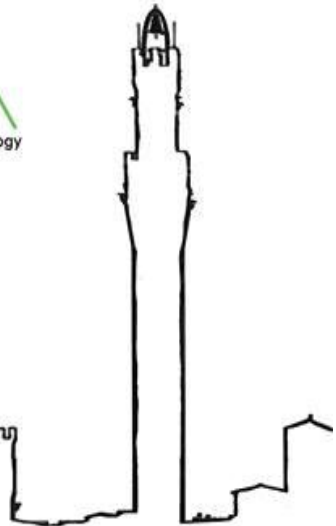


> SIENA  
> 30 march-3 april  
> CAA 2015



KEEP THE REVOLUTION GOING >>>

43<sup>rd</sup> Computer Applications and Quantitative Methods in  
Archaeology

Annual Conference

# Conference Program

University of Siena  
Department of History and Cultural Heritage



## Conference chairman

[Stefano Campana](#) – University of Siena (ITALY), University of Cambridge (UK)

[Roberto Scopigno](#) – Institute for Computer Science and Technologies – CNR Pisa

## Honorary Committee

A.C. Addison - University of California, Berkely – USA

J.A. Barceló – Autonomous University of Barcelona – Spain

A. Beraldin - National Research Council – Canada

L. De Luca – CNRS – France

M. Doneus – University of Vienna – Austria

M. Farjas – Universidad Politécnica de Madrid – Spain

M. Forte – Duke University – USA

F. Giligny – Université La Sorbonne – France

A. Grün – Federal Institute of Technology (ETH) Zurich – Switzerland

M. Guaitoli – University of Salento Lecce – Italy

G. Huadong – Chinese Academy of Sciences – China

M. Hernandez – The International Society for Photogrammetry and Remote Sensing – Mexico

I. Hodder – Stanford University – USA

I. Johnson – University of Sidney – Australia

S. Key – University of Southampton – UK

K.L. Kvamme – University of Arkansas – USA

L. Lancaster – University of California, Berkely – USA

G. Lock – University of Oxford – UK

M. Millett – University of Cambridge – UK

W. Neubauer – Ludwig Boltzmann Institute – Austria

C. Orton – University College London – UK

E. Papi – University of Siena – Italy

D. Powlesland – University of York – UK

C. Renfrew - University of Cambridge – UK

H. Ruter – Cape Town University – South Africa

F. Vermuellen – University of Ghent – Belgium

E. Zubrow – University of Buffalo – USA

## National Committee

G. Azzena – University of Sassari

P. Carafa – University of Rome “La Sapienza”

M. Cattani – University of Bologna

G. Ceraudo – University of Salento Lecce

A. d’Andrea – University of Naples

G. Gattiglia – University of Pisa

M. L.Gualandi – University of Pisa  
L. Malnati – MIBACT – Ministry of Cultural Heritage  
P. Moscati – Institute of Ancient Mediterranean Studies– CNR Rome  
F. Niccolucci – University of Florence  
A. Pessina – Archaeological Superintendence of Tuscany  
S. Piro – Institute of Technology Applied to the Cultural Heritage – CNR Rome  
A. P. Recchia – MIBACT – Ministry of Cultural Heritage  
A. Santoriello – University of Salerno  
G. Scardozzi – IBAM Institute for Archaeology and Monuments – CNR Lecce

### **Organizing Committee**

G. Benelli – University of Siena, Italy  
C. Citter – University of Siena, Italy  
N. Dell’Unto – University of Lund, Sweden  
G. Guidi – Polytechnic of Milan, Italy  
S. Pescarin – Institute of Technology Applied to the Cultural Heritage – CNR Rome, Italy  
G. Pizziolo – University of Siena, Italy  
F. Remondino – Bruno Kessler Foundation Trento, Italy  
A. Traviglia – Macquarie University Sidney, Australia

### **Scientific Secretariat**

Marianna Cirillo – University of Siena

### **Contact CAA 2015 SIENA**

Marianna Cirillo - [marianna.cirillo@hotmail.it](mailto:marianna.cirillo@hotmail.it)

### **CAA 2015 SIENA WEB SITE**

<http://caaconference.org/>

### **CAA INTERNATIONAL WEB SITE**

<http://caa-international.org/>

### **Conference venue – University of Siena**

San Niccolò University Building - [Google Map](#)

In the early 2000s, the University of Siena restored the building, a former monastery that in early 800s was a sort of village organized into pavilions to accommodate mentally ill people. Some University departments have been housed in the wide rooms of the former psychiatric hospital that is located in the town centre, very close to Porta Romana.

The Teaching Centre has many teaching rooms, including those of the Outer Room Pavilion which comprises six 100 seat multi-functional rooms (transformable into a 700 seat auditorium).

## Under the High Patronage of



Ministero  
dei beni e delle  
attività culturali  
e del turismo

REGIONE



TOSCANA



Comune di Pienza

Con il patrocinio di



Provincia di Siena



COMUNE  
DI SIENA

## Sponsored by



**ArcTron** 3D  
Expertise in Three Dimensions

**AICON**  
3D Systems

**breuckmann**  
3D Scanner

**BETA**  
Radiocarbon Dating  
Consistent Accuracy  
Delivered On-Time  
Beta Analytic



**Archaeopress**  
British Archaeological Reports

geocarta



**inari**

## Monday 30<sup>th</sup> March - Workshops

4 slots 1.30 h each

8.00-18.30 Registration

8.00 – 10.00 Workshop registration

9.00 – 10.00

1. Predictive Techniques for 3D Data Augmentation in Cultural Heritage
2. Hands-On Archaeological Conceptual Modelling 2
3. Storytelling from the earth
4. 3DHOP – Presenting online high-res 3D models: a crash course
5. Introduction to exploratory network analysis for archaeologists using Visone
6. UAV Photogrammetry for archaeology and Survey: a state of the art

10.30 – 11.00 Coffee break

11.00 – 12.30

1. Predictive Techniques for 3D Data Augmentation in Cultural Heritage
2. Hands-On Archaeological Conceptual Modelling 2
3. Storytelling from the earth
4. 3DHOP – Presenting online high-res 3D models: a crash course
5. Introduction to exploratory network analysis for archaeologists using Visone
6. UAV Photogrammetry for archaeology and Survey: a state of the art

