

ARCHAEOMAGNETIC APPLICATIONS FOR THE RESCUE OF CULTURAL HERITAGE

REPORT ON WORKSHOP TWO

The second AARCH Workshop was held in Thessaloniki (Greece) – Panorama Hotel - from Monday March 29th until Thursday April 1st 2004. It was attended by 20 AARCH members and 16 non-AARCH colleagues, representing Austria (3), Belgium (1), Britain (5), Bulgaria (4), Canada (1), Denmark (2), Finland (1), France (3), Greece (8), Italy (2), Russia (1), Spain (4), Switzerland (1). Staff and students of the Aristotle University of Thessaloniki (Departments of Geophysics and Archaeology) also participated in several sessions. The AARCH appointees were: (pre-doc) Gianluca Catanzariti (Madrid, Spain), Emanuela De Marco (Thessaloniki, Greece), Miriam Gómez-Paccard (Rennes, France), Evdokia Tema (Torino, Italy) & (post-doc) Elina Aidona (Leoben, Austria), Lluís Casas (Liverpool, United Kingdom), Andy Herries (Sofia, Bulgaria), Clare Peters (Aarhus, Denmark), Simo Spassov (Thessaloniki, Greece).

BUSINESS MEETING

- *Introduction.* Cathy Batt [BRAD] reminded about the aims and objectives of AARCH and circulated extracts from the first annual report.
- *Calibration.* Evdokia Tema [TORI], Clare Peters [UAA] and Cathy Batt [BRAD] reported about the current state of the inter-laboratory calibration. Approximately half of the partners have received the samples. Once all labs have done so, Evdokia will collate the results for discussion. Following this, more detailed comparisons will be considered.
- *Objectives and timescale.* Cathy Batt [BRAD] circulated the revised timetable and highlighted the key deadlines: new posts to be filled in September 2004, the need for a Mid-term Review Meeting and the completion date for the whole project in September 2006.
- *Partner contributions.* Each AARCH coordinator gave a short report about the activities in their laboratory. Cathy Batt emphasised the need for network members to undertake joint research, joint publications and inter-laboratory exchanges. It was reported that most Young Researchers had already visited, or had plans, to visit other laboratories for example Lluís Casas [LIVE] will join a field trip of THES to Santorini; Simo Spassov [THES] will visit SOFI. It was agreed to encourage these activities by better use of email and the website
- *Training aspects.* The young researchers spoke about their training experience, which included specific skills in the research area, general academic courses and training in languages. They also discussed the relationship with their mentor and this was agreed to be a helpful aspect of the Network. Philippe Lanos [CNRS] proposed to give a training course about statistical treatment of archaeomagnetic data, probably integrated into the next Workshop. John Shaw [LIVE] proposed a training course for microwave palaeointensity analysis at Liverpool.
- *Recruitment.* An updated list of appointments was circulated. The post-doc post in RMI has been filled. Posts were still available at UCM (post-doc), CNRS (post-doc), PLYM (post-doc), NAPO (post-doc), BRAD (post-doc & pre-doc). (It has been decided to split the three-year pre-doc of BRAD into two pre-doc posts of one year and two years. These posts have been advertised in the internet and at an international conference. It was confirmed that Professor Nardi [NAP] may withdraw from AARCH but arrangements were in hand for retaining the work in Italy.
- *Finances.* There was considerable discussion of the financial arrangements. The EU will not advance monies to Members and different universities act differently in distributing the money from the European Commission. Most of them cannot pre-pay field expenses, travel

expenses, congress fees, free home ticket, etc. This obliges the young researchers or their supervisors to pre-pay these costs from their own salaries. Although this money will eventually be reimbursed after the universities will be paid from the European Commission, the situation is very unsatisfactory, particularly for young researchers on one-year contracts. This situation also inhibits the operation of AARCH as the exchange of knowledge and experience is strongly limited. Representations will be made to the EC but it is recognised that this situation is outside of the control of the Network.

