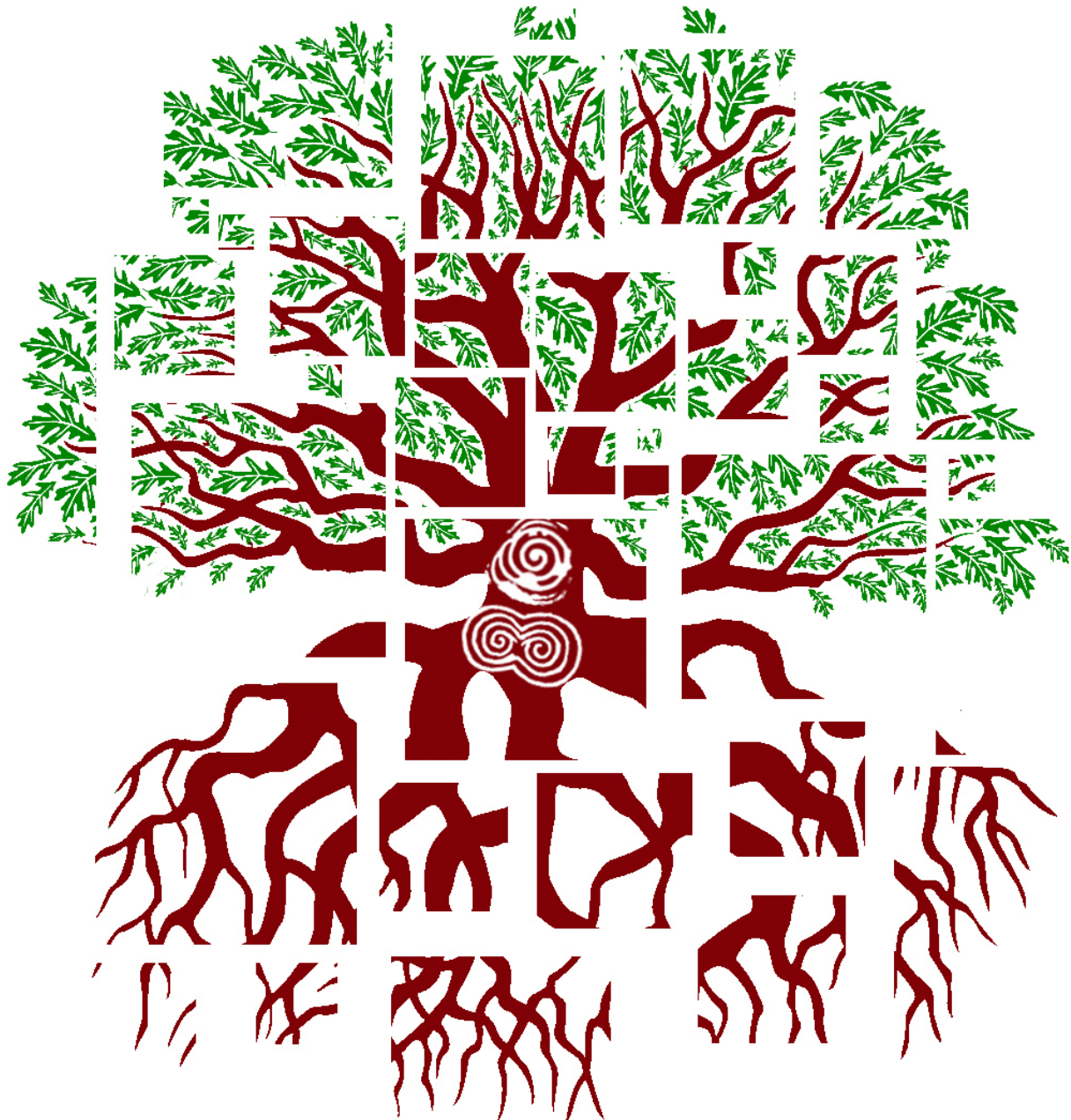


# anthraco2019 – 7<sup>th</sup> International Anthracology Meeting

## Charcoal Science in Archaeology and Palaeoecology

University of Liverpool – Central Teaching Hub, 2-6 September 2019

Hosted by the [Department of Archaeology, Classics and Egyptology](#)



**Conference Programme & Abstracts Volume**

# anthraco2019 - 7<sup>th</sup> International Anthracology Meeting

## Charcoal Science in Archaeology and Palaeoecology

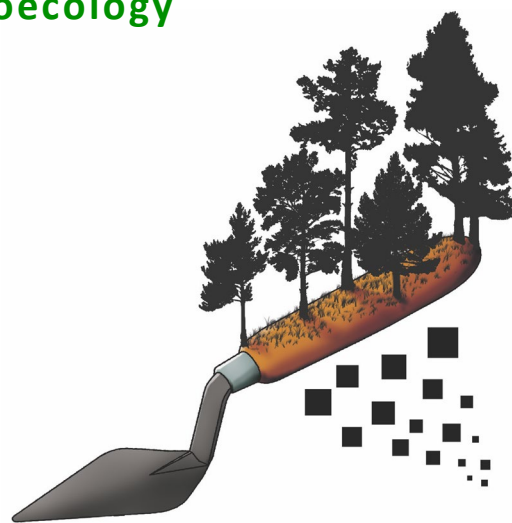
University of Liverpool, 2-6 September 2019

