 % of all in project chosen sites). The combination of faster and less financially demanding non-destructive methods of field archaeological survey on a large scale offered very efficient monitoring of inner and outer structure of settlement and fortification of archaeological monuments (Křivánek 2003). The primary project methodology was based on the wide-area geophysical survey of selected inner and also outer areas of oppida. Magnetometric survey (by caesium magnetometers Smartmag, SM-4g, Scintrex) was

the most suitable geophysical method for the detection of diverse sunken or burned archaeological features surviving beneath the surface.

collection. Study of old maps and older and new aerial photographs helped to better choose survey areas and to understand some landscape changes of archaeological terrains.

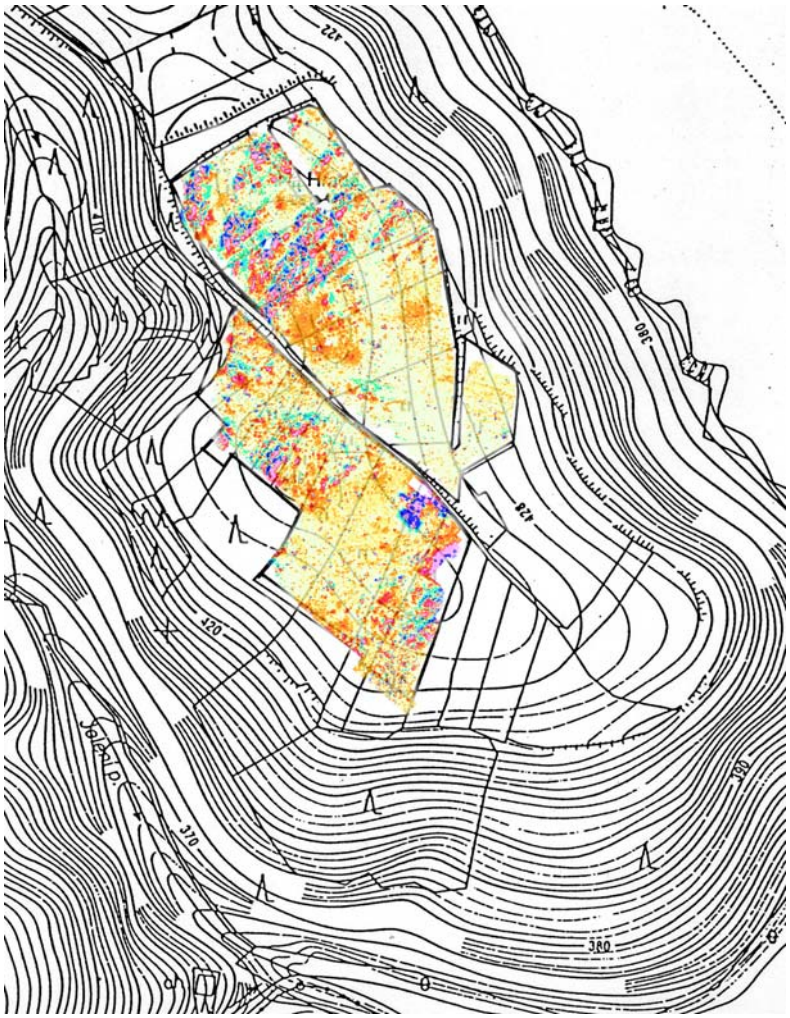

Fig. 1.Oppidum Nevězice, district Písek. The identification of formerly ploughed out settlement, possible remains of internal division, empty zones of communications and also geological and modern landscape changes inside of rampart fortification (surveyed meadow area approx. 4.3 ha, magnetometric survey – Křivánek 2003+2007).

Five oppida in Central (Hrazany, Stradonice, Závist) and South (Nevězice, Třísov) Bohemia were selected (within particular surveys of another 4 La Téne sites) for systematic non-destructive surveys in project. During five years of the project an area approx. 66.85 ha was surveyed in approx. 100 working days of archaeogeophysical field measurement. Further time in the field was necessary for other additional metal detector surveys, surface artefact collection or GPS measurements. Some particular results of measurements were also published during realisation of project (Křivánek 2004, 2005ab, 2007ab). Magnetometric survey of inner open terrain inside of rampart fortification (present meadows, former arable fields) at oppidum Nevězice for example contribute to identification of formerly ploughed out settlement, possible remains of internal division, empty zones of communications and also geological and modern landscape changes (fig. 1).