- *Network Management.* Cathy Batt [BRAD] encouraged colleagues to become involved with aspects of Network Management. It has been decided to renew the AARCH web page. Simo Spassov [THES] will take this part over, with support from Evdokia Tema [TORI] and Roberto Lanza [TORI]. A schedule of visits to Young Researchers was discussed.
- *Reporting.* Members were reminded of the need for prompt Annual reporting in order to ensure prompt payment of costs.
- *Mid-term Review.* Requirements for the Mid-term Review meeting were circulated and it was agreed to hold the mid-term meeting and the AARCH workshop 3 together in Madrid in March 2005. The date was determined by funding issues and fieldwork opportunities. Content and organisation will be carried out by Cathy Batt [BRAD], Don Tarling [PLYM], Marisa Osete and Gianluca Catanzariti [MADRID]. Robert Scholger [LEOBEN] will be invited to participate in the organisation.
- *Future Plans.* Hermann Mauritsch [LEOB] spoke about how AARCH principles could be continued after the end of AARCH. He proposed that AARCH members should apply to provide Marie Curie conference and training courses (summer school and final conference). It was agreed that this would be taken forward by Don Tarling [PLYM], Hermann Mauritsch [LEOB] and Philippe Lanos [CNRS].
Publications of the Network activities in archaeological journals were encouraged.

PRESENTATION OF THE YOUNG RESEARCHERS

Every young researcher (AARCH and non AARCH) gave a presentation outlining the progress of his/her work. Each talk was followed by a discussion involving all Workshop attendees. The following talks were held:

- Aidona, Elina [LEOB]: New techniques for sampling and consolidation of sediments: application to archaeological materials from Eisenerz, Austria.
- Casas, Lluís [LIVE]: Microwave system Archaeointensities from Hampshire.
- Catanzariti, Gianluca [UCM]: Preliminary archaeomagnetic results obtained from ovens ranging in age from the 2nd century BC to 1959.
- De Marco, Emanuela [THES]: Archaeomagnetic study of three Hellenistic kilns in Katerini (Makedonia, Northern Greece).
- Donadini, Fabio: Archaeomagnetic intensity data from Europe. (*non AARCH attendee*)
- Gómez-Paccard, Miriam [CNRS]: Induration of fragile archaeological baked clays with sol-gel techniques.
- Herries, Andy [SOFI]: Archaeomagnetic variability in Thracian and Medieval ovens.
- Kostadinova, Maria: Water glass impregnation and magnetism of baked clay. (*non AARCH attendee*)
- Peters, Clare [UAA]: Archaeo- and mineral magnetic studies in Denmark, the Faroe Islands, Iceland and Scotland.
- Spassov, Simo [THES]: Stability of remanence components in archaeological and volcanic samples - consequences for the Thellier-Thellier method.
- Tema, Evdokia [TORI]: Archaeomagnetic study of two Roman furnaces in Puglia, southern Italy.

INVITED TALKS

Ted Evans (University of Alberta, Edmonton, Canada) gave an introduction on the history of archaeomagnetic research and re-evaluated and updated the archaeomagnetic results from Greece. He drew attention to the gaps in the Greek database and outlined the work needed. The title of his talk was: "A review of archaeomagnetic investigations in Greece".

Danis Nourgaliev from Kazan State University, Russia gave a talk with the title "Palaeosecular variations recorded in European lake sediments: comparison with archaeomagnetic data". He shed some light on relevant neighbouring subjects, like geomagnetism and rock magnetism and on the comparison of AARCH results (e.g. palaeosecular variation curves) with data from different environments (such as lake sediments) for an objective point of view.

LECTURES

Following lectures were given:

- Lanos, Philippe [CNRS]: "*Stratified* or *hierarchical* modelling of archaeomagnetic data"
- Lanza, Roberto [TORI]: "Historical measurements of the Earth's magnetic field and lava flows remanence directions in Italy over the last four centuries"
- Schnepf, Elisabeth [LEOB]: "The German archaeomagnetic curve" (*non AARCH attendee*)

FIELD TRIP

The archaeological site of Dion (Classical period) and the tombs of the Royal Macedonian family at Vergina were visited. Both are located on the foothills of Mt. Olympos, Macedonia, Northern Greece. The excavations at Vergina started in 1861 by Lèon Heuzey and now continue under the supervision of the Aristotle University of Thessaloniki and the Greek archaeological service. This field trip gave us an insight of the philosophy, culture and the every day life of ancient Greeks.