Central Teaching Hub (CTH), Liverpool, L69 7BX  
Campus zone: Central Campus  
[Campus map](#) reference: F6, buildings 221 and 802



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Email [anthraco2019@liverpool.ac.uk](mailto:anthraco2019@liverpool.ac.uk)

Follow us on Twitter:

Liverpool Archaeobotany lab @LiverpoolLab  
Ceren Kabukcu @CerenArkbotani



Edited by Eleni Asouti

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## Members of the Scientific Committee

Eleni Asouti, University of Liverpool, UK  
Yolanda Carrión, University of Valencia, Spain  
Lucie Chabal, CNRS - University of Montpellier, France  
Dana Challinor, Independent Researcher, UK  
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Rita Scheel-Ybert, Federal University of Rio de Janeiro, Brazil  
Isabelle Théry-Parisot, French National Centre for Scientific Research (CNRS), France

## Members of the Organising Committee

### **anthraco2019 Team Leaders:**

Eleni Asouti; Ceren Kabukcu – University of Liverpool, UK

### **Institutional Support:**

Emma Hoey; Rosie Secker; Nicole Rennick  
School of Histories, Languages and Cultures (HLC) Professional Services Marketing and Events Team –  
University of Liverpool, UK

### **Conference branding:**

Marvin Demicoli; Eleni Asouti – University of Liverpool, UK

### **anthraco2019 Support Team (University of Liverpool, UK):**

Kris Boote  
Leonardo Da Fonte  
Marvin Demicoli  
Ellen Grice  
Georgia Hetherington  
Federico Poggiali

## anthraco2019 - List of Sessions

### Session 1: New Developments in Charcoal Science

This session incorporates contributions addressing the development of new methods in anthracology through the lens of related disciplines such as wood anatomy (e.g., the development of new charcoal reference collections and atlases, new developments in charcoal identification including previously unreported charcoal taxa), charcoal taphonomy (e.g., through multivariate statistical analyses, and/or actualistic and/or experimental studies), geochemistry (e.g., stable isotope science), sample selection protocols for wood charcoals, new microscopy, imaging and metrical analysis methods, etc. Presentations in this session demonstrate a strong methodological focus.

### Session 2: Charcoal Science and Human Palaeoecology

Session 2 is entirely devoted to the presentation of new results from archaeo-anthracological projects focusing on palaeoenvironmental reconstruction, past wood fuel and timber uses, human landscape impacts, and/or experimental and anthropological/ethnographic studies conducted independently or in conjunction with an ongoing archaeological project. Any type of archaeological context and any period and geographical region are considered. Presentations in this session demonstrate a strong palaeoecological and/or anthropological focus.

### Session 3: Dendro-Anthracology

This session focuses on recent theoretical and methodological advances in the study of tree rings in archaeological charcoals and related developments in tree ring science and ecological wood anatomy. Archaeological case studies focusing primarily on the reconstruction of fuel/timber wood exploitation strategies, woodland growth conditions and ancient woodland management regimes are included. Presentations in this session demonstrate a strong focus on dendro-anthracology and related disciplines.

### Session 4: Interdisciplinary Studies

This session addresses interdisciplinary topics aiming to integrate the study of archaeological wood charcoal macro-remains with data categories derived from other sub-disciplines of environmental archaeology (e.g., the archaeobotany of plant macro- and micro-remains such as seeds, phytoliths, starch and pollen; vegetation modelling, etc.) Presentations in this session demonstrate a strong interdisciplinary focus.

### Session 5: The Anthracology of Kilns and Charcoal Burning

This session focuses on recent research of charcoal production sites, and the use of charcoal as fuel in domestic and industrial contexts (e.g., metallurgy, pottery and glass kilns, etc.) Papers dealing with all aspects of charcoal production and use as fuel, their multifaceted impacts on woodland ecology and past landscapes, and/or related methodological issues and advances in these fields, are included. Presentations in this session demonstrate a strong focus on the study of charcoal production and use as fuel.

### Session 6: Palaeobotany and Pedoanthracology

This session includes the study of charcoal remains originating in non-archaeological (off-site) assemblages (e.g., pre-Quaternary charcoal fossils, micro-charcoals from lakes and peat bogs, soil and sediment charcoal/ pedoanthracology). Presentations in this session deal with specific case studies as well as methodological issues, demonstrating a strong palaeobotanical and/or pedoanthracological focus.

## Conference programme

### Oral presentations (Lecture Theatre B, CTH)

Monday 2 September 2019

**08:30 – 10:30** Conference registration  
(Coffee will be available in the reception area from 9:30; delegates with posters will be directed to the poster presentation space in the GFlex Teaching Space)

**10:30 – 11:00** Welcome address & Conference info

#### Session 1: New Developments in Charcoal Science

**11:00 – 11:35** Keynote talk: **Data analysis in anthracology – Challenges and prospects**  
Ceren Kabukcu, Lucie Chabal

**11:40 – 11:55** **An effective sampling method for charcoal-rich layers: a case study from the Later Stone Age of Bushman Rock Shelter, Limpopo Province, South Africa**  
Elysandre Puech, Christine Sievers, May Murungi, Marion Bamford, Isabelle Théry-Parisot

**12:00 – 12:15** **New climatic approaches to Middle Palaeolithic sequences: combined methodology of taxonomic and isotopic charcoal analyses on two Neanderthal settlements: “Les Canalettes” (Aveyron, France) and “La Combette” (Vaucluse, France)**  
Benjamin Audiard, Liliane Meignen, Pierre-Jean Texier, Thierry Blasco, Giovanna Battipaglia, Isabelle Théry-Parisot