12.30 - 13.30 Lunch

13.30 – 15.00

1. The Use of 3D GIS Platforms for Intra-Site Investigation in Archaeology
2. First steps in agent-based modelling with Netlogo
3. Data modelling, processing and integration for the knowledge and valorisation of Cultural Heritage in urban area
4. Improving Presentation Skills
5. Ha(r)ckeology: an hacking approach to open archaeology
6. Reconstructing Ancient Landscape in the Cloud

15.00 – 16.30

1. The Use of 3D GIS Platforms for Intra-Site Investigation in Archaeology
2. First steps in agent-based modelling with Netlogo
3. Data modelling, processing and integration for the knowledge and valorisation of Cultural Heritage in urban area
4. Improving Presentation Skills
5. Ha(r)ckeology: an hacking approach to open archaeology
6. Reconstructing Ancient Landscape in the Cloud

16.30 – 17.00 Coffee break

17.30 –

Conference opening: Rector, Usiana Humanities Dean, CNR, MIBACT.

18.15 – 19.00

Key-note talk prof. Martin Millett + 15 min question time

19.30 –

Icebreaker Party – Siena downtown (further info on CAA web site)

## Tuesday 31 March – CAA 2015 CONFERENCE DAY 1

Paper 20 min + 5 min question time  
Up to 8 parallel sessions + roundtable  
2 Slots 5 papers each in the morning  
2 slots 4 papers each in the afternoon

Poster session from 14.30 to 15.00  
2 Roundtables  
2 Key-note talks

8.00 – 10.00 Conference registration desk open

9.00-11.00

### 2D Linked Data: From interoperable to interoperating

- PHILIPP GERTH, SEBASTIAN CUY  
*Connecting Cultural Heritage Data: The Syrian Heritage Project in the IT infrastructure of the German Archaeological Institute*
- KARSTEN TOLLE, DAVID WIGG-WOLF  
*How to move from Relational to Linked Open Data 5 Star – a numismatic example*
- FLORIAN THIERY, THOMAS ENGEL  
*The Labeling System: A bottom-up approach for enriched vocabularies in the humanities*
- PAUL J CRIPPS, DOUGLAS TUDHOPE  
*From interoperable to interoperating Geosemantic resources; practical examples of producing and using Linked Geospatial Data*
- OLIVIER MARLET, STÉPHANE CURET, XAVIER RODIER, BÉATRICE BOUCHOU-MARKHOFF  
*Using CIDOC CRM for dynamically querying ArSol, a relational database, from the semantic web.*

### 5C Archaeological Theory and Statistical Modelling

- TSONI TSONEV  
*The concepts of 'cultural gradient' and 'central place' and their analytical and theoretical implications in archaeological interpretation*
- JUAN A BARCELÓ, GIACOMO CAPUZZO, BERTA MORELL, AGUEDA LOZANO, KATIA ACHINO  
*The Statistics of Time-to-Event. Integrating the Bayesian Analysis of Radiocarbon data and Event History Analysis methods*
- JAMES R. ALLISON  
*Theories and Models of Prehistoric Exchange*
- KAMILA OLŠEVIČOVÁ, ALŽBĚTA DANIELISOVÁ  
*Towards shareable modelling outputs: celtsim case study*
- CATALIN NICOLAE POPA, PETER RAMSL  
*Iron Age Identity and Statistical Modelling. The Late Iron Age cemetery of Mannersdorf*

## 5E Homologation and standardization of archaeological cartographic data

- GIOVANNI AZZENA, ROBERTO BUSONERA, FEDERICO NURRA, ENRICO PETRUZZI  
*Homogenization of the archaeological cartographic data on a national scale in Italy. The SITAN*
- ANNE MOREAU  
*GIS, one of the answers to the challenge of preventive archaeology? : the attempts of the Inrap*
- KAMIL NIEDZIÓŁKA  
*Polish Archaeological Record and GIS: preparing data for settlement studies in Northern Poland*
- GIORGIA LEONI  
*Standardization for data "quality"? The experience of SITAR Project*
- SERGIO CAMIZ, PAOLA MOSCATI  
*Archaeology and GIS. Methodological and terminological issues*

## 4C Formal approaches to visibility analysis in ancient architectural spaces and cultural landscapes

- ANDREW WILSON  
*Hybrid Three-Dimensional Visibility Analysis in Archaeology*
- GIACOMO LANDESCHI, NICOLÒ DELL' UNTO, DANIELE FERDANI  
*A vector-based pipeline for assessing visibility: a 3D GIS perspective*
- HEATHER RICHARDS-RISSETTO, MICHAEL AUER, JENNIFER VON SCHWERIN, NICOLAS BILLEN, LUKAS LOOS, ALEXANDER ZIPF  
*MayaArch3D: Web based 3D Visibility Analyses in Ancient Cityscapes – the role of visible structures at the Maya Site of Copán, Honduras*
- NICOLÒ DELL' UNTO  
*Using different eyes: the case of the medieval Cathedral of Dalby*
- RODRIGO MORA  
*The development of 3D VGA tools: an application in a case of weak heritage in Valparaiso, Chile*

## 6D Colour and Space in Cultural Heritage: Interdisciplinary connections

- ANNA BENTKOWSKA-KAFEL  
*Colour and Space in Cultural Heritage in 6Ds. The interdisciplinary connections*
- LUCA CIPRIANI, FILIPPO FANTINI, SILVIA BERTACCHI  
*A novel method for shadow removal and BRDF simulation of texture from SfM applications*
- SARAH YOUNAN  
*Museums digital repositories and personal identities*
- MARCELLO PICOLLO, ANDREA CASINI, COSTANZA CUCCI, MARINA GINANNI, ELENA PRANDI, MAGNOLIA SCUDIERI, TATIANA VITORINO  
*The use of hyper-spectral imaging technique to reveal concealed layers: a key question for the study of paintings*
- JONATHAN ROY GRATON, DOUGLAS ALEXANDER CAWTHORNE  
*Hidden but not lost; Exploring the Great Hall at Boughton House*