The survey by this geophysical method was applied in large scale and focused not only the open flat agricultural and most endangered terrains of sites (arable fields, meadows) but also to wooded areas (forest without low vegetation). Geoelectrical resistivity survey (by RM-15, Geoscan Research, U.K.) was another geophysical method applied in more complex or detailed survey of partial situations expecting stony structures or constructions. The other non-destructive methods applied in the project were metal detector survey (White's Electronics, XP-metal detectors), GPS measurement (Trimble Pathfinder) of visible remains of fortifications and other terrain changes, systematic surface artefact

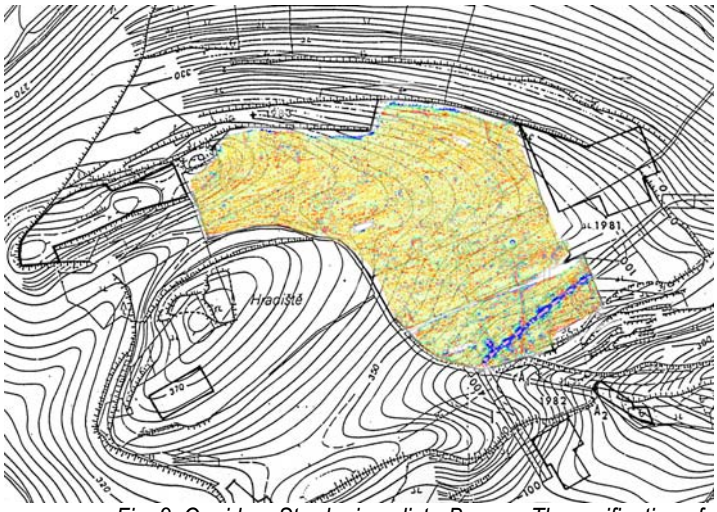

Fig. 2. Oppidum Stradonice, distr. Beroun. The verification of heavily ploughed out subsoil remains of very intensive settlement of the whole area, internal divisions and production in central part of site (surveyed ploughed area 13.45 ha, magnetometric survey – Křivánek 2006+2007).

A part of a very large ploughed out, and up to now, agricultural terrain was observed for example also inside of oppidum Stradonice. Heavily ploughed out subsoil remains of very intensive settlement of the whole area, separated by internal divisions, ditches and production features verified the central part of site near acropolis (fig. 2).

Different results were offered by geophysical surveys of oppidum Závist, cadaster Lhota. Magnetometric measurement of the ploughed out area in the outer part of the oppidum, for example, identified subsurface remains of possible communication, the fortification of the entrance and settlement in outer part of site (fig. 3).

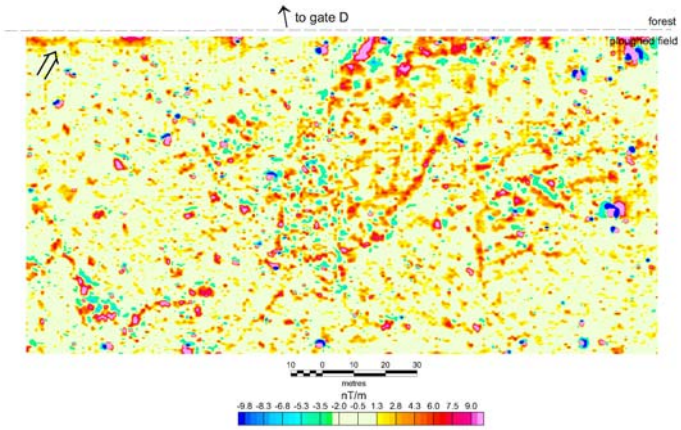

Fig. 3. Oppidum Závist, cadaster Lhota, distr. Prague-West. The identification of subsurface remains of possible communication, fortification of entrance and settlement in outer part of site (presented part of ploughed area approx. 2 ha, magnetometric survey – Křivánek 2004).

Another survey by magnetometers in the wooded central part of the site confirmed subsurface remains of settlement on the platform, possible older communication and the indication of probable modern fields (fig. 4).