**12:20 – 12:35** **Foraging behaviours and fuel wood selection: insights from pre-agricultural habitations in the Eastern Mediterranean**  
Eleni Asouti

**12:40 – 12:55** **Firewood gathering strategies in Parc Nacional d’Aigüestortes i Estany de Sant Maurici (Central Pyrenees). Some proposals**  
Laura Obea Gómez, Ermengol Gassiot Ballbé, Ignacio Clemente Conte, Sara Díaz Bonilla, David Garcia Casas, David Rodriguez Antón, Guillem Salvador Baiges

**13:00 – 13:55** Lunch & coffee break (lunch provided at the conference venue)

**14:00 – 14:15** **Investigating growth habit and stem height: applications of vessel diameter measurements in anthracology**  
Ceren Kabukcu

**14:20 – 14:35** **Atlas and identification key of xylophagous traces**  
Magali Toriti, Aline Durand, Fabien Fohrer

**14:40 – 14:55** **A new approach to digitizing and imaging the Harvard University herbaria wood slides**  
Madelynn von Baeyer

**15:00 – 15:15** **Comparative wood anatomy as an aid to identification of *Prunus brigantina* Villars**  
Nicolas Dieudonné, Brigitte Talon

**15:20 – 17:00** Open posters session (GFlex Teaching Space)

Tuesday 3 September 2019

08:30 – 08:55 (Conference reception desk open)

Session 2: Charcoal Science and Human Palaeoecology I

- 09:00 – 09:15 **A step forward into tropical regions anthracology. Vegetation and wood uses in ancient Sri Lanka based on the charcoal record from Mantai, Kirinda and Kantharodai**  
Ethel Allué, Charlene Murphy, Eleanor Kingwell-Banham, Wijerathne Bohingamuwad, Gamini Adikari, Nimal Perera, Nicole Boivin, Dorian Q Fuller
- 09:20 – 09:35 **An analysis of charcoal from Sibudu cave (South Africa) for a ‘volcanic winter’ associated with the Toba super-eruption**  
Bongekile Zwane, Marion Bamford
- 09:40 – 09:55 **People-plant interactions during the Late Stone Age at Wonderwerk Cave: Charcoal from the Holocene Stratum 3b, Wonderwerk Cave, South Africa**  
Joseph Chikumbirike, Marion Bamford
- 10:00 – 10:15 **Woody taxa in Middle Stone Age charcoal from Rose Cottage Cave (Free State)**  
Sandra J. Lennox
- 10:20 – 10:35 **Cultivated Landscapes – The case study of Mege, Nigeria**  
Alexa Höhn
- 10:40 – 11:10 **Coffee break**
- 11:15 – 11:30 **Land management and wood use at Joya de Cerén, a Late Classic Maya Village**  
Venicia Slotten
- 11:35 – 11:50 **Exploitation of wood resources and tropical fruit trees in the Islamic South-East Arabia: insights into plant economy of the ancient harbour city of Qalhât (XIV<sup>th</sup>-XVI<sup>th</sup> c. AD)**  
Vladimir Dabrowski, Margareta Tengberg
- 11:55 – 12:10 **Vegetation, land and wood use at the sites of Bat and Al-Khashbah in Oman (4th-3rd millennium BC)**  
Kathleen Deckers, Conrad Schmidt, Stephanie Döpfer
- 12:15 – 12:30 **Wood use at Chalcolithic Çamlıbel Tarlası, Turkey**  
John M. Marston, Peter Kováčik
- 12:35 – 12:50 **Fuelling urbanisation: the analysis of charcoal from Late Neolithic sites along the Central Yellow River region in China**  
Marvin Demicoli
- 12:55 – 14:00 **Lunch & coffee break (lunch provided at the conference venue)**
- 14:05 – 14:20 **Not just charcoal: Analysis of wood remains from aboriginal communal granaries of Gran Canaria (Canary Islands, Spain)**  
P. Vidal-Matutano, J. Morales, P. Henríquez-Valido, Á. Marchante, M.A. Moreno-Benítez, A. Rodríguez-Rodríguez
- 14:25 – 14:40 **Fuel management and landscape in the context of the first occupations of the Balearic Islands: charcoal analysis at Cova des Moro (Manacor, Mallorca, Spain)**  
Yolanda Carrión Marco, Jaume Conesa Coll, Damià Ramis
- 14:40 – 14:55 **Woodland species diversity and impact on the firewood exploitation strategies. An exploratory approach applied to Neolithic lacustrine sites of the French northern alpine arc**  
Alexa Dufraisse, Sylvie Coubray

- 15:00 – 15:15 **Choice or chance? Use of wood resources by Neolithic lake-dwelling societies in pre-alpine SW-Germany**  
Oliver Nelle, Doris Jansen, Hannes Knapp
- 15:20 – 15:35 **Contrasting the charcoal assemblages of Late Iron Age and Roman roadside settlements in north-eastern England**  
Jonathan Baines
- 15:40 – 16:45 **Open posters session (GFlex Teaching Space)**
- 17:00 – 19:00 **Anthraco2019 Wine Reception at the Victoria Gallery & Museum**  
Campus map reference: D 7 (building no 421)

## Wednesday 4 September 2019

08:30 – 08:55 (Conference reception desk open)