## 7C Replication: from the past to the digital age

- ROB SHAW, MICHAEL ANN BEVIVINO, GARY DEVLIN  
*Replicating Replicas: from 19th Century plaster cast to 3D digital replica*
- MARIA CHIARA LIGUORI  
*Manifold digital applications for a multitarget communication: the Etruscan virtual experience*
- PAOLA DI GIUSEPPANTONIO DI FRANCO  
*The performance of heritage: manipulating 3D digital and printed replicas of artefacts inside museums*
- STUART JEFFREY  
*Digital replication, aura and authenticity*
- MHAIRI MAXWELL  
*Digital-Design-Archaeology: integrating digital and traditional making in re-creating a Pictish drinking horn fitting.*

## 4E From 3D Scanning of Objects and Monuments to Augmented Reality

- KATALIN TOLNAI  
*The Study of the Past in In-depth? – A 3D approach in the integrated interpretation of archaeological data*
- ANDREAS HADJIPROCOPIS  
*Cloud-based 3D Reconstruction of Archaeological sites using photographs from Aerial Surveying, hand-held devices and Open Access Image Repositories*
- ANESTIS KOUTSOUDIS, FOTIOS ARNAOUTOGLU, VASILIOS LIAKOPOULOS, ATHANASIOS TSAOUSELIS, GEORGE IOANNAKIS, CHRISTODOULOS CHAMZAS  
*Creating 3D replicas of medium-to-large scale monuments for Web-based dissemination within the framework of the 3D-ICONS project*
- GÁBOR BÖDŐ  
*Understanding Heritage through Augmented Reality Development*
- GARY DEVLIN, ANTHONY CORNS, ROBERT SHAW, PATRICK GRIFFIN  
*Modelling Irelands iconic sites: Generating online digital models from massive pointcloud datasets*

## ROUNDTABLE 6 - Thinking between the lines: conceptualising the future of archaeological databases

11.00-11.30 Coffee break

11.30-13.30

Keynote speakers

11.30 – 12.15 Holly Rushmeier + 15 min question time

12.30 – 13.15 Maurizio Forte + 15 min question time

13.30-14.30 Lunch time

14.30-15.00 Poster session

15.00-16.40

### 3C Computer and rock art studies: data collection, interpretation and communication

- MARGARITA DIAZ-ANDREU, TOMMASO MATTIOLI  
*Archaeoacoustics of rock art: quantitative and qualitative approaches to the acoustics and soundscapes of rock art in the Western Mediterranean*
- JOHAN LINDERHOLM, PAUL GELADI, CLAUDIA SCIUTO  
*Field based Near Infrared analysis of Rock paintings in northern Scandinavia*
- ENRIQUE CERRILLO-CUENCA, MARCELA SEPÚLVEDA  
*Photographic recording and the digital enhancement of pigments: recent applications in the rock art of Northern Chile*
- PAOLO EMILIO BAGNOLI, ANDREA SAMUELI  
*Computer graphics-aided recording of open-air extensive rock-art panels*

### 5M Improving Resolutions: Use and Potentials of Quantitative Methods in Near Eastern Archaeology

- SIMONE BONZANO  
*The Gis-Archaeologist: methodological and analytical remarks on ancient near eastern highlands.*
- NAZARIJ BUŁAWKA, BARBARA KAIM  
*The Iron Age in Serakhs oasis (Turkmenistan). The preliminary results of the application of Geographic Information System in the study of the settlement pattern of the earliest confirmed occupation of the oasis.*
- TUNA KALAYCI  
*Archaeological Sites and Site Territories: A Remote Sensing Approach for Modelling Production Landscapes*
- VANESSA JULOUX  
*New data mining approach to analyze male or female agency: inventory of action verbs*

### 4F Geomatics approaches in Latin American Archaeology

- CAROLIN VON GROOTE-BIDLINGMAIER, KLAUS HILBERT, SABINE TIMPF  
*Deriving settlement patterns using environmental information*
- KAYELEIGH SHARP, MELISSA LITSCHI  
*Integrated Technological and Spatial Analysis: Fuzzy Data Mining on the North Coast, Peru*
- MIŁOSZ GIERSZ, PATRYCJA PRZĄDKA-GIERSZ, WIESŁAW WIĘCKOWSKI, JULIA MARIA CHYLA, ROBERTO PIMENTEL NITA, JACEK KOŚCIUK, ANNA KUBICKA, KRZYSZTOF MISIEWICZ, MIRON BOGACKI, WIESŁAW MAŁKOWSKI  
*Geomatic approaches in evaluation and inventorying of pre-Columbian heritage in danger at the coastal deserts of the Ancash Region of Peru*
- CRISTINA CASTAGNETTI, ELEONORA BERTACCHINI, ELISA BENOZZI, CAROLINA ORSINI, PAOLO ROSSI, ALESSANDRO CAPRA, VERONICA WILLIAMS  
*GPS and GIS for documentation and spatial representation in two valleys of the middle calchaquí basin (salta argentina)*

## 5G How to reveal geographic relations in Databases on cultural heritage

- MIEKO MATSUMOTO, ESPEN ULEBERG  
*Dynamic Distributions in macro and micro perspective*
- MIRELLA SERLORENZI, STEFANIA PICCIOLA, ANDREA DE TOMMASI, CRISTIANA CORDONE, FEDERICA LAMONACA, LINO TRAINI, ANDREA VARAVALLO  
*Cluster Analysis applications for SITAR Project open archaeological datasets*
- CHRISTIAN WILLMES, DANIEL BECKER, GEORG BARETH  
*Data integration for paleo environmental and archaeological GIS based analysis*

## 5K Where Do We Go From Here? Least Cost Paths Revisited

- DIMITRIJ MLEKUŽ, DEVI Taelman  
*Energyscapes – An energy expenditure approach for the trade of ornamental stone in Central Adriatic Italy*
- IRMELA HERZOG  
*Dispersal versus optimal path calculation*
- EMMA SLAYTON, VIVIANA AMATI, TERMEH SHAFIE, ULRIK BRANDES, MENNO HOOGLAND, CORINNE HOFMAN  
*Least Cost Pathways and the Caribbean Sea: Using least cost pathway modeling to explore reciprocal connections between the Greater and Lesser Antilles.*
- MARK RAYMON GROENHUIJZEN, PHILIP VERHAGEN  
*Through hell and high water: a multimodal transport network in the Dutch Roman limes*
- SYLVIANE DÉDERIX  
*Traveling across archaeological landscapes with the hierarchical communication network*