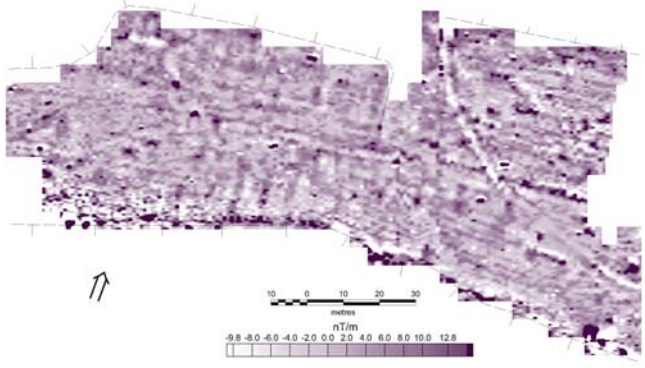

Fig. 4. Oppidum Závist, cadaster Lhota, distr. Prague-West. The identification of subsurface remains of settlement on platform and communication, indication of probably modern fields in central wooded part of site (surveyed wooded area approx. 1.1 ha, magnetometric survey – Křivánek 2005).

Geoelectric resistivity measurement (A0.5M.0.5N0.5B) in another wooded area of oppidum Hrazany, cadaster Radíč identified subsurface stone lines and rectangular division of a settled area on the platform inside a rampart fortification (fig. 5).

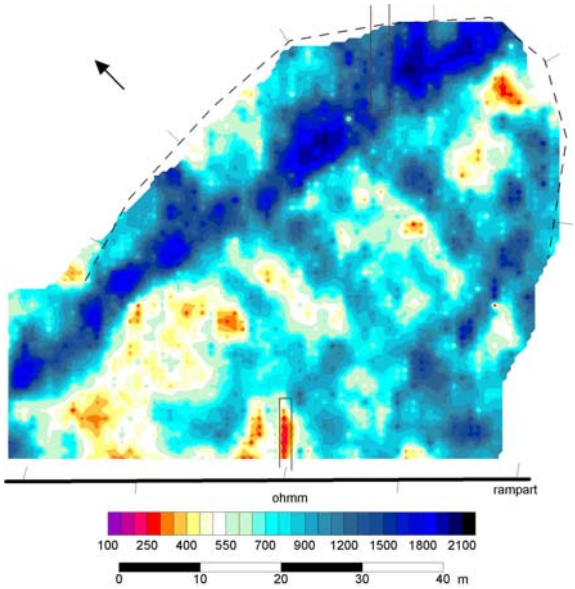

Fig. 5. Oppidum Hrazany, cadaster Radíč, distr. Příbram. The identification of stone lines and rectangular division of settled area on platform inside of rampart fortification (surveyed wooded area approx. 0,25 ha, geoelectric resistivity survey - Křivánek 2005).

The final detailed summary of results of the project will be published (in English) in a peer-reviewed archaeological journal Památky archeologické in 2008. This paper should include composition of general maps for the exact identification and registration of entire sites, verification of other real areas or internal structures of oppida for the adequate protection of the archaeological monuments, comparison of the results of non-destructive methods with current knowledge regarding the oppida based on archaeological investigation, new maps and possibly new interpretations of the use of individual areas, an assessment of the benefits of, and further potential for non-destructive oppidum surveys, and of the common traits and specific features within individual sites.

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Back to Bedlam[1]: Archaeology, Geophysics and Great War training landscapes

Peter Masters, Cranfield University, UK p.masters@cranfield.ac.uk

Large areas of Salisbury Plain were given over to training for trench warfare on the Western Front during the Great War of 1914-18. In some places these sites still survive as earthwork remains, but many sites were levelled and backfilled by the troops waiting for demob (demobilised) at the end of the war. Aerial photographic evidence shows how extensive these trench systems could be but little survives now to mark their existence (McOmish et al 2002, 138, 141).

Figure 1 – Perham Down looking south shows the location of the geophysical survey.

In November 2006, Martin Brown, Environmental Advisor (Archaeology), Defence Estates (MOD) approached Cranfield University to undertake a geophysical survey in order to reveal the extent of these trenches. The area chosen was the First World War military practice works on Perham Down, eastern part of the Salisbury Plain Training Area (SPTA), Tidworth, Wiltshire, which is located to the north-east of Shipton Bellinger and to the south of Tidworth (SU 2510 4645).

Earthwork remains of these trenches and associated redoubts today survive mainly within wooded copses to the west and to the south where the remains of the ruined Down Farm now lies. The remains to the east are under arable cultivation and their preservation is unknown. The trenches located on the open ground were in-filled during the first half of the 20th century (Fig. 1).

