UNIMORE
UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA

Dipartimento di Scienze della Vita

LPP - Laboratorio di Palinologia
e Paleobotanica

ISBN 978-88-943442-0-2

CEA 2018

Humans and environmental sustainability:
Lessons from the past ecosystems of Europe and Northern Africa

14th Conference of Environmental
Archaeology 2018

Modena, 26-28 February 2018

Edited by
Assunta Florenzano, Maria Chiara Montecchi, Rossella Rinaldi

UNDER THE PATRONAGE OF

CEDAD
CEntro di DAtazione e Diagnostica

MUSEI CIVICI

ISTITUTO ITALIANO DI PREISTORIA E PROTOSTORIA

Comune di Modena

Regione Emilia-Romagna

CEA2018

This e-book includes the 61 long abstracts of oral presentations (41) and posters (20) presented at the three-day CEA2018, the 14th Conference of Environmental Archaeology. The LPP-Laboratory of Palynology and Palaeobotany of Department of Life Science, interdisciplinary biological center of the University of Modena and Reggio Emilia, organized the meeting in Modena (26-28 February 2018), in the historical and recently restored San Geminiano building.
The scientific contributions were presented in 8 talk sessions and one poster session. Multidisciplinary *ABG Archaeo-Bio-Geo* studies on environmental reconstructions and palaeoecological research involving analyses of archaeological survey, human and animal bones, sometimes integrated to isotopic or molecular data, remote sensing and GIS, are reported in this e-book. Botany is the prevalent biological field contributing to environmental reconstructions, with analyses on plant macroremains, non-pollen palynomorphs and pollen, and with studies on flora and vegetation changes. Study areas are mainly centered on European countries, Mediterranean and Northern Africa, including five abstracts on Sahara, while two contributions concern South America.

The 1st Conference, called "The Archaeobotanical work group", was organized in 2005, and was a working group round-table meeting between experts on environmental studies and archaeologists of the Czech Republic. Then, the meeting became an annual conference with more and more attendants from other countries. In 2017, the 13th CEA took place in Nitra, Slovakia, and was for the first time outside the Czech Republic. In Italy, the CEA2018 has been especially rich of presentations and interdisciplinary approaches, with many countries represented as study areas and participants coming to Modena. Titles and list of co-authors show an unexpectedly rich number of contributions to the Environmental Archaeology by Italian specialists joining colleagues from the Czech Republic, Poland, Norway, Sweden, Greece, Spain, France, Switzerland, Austria, Germany, Serbia, Slovakia, Republic of Macedonia, United Kingdom, United States of America, and other countries.
The congress was under the patronage of the project SUCCESSO-TERRA (on sustainability and the Bronze age in the Po plain-N Italy) and of the network BRAIN-Botanical Records of Archaeobotany Italian Network (*https://brainplants.unimore.it/*). Basic sponsorships were given by the Botanical Society of Italy, the Italian Institute of Prehistory and Protohistory, the scientific association Society of Naturalists and Mathematicians of Modena, the Superintendence of Bologna, Modena, Reggio Emilia and Ferrara, Civic Museum of Archaeology and Ethnology of Modena, with municipality of Modena and the Emilia Romagna Region. Besides the SUCCESSO-TERRA project mentioned above, financial support was provided by Fondazione Anna Maria Catalano ONLUS and CEDAD-Centro di DAtazione e Diagnostica. We acknowledge all the projects, institutions and associations, the international scientific committee, the local organization committee and the Centro Interateneo EDUNOVA - Centro E-learning di Ateneo who contributed to the success of the conference.

Anna Maria Mercuri
February 2018

Contents

SESSION 6
RECOSTRUCTING PAST LANDSCAPE: FLORA INSIGHTS FROM ARCHAEOLOGICAL SITES

SESSION 7
INTERDISCIPLINARY METHODS FOR ENVIRONMENTAL ARCHAEOLOGY INTERPRETATION

SESSION 8
ENVIRONMENTAL SUSTAINABILITY IN A CHANGING WORLD: LESSONS FROM THE PAST

POSTER SESSION

SESSION 8

Environmental sustainability in a changing world: lessons from the past

Beginning of a new farming system (mid-9th century AD): local fire events and vegetation changes in southwestern Tuscany

Mauro Paolo Buonincontri[1,2], Pierluigi Pieruccini[3], Carmine Lubritto[4], Giovanna Bianchi[1], Gaetano Di Pasquale[2]

[1]Dipartimento di Scienze Storiche e dei Beni Culturali, Università degli Studi di Siena, Italy; [2]Dipartimento di Agraria, Università degli Studi di Napoli "Federico II", Italy; [3]Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente, Università degli Studi di Siena, Italy; [4]Dipartimento di Scienze e Tecnologie Ambientali, Biologiche e Farmaceutiche, Università degli Studi della Campania, Italy

Email address: mauro.buonincontri@unisi.it

***Keywords**: soil charcoal analysis, Middle Ages, Human impact, fire-affected vegetation*

Introduction

The ERC Advanced Grant 2014 "Origins of a new Economic Union (7th to 12th centuries): resources, landscapes and political strategies in a Mediterranean region (nEU-Med)", hosted by the University of Siena, is focusing on understanding the archaeology of resource management and commerce in south-western Tuscany. In re-defining the causes of socio-economic development in this region, destined to become an apogee of European economic development during the Renaissance (15th century AD), the project investigates also the evolution of the plant landscape in order to reconstruct (a) uses, (b) changes and (c) time intervals of forest and agricultural resources. Previous archaeobotanical research suggested that the first post-Roman settlements in the area practiced high quality subsistence agriculture, adapting from the mid-9th century AD to systematic cultivation of surpluses of cereals, olives and chestnuts (Buonincontri et al. 2017; Buonincontri et al. 2015; Di Pasquale et al. 2014). Through archaeobotanical analyses, the ERC nEU-Med Project aims to study when and why these changes occurred and what role agro-forestry production played in the processes leading to Late Medieval economic growth.

Soil charcoal analysis was performed in the Pecora river plain, along a section opened during geoengineering work on the left bank of the river. Soil charcoal analysis represents a unique tool to investigate local fire events and vegetation changes with a highly-detailed spatial resolution (Thinon 1978) and possibly without the human selection characterizing archaeological charcoal (Théry-Parisot et al. 2010). Charcoal identification, combined with radiocarbon dating and the sedimentological and stratigraphical analysis of the section, allowed drawing a detailed snapshot of the changes in the forestry conditions between the 9th and the 13th century AD.

Materials and Methods

The investigations have been mainly carried out in a retention basin on the hydrographic left bank of the Pecora river (Fig. 1). The basin allowed the observation of ca. 3 m of the sequence perpendicular to the river flow direction (Sections NW; Fig. 2). Sedimentological and stratigraphical analysis has allowed the identification of palaeochannels with two different depositional environments suggesting changes of geomorphological conditions and alluvial plain landscapes. The oldest, U 3.1, is typical of a gravel-sand sinuous meandering river and filling of abandoned channels. The U 3.2 sediments are typical of deposition by a gravel-bed braided river.