## 7A Teaching digital archaeology - digitally teaching archaeology

- RONALD VISSER  
*Teaching digital archaeology digitally*
- DOUG ROCKS-MACQUEEN  
*Teaching Archaeology Online with Virtual Learning Environments*
- SORIN HERMON, KYPRIANOS KOUNTOURIS, PANAYOTIS KYRIAKOU  
*Teaching or being taught? Experiences with digital archaeology at a primary school in Pyrga, Cyprus*
- MATTHIAS LANG, DIETA SVOBODA, JASON T. HERRMANN, JÖRG BOFINGER  
*Teaching Digital Methods in the Field - The Tübingen approach*

## 7C Replication: from the past to the digital age

- SOFIA PESCARIN, IVANA CERATO  
*Archaeological Museums: requirements, expectations, digital perspectives*
- PABLO ROCES COTO, MERCEDES FARJAS ABADÍA, SABAH JASIM  
*Digital representation of archaeological pieces: 3D modelling, replicas and metrics*
- STEFANIA POESINI, LUCIA SARTI, VINCENZO DE TROIA, PAOLO MACHETTI  
*Computer applications for multisensory communication on cultural heritage*
- TEIJA TUULIA OIKARINEN  
*Utilisation of a game engine for archaeological visualisation*

## 8C Digital methods in exploring and explaining the development of protourban centres

- JORN SEUBERS  
*By the grace of the plough*
- ANGELO AMOROSO  
*Markers to define the proto-urban centers and their territory in Latium Vetus*
- ULLA MAARIT RAJALA  
*The Final Bronze Age – Early Iron Age transition in southern and northern Etruria: GIS, territories, agricultural production and settlement change*
- ALESSANDRO GUIDI, FRANCESCA FULMINANTE, SERGI LOZANO, LUCE PRIGNANO  
*Networks and Urbanization in Etruria and Latium vetus (1175/1150-500 BC)*

## ROUNDTABLE 2 - Arches Heritage Inventory and Management System

16.40-17.00 Coffee break

17.00-18.40

## 3C Computer and rock art studies: data collection, interpretation and communication

- ALEXANDER PAKHUNOV  
*Simple and low-cost method for the tracking of biological activity on cave art sites*
- FRANK BOOCHS, STEFANIE WEFERS, BURKHARD TIETZ, TOBIAS REICH  
*Support of Petroglyph analysis through processing and viewing of 3D scans*
- ANDREA ARCÀ  
*Digital practices for the study of the Great Rock of the Naquane National Park, Valcamonica - Italy: from graphic rendering to figure cataloguing*

## 4F Geomatics approaches in Latin American Archaeology

- JENNIFER VON SCHWERIN, MICHAEL AUER, NICOLAS BILLEN, LUKAS LOOS, HEATHER RICHARDS-RISSETTO, MARKUS REINDEL, ALEXANDER ZIPF, FABIO REMONDINO, BELEN JIMENEZ FERNANDEZ PALACIOS  
*A 4DWebGIS for the Documentation and Analysis of Complex Archaeological Sites*
- GUADALUPE ZETINA-GUTIERREZ, PATRICIA CASTILLO-PEÑA  
*Geomatics at conservation and study of domestic context of core and periphery of El Tajín, Veracruz; México: Research based in GIS, LIDAR and Photogrammetry.*
- BENJAMIN VINING  
*Multispectral and UAVSAR detection of archaeological anthrosols in an environment of industrial sugarcane cultivation, Chicama, Peru*

## 5G How to reveal geographic relations in Databases on cultural heritage

- MICHAEL MÄRKER, CHRISTIAN WILLMES, VOLKER HOCHSCHILD, GEORG BARETH  
*How to exchange data between DB Systems on Early Humans. A case study based on the SFB 806 DB and the ROCEEH ROAD system*
- ERIC ANDREW RODRIGUEZ  
*Reconstructing "Cultural Wetlands": New Palaeogeographic Models for the Humber Estuary*
- CRISTIANO BENEDETTO DE VITA, VINCENZO AMATO, FRANCESCA FILOCAMO, ALFONSO SANTORIELLO, FRANCESCO ULIANO SCELZA, FRANCESCO MELE  
*Archaeology, Geomorphology and Palaeosurfaces: studies: a multidisciplinary approach for understanding the ancient Laos territory.*

## 7A Teaching digital archaeology - digitally teaching archaeology

- HERVE TRONCHERE, EMMA BOUVARD, STÉPHANE MOR, AUDE FERNAGU  
*From the Excavation to the Scale Model: a digital Approach*
- KRZYSZTOF MISIEWICZ, WIESŁAW MAŁKOWSKI, URSZULA ZAWADZKA-PAWLEWSKA, JULIA MARIA CHYLA  
*How to teach GIS to archaeologists*
- FRANÇOIS DJINDJIAN  
*3D Archaeology teaching at the Paris 1 Pantheon Sorbonne University*
- EVA PIETRONI, DANIELE FERDANI, AUGUSTO PALOMBINI, MASSIMILIANO FORLANI, CLAUDIO RUFA  
*Lucus Feroniae and Tiber Valley virtual museum: from documentation and 3D reconstruction, up to a novel approach in storytelling, combining virtual reality, cinematographic rules, interaction and "ugmented" perception of the archaeological context*

## 8C Digital methods in exploring and explaining the development of protourban centres

- MARIZA CHRISTINA KORMANN, STELLA KATSAROU, DORA KATSONOPOULOU, GARY LOCK  
*Structural Integrity Modelling of an Early Bronze Age "Corridor House" in the Peloponnese*
- ANDREAS VIBERG, ULLA RAJALA, ARJA KARIVIERI, ELENA SORGE, ALESSANDRO FURIESI, LENA HOLMQUIST, MARIA LOWE FRI  
*The Stockholm Volterra Project—geophysics, photogrammetry and GIS mapping in exploring the historic centre of Volterra, Italy, from the Etruscan to the medieval period*
- WOJCIECH EJSMOND, JULIA MARIA CHYLA, TEODOZJA RZEUSKA, DAWID FELIKS WIECZOREK, PIOTR WITKOWSKI, MARCIN JAKUB ORDUTOWSKI, MARZENA OŻAREK-SZILKE, DANIEL TAKACS  
*Gebelein Archaeological Site Complex in Egypt – Shift from Capital of Predynastic, through Capital of Protostate to Administrative Centre in Dynastic Era*
- LISA FISCHER  
*Creating Virtual Williamsburg: Modeling an Eighteenth-Century American City in 3D*

