ISAP NEWS

The newsletter of the International Society for Archaeological Prospection

Issue 11, April 2007

Contents

Editor's Note

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Welcome to the 11th issue of ISAP News. I hope you enjoy reading it and are inspired to contribute to the next edition which will be produced in July, just before The 7th International Conference on Archaeological Prospection, which will be held from 11th-15th September in Nitra, Slovakia. Registration details can be found on page 7 and more information about the conference can be found on-line at http://www.archeol.sav.sk/ap07.htm. Details about travelling to Nitra from the nearest airports of Bratislava and Vienna are promised soon. The next ISAP AGM will also be held during the course of the conference.

If you would like to submit an article, advert or announcement for the next issue, please email content direct to me by 16th July 2007.

Ground-Penetrating Radar's Ability to Discover and Map Buried Archaeological Sites in Hawaii: an Analysis in Different Soil Types, as a Function of Soil Moisture and Weathering Characteristics

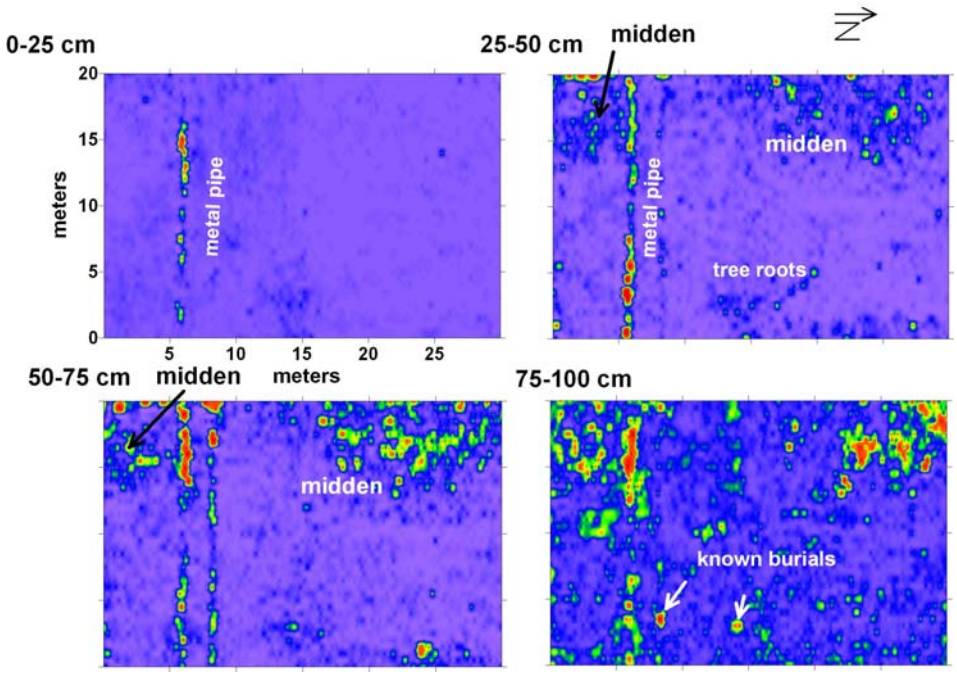
Lawrence Conyers, University of Denver, USA lconyers@du.edu

Lawrence Conyers (University of Denver, Colorado, USA) and Sam Connell (Foothill College, Los Altos California, USA) have just completed a GPR analysis of many Hawaiian archaeological sites. This work specifically looked at the depth of penetration, resolution and buried feature analysis in limestone and basaltic soils in both windward and leeward sides of Oahu.

Collecting GPR at the ocean's edge in Hawaii with the SIR-3000 system and a 400 MHz antenna

A number of different antenna frequencies were used with the GSSI SIR-3000 system. The depth of investigation was found to be generally controlled by the types of clay in the soils, which is function of the degree the soils have been weathered. Windward clay soils, which have seen relatively intense weathering due to greater rainfall, had the greatest depth of energy penetration and therefore subsurface resolution, while leeward soils had the least. The greatest depth of investigation was found in coral sand and un-weathered basalt, with resolution of important features to a depth of between 3 and 6 metres. The shallowest depth of penetration was found to be in unconsolidated basalt cinders, which produced a great deal of energy scattering and therefore poor depth penetration and resolution. GPR data collected near salt water, or in brackish groundwater areas showed significant radar energy attenuation at the water table level, which was about a metre depth where tested. One surprising result was the 6 metre depth of energy penetration in un-weathered basalt rock, where both the ceilings and floors of lava tubes could be resolved using the 270 MHz antennas.