The bedforms were characterised by the presence of very abundant fine to very coarse charcoals. In the U 3.2, 10 soil samples were collected at different levels, ranging from 500 to 2390 ml of volume. The samples were firstly air-dried and weighted, and then they were wet-

sieved through two sieves with 1 and 0.4 mm mesh-size. Charcoal concentration and taxonomical identification were preliminarily performed for charcoal remains greater than 1 mm. Taxonomical identification was carried out with an incident light microscope at magnifications of 100×, 200× and 500× and supported with wood anatomy atlases (Abbate Edlmann et al. 1994; Schweingruber 1990; Vernet et al. 2001) and the reference collection in the Dipartimento di Agraria at the Università degli Studi di Napoli 'Federico II'.

Figure 1 - Study area of the ERC-ADG nEU-Med Project. Red diamond indicates the retention basin of the Pecora river; white diamonds indicate Medieval archaeological sites; pale blue diamond is Accesa Lake (Late Holocene pollen sequence in Magny et al. 2007).

The presence of abundant charcoals allowed AMS radiocarbon dating in order to assess the chronology of the succession of events (Tab. 1). Samples were collected from U 3.1, the sinuous meandering rivers' sediments, and from U 3.2, the braided rivers' sediments. The preliminary results show that the U 3.1 sediments were left at least until 787-471 BC (Fi3497) whereas the filling of the upper palaeochannel (U 3.2) can be dated between 820-980 AD (Fi3452, from soil sample 2.4) and 1150-1290 AD (Fi3451 from soil sample 2.1).

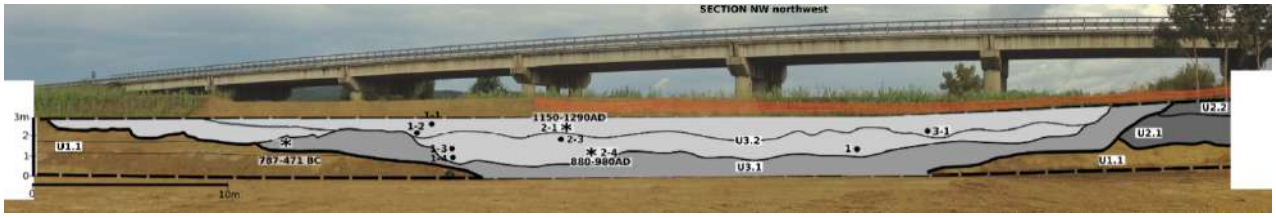

Figure 2 - Northwestern section of the retention basin. Light and dark greys highlight the palaeochannel of the Pecora river. Black circles indicate the soil samples for charcoal analysis; stars indicate soil samples with radiocarbon dating.

Results and Discussion

A total of 13 liters of soil were sampled with ca. 18.4 g of extracted charcoals. To get taxonomical information, 145 charcoal remains were preliminarily analyzed allowing the identification of 22 taxa (Tab. 2). Among the identified taxa, *Ulmus* is the most common (30.3%), followed by *Fraxinus* (12.4%), such as *F.* cf. *ornus* (3.4%) and *F.* cf. *angustifolia* (2.8%), *Quercus* cf. *cerris* (7.6%), *Salix* and *Erica* (4.1%), *Alnus* (2.8%), *Populus/Salix* and *Quercus* cf. *ilex* (2.1%), *Populus* (< 1%). Unidentifiable charcoals constitute 15.9% of the total.

Table 1 - Radiocarbon and calibrated ages of selected charcoals. Radiocarbon dates have been calibrated by using OxCal 4.2 (Bronk Ramsey 2005) and the Reimer et al. (2004) calibration curve. Samples were dated by AMS at the INFN CHNet in Florence. In bold, the most probable calendar time intervals obtained from the calibration curves.

Sample Id	Lab code		Radiocarbon age	Calibrated age	
				1 Sigma	2 Sigma
2.1	Fi3451	*Ulmus*	808±50	**1185-1270 AD**	1050-1290 AD
					1150-1290 AD
2.4	Fi3452	*Ulmus*	1142±55	780-790 AD	**770-1020 AD**
				820-980 AD	
	Fi3497	*Quercus pubescens*	2487±48	**695-541 BC**	**787-471 BC**
				766-727 BC	466-430 BC

The percentages of the taxonomical identification of the soil charcoal remains, together with the radiocarbon dating, are presented in Fig. 3. Overall, the most recorded taxa pertained to broad-leaved trees, while Mediterranean sclerophyllous shrubs and trees are scarcely present. In detail, two phases seem to be present, in agreement with the two different time intervals proposed. In the lower samples, dated between the 820-980 AD, the strong presence of trees typical of riparian and mixed flood-forest suggests that fire events occurred mainly along the riverbed and wetlands of Pecora river and its alluvial plain. In the higher samples, trees referable to the thermophilous deciduous forest prevail, suggesting that foothill areas were fire-affected mainly during the mid-12th and the end of the 13th century AD.

The comparison of our data with pollen analysis in the region shows an interesting conformity of the fire signal and forest clearance. In particular, the pollen sequence of Accesa Lake shows a decrease of wild arboreal pollen from ca 850-950 AD whereas pollen of cultivated trees spread, such as olive and chestnut (Magny et al. 2007). Therefore, the mid-9th century AD seems to be a crucial period for the beginning of agro-forestry activities, creating the opening of woodland and the cultivation of new areas for producing surpluses of crops and fruit trees (Di Pasquale et al. 2014; Buonincontri et al. 2015; Buonincontri et al. 2017).

Table 2 - List of charcoal remains recovered. For each taxon the number of charcoal specimens in the soil samples are given. Identified taxa are grouped according to their ecological significance.

	Riparian forest					Mixed flood-plain forest		Thermophylous deciduous forest						Broadleaved evergreen forest			Others						
Sample ID	*Alnus*	*Populus*	*Salix*	*Populus/Salix*	*Vitis vinifera*	*Fraxinus* cf. *oxycarpa*	*Ulmus*	*Quercus cerris*	*Q. pubescens*	*Quercus* deciduous type	*Crataegus*	*Euonymus*	*F.* cf. *ornus*	*Sorbus* cf. *aucuparia*	*Q. ilex*	*Cistus*	*Erica*	*Prunus*	*Fraxinus*	*Quercus*	Maloideae	Monocotyledon	Undetermined	Total
1.1								2												1			1	4
2.1							3	5											6	4	4		11	33
3.1				2		3		4		1			2		2		6		6	1			3	30
1.2																							1	1
2.3	4	1				1	9						3	1				1	4					24
4			6	1											1									8
1							31							1					2		1		5	40
2.4							1													1				2
1.4																						1	2	3