### Session 2: Charcoal Science and Human Palaeoecology II

- 09:00 – 09:15 **Fuel procurement during the Upper and Late Palaeolithic in Central Europe: analysis of wood charcoal sequences from archaeological sites from Poland, Slovakia and Hungary**  
Magdalena Moskal-del Hoyo, Jarosław Wilczyński, Lengyel György, Małgorzata Kot, Damian Stefański, Magdalena Sudół-Procyk, Tadeusz Wiśniewski
- 09:20 – 09:35 **Vegetation change in southeastern Greece from the Middle Palaeolithic to Late Neolithic. The wood charcoal record from cave sites in the Peloponnese**  
Maria Ntinou
- 09:40 – 09:55 **Environmental change and prehistoric landscape practices in the south-west Italian peninsula during the Pleistocene-Holocene transition**  
Federico Poggiali, Domenico Lo Vetro, Fabio Martini, Eleni Asouti
- 10:00 – 10:15 **Climate versus human-driven disappearance of *Fagus sylvatica* (European beech) extra-zonal stands at low altitude in central and southern Italy: insights from archaeo-anthracological data**  
Mauro Paolo Buonincontri, Gaetano Di Pasquale
- 10:20 – 10:50 **Coffee break**

### Session 3: Dendro-Anthracology

- 10:55 – 11:10 **Dendro-anthracology and anthraco-typology: how does it work? A user's guide**  
Sylvie Coubray, Alexa Dufraisse
- 11:15 – 11:30 **Dendro-anthracological tools applied to pinewood (*Pinus tp. sylvestris*) exploitation as fuel during the Mesolithic-Neolithic transition in NE Iberian Peninsula**  
Marta Alcolea, Alexa Dufraisse
- 11:35 – 11:50 **Firewood and timber collection and management strategies from Medieval sites in Eastern England. Initial results from the anthraco-typological analysis of oak charcoal remains**  
Robert Francis, Alexa Dufraisse
- 11:55 – 12:10 **Dendro-anthracology of *Pinus halepensis* Miller in prehistoric and protohistoric Mallorca (Balearic Islands, Western Mediterranean)**  
Llorenç Picornell Gelabert, Alexa Dufraisse, Martín de Luís Arrillaga, Maurici Mus Amézquita



#### Session 4: Interdisciplinary Studies I

- 12:15 – 12:30** **Harvesting the Mediterranean forest: wood, wild fruits and crop management during the Neolithic and the Bronze Age in Corsica. New archaeobotanical data**  
 Claire Delhon, Isabel Figueiral, Laurent Bouby, Thomas Perrin, Pascal Tramoni
- 12:35 – 12:50** **Charcoal macro-remains analysis in an integrated landscape research: land-use in a long-term and multidisciplinary perspective (Ter High Mountain Valleys, Eastern Pyrenees, Spain)**  
 Josep Maria Palet, Valentina Pescini, Massimiliano Fossati, Lídia Colominas, Arnau Garcia, Hèctor A. Orengo, Tania Polonio
- 12:55 – 14:00** **Lunch & coffee break (lunch provided at the conference venue)**
- 14:05 – 14:20** **Food for the dead, fuel for the pyre: symbolism and function of plant remains in the Roman cremation necropolis of Bracara Augusta (Portugal)**  
 Filipe Costa Vaz, Cristina Braga, Cláudia Oliveira, João Pedro Tereso, Luís Fontes, Manuela Martins
- 14:25 – 14:40** **The history of pines and pinewoods in western Iberia: a revision of archaeobotanical data**  
 João Pedro Tereso, Cláudia Oliveira
- 14:45 – 15:00** **Long-term history of woodland under human impact: archaeo-anthracological synthesis for lowlands in the Czech Republic**  
 Jan Novák, Petr Kočár, Romana Kočárová, Vojtěch Abraham
- 15:05 – 15:20** **Blooming of the Byzantine sustainable agricultural society in the Negev desert (Israel) and its abrupt decline**  
 Dafna Langgut, Yotam Tepper, Mordechai Benzaquen, Guy Bar-Oz
- 15:25 – 15:40** **Ritual and routine: distinguishing activities from fuelwood**  
 Dana Challinor
- 15:45 – 17:30** **Charcoal open lab demo session (CTH Environmental Sciences lab; 1<sup>st</sup> floor)**  
 Open posters session (GFlex Teaching Space)
- 18:00 – 20:00** **Anthraco2019 Scientific Committee meeting**

#### Thursday 5 September 2019

- 08:30 – 08:50** (Conference reception desk open)
- 09:00 – 09:30** **Keynote talk: Beyond wood anatomy**  
 Alan Crivellaro

#### Session 5: The Anthracology of Kilns and Charcoal Burning

- 09:35 – 09:50** **Forest dynamics of the Euganean Hills (Padua, Italy): when the anthracology of charcoal kilns and historical cartography explain the origin of forest landscapes**  
 Sandrine Paradis-Grenouillet, Giuseppe Bazan
- 09:55 – 10:10** **A review of 2000 years of charcoal production in the Low Countries**  
 Koen Deforce, Bert Groenewoudt
- 10:15 – 10:30** **Searching for the charcoal burners heritage - Interconnecting forest history, anthracological research and local people**  
 Thomas Ludemann
- 10:35 – 11:05** **Coffee break**

