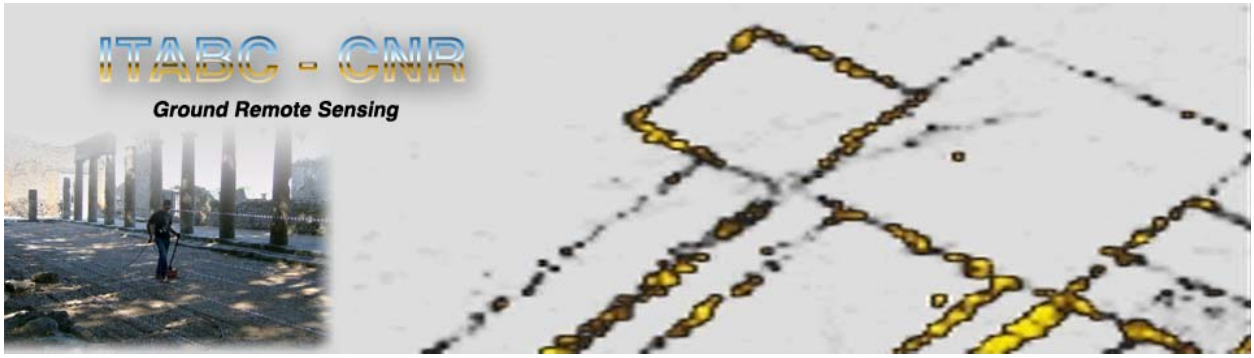

GPR Methods for Archaeology and Historical Buildings

Ground Penetrating Radar Advances in Subsurface Imaging for Archaeology and Historical Buildings

December 1st – 3rd , 2010

A three-day course at the Institute for Technologies Applied to Cultural Heritage
ITABC-CNR (Research Area of CNR, Roma1)

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1. OVERVIEW

The archaeological and cultural heritage environments often have unique site conditions as well as special requirements for making useful subsurface images from ground penetrating radar surveys. ITABC-CNR organises a workshop which will explore GPR Methods in Archaeology and Historical Buildins. The course will cover a variety of topics which will encompass field collection practices and survey design as well as introduce signal processing and image processing techniques which are often used for these specific applications. The use of forward models to aid in the interpretation of recorded radargrams from archaeological sites and historical buildings will be examined with demonstrations of GPR simulations. Various surveys from Italian, Japanese, Asian, and Native American sites will be shown that will highlight the use of GPS navigation, topographic corrections, time slicing, horizon slicing, and overlay analysis in GPR archaeometry.

2. COURSE APPROACH

The course presents the basic principals behind the design and operation of gpr systems and provides essential information needed to effectively utilize gpr to its full operational value. participants gain insight into design methodologies for gpr systems and antennas.
Field Methods for Archaeological Acquisition and Survey design are introduced and substantiated with real-world applications. Using several real-world applications, the processing and display of data sets are presented to show the necessary data manipulations from start to end.

3. WHO ATTENDS

Practicing engineers, geophysicists, geologists, scientists and GPR users broadening their knowledge. An engineering and geophysics background is helpful.

Their knowledge, experience and master's degree must be indicated in the CV.
The age limitation is not provided.
Attendees should bring their own laptop computers as workshop software licenses will distributed and signal/image processing with raw GPR data to final 3D visualization volumes will done on field data collected at a test site. Several practice folders including GPS/GPR data from archaeological sites will also be distributed and processed together in the workshop.

4. TOPICS INCLUDE

4.1 Basic GPR Signal Processing

4.1.1 GPR Synthetic Radargrams – creating synthetic radargrams from a model to try and simulate field data.
4.1.2 Post processing gain
4.1.3 DC-drift removal
4.1.4 Background removal
4.1.5 Migration
4.1.6 Static Corrections.
4.1.7 Depth Determination
4.1.8 Time slices – mapping of reflection anomalies across a site and at various depths.
4.1.9 Overlay Analysis
4.1.10 Isosurface rendering

4.2 Image Processing

4.2.1 GPR Imaging at Archaeological Sites
4.2.2 Case Histories
4.2.3 Roman Sites
4.2.4 Japanese Sites
4.2.5 Indian Sites
4.2.6 Other sites
4.2.7 Evaluation and Discovery at Historic Buildings
4.2.8 Search for Midden Deposits and Dwellings
4.2.9 Burial Rediscovery in Urban Environments
4.2.10 GPR-GPS Surveying for Archaeological Prospection
4.2.11 Correcting for Topographic effects on GPR Datasets

DISCUSSION

5. COURSE DETAILS

5.1 Times & Dates

Wed. – Thurs., 10:00 am – 16:30 pm, December 1st and 2nd.
Friday, 10:00 am– 15:00 pm, December 3rd 2010.

Teachers:

Dott. Dean Goodman – Geophysical Archaeometry Lab – CA, USA.
Prof. Luigi Sambuelli – Politecnico di Torino, Italy.
Dott. Salvatore Piro – ITABC, CNR, Italy

5.2 Registration Form and FEE

The registration form (for admission), with attached CV, must be submitted not later than **November 10, 2010**, to the attention of: Dott. Salvatore Piro by Fax: +39 06 90672684 or by e-mail to Salvatore.piro@itabc.cnr.it

The registration form must contain:

- Surname and Name
- Fiscal Code
- Place and date of birth
- Residence
- Address
- Phone and mobile
- **Curriculum Vitae CV**

The registration FEE is: EURO 400,00 (20% VAT included), which comprises:

- Didactic materials;
- Handbook;
- Training in laboratory and on the field;
- Lunches (in the canteen of Research Area)

The transport to the Research Area of CNR Roma1 - ITABC and the accommodation must be organised directly by participants.

The names of admitted participants will be published in the web site: http://grs-lab.itabc.cnr.it (education).

6. NOTE

Please, bring a laptop computer as workshop software licenses will distributed and signal/image processing with raw GPR data to final 3D visualization volumes will done on field data collected at a test site.

7. LOCATION

All lectures meet in the Training Room of ITABC, Research Area of CNR, Roma1.
Area della Ricerca CNR Roma1, Via Salaria Km 29,300 (Monterotondo – Roma).
www.mlib.cnr.it

ITABC October, 4th, 2010