## 6B New advancements in computational imaging

- SCOTT MADRY, ELIZABETH JONES, AMANDA TICKNER  
*Archaeological Public Outreach, Education, and Research using the Liquid Galaxy Display System*
- PIOTR WITKOWSKI, JULIA MARIA CHYLA, WOJCIECH EJSMOND, DAWID FELIKS WIECZOREK  
*The Combination of the RTI techniques and DStretch algorithms and Near Infrared imaginary in Gebelein Archaeological Project*
- GEORGE- ALEXIS IOANNAKIS, ANESTIS KOUTSOUDIS, BLAŽ VIDMAR, FOTIS ARNAOUTOGLU,  
CHRISTODOULOS CHAMZAS  
*Enhancing Multi- Image Photogrammetric 3d Reconstruction Performance on Low-Feature Surfaces*
- ROBERT BEWLEY  
*Endangered Archaeology in the Middle east and North Africa*

18.00-19.00

Presentation of the book:

Pizziolo G. and Sarti L. (eds) "*Predicting prehistory. Predictive models and field research methods for detecting prehistoric contexts, Proceedings of the International Workshop, Grosseto (Italy), September 19-20 2013*", *Millenni studi di archeologia preistorica*, 11, Museo e Istituto Fiorentino di Preistoria "Paolo Graziosi", Firenze 2015.

19.30 – 20.30 Duomo tour (further info on [CAA web site](#))

## Wednesday 1<sup>st</sup> April – CAA 2015 CONFERENCE DAY 2

Paper 20 min + 5 min question time  
Up to 8 parallel sessions + roundtable  
2 Slots 5 papers each in the morning  
2 slots 4 papers each in the afternoon

Poster session from 14.30 to 15.00

3 Roundtables

1 Key-note talk

8.00 – 10.00 Conference registration desk open

9.00-11.00

### 1A Digital frontiers in maritime archaeology

- ØYVIND ØDEGÅRD, ASGEIR J. SØRENSEN, MARTIN LUDVIGSEN, STEIN M. NORNES  
*Underwater Robotics in Marine Archaeology*
- MADELINE MCALLISTER  
*Virtual diving: Analysis of the archaeological value in image-based digital recording and reconstruction of underwater shipwreck sites in Western Australia*
- CRYSTAL SAFADI  
*An evaluation of the maritime accessibility and protection afforded by bronze age and iron age levantine harbours*
- PAT THOMAS TANNER  
*3D Scanning, Contact Digitising and Advanced 3D Digital Modelling for the reconstruction and Analysis of Boats and Ships*
- CARLO BELTRAME, ELISA COSTA, FRANCESCO GUERRA, PAOLO VENIER  
*Underwater photogrammetry applied on two cargos of marble of Roman age*

### 2A Interdisciplinary methods of data recording, management and preservation

- LIAT WEINBLUM, STEFAN MÜNGER  
*DANA (Digital Archaeology and National Archives) – A New Software Tool for Field Archaeologists*
- FRANCESCA ANICHINI, GABRIELE GATTIGLIA  
*Preserving Italian archaeological open data: the MOD solution.*
- GIULIANO DE FELICE, ANDREA FRATTA  
*A dig in archive. The case of Herdonia*
- KANG LI  
*Computer-assisted archaeological line drawing by viewpoint-related feature extracting method*
- ENORA MAGUET  
*Palaeoenvironmental records and PHP possibilities: results and perspectives on an online bioarcheological database*

## 4A Managing archaeological 3d models

- ANDREA D'ANDREA  
*Providing 3D content to Europeana*
- ACHILLE FELICETTI  
*MaDAM: A new generation Digital Asset Management for Cultural Heritage*
- ATHANASIOS TSAOUSELIS, KONSTANTINOS STAVROGLOU, ANESTIS KOUTSOUDIS, FOTIOS ARNAOUTOGLU, ANASTASIA MICHAILIDOU, DESPOINA TSIAFAKIS, CHRISTODOULOS CHAMZAS  
*The 3D Icons Portal: A Web tool for the dissemination of European 3D Cultural Heritage Objects*
- BRITT LONNEVILLE, BERDIEN DE ROO, CORNELIS STAL, BART DE WIT, ALAIN DE WULF, PHILIPPE DE MAEYER  
*Google Earth and KML as GIS tools for archaeological 3D models*
- PANAGIOTIS PARTHENIOS, KATERINA MANIA, FANI MALLOUCHOU-TUFFANO, SOCRATES YIANNOUDES, ANNA KARAGIANNI, PANAGIOTIS KOTSARINIS  
*Abstraction of information as a method for processing large amounts of data in cultural heritage*

## 5H Geographical and temporal network science in archaeology

- PETER BIKOULIS  
*Hypothesis Testing and Validation in Archaeological Networks*
- DANIEL WEIDEL, MEREKE VAN GARDEREN, ULRİK BRANDES  
*Network Science in Archaeology: A Case Study Replication*
- TOM BRUGHMANS  
*MERCURY: an agent-based network model of tableware trade in the Roman East*
- SÉBASTIEN PLUTNIAK, JOSÉPHINE CARO, CLAIRE MANEN  
*Assessing the relevance of a stratigraphy by network analysis of conjoin relations between archaeological objects*
- SERGI LOZANO  
*Applying spectral analysis in archaeology. The urbanization process in Central Italy*

## 5I Interpreting the unstructured: new methods and tools for intrasite spatial analysis of palaeosurfaces

- MICHAL BIRKENFELD, NIGEL ADRIAN GORING-MORRIS  
*Stratigraphy and spatial analysis at the PPNB site of Kfar HaHoresh, Israel*
- KATIA FRANCESCA ACHINO, JUAN ANTONIO BARCELÓ  
*Predicting the accumulative consequences of abandonment processes. Intrasite analysis of lakeside settlements*
- HANS PETER BLANKHOLM  
*Intrasite spatial analysis past and present: an overview*
- REBECCA J S CANNELL, JAN BILL  
*The geochemistry of deposition: functions and phases identified by geochemistry and spatial analysis in the proto-urban Viking Age settlement near Gokstad, Norway.*
- GIOVANNA PIZZILO, LUCIA SARTI, NICOLETTA VOLANTE  
*Intrasite analysis in the Florentine Plain: from data integration to palaeosurfaces interpretation*