- 11:10 – 11:25** [The analysis of archaeological charcoal assemblages from Chigaramboni archaeo-metallurgical sites, south eastern Zimbabwe](#)  
Joseph Chikumbirike, Marion Bamford, Amanda B. Esterhuysen
- 11:30 – 11:45** [Anthracological analyses of charcoal kilns at a high spatial resolution: a way to better understand the charcoal production and the related forest history?](#)  
David Gocel-Chalté, François Guerold, Hannes Knapp, Vincent Robin
- 11:50 – 12:05** [The need for dendrochronology to improve the temporal resolution of charcoal manufacturing activity in the French Eastern Pyrenees: the case of the ancient charcoal-production forest of Bernadouze \(Suc-et-Sentenac, Haut-Videssos\)](#)  
Léonel Fouédjeu, Mélanie Saulnier, Vincent Labbas, Mathieu Lejay, Sandrine Buscaino, Vanessa Py-Saragaglia

#### Session 4: Interdisciplinary Studies II

- 12:10 – 12:25** [The xylophagi of the wooden floor of Camelin block \(Fréjus, France\): interdisciplinary approaches through archaeology and anthraco-entomology](#)  
Magali Toriti, Pierre Excoffon, Aline Durand, Fabien Fohrer
- 12:30 – 12:45** [Charcoal hearth soils as environmental archives. A case study from Central Italy \(Poggio di Montieri\)](#)  
V. Pescini, G. Certini, G. Mastrodonardo
- 12:50 – 13:55** Lunch & coffee break (lunch provided at the conference venue)
- 14:00 – 14:15** [Reconstructing past multiple land use systems: the 5T.ERA \(5 Terre Environmental Resource Archaeology\) multi-proxy project](#)  
R. Cevasco, N. Gabellieri, B. I. Menozzi, C. Montanari, A. Panetta, V. Pescini
- 14:20 – 14:35** [Fire use and agroforestry in tropical forests \(Guatemala\)](#)  
L. Dussol, L. Purdue, B. Vannière, M. Testé, S. Morell-Hart, I. Théry-Parisot, A. Garnier, E. Lemonnier, C. Castanet
- 14:40 – 14:55** [Preliminary charcoal and phytolith analysis from an early Swahili daub house at Unguja Ukuu, Zanzibar \(c. 7<sup>th</sup>-14<sup>th</sup> century AD\)](#)  
Welmoed Out, Stephanie Wynne-Jones, Peter Mikkelsen, Federica Sulas
- 15:00 – 15:15** [Herod the Great royal Roman gardens come alive: charcoal remains and pollen analysis](#)  
Dafna Langgut
- 15:20 – 17:30** Charcoal open lab demo session (CTH Environmental Sciences lab; 1<sup>st</sup> floor)  
Open posters session (GFlex Teaching Space)
- 19:00 – 22:00** Conference Dinner (The Pen Factory, 13 Hope Street, Liverpool, L1 9BQ)  
<https://www.pen-factory.co.uk>

## Friday 6 September 2019

08:30 – 09:30 (Conference reception desk open)

### Session 6: Palaeobotany & Pedoanthracology

09:35 – 09:15 **A case of Medieval deforestation in southern Tuscany (850-1050 AD): an isolated local event or the onset of wide-ranging socioeconomic growth?**

Mauro Buonincontri, Marta Rossi, Gaetano Di Pasquale

09:20 – 09:35 **Assessing the function of Palaeolithic hearths: experiments on intensity of luminosity and radiative heat outputs from different fuel sources** [Session 2 Oral Presentation]

Sally Hoare

09:40 – 09:55 **Pedoanthracological data to understand the past and current fir (*Abies alba*) distribution in NE Iberian Peninsula**

Raquel Cunill Artigas, Albert Pèlach Mañosa, López Soriano, Manuel Joan; Jordi Nadal Tera, Marc Sánchez-Morales, Ramon Pérez-Obiol

10:00 – 10:30 Coffee break

10:35 – 10:50 **Typology of soil charcoal assemblages in the forest-steppe zone**

Elena Ponomarenko, Ekaterina Ershova, Pille Tomson

10:55 – 11:10 **Ecological niches of oaks versus beech forest trees documented by pedoanthracology in forests of the Lorraine Plateau (France)**

Thomas Feiss, Vincent Robin, Delphine Aran, Thierry Paul, Jean-Luc Dupouey

11:15 – 11:30 **Assessment of past fire regime in northern central Europe based on a multiscale and multi-archive paleo-signal**

Vincent Robin, Oliver Nelle

11:35 – 12:05 Plenary Session – Anthraco2023

13:30 – 15:00 Tour of the Archaeology labs & the Garstang Museum of Archaeology (meeting point: Abercromby Square Garden - [Campus map](#) reference: E 3)

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## Poster presentations

(all posters will be on display for the duration of anthraco2019 in the GFlex Teaching Space, adjacent to the conference lecture theatre)

**Looking for the invisible: anthracological analysis to reveal ritual action in the Eneolithic cremation of Apulia (SE Italy)**

Giorgia April, Girolamo Fiorentino

**Dendrological studies application on two charcoal kilns in Madonie Park (Palermo, Italy). Preliminary results about the exploitation of *Fagus sylvatica* in 14th century A.D.**

Sabrina Bianco, Sandrine Paradis-Grenouillet, Ethel Allué, Forgia Vincenza, Josep M. Vergès