Huntly Gordon in The Unreturning Army (JM Dent, London 1967) gives an account of the Officer's Training Corps camp at Tidworth Pennings in 1916:

"We were given demonstrations of every aspect of warfare…….. There was an 'exact reproduction' of opposing German and British trenches – front line, support and communication".

Geophysical Survey

The survey was undertaken across the infilled trenches in order to assist in defining the extent of the features and contribute to the interpretation of the existing data. It would also contribute to wider research into the archaeology of historic training, notably during the Great War on the Plain and support the management of the area by enhancing the historic data for the site. The survey was conducted using a Bartington Grad 601 dual fluxgate gradiometer with DL601 data logger set to take 4 readings per metre (a sample interval of 0.25m). The zigzag traverse method of survey was used, with 1m wide traverses across 30m x 30m grids. The sensitivity of the machine was set to detect magnetic variation in the order of 0.1 nanoTesla. An area of c.3ha was surveyed.

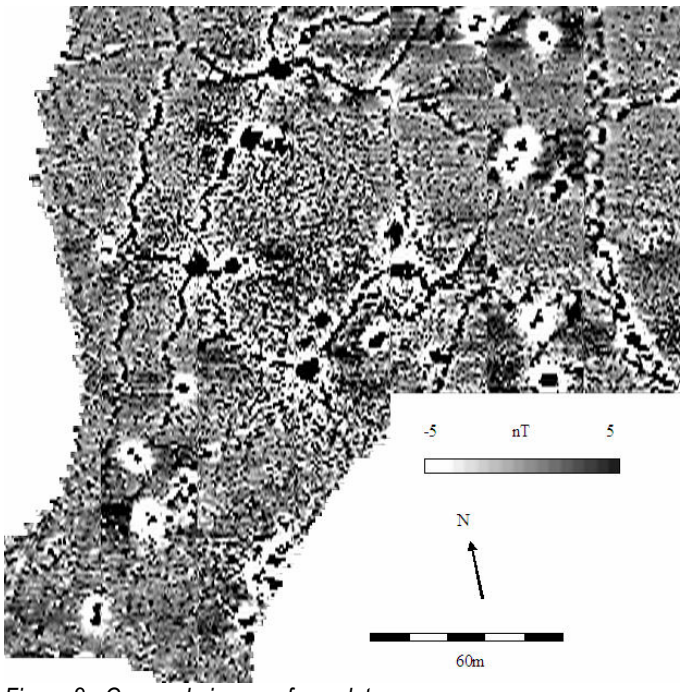

Figure 2 - Greyscale image of raw data

Interpretation

The front line is depicted as a Greek key or crenellated linear anomaly on the eastern side of the survey area, indicating fire bay trenches. Protruding from the front line into no-man's land is a short curvilinear anomaly, which represents a 'sap', a utility trench dug-out into no-man's land scouting for the presence of the enemy line.

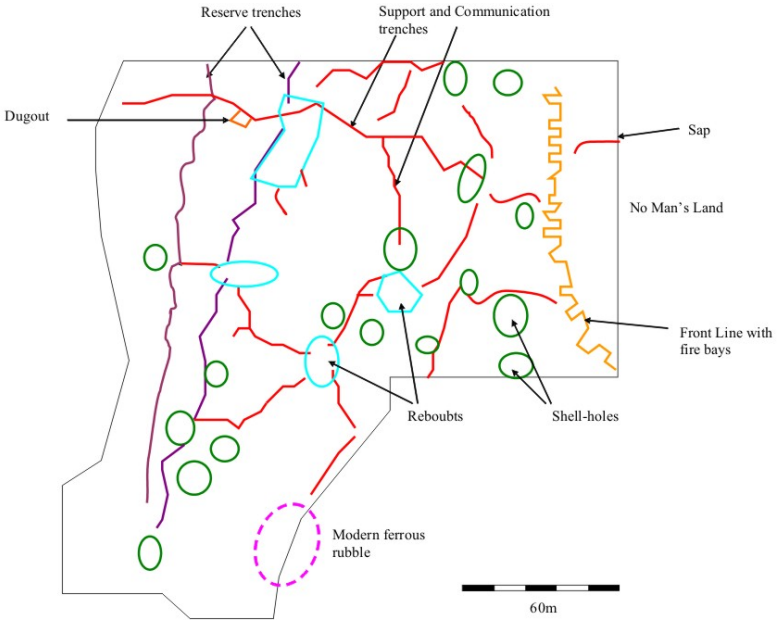

Figure 3 - Interpretation

To the west of this line, a series of curvilinear and zig-zag shaped anomalies denote the filled in remains of the Support and Communication trenches, providing defence in depth and safe access through the system. Further to the west of the Support trenches would have been the Reserve trenches shown as two parallel zig-zag configured trenches.