## 5L Modelling large-scale human dispersals: data, pattern and process

- BENJAMIN DAVIES  
*"Reediness is not a Polynesian character": Modelling Pacific Island settlement and potential effects of spatiotemporal constraints on survival and human body dimensions*
- FULCO SCHERJON  
*Large scale population modelling in the deep past. Issues and concerns. HomininSpace, a case study in points.*
- GIACOMO CAPUZZO, JUAN ANTONIO BARCELÓ  
*Adoption of innovations and expansive phenomena in the 2nd millennium BC in Central and Western Europe.*
- MICHAEL MÄRKER, MICHAEL BOLUS  
*What can we learn about the environmental preferences of Neanderthals and Modern Humans using stochastic modeling?*
- THOMAS G. WHITLEY, GEOFF AVERN, CHRISTINE MARKUSSEN, KATIE SIMON  
*Modelling in Le Mandement: Using GIS and Geophysics to Examine Caesar's Campaign against the Helvetii in 58 BC*

## 9A Towards a Theory of Practice in Applied Digital Field Methods

- DANIELE FERDANI, GIOVANNA BIANCHI  
*Recording, preservation and interpretation of a medieval archaeological site integrating different 3d technologies*
- SORIN HERMON, LOLA VICO, FRANCO NICCOLUCCI  
*On the intricacies of scientifically 3D modelling a building from the past and formally representing its underlying reasoning process – The Santa Cristina sanctuary site (Sardinia, Italy) as a case-study*
- JEROEN DE REU  
*Image-based 3D reconstruction: the future of archaeological excavation practice?*
- FABRIZIO GALEAZZI  
*Finding a Place for the New: Integrating 3D recording techniques with traditional practices of archaeological documentation.*
- LUCA BEZZI, ALESSANDRO BEZZI, RUPERT GIETL, GIANLUCA FONDRIEST, GIUSEPPE NAPONIELLO, MATTIA SEGATA  
*Professional archaeology: innovations and best practices in digital methodologies. Through an Open Research*

## ROUNDTABLE 3 - The whole is other than the sum of its parts: where is the spatial data infrastructure for cultural heritage?

11.00-11.30 Coffee break

11.30-13.30

### 1A Digital frontiers in maritime archaeology

- DOMINIQUE RISSOLO, ALBERTO NAVA BLANK, VID PETROVIC, MICHAEL BIANCO, PERRY NAUGHTON, ERIC LO, ANTONELLA WILBY, FALKO KUESTER, ROBERTO CHAVEZ ARCE  
*Refining techniques for underwater structure-from-motion (SfM) image acquisition and processing*
- DEJAN VERANIČ, AIXA ANDREETTA  
*The »PALAFITTES GUIDE«: personal guide to the pile dwellers and their settlements*

## 2A Interdisciplinary methods of data recording, management and preservation

- SMARAGDI PAPAGIANNOPOULOU, NIKI NAOUMIDOU  
*When Archeology and Conservation meets in a cultural information system for movable archaeological finds so-called: Mnemosyne*
- ARIANNA TRAVIGLIA, STEPHEN WHITE, ANDREW WILSON, BEATRICE MCLOUGHLIN  
*Digital laboratory recording: workflows and data models for artefact processing*
- ANDREA BARDI, LUISA DALLAI, ALESSANDRO DONATI, VANESSA VOLPI  
*Archaeological and physicochemical approaches to the territory: on-site analysis and multidisciplinary databases for the reconstruction of historical landscapes*
- JEAN-YVES BLAISE  
*Putting architectural changes into context: the historySkyline visual metaphor*
- MICHAŁ GILEWSKI  
*Slow-motion videography and recording experimental archaeology*

## 4D 3D Reconstruction, Analysis and Immersive Telepresence at Rock-Art Sites

- THOMAS HÖLL, GERT HOLLER, AXEL PINZ  
*A scanner-prototype for geometric and radiometric reconstruction of rock-art sites*
- KEN SAITO, CHRIS MUSSON  
*3D Recording of Rock Art in Harsh Environmental Conditions at Ughtasar, Armenia*
- VERA MOITINHO DE ALMEIDA, LUIS TEIRA, ROBERTO ONTAÑÓN-PEREDO,  
*Analysing Rock Art: a quantitative approach using 3D models*
- MATTHIAS ZEPPELZAUER  
*Intelligent Rock Art Processing: from Automated 3D Segmentation to Shape Classification*
- CARLO INGLESE, MARCO CARPICECI, FABIO COLONNESE  
*Mediated representations after laser scanning. The Monastery of Aynalı and the architectural role of red pictograms*

## 5A Modelling approaches to analyse the socio-economic context in archaeology

- TILMAN BAUM, CLAAS NENDEL  
*Combining two modelling approaches to examine prehistoric husbandry methods and land use of the pre-alpine wetland settlements*
- ALŽBĚTA DANIELISOVÁ, KAMILA OLŠEVIČOVÁ, JAN PROCHÁZKA  
*Socio-economic map of an iron age region: subsistence and interactions (using gis, agent based modelling and network analysis)*
- JAMIE JOYCE, PHILIP VERHAGEN  
*Keeping the home fires burning: spatial dynamic modelling of the wood-fuel economy of the Roman limes zone in the Netherlands.*
- ANGELOS CHLIAOUTAKIS  
*An application of a self-organizing Agent-based model in Minoan Crete*
- ANDREA KAY, JED KAPLAN  
*A classification of subsistence lifestyles and land use in prehistoric Africa*

## 5H Geographical and temporal network science in archaeology

- PIM VAN BREE, GEERT KESSELS  
*Diachronic network analysis in nodegoat: a methodology to dynamically scrutinise, reconfigure and re-evaluate complex datasets*
- MANUELA RITONDALE, GUIDO CALDARELLI, MAURO COLETTI  
*Application of network analysis to the trade routes of antiquities passing through the pontine islands*
- MU-CHUN WU  
*Wayfaring Social Relations: a spatial construct*
- ÉRIC MERMET, DAVIDE GHERDEVICH, HÉLÈNE NOIZET, SANDRINE ROBERT, LÉA HERMENAULT  
*Characterisation of the hierarchy of streets of Paris in 1380 using the analysis of the structure of networks*