**Wood technology of Patagonian hunter-gatherers: selection and use of woody resources as raw material**

Laura Caruso-Fermé

**Woodworking technology during the Early Neolithic: first results of the site of La Marmotta (Italy)**

L. Caruso-Fermé, M. Mineo, M. Ntinou

**Spatial analysis of firewood charcoal fragments in archaeological levels: issues for palaeoecological interpretation in anthracology**

Lucie Chabal

**Climatic signals in the wood anatomy of *Quercus pyrenaica* Willd. and *Pinus pinaster* Aiton from northeast Portugal: Baseline for continuing studies**

Leonardo Da Fonte

**Wood exploitation between Kura and Araxes valley (Southern Caucasus) from the Neolithic to Early Bronze Age**

Alexa Decaix, Reinder Neef

**Vegetation reconstruction in the ClaSS (Climate, Landscape, Settlement and Society: Exploring Human-Environment Interaction in the Ancient Near East) Project**

Katleen Deckers, Simone Riehl, Michelle De Cruchy, Valentina Tumolo, Dan Lawrence

**Reconstructing the history of the *silva carbonaria*, an enigmatic charcoal-burners-forest in Central Belgium**

Koen Deforce, Jan Bastiaens, Johan De Grave, Philippe De Smedt, Elke Ghyselbrecht, Nasrin Karimi Moayed, Erwin Meylemans, Sara Schalbrock, Kris Vandekerckhove, Dimitri Vandenberghe

**Morphometric and dendrometric observations on waterlogged wood: the case study of a 4th century BC well at Taranto "Torre Montello", Salento, Italy**

Lou Godefroy

**The anthracological results from la Cova del Sardo (Parc Nacional d'Agüestortes i Estany de Sant Maurici, Central Pyrenees)**

Laura Obea Gómez, Mireia Celma Martínez, Ermengol Gassiot Ballbé, Ignacio Clemente Conte, Sara Díaz Bonilla, David Rodríguez Antón, Guillem Salvador Baiges

**Burning wood over 2300m a.s.l. in the Central Pyrenees. Anthracological results from Abric de l'Estany de la Coveta I and Abric de les Obagues de Ratera (Parc Nacional d'Aigüestortes i Estany de Sant Maurici)**

Laura Obea Gómez, Mireia Celma Martínez, Ermengol Gassiot Ballbé, Ignacio Clemente Conte, Sara Díaz Bonilla, David Rodríguez Antón, Guillem Salvador Baiges

**Charcoal identification of the semi-deciduous and deciduous oak species of the Salento Peninsula (SE Italy) and their relevance to archaeological contexts: a metric approach**

A.M. Grasso, E. Vaccab, G. Fiorentino

**Charcoal analysis of kiln terraces to reconstruct practices and wood uses' temporalities for charcoal manufacturing activity: the case of the Bernadouze forest (Suc-et-Sentenac, Haut-Vicdessos)**

Léonel Fouédjeu, Mélanie Saulnier, Raquel Cunill Artigas, Sandrine Buscaino, Vanessa Py-Saragaglia

**Sustainable management of wood for charcoal manufacturing activity in the Northern Pyrenees: dendro-anthracological study of charcoal kilns in the Bernadouze forest (Suc-et-Sentenac, Haut-Videssos)**

Léonel Fouédjeu, Sandrine Paradis-Grenouillet, Mélanie Saulnier, Raquel Cunill Artigas, Sandrine Buscaino, Vanessa Py-Saragaglia

**Fire and forest management: an anthracological approach to relative dating of suspected pit kilns containing coppice**

E. van Hees, M. van Zon, J. Pijnnaken-Vroeijenstein

**A charcoal study to better understand lynchet construction and lynchet landscape history**

Benjamin Keller, Vincent Robin, Pierre-Alexis Herrault, Damien Ertlen, Dominique Schwartz

**Neolithic wood use and forest exploitation. Comparison of anthracological and xylotomical data from three Neolithic wells from the Czech Republic**

Romana Kočárová, Petr Kočár, Jan Novák, Michal Rybníček

**Wood management in the ceremonial building of the Na Galera islet (Balearic Islands, Western Mediterranean): fuel, timber and coastal vegetation at the end of the first millennium BC**

Yolanda Carrión Marco, Llorenç Picornell Gelabert, Alexa Dufraisse, Ramón Martín Gordon, Jorge Argüello

**Bronze Age and Middle Ages in the Southeast of the Iberian Peninsula (Spain): New Approaches to Sampling in Number of Wood and Charcoal Analysis and Fraction Size**

Mireia Celma Martínez

**Wood as structural element at the houses of Akrotiri, Thera. The anthracological evidence**

Antigoni Mavromati

**Wood charcoal assemblages from the loess upland zone of western Lesser Poland**

Magdalena Moskal-del Hoyo

**Vegetation changes around Sarakenos Cave (Boeotia, Greece) from the late Pleistocene to the mid-Holocene: the study of charred wood and non-wood plant macro-remains**

Magdalena Moskal-del Hoyo, Lina Karathanou, Maria Ntinou, Małgorzata Kaczanowska, Janusz K. Kozłowski, Antonia Tsourouni, Adamantios Sampson

**Combining charcoal and magnetic susceptibility analyses: evaluation of post-depositional processes in unit IV from Abric del Pastor (Middle Palaeolithic, Iberia)**