Interspersed within this intricate system of trenches, are series of other anomalies likely to represent shell-holes, dugouts and redoubts (strong points). Similar systems of trenches may be seen in the training manuals of the combatant nations (War Office 1917)

Conclusions

From the results it has been shown that the gradiometer survey was successful in detecting the remains associated with the Great War trenches on Perham Down. The results appear to depict a very developed and complex system of trenches. The scale and complexity of remains demonstrates the level of training given to troops, which has been discussed elsewhere (Brown 2004).

This technique has since been applied to the Front Line at Ploegsteert, Belgium (forthcoming) and further practice trenches on Salisbury Plain (http://plugstreet.blogspot.com/).

The lessons learned here on the training area has been applied to the battlefields on the Western Front but also has informed management of the British Army's largest UK training area.

Acknowledgements
The author would like to thank Martin Brown and Richard Osgood for their help in suggesting an invaluable piece of research. I would also like to thank to Steve Litherland and Claire McHardy for their assistance in the field.

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Footnote
[1] 'Bedlam' in the title refers to Bedlam plantation, which runs next to the site and the Imperial War Museum is located in the old Bedlam hospital from whence the association of the word with lunacy derives.

Conference, Seminar and Course Announcements

EIGG Geophysical Equipment Exhibition

Geophysical Test Site, Oadby, Leicester, UK, 4 May 2008

EIGG
Environmental & Industrial Geophysics Group

Stimulating Near-Surface Geophysics

University of Leicester

EIGG Geophysical Equipment Exhibition
Thursday May 8th 2008, 10 am - 4 pm

Geophysical Test Site, Oadby, Leicester.

The site is 5 miles from M1 junction 21 along the Leicester Ring Road at Grid Reference: SK 629 016

10.00—1600 Live demonstrations of geophysical equipment on the EIGG test site, with opportunity for hands-on trials. Exhibitors are currently registering, but typically include most sales and rental suppliers of geophysical equipment in UK and northern Europe.

Geophysical methods on display typically include: Magnetics, Resistivity, EM, Ground Penetrating Radar (GPR), seismics, and processing software.

The Environmental and Industrial Geophysics Group (EIGG) maintains two Shallow Geophysics test sites at the University of Leicester. Their purpose is to provide a facility for training, demonstrations, calibration and research for many aspects of shallow geophysical surveys and methods.
News updates of the program of the exhibition and demonstrations are available on the website

https://swww2.le.ac.uk/Members/iah/eiggex2008/eiggex_top

For further information on EIGG and details of other events, see

http://www.eigg.org/index.html

International Summer School: 3D Modelling in Archaeology and Cultural Heritage

Centro Stefano Franscini, Monte Verità, Ascona, Switzerland, 9 - 14th May 2008

Organized by:
ETH Zurich - http://www.photogrammetry.ethz.ch
University of SIENA, Italy - http://www.lapetlab.it
Research center FBK in Trento, Italy - http://www.fbk.eu/irst/renderer.aspx?targetID=111
University of California Merced - http://www.ucmerced.edu

The School will face the problem of the modern technologies in the heritage field, giving participants the opportunity to obtain a detailed overview of the main methods and applications to archaeological and conservation research and practice. Furthermore, our School will give the chance to participants to enter in a very short time the kernel of the scientific discussion on 3D technologies – surveying methods, documentation, data management and data interpretation - in the archaeological research and practice.

The School will be open to ca 60 participants at graduate level, to those carrying out doctoral or specialist research, to established research workers, to members of State Archaeology Services and to professionals specializing in the study and documentation, modeling and conservation of the archaeological heritage.

The grant application and registration form are available online.

The deadline for the grant application is 15st February, 2008:
http://www.3darchaeology.org/school_grant_application.pdf
Grants provided by UNESCO and ISPRS will be available for students with limited budgets and travel possibilities.

The deadline for the registration is 31st March, 2008: http://www.3darchaeology.org/school_registration.pdf

The School is to be held in the congress centre Centro Stefano Franscini, Monte Verità, Ascona, Switzerland. The centre is an ETH-affiliated seminar complex located in a superb botanical park on the historic and cultural Monte Verità area, which will also be the residence of the participants with its integrated hotel and restaurant.