A variety of GPR data processing techniques were used to produce two and three-dimensional images of buried features ranging from burials in both maintained and abandoned cemeteries, house floors and walls and prehistoric middens. Those processing steps were amplitude slice-maps and three-dimensional isosurface renderings. The results of these tests will be published in the journal Hawaiian Archaeology in the spring of 2007.



Amplitude slice-maps of a prehistoric Hawaiian settlement midden and two burials

Revealing the Ibero-Roman Site of Puig-Ciutat (Catalonia, Spain) by Means of Geophysical Survey Methods

Roger Sala and Maria Lafuente, SOT Archaeological Prospection, Barcelona, Spain
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The survey carried out by means of fluxgate gradiometer over the buried site of Puig-Ciutat (Catalonia, Spain), which had never been excavated and was only known by the subsistence of the place name, the medieval written sources and the presence of abundant Ibero-Roman pottery sherds on the surface, revealed the existence of a possible ancient urban network beneath a present cultivation field (Fig. 1).

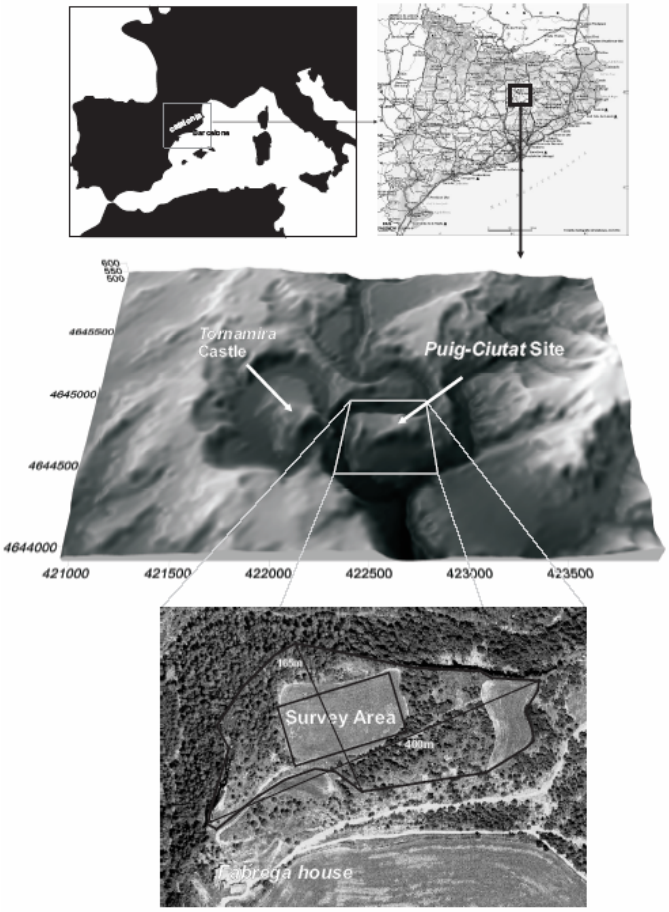

Fig 1: Site location and landscape

This network (Fig. 2A-2B) is composed by a big square feature located in the centre of the field, which has been interpreted as a building; two possible roads to the W and N of it, and three groups of anomalies to the N, W and S that could be the remains of other big buildings; two sets of smaller buildings, which present an angular distribution; combustion areas, probably related with a metalworking feature, according to the iron slags found on the surface; and possible silos (Bevan, 1998; Crew, 2002; Gaffney & Gater, 2003; Houslow & Chroston, 2002; Kvamme, 2000; Marmet, 1999; Proceedings, 2005).