P. Vidal-Matutano, Á. Carrancho, C.M. Hernández, C. Mallol, B. Galván

**Ship ahoy! Evaluation of waterlogged wood remains from El Burrero shipwreck (Gran Canaria, Canary Islands, Spain)**

P. Vidal-Matutano, J. Mata-Mora, J. Guillén-Medina

**Pedoanthracological records as tools for revelation of the forest history in the Khan Khentii Mts. (northern Mongolia)**

Jan Novák, Antonín Kusbach, Tadeáš Štěrba

**The Late Holocene forest transformation in sandstone landscapes of the Czech Republic**

Jan Novák, Petr Šída, Jiří Svoboda, Petr Pokorný

**Woodlands and farmlands in Bronze Age central Greece. Insights from archaeobotanical assemblages from the sites of Agia Paraskevi, Kynos and Mitrou (Phthiotida)**

Maria Ntinou, Aggeliki Karathanou, Clemence Pagnoux, Sultana-Maria Valamoti

**Automatic detection of ancient charcoal production platforms through LiDAR observations: is it an effective method?**

Cláudia Oliveira, Pierre-Alexis Herrault, Vincent Robin, Simon Devin

**Charcoal and coal: charcoal: energy resources with a strong impact on the past environment and ongoing stakes for energy transition**

Cláudia Oliveira, Vincent Robin, Simon Devin

**Firewood selection strategies for combustion events during Late Holocene hunter-gatherer occupations in South America (Córdoba, Argentina)**

Andrés Robledo

**Crossing molecular study of ashy sediment and taphonomy to date and to reconstruct fuel management strategies and paleoenvironments at Le Rocher de l'Impératrice (Plougastel, France) during the Lateglacial Azilian occupation)**

**Isabelle Théry-Parisot, Samuel Abiven, Erwan Messenger, Nicolas Naudinot**

**Mid-Holocene archaeobotanical record from the Atlantic band of Cádiz (SW Spain) based on pollen and charcoal data**

**Paloma Uzquiano, Blanca Ruiz-Zapata, José Gil-García, Eduardo Vijande, José Ramos**

**Anthracological analysis of charcoal from the Bronze Age site of Erlitou (Henan province, China)**

**Shuzhi Wang, Haitao Zhao, Guoliang Chen, Xu Hong, Marvin Demicoli**

serve as the baseline for comparison with archaeological charcoals of *P. pinaster* and *Q. pyrenaica* sampled from Baixo Sabor and will be used to reconstruct its long-term climate history.

## Wood exploitation between Kura and Araxes valley (Southern Caucasus) from the Neolithic to Early Bronze Age

Decaix, Alexia<sup>1\*</sup>; Neef, Reinder<sup>2</sup>

\* Corresponding author – Email: [Alexia.DECAIX@univ-cotedazur.fr](mailto:Alexia.DECAIX@univ-cotedazur.fr)

<sup>1</sup> Université de Côte d'Azur, CEPAM, UMR 7264, Pôle Universitaire Saint Jean d'Angély-SJA3, 24 Avenue des Diables Bleus, F - 06357 Nice Cedex 4 (France).

<sup>2</sup> Deutsches Archäologisches Institut - Zentrale, Im Dol 2-6, 14195 Berlin (Germany).

So far, there have been few studies undertaken on anthracological assemblages from the southern Caucasus. This poster presents the results of anthracological studies from archaeological sites in Azerbaijan and Georgia, located between Kura and Araxes valley dating from the Neolithic to the Early Bronze Age. Results show that riparian forests were the main habitat type where people collected their firewood. But several other types of environments were also exploited such as more or less open shibliak woodlands as well as mixed deciduous forests. Combining the results of the charcoal fragment studies with other archaeobotanical macroremains retrieved from the sites (seeds and fruits) and local palynological studies, permits the reconstruction of a more humid and densely vegetated environment in the northwestern part of the study area, whereas the southeastern part seems to have been more dry with a rather open vegetation.

## Vegetation reconstruction in the ClaSS (Climate, Landscape, Settlement and Society: Exploring Human-Environment Interaction in the Ancient Near East) Project

Deckers, Katleen<sup>1\*</sup>; Riehl, Simone<sup>1</sup>; De Cruchy, Michelle<sup>2</sup>; Tumolo, Valentina<sup>2</sup>; Lawrence, Dan<sup>2</sup>

\* Corresponding author – Email: [katleen.deckers@uni-tuebingen.de](mailto:katleen.deckers@uni-tuebingen.de)

<sup>1</sup> University of Tübingen, Institute for Archaeological Sciences, Tübingen (Germany)

<sup>2</sup> Durham University, Department of Archaeology, Durham (UK)

The ClaSS project, funded by an ERC Starting Grant awarded to Dan Lawrence, investigates the relationship between climate fluctuations and settlement history over the last 8000 years. As part of the project, anthracological data (amongst other archaeobotanical data) will be collated for the entire Near East. Within the anthracological part of the project we aim to reconstruct the vegetation and understand the impacts of humans and climate on the environment. We will also investigate the boundaries of human adaptation to changing environments. The anthracological research in this project uses a combination of database collection of published charcoal identifications, new charcoal identifications, diameter measurements and dendrological studies. Eventually, archaeobotanical data, settlement data and climate simulations will be combined to investigate the question: What factors have allowed for the differential persistence of societies in the face of changing climatic and environmental conditions?