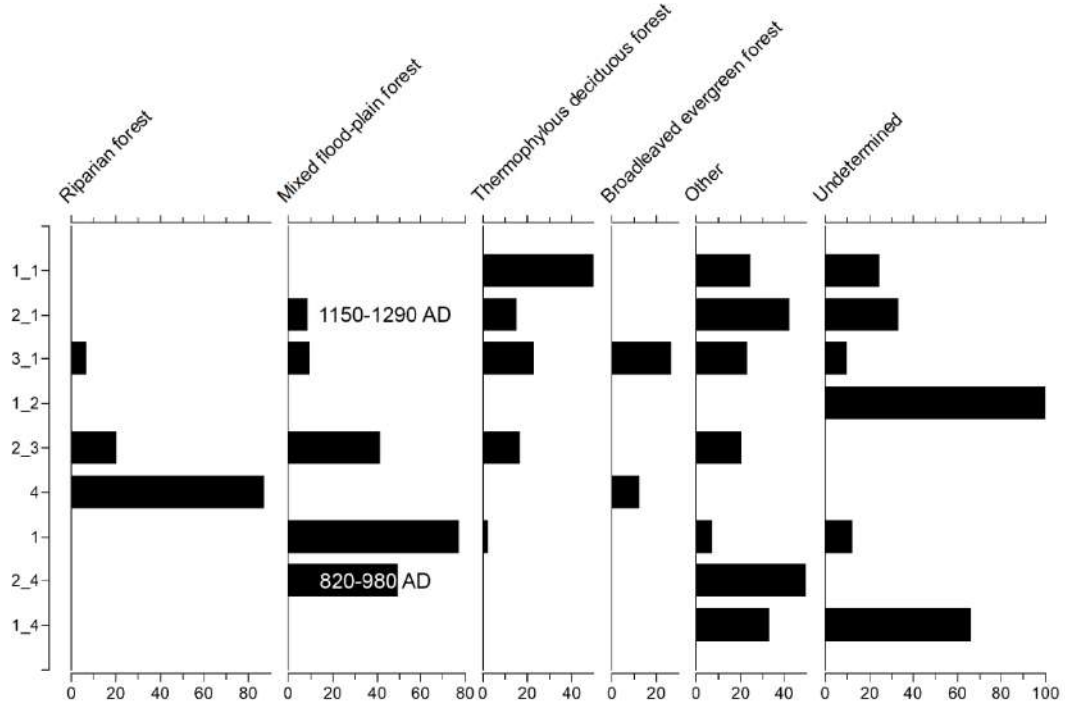

Figure 3 - Percentage bars of the ecological groups calculated over the sum total of charcoal remains in each soil samples. The ecological groups are in agreement with Tab. 2. The most probable AMS radiocarbon dates are presented.

Conclusions

Assuming that the charcoal record is the result of fire-affected forest vegetation, we can argue that the period between the mid-9th and the end of the 13th century AD is characterized by fire activities in the Pecora river basin. At least in the first centuries, according to several palaeoenvironmental data sources, fires were used mainly for clearing and reclaiming woodland for a new farming system characterized by the cultivation of cereals, olive and chestnut groves, that would stabilize in the following centuries. The fire events along the Pecora river are probably the first steps to the beginning of the modern agroforestry landscapes in Tuscany.

Acknowledgements (Funds)

This work is part of the nEU-Med Project (Principal Investigator prof. Richard Hodges) supported by the European Research Council (ERC) under the European Union's Horizon 2020 Research and Innovation Programme (ERC Advanced Grant, agreement No. 670792).

References

ABBATE EDLMANN, M. L., DE LUCA, L., LAZZERI, S. 1994: Atlante anatomico degli alberi e arbusti della macchia mediterranea. Relazioni e monografie agrarie subtropicali e tropicali 114. Istituto Agronomico per l'Oltremare, Firenze.

BRONK RAMSEY, C. 2005: OxCal Version 4.2. https://c14.arch.ox.ac.uk/oxcal.html.

BUONINCONTRI, M. P., PECCI, A., DI PASQUALE, G., RICCI, P., LUBRITTO, C. 2017: Multiproxy approach to the study of Medieval food habits in Tuscany (central Italy). Archaeological and Anthropological Sciences 9, 653-671.

BUONINCONTRI, M. P., SARACINO, A., DI PASQUALE, G. 2015: The transition of chestnut (*Castanea sativa* Miller) from timber to fruit tree: Cultural and economic inferences in the Italian peninsula. The Holocene 25, 1111-1123.

DI PASQUALE, G., BUONINCONTRI, M. P., ALLEVATO, E., SARACINO, A. 2014: Human-derived landscape changes on the northern Etruria coast (western Italy) between Roman times and the late Middle Ages. The Holocene 24, 1491-1502.

MAGNY, M., DE BEAULIEU, J.-L., DRESCHER-SCHNEIDER, R., VANNIÉRE, B., WALTER-SIMONNET, A.-V., MIRAS, Y., MILLET, L., BOSSUET, G., PEYRON, O., BRUGIAPAGLIA, E., LEROUX, A. 2007: Holocene climate changes in the central Mediterranean as recorded by lake-level fluctuations at Lake Accesa (Tuscany, Italy). Quaternary Science Reviews 26, 1736-1758.

REIMER, P. J., BAILLIE, M. G. L., BARD, E., BAYLISS, A., BECK, J. W., BERTRAND, C. J. H., BLACKWELL, P. G., BUCK, C. E., BURR, G. S., CUTLER, K. B., DAMON, P. E., EDWARDS, R. L., FAIRBANKS, R. G., FRIEDRICH, M., GUILDERSON, T. P., HOGG, A. G., HUGHEN, K. A., KROMER, B., MCCORMAC, F. G., MANNING, S. W., RAMSEY, C. B., REIMER, R. W., REMMELE, S., SOUTHON, J. R., STUIVER, M., TALAMO, S., TAYLOR, F. W., VAN DER PLICHT, J., WEYHENMEYER, C. E. 2004: IntCal04 Terrestrial radiocarbon age calibration, 26-0 ka BP. Radiocarbon 46, 1029-1058.

SCHWEINGRUBER, F. H. 1990: European Wood Anatomy. Paul Haupt, Bern.

THÉRY-PARISOT, I., CHABAL, L., CHRZAVZEZ, J. 2010: Anthracology and taphonomy, from wood gathering to charcoal analysis. A review of the taphonomic processes modyfing charcoal assemblages, in archaeological contexts. Palaeogeography, Palaeoclimatology, Palaeoecology 291, 142-153.

THINON, M. 1978: La pédoanthracologie: une nouvelle méthode d'analyse phytochronologique depuis le Néolithique. Comptes rendus de l'Académie des Sciences de Paris 287, 1203-1206.

VERNET, J. L., OGEREAU, P., FIGUEIRAL, I., MACHADO YANES, C., UZQUIANO, P. 2001: Guide d'identification des charbons de bois prehistoriques et recents. Editions du CNRS, Paris.