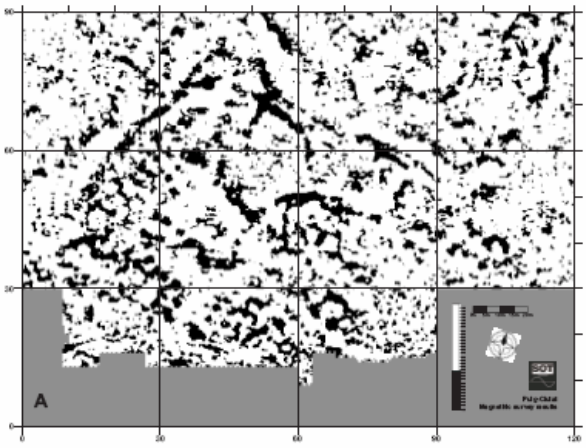

Fig 2A: Magnetic map (±1.6nT)

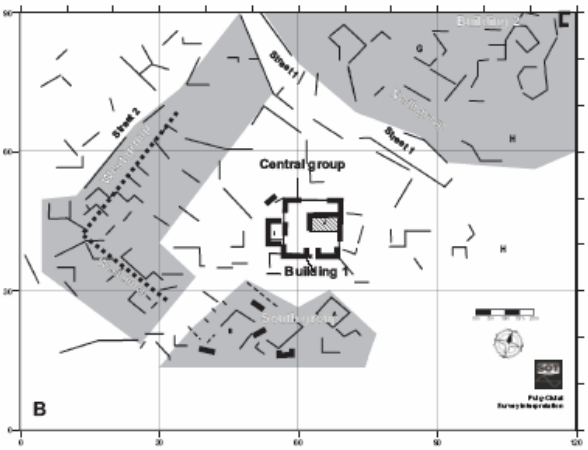

Fig 2B: Interpretation of detected magnetic features

An extra survey by means of GPR and electrical resistance with MPX carried over the central building allowed us to obtain more information about its shape and internal distribution at different stages, and its depth of burial (Conyers & Goodman, 1997; Linford & Linford, 2004; Nishimura & Goodman, 2000; Proceedings, 2005). The time-slice visualizing technique (Goodman, 2004) offered plans of the building at different

depths (Fig. 3), which were useful to define a corridor-shape feature, which is thought to be the entrance, and a possible wall and rubble that could be part of the internal distribution of the building. The magnetic gradiometry revealed the existence of a possible silo or combustion area plus two possible pavements inside the building. Three plans were generated by the Multiplexer electrical prospection (at 0.5m, 1m and 1.5m), which shown the building walls, but offered no new information about it.

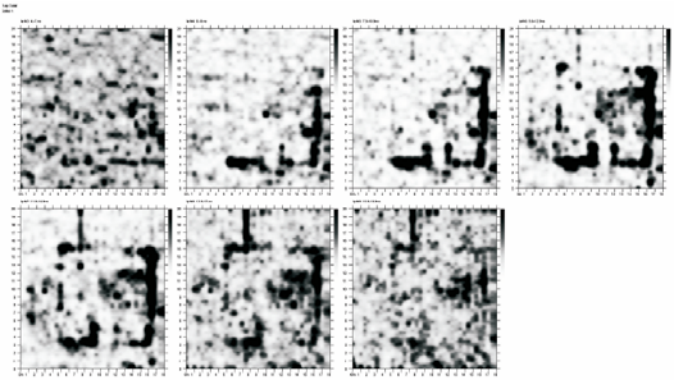

Fig 3: Slices 3-9 from Building 1 GPR survey. View of 4-19ns in 3ns overlapping steps

The GPR wave velocity test used to approximate the depth of burial of the feature estimated that the remains were located between the first 35cm and 120cm of subsoil.

As a final result of the integration of the three techniques and a previous knowledge of the site's historical and archaeological site background, some interpretative hypothesis could be formulated. On one hand, the shape of the detected site and its internal distribution does not correspond to the typical Iberian oppidum. On the other hand, the presence of the 'Central Group' in the centre of the prospected area, which includes Building 1 and other features around it, suggests two interpretative possibilities. The first is that this central area would belong to a settlement phase more recent than the rest of the features, and the second one, that this building was a central space to be used by the whole community.