## Reconstructing the history of the *silva carbonaria*, an enigmatic charcoal-burners-forest in Central Belgium

Deforce, Koen<sup>1,2,3\*</sup>; Bastiaens, Jan<sup>1</sup>; De Grave, Johan<sup>4</sup>; De Smedt, Philippe<sup>5</sup>; Ghyselbrecht, Elke<sup>4</sup>; Karimi Moayed, Nasrin<sup>4</sup>; Meylemans, Erwin<sup>1</sup>; Schalbroeck, Sarah<sup>6</sup>; Vandekerkhove; Kris<sup>7</sup>; Vandenberghe, Dimitri<sup>4</sup>

\* Corresponding author – Email: [koen.deforce@vlaanderen.be](mailto:koen.deforce@vlaanderen.be)

<sup>1</sup> Flanders Heritage Agency, Havenlaan 88 bus 5, B-1000 Brussels (Belgium).

<sup>2</sup> Royal Belgian Institute of Natural Sciences, OD Earth and History of Life, Vautierstraat 29, B-1000 Brussels (Belgium).

<sup>3</sup> Ghent University, Department of Archaeology, Sint Pietersnieuwstraat 35, B-9000 Ghent (Belgium).

<sup>4</sup> Ghent University, Department of Geology, Krijgslaan 281- S8, B-9000 Ghent (Belgium).

<sup>5</sup> Ghent University, Department of Environment, Coupure Links 653 geb. B, B-9000 Ghent (Belgium).

<sup>6</sup> Catholic University of Leuven, Department of Biology, Kasteelpark Arenberg 31, B-3000 Leuven (Belgium).

<sup>7</sup> Research Institute for Nature and Forest (INBO), Gaverstraat 4, B-9500 Geraardsbergen (Belgium).

The Sonian forest, situated south of Brussels, is one of the last remnants of a vast forest likely covering the larger part of central Belgium up to at least the end of the Early Medieval period and which is mentioned as *silva carbonaria* (Latin for 'charcoal burners forest') in early historical texts. Since 2017, parts of this forest, together with several other European old growth beech forests, have been listed as a UNESCO world heritage site. Extensive archives allow us to reconstruct its history over the last 500 years, yet, little is known on the extent, composition and exploitation of this forest before that time. Here we present preliminary results of an interdisciplinary study of ancient charcoal and metal production sites from the forest, providing novel information on its history and evolution. Combined use of LIDAR and geophysical methods allows revisiting the intensity and type of activities in the Sonian forest. OSL and radiocarbon analysis provide a detailed chronology of these activities. Anthracological analysis allows the reconstruction of past forest composition and its changes resulting from charcoal production activities. These analyses also provide new insights into the role of beech in the natural forest vegetation in the lowlands of NW-Europe.

## **Morphometric and dendrometric observations on waterlogged wood: the case study of a 4th century BC well at Taranto "Torre Montello", Salento, Italy**

Godefroy, Lou

Email: [l.godefroy@vu.nl](mailto:l.godefroy@vu.nl)

Vrije Universiteit of Amsterdam, Faculty of Humanities, Art and Culture, History, Antiquity, De Boelelaan 1105, 1081 HV Amsterdam (The Netherlands).

In 2010 rescue excavations at Taranto "Torre Montello" (Salento, Italy) brought to light a settlement situated in the Chora Tarantina. The excavated area revealed an occupation from the Archaic to Hellenistic periods. The campaign reflects the singularity of the site: several sectors revealed traces possibly belonging to an agricultural holding. A well feature contained a high concentration of plant macro-remains the importance of which was quickly established. Indeed, it constitutes the only waterlogged context available for the Apulia Region and for this particular period. In tandem with seeds, a high quantity of waterlogged wood was revealed. Surprisingly, the only species identified was fig (*Ficus carica*). But how to deal with one species in term of interpretation? In this poster I will open the dialogue about the potentialities of morphometric and dendrometric observations (wood diameter estimations, cut marks) as parameters with which the use of this type of organic material prior to its deposition could be reconstructed and understood. Indeed, the wood present in this feature presents several modifications due to natural and anthropogenic causes. The main goal is to investigate how these types of method can help us to highlight transformation processes and practices.

## **The anthracological results from la Cova del Sardo (Parc Nacional d'Agüestortes i Estany de Sant Maurici, Central Pyrenees)**

Obea Gómez, Laura<sup>1\*</sup>; Gassiot Ballbé, Ermengol<sup>1</sup>; Clemente Conte, Ignacio<sup>2</sup>; Díaz Bonilla, Sara<sup>1</sup>; Garcia Casas, David<sup>1</sup>; Rodríguez Antón, David<sup>1</sup>; Salvador Baiges, Guillem<sup>1</sup>

\* Corresponding author – Email: [laura.obea@uab.cat](mailto:laura.obea@uab.cat)

<sup>1</sup> Autonomous University of Barcelona, Department of Prehistory, Building B, 08193 Bellaterra (Cerdanyola del Vallès) Barcelona (Spain).

<sup>2</sup> Consejo Superior de Investigaciones Científicas, Institut Milà i Fontanals, Department of Archaeology and Anthropology; Carrer de les Egipcíaques 15, 08001 Barcelona (Spain).

Thanks to the research developed in the Parc Nacional d'Aigüestortes i Estany de Sant Maurici (PNAESM) by the GAAM group (Grup d'Arqueologia d'Alta Muntanya) since the early 2000s, more than 350 sites of archaeological interest have