## 5L Modelling large-scale human dispersals: data, pattern and process

- ANDREA ZANOTTI, JEAN-PIERRE BOCQUET-APPEL  
*An Agent-based Model to Simulate the Balkan Neolithic Expansion*
- SIMONE CALLEGARI, JOHN DAVID WEISSMANN, GEORGE LAKE, CHRISTOPH P. E. ZOLLIKOFER  
*High-performance agent-based models of worldwide human dispersals*
- IZA ROMANOWSKA, SETH BULLOCK  
*Testing the Variability Selection Hypothesis on Hominin Dispersals - an Agent-based Modelling Approach*
- PENNY SPIKINS, ANDY EVANS  
*The Dark Side of Dispersal: Modelling the effects of altruistic punishment, spite and vengeance on the spread of modern humans*
- NATALIE TKACHENKO, SIMONE CALLEGARI, JOHN DAVID WEISSMANN, WESLEY P. PETERSEN, GEORGE LAKE, CHRISTOPH P. E. ZOLLIKOFER  
*Individual-based modeling of population growth and dispersal in discrete time*

## 6C The Past, Present and Future of Non-Intrusive Geophysical Survey in the Field and the Laboratory

- KEN SAITO, BARBARA FREZZA, STEFANO CAMPANA  
*LONG WALKS IN THE ITALIAN COUNTRYSIDE Large-scale geophysical prospection in rural and once-urban contexts in central Italy*
- PETRA SCHNEIDHOFER, ERICH NAU, LARS GUSTAVSEN, JESSICA LEIGH MCGRAW, CHRISTER TONNING, TERJE GANSUM, JAN BILL, WOLFGANG NEUBAUER  
*Interdisciplinary investigation of the burial mound at Rom in Vestfold County, Norway*
- BRIAN SEYMOUR, PAUL SCERRI  
*Robotic Watercraft and Archaeological Survey: A Cost Effective Approach.*
- ARMIN SCHMIDT, KAYT ARMSTRONG, MARTIJN VAN LEUSEN  
*Anomaly to Feature: Improving archaeological interpretation of magnetometer data through model-based inversion*

## 9A Towards a Theory of Practice in Applied Digital Field Methods

- SAMANTHA STOUT  
*Cyberarchaeology and interdisciplinary collaboration – A critical analysis of the adoption of digital technologies in archaeology in the case of CISA3 fieldwork in Jordan*
- COLLEEN MORGAN  
*The Death (and Afterlife) of Archaeological Photography*
- ERIK KJELLMAN, ANJA ROTH NIEMI  
*Lens distortion: perspectives on reflexivity and interpretation in digital field archaeology. Case studies from Northern Norway*
- PATRICIA MARTÍN-RODILLA, CESAR GONZALEZ-PEREZ, PATRICIA MAÑANA-BORRAZÁS  
*A conceptual and visual proposal to decouple material and interpretive information about stratigraphic data*
- HEATHER RICHARDS-RISSETTO, KRISTIN LANDAU  
*Lessons in Translation: From Analog to GeoDigital*

## ROUNDTABLE 4 - Simulating the Past: Complex Systems Simulation in Archaeology

13.30-14.30 Lunch time

14.30-15.00 Poster session

15.00-16.40

## 1B The challenge of the preventive archaeology

- ANN DEGRAEVE  
*Preventive archaeology: how can we bridge the digital gap*
- MAXIME SEGUIN, YARAMILA TCHEREMISSINOFF  
*A systematic photogrammetric survey in a context of preventive archaeology: the collective grave of "Cavalade-mas-rouge"*
- RUPERT GIETL, LUCA BEZZI, ALESSANDRO BEZZI  
*Preventive archaeology along the WW1 high alpine frontline. Challenges, approaches, limitations*
- ENRICO PETRUZZI  
*Collecting, managing and sharing archaeological data : preventive archaeology in a urban context. Porto Torres, Sardinia, Italy*

## 2A Interdisciplinary methods of data recording, management and preservation

- TIINA VÄRE, JAAKKO NIINIMÄKI, MILTON NÚÑEZ, MARKKU NISKANEN, SANNA LIPKIN, SIRPA NIINIMÄKI, MATTI HEINO, ANNEMARI TRANBERG, ROSA VILKAMA, SAARA TUOVINEN, TIMO YLIMAUNU, TITTA KALLIO SEPPÄ, JUHO ANTTI JUNNO  
*Virtual excavation of burials utilizing computed tomography imaging*
- THOM CORAH, DOUGLAS CAWTHORNE  
*Driving Engagement in Heritage Sites Using Personal Mobile Technology*
- CYNTHIA MASCIONE, LUCA PASSALACQUA, ROSSELLA PANSINI  
*Integrated methodologies for the reconstruction of the ancient city of Lixus (Morocco)*
- ANAIS GUILLEM, DEJAN VERANIČ, ROKO ZARNIC  
*UNESCO World heritage serial property Prehistoric Pile Dwellings around the Alps, Monitoring of pile dwelling near Ig, in Ljubljana Marsh Nature Park with photogrammetry and BIM approach.*

## 4D 3D Reconstruction, Analysis and Immersive Telepresence at Rock-Art Sites

- NEIL SMIT, MATT HOWLAND, THOMAS LEVY  
*Digital field recording in the 4th dimension: ArchField C++*
- TOMMASO EMLER, BARBARA FORTE, EMANUELE FORTUNATI  
*Cultural Heritage 3D modeling view in Real time: the Forum of Nerva in Rome in the time of Imperial Rome and Medieval Ages*
- EMANUEL DEMETRESCU, IVANA CERATO  
*From survey data to 3D extensive landscape reconstruction. A taxonomic - metadata approach to Montegrotto Terme area.*
- STEPHAN BECK, ANDRÉ KUNERT, ALEXANDER KULIK, BERND FROEHLICH  
*Collaborative Visual Analysis of 3D Scanning Data: The 3D-Pitoti Scientists Lab*