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Proceedings - *Extended Abstracts of the 6th International Conference on Archaeological Prospection*, Institutes of Technologies Applied to Cultural Heritage (ITABC), National Research Council (CNR), Roma (Itàlia), 2005

North Sea Palaeolandscape Project Access Grid Seminar

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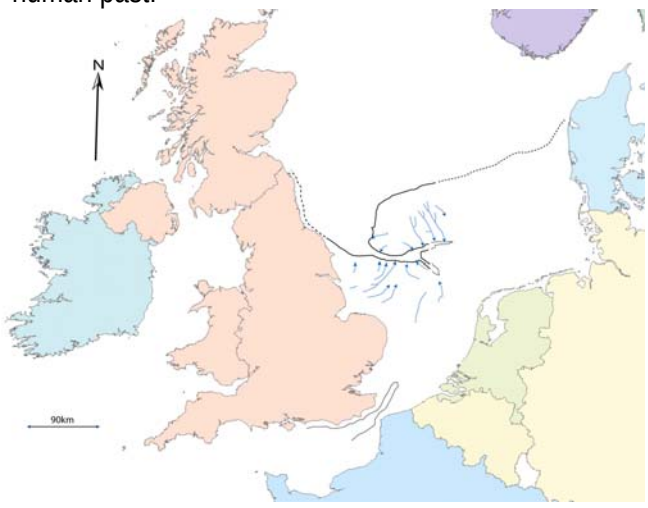
Duncan P. McKinnon, University of Arkansas, USA duncanm@uark.edu

On March 14, 2007 a multidisciplinary group of researchers presented at the University of Birmingham results from the North Sea Palaeolandscape Project. This half-day symposium was broadcast using the video conferencing Access Grid® system. The Access Grid® system allows users from around the globe to participate in an interactive real-time dialogue. Institutional participants included students, faculty, and professionals from the National Oceanography Centre, Durham, Reading, Cambridge, Birmingham, BGS, and the University of Arkansas. The North Sea Palaeolandscape Project is a mammoth research endeavour that successfully created a digital reconstruction of a 23,000 km^2 section of the North Sea floor. This reconstructed section consists of 700 km of coast encompassing several countries, truly making it international in scale. More so, this advanced multi-disciplinary research project was conducted over an amazingly short span of only eighteen months. The scale and complexity of this project, as presented in the symposium, are testimony of the necessity to advance beyond traditional research methods in attempting to understand and reconstruct the human past.



Overview of project area

The North Sea Palaeolandscape Project Access Grid® symposium was divided into two sessions. In the first session, presenters reviewed the various technological, archaeological and geomorphological contexts associated with the North Sea. This first session provided a solid framework for understanding the various challenges faced by the North Sea Project. In the second session, mapping, analysis and results of the project were presented. The second session provided remarkable results from the project, including areas mapped, tools used for analysis of the data and discussions of future research prospects. A total of nine presentations contributed to the half-day symposium. The project was funded by Aggregates Levy Sustainability Fund, administered by English Heritage (http://www.english-heritage.org.uk/) Petroleum Geo-Services (http://www.pgs.com/) provided three-dimensional seismic data using advanced seismic maritime vessels.

The first session began with an introduction to the videoconference by Professor Vincent Gaffney. Following him, Dr. Ian Oxley took the stage and reaffirmed the support of English Heritage for the ongoing research project.

Professor Geoff Baily followed this up with a discussion of the larger archaeological context of the North Sea Palaeolandscape Project, namely the affect of coastline change on ancient peoples of the area and the archaeology they left behind. In particular, he presented information concerning what archaeological information we currently do not possess, what may be preserved on the seafloor, and how to go about recovering it.

Dr. Mark Bunch followed with a synopsis of data issues surrounding the exploration of inundated land surfaces within English waters. His two main objectives were to assess the existing three-dimensional seismic data sets available and to evaluate their supporting data.

Following Dr. Bunch, Ken Thomson presented the geological background for the project. He described the theory and practice required of two- and three-dimensional seismic data acquisition and the benefits of three-dimensional data cubes over two-dimensional data slices.

Prior to a mid-session coffee break, Simon Fitch discussed the technological aspects of the project. His discussion reviewed the necessary hardware and software required to acquire, manage, store, manipulate the colossal data set and how to make these data available to the many researchers involved.

The second session began with Dr. Ken Thomson presenting the contributing research related to salt tectonics and the internal structures of the Outer Silver Pit. Dr. Thomson analyzed the North Sea floor looking for salt dome relief corresponding with the seabed and associated sand banks. The identification of areas of salt concentration along sand banks, according to Thomson, provides probable locations of prehistoric occupation when ocean levels were lower.