List of Authors

A

ALLÉE, PHILIPPE
University of Limoges, Dept. of Geography, GEOLAB, Limoges
FR, France
philippe.allee@unilim.fr

ARRU, LAURA
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze della Vita, Plant Physiology Lab
IT, Italy
laura.arru@unimore.it

AUßERLECHNER, MARLIES VERENA
Universität Innsbruck, Dept. of Botany
AT, Austria
Marlies.Ausserlechner@uibk.ac.at

B

BACCHETTA, GIANLUIGI
Università degli Studi di Cagliari, Banca del Germoplasma della Sardegna (BG-SAR), Hortus Botanicus Karalitanus (HBK); Centro Conservazione Biodiversità (CCB), Dip. di Scienze della Vita e dell'Ambiente (DISVA)
IT, Italy
bacchet@unica.it

BAL, MARIE
University of Limoges, Dept. of Geography, GEOLAB, Limoges
FR, France
marie-claude.bal@unilim.fr

BALDASSARRI, MONICA
Museo Civico di Montopoli in Val d'Arno (Pisa)
IT, Italy

BANDINI MAZZANTI, MARTA
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita, Laboratorio di Palinologia e Paleobotanica
IT, Italy
marta.mazzanti@unimore.it

BARATTI, GIORGIO
Università degli Studi di Milano, Dip. Scienze della Terra "Ardito Desio"
IT, Italy
giorgio.baratti@unimi.it

BARELLI, LIA
Sapienza University of Rome, Dept. of History, Representation and Restoration of Architecture
IT, Italy
lia.barelli@uniroma1.it

BASSETTI, MICHELE
CORA Società Archeologica srl, Trento
IT, Italy
michele@coraricerche.com

BAUMANOVA, MONIKA
Uppsala University, Sweden, Dept. of Archaeology and Ancient History
CZ, Czech Republic;
University of Basel
CH, Switzerland
monika.baumanova@uclmail.net

BELTRAME, CARLO
Università Ca' Foscari, Dip. di Studi Umanistici, Venezia
IT, Italy
beltrame@unive.it

BENATTI, ALESSANDRA
University of Limoges, Dept. of Geography, GEOLAB, Limoges
FR, France;
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita, Laboratorio di Palinologia e Paleobotanica
IT, Italy
alessandra.benatti@unilim.fr

BENAZZI, STEFANO
University of Bologna, Dept. of Cultural Heritage
IT, Italy;
Max Planck Institute for Evolutionary Anthropology, Dept. of Human Evolution
D, Germany
stefano.benazzi@unibo.it

BENEŠ, JAROMÍR
University of South Bohemia, Faculty of Science, LAPE; Faculty of Philosophy, Institute of Archaeology, České Budějovice
CZ, Czech Republic
benes.jaromir@gmail.com

BERNARDINI, FEDERICO
Centro Fermi, Museo Storico della Fisica e Centro di Studi e Ricerche "Enrico Fermi", Roma; Multidisciplinary Laboratory, The "Abdus Salam" International Centre for Theoretical Physics (ICTP), Trieste
IT, Italy

BERTACCHI, ANDREA
University of Pisa, Dept. of Agriculture, Food and Environment (DAFE)
IT, Italy
andrea.bertacchi@unipi.it

BEŠTA, TOMÁŠ
University of South Bohemia, Faculty of Science, LAPE, České Budějovice
CZ, Czech Republic
Bobiz@seznam.cz

BIANCHI, GIOVANNA
Università degli Studi di Siena, Dip. di Scienze Storiche e dei Beni Culturali
IT, Italy
giovanna.bianchi@unisi.it

BOBEK, PŘEMYSL
Czech Academy of Sciences, Institute of Botany
CZ, Czech Republic
premysl.bobek@ibot.cas.cz

BORGI, FEDERICO
Università degli Studi di Milano, Dip. Scienze della Terra "Ardito Desio"
IT, Italy

BOSCAINI, MICHELA
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita, Laboratorio di Palinologia e Paleobotanica
IT, Italy

BOSCATO, PAOLO
Università degli Studi di Siena, Dip. di Scienze Fisiche, della Terra e dell'Ambiente, Unità di Ricerca Preistoria e Antropologia
IT, Italy
paolo.boscato@unisi.it

BOSCHIN, FRANCESCO
Università degli Studi di Siena, Dip. di Scienze Fisiche, della Terra e dell'Ambiente, Unità di Ricerca Preistoria e Antropologia
IT, Italy

BOSI, GIOVANNA
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita, Laboratorio di Palinologia e Paleobotanica
IT, Italy
giovanna.bosi@unimore.it

BOWES, KIMBERLY
University of Pennsylvania, Dep. of Classical Studies
USA, United States of America
kbowes@sas.upenn.edu

BRANDOLINI, FILIPPO
Università degli Studi di Milano, Dip. Scienze della Terra "Ardito Desio"
IT, Italy
filippo.brandolini@unimi.it

BUDILOVÁ, KRISTÝNA
University of South Bohemia, Faculty of Science, LAPE, České Budějovice
CZ, Czech Republic
krr.budilova@gmail.com

BUMERL, JIŘÍ
University of South Bohemia, Faculty of Philosophy, Institute of Archaeology
CZ, Czech Republic

BUONINCONTRI, MAURO PAOLO
Università degli Studi di Siena, Dip. di Scienze Storiche e dei Beni Culturali; Università degli Studi di Napoli Federico II, Dip. di Agraria

IT, Italy
mauro.buonincontri@unisi.it

C

CALCAGNILE, LUCIO
CEDAD - University of Salento, Dept. of Mathematics and Physics "Ennio de Giorgi"
IT, Italy
lucio.calcagnile@unisalento.it

CAMPANA, STEFANO REMO LUIGI
University of Siena, Dept. of History and Cultural Heritage, Landscape Archaeology & Remote Sensing LAB
IT, Italy
campana@unisi.it

CAPECCHI, GIULIA
Università degli Studi di Siena, Dip. di Scienze Fisiche, della Terra e dell'Ambiente, Unità di Ricerca Preistoria e Antropologia
IT, Italy
capecchigiulia@alice.it

CASTIGLIONI, ELISABETTA
AR.CO. Società Cooperativa di Ricerche Archeobiologiche, Como
IT, Italy
castiglioni.eli@alice.it

CEVASCO, ROBERTA
University of Gastronomic Science at Pollenzo; University of Genoa, Laboratory of Archaeology and Environmental History
IT, Italy
r.cevasco@unisg.it

CHASSIOT, LÉO
Institut des Sciences de la Terre d'Orléans (ISTO), UMR 7327 CNRS / Université d'Orléans / BRGM, Orléans,
FR, France;
INRS - Eau Terre Environnement, Québec
CDN, Canada
leo.chassiot@hotmail.fr

CHIARENZA, NEVA
Soprintendenza Archeologia, Belle Arti e Paesaggio per la città metropolitana di Genova e le province di Imperia, La Spezia e Savona
IT, Italy
neva.chiarenza@beniculturali.it