PRACTICAL COURSE

A practical course about sampling techniques was held. The aim was to show different sampling techniques. This course was guided by Philippe Lanos [CNRS] and Ted Evans. Ted Evans demonstrated a sampling technique for small samples, whereas Philippe Lanos showed a sampling procedure for larger samples. Both techniques are of common interest due to the different situation likely to be found in the field. In addition, Cathy Batt [BRAD] and Don Tarling [PLYM] shared their sampling experiences. The course took place at a Hellenistic site at Olympias, Chalkidiki. This archaeological site consists of several storage rooms, workshops and five pottery kilns. Pottery finds and coins indicate different phases of constructions between the mid of the 4th century BC until the 1st century BC. The excavations have been undertaken by K. Sismanidis between 1999 and 2000. K. Sismanidis is thanked for help to access the site.

After the practical course, the birthplace of Aristotle was visited; one of the last major philosophers from the Classical/Hellenistic period that has strongly influenced the European way of thinking.

LIST OF PARTICIPANTS

Abrahamsen, Niels (Aarhus, Denmark)	abraham@geo.au.dk
Aidona, Elina (Leoben, Austria)	elina.aidona@unileoben.ac.at
Batt, Catherine (Bradford, United Kingdom)	C.M.BATT@bradford.ac.uk
Casas, Lluís (Liverpool, United Kingdom)	lluis@liverpool.ac.uk
Catanzariti, Gianluca (Madrid, Spain)	gcatanza@fis.ucm.es
<i>Chauvin, Annick (Rennes, France)</i>	annick.chauvin@univ-rennes1.fr
De Marco, Emanuela (Thessaloniki, Greece)	demarco@lemnos.geo.auth.gr
<i>Donadini, Fabio (Helsinki, Finland)</i>	fabio.donadini@helsinki.fi
Evans, Ted (Edmonton, Canada)	evans@phys.ualberta.ca
<i>Gerofoka, Eleni (Katerini, Greece)</i>	
Gómez-Paccard, Miriam (Rennes, France)	miriam.gomez@univ-rennes1.fr
<i>Hedley, Ian (Geneva, Switzerland)</i>	Ian.Hedley@terre.unige.ch
Herries, Andy (Sofia, Bulgaria)	andyherries@yahoo.co.uk
<i>Hill, Mimi (Liverpool, United Kingdom)</i>	mimi@liv.ac.uk
Hus, Jozef (Dourbes, Belgium)	jhus@oma.be
<i>Jordanova, Neli (Sofia, Bulgaria)</i>	vanedi@geophys.bas.bg
Kondopoulou, Despina (Thessaloniki, Greece)	despi@geo.auth.gr
<i>Kostadinova, Maria (Sofia, Bulgaria)</i>	miki4740@abv.bg
Kovacheva, Mary (Sofia, Bulgaria)	marykov@geophys.bas.bg
Lanos, Philippe (Rennes, France)	philippe.lanos@univ-rennes1.fr
Lanza, Roberto (Torino Italy)	roberto.lanza@unito.it
Mauritsch, Hermann (Leoben, Austria)	hermann.mauritsch@notes.unileoben.ac.at
<i>McIntosh, Gregg (Madrid, Spain)</i>	gregc@ucmail.ucm.es
Nourgaliev, Danis, (Kazan, Russia)	danis.nourgaliev@ksu.ru
Peters, Clare (Aarhus, Denmark)	clare.peters@geo.au.dk
Osete, Marisa (Madrid, Spain)	mlosete@fis.ucm.es
<i>Ruiz Martínez, Carlos (Madrid, Spain)</i>	vcarlos@fis.ucm.es
<i>Sarris, Apostolos (Crete, Greece)</i>	asaris@ret.forthnet.gr
<i>Schnepp, Elisabeth (Leoben, Austria)</i>	eschnepp@foni.net
Shaw, John (Liverpool, United Kingdom)	j.shaw@liv.ac.uk
Spasov, Simo (Thessaloniki, Greece)	simo@lemnos.geo.auth.gr
<i>Spatharas, Vassilis (Thessaloniki, Greece)</i>	vspath@ath.forthnet.gr
Tarling, Don (Plymouth, United Kingdom)	d.tarling@plymouth.ac.uk
Tema, Evdokia (Torino Italy)	evdokia.tema@unito.it
<i>Tsokas, Grigorios (Thessaloniki, Greece)</i>	gtsokas@geo.auth.gr
<i>Zananiri, Irene (Thessaloniki, Greece)</i>	izanan@lemnos.geo.auth.gr

[AARCH member; *Non AARCH attendees*; **Invited Guests**]