Returning to the podium, Simon Fitch presented the much-awaited atlas of the mapped palaeolandscapes within the project area. His atlas of mapped palaeolandscapes consists of palaeochannels, tributaries and wetlands across the 23,000 km^2 survey area. The identification of these areas further contributes to probable locations of prehistoric occupational areas.

Continuing on, Dr. David Smith presented the various environmental issues relating to the North Sea study area. Dr. Smith discussed how the area being researched was not affected by shore erosion. Subsequently, this lack of shore erosion provides an isolated and preserved archive of the study area.

As the last presenter broadcast from Birmingham, Professor Vince Gaffney discussed issues related to heritage and landscape characterization. His main points included an emphasis that the North Sea must be viewed as an extension of the land. He continued stating that modern coastlines are not useful in a holistic interpretation of past occupations within this international landscape. Additionally, Professor Gaffney stressed the need for characterization of land classes and topography of the North Sea floor in order to understand the palaeo-use of the area beyond a simple management of the area.

Wrapping up the symposium, Professor Martin Bell (University of Reading) gave concluding remarks while sat at his computer in Reading. He reemphasized the enormous scale of this project and the short eighteen months in which this phase was completed. He stressed the importance of interdisciplinary teamwork demonstrated in this project and the exciting prospects for future areas of research in terms of understanding palaeolandscapes, coastal management and coastal protection of archaeological areas.

Through use of the Access Grid® system, researchers and interested parties from around the world were able to participate in learning about the North Sea Palaeolandscape Project. This type of videoconferencing is a relatively unused, yet an efficient method of scientific collaboration and education. The project is of global importance and, rightly so, was presented to a global audience.

More Information about University of Birmingham Access Grid® seminars:
http://www.iaa.bham.ac.uk/Computing/HP_VISTA/Seminars/access_grid_seminars.htm

More Information about the North Sea Palaeolandscape Project:
http://www.ahessc.ac.uk/gaffney2-case-study

More Information about Access Grid®:
http://www.accessgrid.org/

Conference, Seminar and Course Announcements

Access Grid - Remote Sensing and Visualisation Seminar Series: Deep Subsurface Geophysical Prospection at Tell Qarqur, Syria

7th May 2007

The next Remote Sensing and Visualisation Access Grid Seminar will be on Monday 7th May at 17:15 UK time (11:15 US Central time). The seminar will be:

"Deep subsurface geophysical prospection at Tell Qarqur, Syria"
Dr. Jesse Casana, Aaron Fogel, and Jason Herrmann

The main participants will be in the USA, but for advice on joining the meeting please contact Helen Goodchild (H.Goodchild@bham.ac.uk). New participants must test the link before the meeting.

Since the last newsletter the following seminars have been held, Dominic Powlesland (Landscape Research Centre) *Archaeological prospection at West Heslerton*, Keith Challis (Birmingham Archaeology/HP VISTA) *Airborne remote sensing in alluvial environments and* Dr Michael Donneus *Airborne Laser Scanning as a tool for archaeological prospecting in forests.*

A milestone for the series was a conference on the North Sea Palaeolandscape Project, which is based at Birmingham and is sponsored by the ALSF. This landmark project involves mapping and interpretation of archaeology and geomorphology in the southern North Sea and a review of the day can be read above.

Those of you who know the North Sea project or participated in the Access Grid conference will know the significant contribution by one of the Principal Investigators, Dr Ken Thomson. As the Newsletter was being collated the sad news of Ken's sudden death has stunned colleagues and friends. Ken was a thoughtful inspiration to the North Sea team and he will be missed. He was only 41 years of age.

Chris Gaffney

The 7th International Conference on Archaeological Prospection

Nitra, Slovakia, 11th – 15th September 2007

Dear ISAP members, the D day is coming soon, deadline for Conference registration is May 15th. The registration fee is € 300 if you pay it before this date. The registration fee is € 350 if paid after this date, or in cash at the venue. Registration forms are available on the conference website (http://www.archeol.sav.sk/ap07.htm). However, the registration fee must be paid in EURO by bank transfer, net of bank charges and commission which are charged to the person making the payment.