CHRABĄSZCZ, MARIUSZ
Jan Kochanowski University in Kielce, Institute of Geography, Student Research Group of Geomorphologists "Złoty Bażant"
PL, Poland
mariuszchrabaszcz1988@gmail.com

CHWAŁEK, SŁAWOMIR
Jan Kochanowski University in Kielce, Dept. of Geomorphology, Geoarchaeology and Environmental Management
PL, Poland
slawomirchwalek@gmail.com

CIANI, FRANCESCO
Università degli Studi di Firenze, Dip. di Biologia
IT, Italy
francesco.ciani@unifi.it

CIPRIANI, ANNA
Università degli Studi di Modena e Reggio Emilia, Dept. of Chemical and Geological Sciences
IT, Italy;
Lamont-Doherty Earth Observatory, Columbia University, Palisades, New York
USA, United States of America
anna.cipriani@unimore.it

CLÒ, ELEONORA
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita, Laboratorio di Palinologia e Paleobotanica
IT, Italy
178051@studenti.unimore.it

COSTANZO, STEFANO
Università degli Studi di Milano, Dip. Scienze della Terra "Ardito Desio"
IT, Italy

CREMASCHI, MAURO
Università degli Studi di Milano, Dip. Scienze della Terra "Ardito Desio"
IT, Italy
mauro.cremaschi@unimi.it

ČULÍKOVÁ, VĚRA
Institute of Archaeology Prague, CAS, Prague 1; Laboratory of Archaeobotany in Opava
CZ, Czech Republic

D

D'HALLEWIN, GUY
CNR, Istituto di Scienze delle Produzioni Alimentari, Li Punti Sassari
IT, Italy
guy.dhallewin@gmail.com

DALLAI, DANIELE
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita
IT, Italy
daniele.dallai@unimore.it

DARCQUE, PASCAL
Arscan, Maison de l'Archéologie et de l'Ethnologie, University of Paris, Nanterre
FR, France
pascal.darcque@cnrs.fr

D'AURIA, ALESSIA
University of Naples Federico II, Dept. of Agricultural Sciences, Laboratory of Vegetation History and Wood Anatomy
IT, Italy
alessia.dauria@unina.it

DE SOUZA, JONAS GREGORIO
University of Exeter, Dept. of Archaeology
UK, United Kingdom
J.Gregorio-De-Souza@exeter.ac.uk

DEGASPERI, NICOLA
CORA Società Archeologica srl, Trento
IT, Italy
info@coraricerche.com

DEGLI ESPOSTI, MICHELE
Università degli Studi di Milano, Dip. Scienze della Terra "Ardito Desio"
IT, Italy

DEL VAIS, CARLA
Università degli Studi di Cagliari, Dip. di Storia, Beni Culturali e Territorio
IT, Italy
cdelvais@unica.it

DELL'OLMO, LORELLA
Università degli Studi di Firenze, Dip. di Biologia
IT, Italy
lorella.dellolmo@unifi.it

DI LERNIA, SAVINO
Sapienza University of Rome, Etnografia Preistorica dell'Africa, Scienze dell'Antichità, IT, Italy;
University of the Witwatersrand, School of Geography, Archaeology and Environmental Studies
ZA, South Africa
savino.dilernia@uniroma1.it

DI PASQUALE, GAETANO
University of Naples Federico II, Dept. of Agricultural Sciences, Laboratory of Vegetation History and Wood Anatomy
IT, Italy
gaetano.dipasquale@unina.it

DIMITRIJEVIĆ, VESNA
University of Novi Sad, BioSense Institute; Belgrade University, Faculty of Philosophy, Dept. of Archaeology, Laboratory for Bioarchaeology
SRB, Serbia
vesnadim@beotel.rs

E

ELIÁŠ (JUN.), PAVOL
Slovak University of Agriculture in Nitra, Dep. of Ecology
SK, Slovakia
Pavol.Elias@uniag.sk

F

FLORENZANO, ASSUNTA
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita, Laboratorio di Palinologia e Paleobotanica
IT, Italy
assunta.florenzano@unimore.it

FOGGI, BRUNO
Università degli Studi di Firenze, Dip. di Biologia
IT, Italy
bruno.foggi@unifi.it

FORNACIARI, RITA
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita, Laboratorio di Palinologia e Paleobotanica
IT, Italy
rita.fornaciari@unimore.it

FORTI, ALESSANDRA
Università Ca' Foscari, Dip. di Studi Umanistici, Venezia
IT, Italy
alessandra.forti@unive.it

FRĄCZEK, MARCIN
Jan Kochanowski University in Kielce, Dept. of Geomorphology, Geoarchaeology and Environmental Management, Kielce
PL, Poland

FREDH, ERIK DANIEL
University of Stavanger/Museum of Archaeology
NO, Norway
daniel.fredh@uis.no

FURIA, ELISA
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita, Laboratorio di Palinologia e Paleobotanica
IT, Italy
elisa.furia@yahoo.it

G

GABELLIERI, NICOLA
DISFOR; University of Genoa, Laboratory of Archaeology and Environmental History
IT, Italy
n.gabellieri@hotmail.com

GLAIS, ARTHUR
LETG-Caen UMR 6554 CNRS, University of Caen Normandy, Dept. of Geography
FR, France
arthur.glais@unicaen.fr

GONDA, REGINA
University of Exeter, Dept. of Archaeology
UK, United Kingdom
rg384@gexeter.ac.uk

GRILLO, OSCAR
Stazione Consorziale Sperimentale di Granicoltura per la Sicilia, San Pietro - Caltagirone (CT)
IT, Italy
oscar.grillo.mail@gmail.com

H

HAJNALOVÁ, MÁRIA
Constantine the Philosopher University in Nitra, Dept. of Archaeology
SK, Slovakia
mhajnalova@ukf.sk

HORAK, JAN
Charles University, Faculty of Arts, Institute of Archaeology; Czech University of Life Sciences, Dept. of Ecology, Faculty of Environmental Sciences
CZ, Czech Republic
jan_horak@email.cz

HOUFKOVA, PETRA
University of South Bohemia, Faculty of Science, LAPE, České Budějovice
CZ, Czech Republic
petra.houfkova@gmail.com

I

IRIARTE, JOSE
University of Exeter, Dept. of Archaeology
UK, United Kingdom
J.Iriarte@exeter.ac.uk

ISOLA, ILARIA
Istituto Nazionale di Geofisica e Vulcanologia, Sezione di Pisa
IT, Italy
ilaria.isola@ingv.it

J

JUŘIČKOVÁ, LUCIE
Charles University in Prague, Faculty of Science, Dept. of Zoology
CZ, Czech Republic
lucie.jurickova@seznam.cz

K

KALICKI, TOMASZ
Jan Kochanowski University in Kielce, Dept. of Geomorphology, Geoarchaeology and Environmental Management, Kielce
PL, Poland
tomaszkalicki@ymail.com