We would be grateful if you could also circulate this announcement to all the possible participants.

Don't hesitate to contact the organization by email info@3darchaeology.org if you should have any questions.

GPR 2008

Birmingham, UK, 15 - 19th June 2008

In excess of 200 abstracts have been received for the 12th International Ground Penetrating Radar Conference GPR2008 to be held in Birmingham, UK in June 2008 www.gpr2008.org.uk covering the many diverse areas of the technology. Participants may also enjoy an exciting journey through the wide range of applications, beginning at their front door with utility detection, moving through many infrastructure areas including roads, railways and structures to the environment, both ancient and modern, with archaeology and issues of major "green concern", for example glaciology in polar regions, hydrogeology, geology and sedimentology. The journey concludes with sub-surface investigations on the Moon and Mars.

The wide range of papers is a perfect illustration of the wide range of disciplines for which Ground Penetrating Radar is indispensable. Although submission of abstracts has now officially closed, late submission particularly for posters may be possible. Please contact Michelle.Webb@pipehawk.com.

Please note that many papers have been submitted with specific reference to Archaeology, so there will be 2, possibly 3 sessions devoted to applications of GPR to Archaeology

AARG 2008

University of Ljubljana, Slovenia, 9 - 11 September 2008

* CALL FOR PAPERS *

International aerial archaeology conference

AARG 2008 LJUBLJANA

9 - 11 September 2008

Hosted by the

Department of Archaeology, Faculty of Arts
University of Ljubljana

Proposals for sessions, papers and posters are invited

The following sessions have been proposed, for which offers of papers are welcome:
Aerial Archaeology in the Mediterranean; New Projects; Postgraduate research;
Airborne Thematic Mapping/Airborne Laser Scanning;
An archaeology of natural places … from the air;
Aerial photography in context – recording landscape and urban areas

11 September Conference Day 3
Field Trip

Note: session titles are provisional and all papers and session proposals are welcome.
Oral papers should usually be 20 minutes duration, and equal weighting is given to poster presentations.
Closing date for abstracts is 31st May 2008.

Address for conference correspondence:
Dave Cowley
RCAHMS
16 Bernard Terrace
Edinburgh, EH8 9NX
Scotland
Email dave.cowley@rcahms.gov.uk

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STUDENT/YOUNG RESEARCHERS BURSARIES FOR AARG 2008

These are to support bona fide students and young researchers who are interested in aerial archaeology and wish to attend the conference. Anyone wishing to apply should contact Dave Cowley (RCAHMS, 16 Bernard Terrace, Edinburgh, EH8 9NX, Scotland or by email) with the following information:
Their interests in archaeology and aerial archaeology; place of study; the name and contact details of a supervisor or employer who can provide a reference; an estimate of their travel costs to attend.
Closing date for applications is 31st May 2008.

Aerial Archaeology Research Group website: http://aarg.univie.ac.at/

1st International Workshop on "Advances in Remote Sensing for Archaeology and Cultural Heritage Management"

Rome, Italy, 1 - 4 October, 2008

On behalf of the EARSEL SIG on Remote Sensing for Archaeology and Cultural Heritage (Re.Se.Ar.C.H.), we are pleased to welcome you to the 1st International Workshop on "Advances in Remote Sensing for Archaeology and Cultural Heritage Management" which will held in Rome, October 1 - 4 , 2008.

The workshop is organised by Institute of Methodologies for Environmental Analysis and the Institute for Architectural and Archaeological Heritage of National Research Council (www.cnr.it), in collaboration with the Earth and Environmental Department and the Cultural Heritage Department of National Research Council, with patronage of CNR, UNESCO, MiBAC (Italian Ministry of Cultural Heritage and Activities) and sponsoored by the European Space Agency (ESA) and BELSPO (Belgian Science Policy).

The topics of the workshop are:
- Aerial archaeology: from the historical photographs to multispectral and hyperspectral imagery.
- Active airborne sensors (lidar, SAR): data processing issues and applications.
- Satellite imagery for archaeology: data processing issues and study cases
- Sub-surface reconstruction based on GPR, magnetic and electrical tomography for the archaeological research.
- Integration of space/air borne and ground remote sensing techniques for archaeology and cultural heritage.
- 3D visualization and Virtual reconstruction of landscape and sites.
- Landscape archaeology and palaeo-environmental studies based on Remote sensing, GIS and ICT.
- Rescue archaeology and management of cultural heritage: by means of Remote Sensing and GIS based methods.
- Integration of remote sensing and ground truth.