Fill in the relevant items:
I will make a bank transfer for: 160052007
to: Archeologický ústav SAV – Akademická 2 – SK-949 21 Nitra (Slovak Republic)
Bank name: Štátna pokladnica
Bank adress: Radlinského 32, 810 05 Bratislava

Code IBAN: SK2381800000007000005540
Swift/BIC code: SUBASKBX
Please indicate your name clearly on the bank transfer and write all the information indicated above. A copy of the bank transfer must be send, by fax or e-mail, to Dr. Ivan Kuzma or Dr. Ján Tirpák.
Fax: +421 37 7335618, e-mail: ivan.kuzma@savba.sk; jan.tirpak@savba.sk

May 15th is also the deadline for those who are interested in the three day's Post-Congress Excursion (16 – 18 September 2007). We know that eight days at once is much time for all of us but we hope that you would like to see the beautiful parts of Slovakia.

A more detailed program of conference will be given on Conference web site in the beginning of June. However, all submitted abstracts of both oral and poster presentations have been accepted and will be published.

We are looking forward to your participation at the 7th Archaeological Prospection Conference in Nitra.

Yours sincerely,

Organizing Committee
7th Archaeological Prospection 2007
AP.2007@savba.sk

The 7th International Conference on Archaeological Prospection: Travel Bursaries

Nitra, Slovakia, 11th – 15th September 2007

ISAP
International Society for Archaeological Prospection

Application for Travel Bursary: 7th International Conference on Archaeological Prospection 2007, Nitra 11-15th September.

A feature of the last ISAP Archaeological Prospection conference in Rome was the introduction of a Student Bursary to facilitate attendance for those participating in the conference. Delegates at that conference contributed to a fund to ensure that ISAP can offer similar bursaries for the upcoming ISAP conference in Nitra (September 2007). The award will be 150 Euro for each successful applicant. The application form and other details can be found on the ISAP web site. Please note that the deadline for applications is 31st July 2007.

Chris Gaffney

MSc in Archaeological Prospection: Shallow Geophysics: Four Studentships

University of Bradford, UK, September 2007

UNIVERSITY OF BRADFORD
MAKING KNOWLEDGE WORK

This one-year taught Masters course provides training in the underlying principles and applications of archaeological prospection techniques, with particular emphasis on geophysical survey (e.g. magnetic, earth resistance, ground penetrating radar). In addition to gaining a formal qualification in this discipline, the long-

established course offers an ideal opportunity to acquire in-depth understanding of fundamental issues related to instrument usage, data processing and archaeological data interpretation.

The University's *Division of Archaeological, Geographical and Environmental Sciences*, is ideally equipped to deliver the course with a large number of geophysical instruments for student use, (including GPR), excellent teaching facilities and academic staff who are experts in the field.

The University offers four prestigious NERC studentships for the next course, which will start in September 2007. For UK students the awards comprise of university fees, a maintenance grant of £7,880 and research expenses; other EU students are eligible for payment of the university fees only. Unfortunately, these studentships are not available to non-EU students.

Archaeological Prospection can also be studied at MPhil and PhD level. Individual research topics can be tailored to the applicants' interests and funding applications, for example to the AHRC, are supported by dedicated staff.

For further details please consult http://www.bradford.ac.uk/archsci/depart/pgrad/arcpros/ and email the course manager, Dr Armin Schmidt (A.Schmidt@Bradford.ac.uk), or telephone ++44 - (0)1274 - 23 5534. Applications may be discussed with the course manager in advance of a formal submission.

Journal Notifications

Archaeological Prospection

The second issue of 2007 of the journal Archaeological Prospection is about to be published. The articles include:

Geophysical exploration in the Church of Protaton at Karyes of Mount Athos (Holy Mountain) in northern Greece
G. N. Tsokas et al

Mixed method approaches to the investigation and mapping of buried Quaternary deposits: examples from southern England
Bates et al

New approach to the study of city planning and domestic dwellings in the ancient Near East.
C. Benech

Pull-up/pull-down corrections for ground-penetrating radar data
J. Leckebusch

Wavelet transform in denoising magnetic archaeological prospecting data
B. Tsivouraki, & G. N. Tsokas

Book Reviews:
Handbook of archaeological methods. Edited by Herbert D.G. Maschner and Christopher Chippendale. AltaMira Press, Lanham, MD, 2005. Review by Mark R. Schurr

Remote Sensing in Archaeology: an explicitly North American perspective
Edited by J. Johnson. The University of Alabama Press. Review by D. Hamilton

For ISAP member discount on Archaeological Prospection please see the details on the society's website.

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