KLIR, TOMAS
Charles University in Prague, Faculty of Arts, Institute of Archaeology
CZ, Czech Republic
Tomas.Klir@ff.cuni.cz

KOČÁR, PETR
Institute of Archaeology of the Czech Academy of Sciences, Prague, v.v.i., Dept. of Natural Sciences and Archaeometry; Charles University in Prague, Faculty of Sciences, Dept. of Botany
CZ, Czech Republic
kocar@arup.cas.cz

KOMÁRKOVÁ, VERONIKA
University of South Bohemia, Faculty of Science, LAPE, České Budějovice
CZ, Czech Republic
verokomar@seznam.cz

KOSŇOVSKÁ, JITKA
University of South Bohemia, Faculty of Science, LAPE, České Budějovice
CZ, Czech Republic
jitullka@gmail.com

KOVÁRNÍK, JAROMÍR
University of South Bohemia, Faculty of Science, LAPE, České Budějovice
CZ, Czech Republic
jaromir.kovarnik@gmail.com

KUSZTAL, PIOTR
Jan Kochanowski University in Kielce, Dept. of Geomorphology, Geoarchaeology and Environmental Management, Kielce
PL, Poland
roch1990@gmail.com

L

LABATE, DONATO
Soprintendenza Archeologia, Belle Arti e Paesaggio per la Città Metropolitana di Bologna e le province di Modena, Reggio Emilia e Ferrara
IT, Italy
donato.labate@beniculturali.it

LATKOVA, MICHAELA
The Institute of Archaeology AV ČR, Brno, v. v. i., Dept. of Mediaeval Archaeology
CZ, Czech Republic
michaelalatkova@gmail.com

LAVRIEUX, MARLÈNE
Institut des Sciences de la Terre d'Orléans (ISTO), UMR 7327 CNRS / Université d'Orléans / BRGM, Orléans
FR, France;
University of Basel, Dept. of Environmental Sciences, Basel
CH, Switzerland
mlavrieux@gmail.com

LEDGER, PAUL M.
CNRS, Université Clermont Auvergne, GEOLAB, Clermont–Ferrand
FR, France
p.ledger@abdn.ac.uk

LESPEZ, LAURENT
University of Paris-East Créteil, Laboratory of Physical Geography (LGP) UMR 8591 CNRS
FR, France
laurent.lespez@u-pec.fr

LÓPEZ-SÁEZ, JOSÉ-ANTONIO
Institute of History, National Spanish Research Council, CSIC, Madrid
ES, Spain
joseantonio.lopez@cchs.csic.es

LUBRITTO, CARMINE
Università degli Studi della Campania, Dip. di Scienze e Tecnologie Ambientali, Biologiche e Farmaceutiche
IT, Italy
carmine.lubritto@unicampania.it

LUELMO-LAUTENSCHLAEGER, REYES
Institute of History, National Spanish Research Council, CSIC, Madrid; Universidad Autónoma, Dept. of Geography, Madrid
ES, Spain

reyes.luelmo@cchs.csic.es

LUGHI, VANNI
Università di Trieste, Dip. di Ingegneria e Architettura
IT, Italy
vlughi@units.it

LUGLI, FEDERICO
Università degli Studi di Modena e Reggio Emilia, Dept. of Chemical and Geological Sciences
IT, Italy
federico.lugli@unimore.it

M

MACKINNON, MICHAEL
University of Winnipeg,
CAN, Canada
m.mackinnon@uwinnipeg.ca

MACISZEWSKI, IGOR
ASINUS Igor Maciszewski
PL, Poland

MAEZUMI, SHIRA
University of Exeter, Dept. of Archaeology
UK, United Kingdom
s.y.maezumi@exeter.ac.uk

MAINI, ELENA
Università di Bologna, Dip. Storia Culture Civiltà, Ravenna
IT, Italy
elena.maini@unibo.it

MAJEROVIČOVÁ, TEREZA
University of South Bohemia, Faculty of Philosophy, Institute of Archaeology
CZ, Czech Republic
tmajerovicova@gmail.com

MARCHESINI, MARCO
Laboratorio di Palinologia e Archeobotanica, CAA "Giorgio Nicoli", Crevalcore (BO)
IT, Italy
mmarchesini@caa.it

MARIANI, GUIDO STEFANO
Università degli Studi di Milano, Dip. Scienze della Terra "Ardito Desio"
IT, Italy
guido.mariani@unimi.it

MARIANI, MICHELA
University of Melbourne, School of Geography, Parkville
AUS, Australia
michela.mariani@unimelb.edu.au

MARIOTTI LIPPI, MARTA
Università degli Studi di Firenze, Dip. di Biologia
IT, Italy
mariotti@unifi.it

MARITAN, MICHELE
Università degli Studi di Padova, Dip. di Biologia
IT, Italy
michele.maritan@unipd.it

MARTINELLI, NICOLETTA
Laboratorio Dendrodata, Verona
IT, Italy
nicoletta.martinelli@dendrodata.it

MASI, ALESSIA
Sapienza University of Rome, Dept. of Environmental Biology
IT, Italy
alessia.masi@uniroma1.it

MASSAMBA N'SIALA, ISABELLA
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita, Laboratorio di Palinologia e Paleobotanica
IT, Italy
islabela@yahoo.it

MENSING, SCOTT ANDREW
University of Nevada, Dept. of Geography, Reno
USA, United States of America
smensing@unr.edu

MERCURI, ANNA MARIA
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita, Laboratorio di Palinologia e Paleobotanica
IT, Italy
annamaria.mercuri@unimore.it

MICHELI, ROBERTO
MIBACT – Soprintendenza Archeologia, Belle Arti e Paesaggio del Friuli Venezia Giulia
IT, Italy
roberto.micheli@beniculturali.it

MINISSALE, PIETRO
University of Catania, Dept. of Biological Geological and Environmental Sciences
IT, Italy
p.minissale@unict.it

MIOLA, ANTONELLA
Università degli Studi di Padova, Dip. di Biologia
IT, Italy
antonella.miola@unipd.it

MIRAS, YANNICK
CNRS, UMR 7194, Histoire Naturelle de l'Homme Préhistorique, Dépt. de Préhistoire, Muséum National d'Histoire Naturelle, Institut de Paléontologie Humaine, Paris; CNRS, Université Clermont Auvergne, GEOLAB, Clermont–Ferrand
FR, France
yannick.miras@mnhn.fr

MOLINARI, CHIARA
Lund University
SE, Sweden
chiara.molinari@nateko.lu.se

MONTANARI, CARLO
DISTAV; University of Genoa, Laboratory of Archaeology and Environmental History
IT, Italy
Carlo.Montanari@unige.it

MONTECCHI, MARIA CHIARA
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita, Laboratorio di Palinologia e Paleobotanica
IT, Italy
mariachiara.montecchi@unimore.it