The main activities of the Workshop will include lectures given by invited speakers, oral communications, poster sessions and a field excursion. Full texts of the invited lectures, oral communications and posters, will

be included in the Workshop Proceedings. Selected papers presented during the workshop will be published in a special issue of an International Journal.

Important deadlines
Abstract submission: March 31st 2008
Notification of Acceptance: April 30th 2008
Full Paper Submission and registration: June 30th 2008
Abstract and queries can be addressed to: earsel-researchsig@ibam.cnr.it
More information: http://www.ibam.cnr.it/earsel/workshop/Workshop.htm

"Recent Work in Archaeological Geophysics" and "Geoscientific Equipment and Techniques at Crime Scenes"

Burlington House, Piccadilly, London, UK, 16 - 17 December 2008

16th December: Recent Work in Archaeological Geophysics

Shallow geophysical techniques are playing an increasing role in the evaluation of archaeological sites, in their discovery, interpretation and management. This will be the eighth in a succession of biennial meetings in which contributors from the UK and further afield present and debate the results of recent research and case studies. Suppliers of equipment and software also attend and the meeting therefore represents an invaluable opportunity for both archaeological and geophysical practitioners to take advantage of recent research and developments.

Convenor: Paul Linford, English Heritage, Fort Cumberland, Eastney, Portsmouth, PO4 9LD, UK; Tel.: +44 (0)23 9285 6749 email: Paul.Linford@english-heritage.org.uk

17th December: Geoscientific Equipment and Techniques at Crime Scenes
This follow-on meeting of the Forensic Geology Group aims to capture shared interests between the archaeological, geological, environmental, humanitarian and law enforcement communities, will follow a macro- to microscale organisation. Sessions will include both merging and current cutting-edge geoscientific techniques to aid the forensic investigator and will include geophysics, aerial, satellite and landscape interpretation, buried materials, trace evidence and innovations in materials analysis.

Co-convenors: Dr Alastair Ruffell, School of Geography, Archaeology & Palaeoecology, Queen's University, Belfast, N. Ireland, BT7 1NN; Tel.: +44 (0)28 9097 340 email: a.ruffell@qub.ac.uk
Dr Jamie Pringle, School of Physical Sciences & Geography, Keele University, Keele, Staffs. ST5 5BG; Tel.: +44 (0)1782 583163 email: j.k.pringle@esci.keele.ac.uk

Call for papers
Those interested in contributing either a talk or poster to either meeting are warmly encouraged to contact the respective convenors, and to submit abstracts of up to 1000 words in length, accompanied by suitable black and white illustrative material, no later than the 31st August 2008. These will be collated and made available to all those attending.

Announcement

ArchaeoPhysica welcomes Maria Lafuente who has joined us from SOT Prospecció Arqueològica, Spain to complement our expanding team

Journal Notifications

Archaeological Prospection

Dear All

Just a very short note to say that we have an excellent selection of papers ready to publish this year in Archaeological Prospection. In the first Issue we have an invited review paper by Rinita Dalan from Minnesota State University. As many of you will know Rinita is an authority on magnetic susceptibility and has provided the journal with a large article 'A review of the role of magnetic susceptibility in archaeogeophysical studies in the USA: recent developments and prospects'. This is a 'must read' for all practitioners of shallow prospection as the case studies that she illustrates her article with are very broad in application.

Among the other contributions to issue 1 should be 'Common- and multi-offset ground-penetrating radar study of a Roman villa, Tourega, Portugal' by
Brooke A. Berard and J. M. Maillol (this missed the deadline for the previous issue), as well as 'Non-destructive electrical resistivity tomography for indoor investigation: the case of Kapnikarea Church in Athens' by
G. N. Tsokas, P. I. Tsourlos, G. Vargemezis and M. Novack.
The editorial team at Archaeological Prospection are dedicated to bringing the best papers in shallow prospecting from around the world… in the last 4 years (2004-2007) the journal has published 87 papers and the 117 named authors from this period come from 25 different countries…all this at a massive discount to ISAP members. Please subscribe via the link on the ISAP website.

Chris Gaffney, Editor

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