MORENO, DIEGO
University of Genoa, Laboratory of Archaeology and Environmental History
IT, Italy
diego.moreno@unige.it

MORICCA, CLAUDIA
Sapienza University of Rome, Dept. of Environmental Biology
IT, Italy
claudia.moricca@uniroma1.it

MOZZI, PAOLO
Università degli Studi di Padova, Dip. di Geoscienze
IT, Italy
paolo.mozzi@unipd.it

MUTTI, ANGELA
Museo della Terramara Santa Rosa di Poviglio
IT, Italy
muttiangel@libero.it

N

NAUMOV, GOCE
Goce Delcev University, Center for Prehistoric Research
Former Yugoslav Republic of Macedonia
gocenaumov@gmail.com

NARDI, VARINIA
Sapienza University of Rome, Etnografia Preistorica dell'Africa, Scienze dell'Antichità,
IT, Italy
varinianardi@libero.it

NICOLL, KATHLEEN
University of Utah
USA, United States of America
kathleen.nicoll@gmail.com

NOVAK, JAN
University of South Bohemia, Faculty of Science, LAPE, České Budějovice
CZ, Czech Republic
prourou@gmail.com

O

OEGGL, KLAUS
Universität Innsbruck, Dept. of Botany
AT, Austria
Klaus.Oeggl@uibk.ac.at

P

PANETTA, ALESSANDRO
DAFIST; University of Genoa, Laboratory of Archaeology and Environmental History
IT, Italy
archeopanetta@gmail.com

PARVONIČOVÁ, LENKA
Charles University in Prague, Institute of Classical Archaeology
CZ, Czech Republic
Lena.parv@gmail.com

PEÑA-CHOCARRO, LEONOR
CSIC, GI Arqueobilogía, Instituto de Historia
ES, Spain
leonor.chocarro@csic.es

PÉREZ-DÍAZ, SEBASTIÁN
Institute of History, National Spanish Research Council, CSIC, Madrid
ES, Spain
sebas.perezdiaz@gmail.com

PESCINI, VALENTINA
DAFIST; University of Genoa, Laboratory of Archaeology and Environmental History
IT, Italy
valpes87@gmail.com

PIERUCCINI, PIERLUIGI
Università degli Studi di Siena, Dip. di Scienze Fisiche, della Terra e dell'Ambiente
IT, Italy
pieruccini@unisi.it

PIOVESAN, GIANLUCA
University of Tuscia - Dafne
IT, Italy
piovesan@unitus.it

POKORNÁ, ADÉLA
Institute of Archaeology of the Czech Academy of Sciences, Prague, v.v.i., Dept. of Natural Sciences and Archaeometry; Charles University in Prague, Faculty of Sciences, Dept. of Botany
CZ, Czech Republic
pokorna@arup.cas.cz

POKORNÝ, PETR
Charles University in Prague, Center for Theoretical Study
CZ, Czech Republic
pokorny@cts.cuni.cz

PRAVCOVA, IVANA
University of South Bohemia, Faculty of Science, LAPE, České Budějovice
CZ, Czech Republic
ivana.pravcova@gmail.com

PRESCOTT, CHRISTOPHER
The Norwegian Institute in Rome-UiO
IT, Italy
christopher.prescott@roma.uio.no

PRØSCH-DANIELSEN, LISBETH
University of Stavanger/Museum of Archaeology
NO, Norway
Lisbeth.prosch-danielsen@uis.no

PROSERPIO, BARBARA
Università degli Studi di Ferrara
IT, Italy
barbara.proserpio@gmail.com

PROVENZANO, NOELLE
Laboratoire méditerranéen de préhistoire Europe Afrique, CNRS
FR, France

PRZEPIÓRA, PAWEŁ
Jan Kochanowski University in Kielce, Institute of Geography, Student Research Group of Geomorphologists "Złoty Bażant"
PL, Poland

PTÁKOVÁ, MICHAELA
Czech Academy of Sciences, Institute of Botany
CZ, Czech Republic

PUGLIESE, RAFFAELE
Sapienza University of Rome, Dept. of Environmental Biology
IT, Italy

PUTZER, ANDREAS
Südtiroler Archäologiemuseum, Bozen
IT, Italy
andreas.putzer@iceman.it

Q

QUARTA, GIANLUCA
CEDAD - University of Salento, Dept. of Mathematics and Physics "Ennio de Giorgi"
IT, Italy
gianluca.quarta@unisalento.it

R

RATTIGHIERI, ELEONORA
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita, Laboratorio di Palinologia e Paleobotanica
IT, Italy
ratti68@hotmail.com

REGATTIERI, ELEONORA
Università di Pisa, Dip. di Scienze della Terra
IT, Italy
eleonora.regattieri@unipi.it

RICCI, STEFANO
Università degli Studi di Siena, Dip. di Scienze Fisiche, della Terra e dell'Ambiente, Unità di Ricerca Preistoria e Antropologia
IT, Italy
stefano.ricci@unisi.it

RICCIARDI, MASSIMO
University of Naples Federico II, Dept. of Agriculture
IT, Italy
masricci@unina.it

RINALDI, ROSSELLA
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita, Laboratorio di Palinologia e Paleobotanica
IT, Italy
rossella.rinaldi@unimore.it

RISO, FEDERICA MARIA
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita, Laboratorio di Palinologia e Paleobotanica
IT, Italy
federicamaria.riso@unimore.it

ROBINSON, MARK
University of Exeter, Dept. of Archaeology
UK, United Kingdom
markrobinson.uk@gmail.com

RONCHITELLI, ANNAMARIA
Università degli Studi di Siena, Dip. di Scienze Fisiche, della Terra e dell'Ambiente, Unità di Ricerca Preistoria e Antropologia
IT, Italy
annamaria.ronchitelli@unisi.it

ROTTOLI, MAURO
AR.CO. Società Cooperativa di Ricerche Archeobiologiche, Como
IT, Italy
archeobotanica@alice.it

ROTUNNO, ROCCO
Sapienza University of Rome, Etnografia Preistorica dell'Africa, Scienze dell'Antichità,
IT, Italy
rotunno.rocco@gmail.com

ROWAN, ERICA
Royal Holloway, University of London, Dept. of Classics
UK, United Kingdom
erica.rowan@rhul.ac.uk

RUCCO, ALESSANDRO ALESSIO
Università degli Studi di Padova, Dip. di Biologia
IT, Italy
alessandroalessio.rucco@unive.it

RUSSO ERMOLLI, ELDA
Università di Napoli Federico II, Dip. di Scienze della Terra, Ambiente e Risorse
IT, Italy
ermolli@unina.it

S

SABATO, DIEGO
CSIC, GI Arqueobilogía, Instituto de Historia
ES, Spain
diego.sabato@cchs.csic.es

SADORI, LAURA
Sapienza University of Rome, Dept. of Environmental Biology
IT, Italy
laura.sadori@uniroma1.it

SAITO, KEN
University of Siena, Dept. of History and Cultural Heritage, Landscape Archaeology & Remote Sensing LAB
IT, Italy
ken.saito@hs.osakafu-u.ac.jp

ŠÁLKOVÁ, TEREZA
University of South Bohemia, Faculty of Science, LAPE; Faculty of Philosophy, Institute of Archaeology, České Budějovice
CZ, Czech Republic
terezasalkova@seznam.cz

SANNA, IGNAZIO
Soprintendenza Archeologia belle arti e paesaggio per la città metropolitana di Cagliari e per le province di Oristano e Sud Sardegna
IT, Italy
ignazio.sanna@beniculturali.it

SARIGU, MARCO
Università degli Studi di Cagliari, Banca del Germoplasma della Sardegna (BG-SAR), Hortus Botanicus Karalitanus (HBK); Centro Conservazione Biodiversità (CCB), Dip. di Scienze della Vita e dell'Ambiente (DISVA)
IT, Italy
msarigu@unica.it

SCIANDRELLO, SAVERIO
University of Catania, Dept. of Biological Geological and Environmental Sciences
IT, Italy
s.sciandrello@unict.it

SCHOOLMAN, EDWARD
University of Nevada, Dept. of History, Reno, Nevada
USA, United States of America
eschoolman@unr.edu

ŠÍDA, PETR
Charles University in Prague, Center for Theoretical Study
CZ, Czech Republic
petrsida@seznam.cz

SMEJDA, LADISLAV
Czech University Of Life Sciences Prague, Dept. of Ecology
CZ, Czech Republic
smejda@fzp.czu.cz

STEFANOVIĆ, SOFIJA
University of Novi Sad, BioSense Institute; Belgrade University, Faculty of Philosophy, Dept. of Archaeology, Laboratory for Bioarchaeology
SRB, Serbia
smstefan@f.bg.ac.rs

STINCA, ADRIANO
University of Campania "Luigi Vanvitelli", Dept. of Environmental, Biological and Pharmaceutical Sciences and Technologies
IT, Italy; Center "Musei delle Scienze Agrarie - MUSA", University of Naples Federico II
adriano.stinca@unicampania.it

T

TORRI, PAOLA
Università degli Studi di Modena e Reggio Emilia, Dip. Scienze Vita, Laboratorio di Palinologia e Paleobotanica
IT, Italy
paola.torri@unimore.it

TRAVASSOS, DAIANA
University of Exeter, Dept. of Archaeology
UK, United Kingdom
dta201@exeter.ac.uk

TSIRTSONI, ZOÏ
Arscan, Maison de l'Archéologie et de l'Ethnologie, University of Paris, Nanterre
FR, France
zoi.tsirtsoni@mae.cnrs.fr

TUNNO, IRENE
Lawrence Livermore National Laboratory, Physical and Life Science Directorate, Livermore
USA, United States of America
irene.tunno@gmail.com

U

UCCHESU, MARIANO
Università degli Studi di Cagliari, Banca del Germoplasma della Sardegna (BG-SAR), Hortus Botanicus Karalitanus (HBK); Centro Conservazione Biodiversità (CCB), Dip. di Scienze della Vita e dell'Ambiente (DISVA)
IT, Italy

marianoucchesu@gmail.com

USAI, ALESSANDRO
Soprintendenza Archeologia belle arti e paesaggio per la città metropolitana di Cagliari e per le province di Oristano e Sud Sardegna
IT, Italy
alessandro.usai@beniculturali.it.

V

VACCARI, LISA
Elettra-Sincrotrone Trieste S.C.p.A., Basovizza (TS)
IT, Italy
lisa.vaccari@elettra.eu

VACCARO, EMANUELE
Università degli Studi di Trento, Dip. di Lettere e Filosofia
IT, Italy
emanuele.vaccaro@unitn.it

VANĚČEK, ZDENĚK
Palacký University, Faculty of Arts, Dept. of History, Olomouc
CZ, Czech Republic
zdenek.vanecek@upol.cz

VANIN, STEFANO
Huddersfield University, Dept. of Chemical and Biological Sciences
UK, United Kingdom
s.vanin@hud.ac.uk

VAVASORI, ANDREA
Università Ca' Foscari, Dip. di Scienze Molecolari e Nanosistemi, Venezia
IT, Italy
vavasori@unive.it

VENORA, GIANFRANCO
Stazione Consorziale Sperimentale di Granicoltura per la Sicilia, San Pietro - Caltagirone (CT)
IT, Italy
venora@granicoltura.it

VIGNOLA, CRISTIANO
Sapienza University of Rome, Dept. of Environmental Biology
IT, Italy
cristiano.vignola@uniroma1.it.

VYCHRONOVÁ, MICHAELA
University of South Bohemia, Faculty of Philosophy, Institute of Archaeology
CZ, Czech Republic
mvychronova@yahoo.com

Z

ŽÁČKOVÁ, PAVLA
Charles University in Prague, Faculty of Sciences, Dept. of Botany
CZ, Czech Republic

ZANCHETTA, GIOVANNI
Università di Pisa, Dip. di Scienze della Terra
IT, Italy
zanchetta@dst.unipi.it

ZANINI, FRANCO
Elettra-Sincrotrone Trieste S.C.p.A., Basovizza (TS)
IT, Italy
franco.zanini@elettra.eu

ZERBONI, ANDREA
Università degli Studi di Milano, Dip. Scienze della Terra "Ardito Desio"
IT, Italy
andrea.zerboni@unimi.it

ŽIVALJEVIĆ, IVANA
University of Novi Sad, BioSense Institute
SRB, Serbia
ivana.zivaljevic@biosense.rs

Scientific Committee

Anna Maria Mercuri – Università di Modena e Reggio Emilia
Laura Sadori – Università La Sapienza Roma
Marta Mariotti Lippi – Università di Firenze
Andrea Zerboni – Università di Milano
Mauro Cremaschi – Università di Milano
Gianluca Piovesan – Università della Tuscia
Savino di Lernia – Università La Sapienza Roma
Giovanna Bosi – Università di Modena e Reggio Emilia
Assunta Florenzano – Università di Modena e Reggio Emilia
Emanuele Vaccaro – Università di Trento
Alessia Masi – Università La Sapienza Roma
Lucio Calcagnile – CEDAD, Università del Salento
Jaromír Beneš – University of South Bohemia
Petr Pokorný – Charles University Prague
Ladislav Šmejda – Czech University of Life Sciences Prague
Yannick Miras – Muséum National d'Histoire Naturelle Paris
Katerina Kouli – National and Kapodistrian University of Athens
Leonor Peña-Chocarro - Spanish National Research Council
Scott Mensing – University of Nevada USA
Sabine Karg – Freie Universität Berlin

Made on February 2018

Modena, Laboratorio di Palinologia e Paleobotanica
Dipartimento di Scienze della Vita
Università degli Studi di Modena e Reggio Emilia