## 5A Modelling approaches to analyse the socio-economic context in archaeology

- CHRISTINA COLLINS, ELENI ASOUTI, MATT GROVE, DOUGLAS BAIRD, RICHARD CHIVERRELL, LEE BRADLEY  
*Results of the 'Unfamiliar Landscape' project: Palaeoenvironmental modelling and the origins of agriculture in Central Anatolia.*
- SEBASTIAN VOGEL, FLORIAN SEILER, MICHAEL MÄRKER  
*The SALVE research project: Sarno River plain – Ancient Life in the Vesuvian Environment*
- MONICA DE CET  
*Menorca and its Past Socio-Economic Sphere: a Methodological Approach to Model Production and Demography on a Mediterranean Island.*
- JOAN NEGRE PÉREZ, JUAN ANTONIO BARCELÓ ÁLVAREZ  
*Agricultural yields and demographic size. An experimental approach to regional-scale population estimate in a medieval Islamic hinterland (Tortosa, Northeast Iberian Peninsula).*

## 5L Modelling large-scale human dispersals: data, pattern and process

- TARJA SUNDELL, MARTIN HEGER, JUHANA KAMMONEN  
*Reconstructing the boom of prehistoric hunter-gatherer population size in Finland by agent and equation-based modeling*
- STEPHANIE R ROGERS, PHILIPPE CURDY, MURIEL ESCHMANN RICHON, RALPH LUGON  
*Modelling glacial archaeological potential in the Pennine Alps – A multidisciplinary approach*
- GUY DE MULDER, MARK VAN STRYDONCK  
*Radiocarbon dates, cremations, flatgraves and the appearance of the urnfield cemeteries in Belgium*

## 6A Approaches for Sensor Data Integration for the Investigation of Archaeological Landscapes

- TUNA KALAYCI, APOSTOLOS SARRIS  
*Sensor Data Integration: Concepts and Methods*
- NIKOS PAPADOPULOS, MEROPI MANATAKI, TUNA KALAYCI  
*Sensor Fusion in Geophysics: A Synthetic Approach*
- ENRIQUE CERRILLO CUENCA, ADARA LÓPEZ  
*Recording the prehistoric landscapes of Inner Iberia through LiDAR data and Aerial Imagery Repositories (WMS)*
- BENJAMIN DUCKE  
*Conquering the point clouds: high-performance processing of multi-sensor data in free and open source GIS*

## 6C The Past, Present and Future of Non-Intrusive Geophysical Survey in the Field and the Laboratory

- KATE WELHAM, JEFFREY FLEISHER, FEDERICA SULAS, CHARLENE STEELE, STEPHANIE WYNNE-JONES  
*An integrated approach to understanding Swahili archaeology. A case study from the UNESCO World Heritage Site of Songo Mnara, Tanzania.*
- MEROPI MANATAKI, APOSTOLOS SARRIS, TUNA KALAYCI, FRANCOIS-XAVIER SIMON, CARMEN CUENCA-GARCIA, JAMIESON C. DONATI, NIKOS PAPADOPOULOS  
*Studying the Variation of Geophysical Signals of the Architectural Attributes of the Neolithic Tells and Landscape.*
- MICHAEL MÄRKER, IVANO RELLINI, MARCO FIRPO, LUIGI MUCERINO  
*Assessment of Subsurface Neolithic/ Palaeolithic sites in the Southern Gargano Area, Apulia, Italy using a 3D geo-electric resistivity*
- JAN BULAS, MICHAŁ KASIŃSKI, PIOTR WRONIECKI  
*Microregional studies of Iron Age landscape in the Michałowice region, woj. Świętokrzyskie, Poland.- Results of non-invasive*

## 9A Towards a Theory of Practice in Applied Digital Field Methods

- PIRAYE HACIGÜZELLER  
*The Archaeological Process and its Progress in the Age of Digital Cartography: a View from Çatalhöyük*
- SARA PERRY  
*Challenging the remit of applied digital field methods*
- MATTEO SORDINI, FRANCESCO BROGI, STEFANO CAMPANA  
*3D recording of archaeological excavation: the case of study of Santa Marta, Tuscany, Italy.*
- AMANDA CLARKE, MICHAEL JOHN RAINS  
*The Use of Digital Technologies in the Silchester Town Life Project*

## ROUNDTABLE 5 - Linked Open Data Applied to Pottery Databases

16.40-17.00 Coffee break

17.00 – 17.45

Keynote Nicolò dell'Unto + 15 min question time

18.00 – 19.30

CAA plenary meeting

20.30 Social dinner at Rocca Salimbeni (further info on CAA web site)

## Thursday 2<sup>nd</sup> April – CAA 2015 CONFERENCE DAY 3

Paper 20 min + 5 min question time

Up to 9 parallel sessions

2 Slots 5 papers each in the morning

2 slots 4 papers each in the afternoon

Poster session from 14.30 to 15.00

2 Roundtables

Closing address lunchtime talk: Special Guest Professor Dominic Powlesland

8.00 – 10.00 Conference registration desk open

9.00-11.00

### 2B Integrating 3D Data from Field Archaeology

- MARIA DORIANA DE PADOVA  
*Re-shaping the excavation - The use of Computer Vision to bring back to life everyday tools and burial contexts*
- ROOSJE DE LEEUWE  
*Integration of 3D scans, photogrammetry and Total Station data in forensic archaeological case work*
- KATIE SIMON, EILEEN ERNENWEIN, CHRISTOPHER ANGEL, CHRISTINE MARKUSSEN  
*Integrating remotely sensed surface and subsurface data in three dimensions for a new look at old spaces*
- ARIAN GOREN, KAY KOHLMAYER, THOMAS BREMER, SUSANNE BRANDHORST, ARIE KAI-BROWNE, ALEXANDER HENNIG, FELIX BALDA, DAVID STRIPPGEN, SEBASTIAN PLESCH  
*Past progressive: Interacting with simulated archaeological assets*
- LOES OPGENHAFFEN, MARTINA REVELLO LAMI  
*Pottery goes digital. 3D laser scanning technology and the study of archaeological ceramics*

### 2C Supporting researchers in the use and reuse of archaeological data

- SORIN HERMON, FRANCO NICCOLUCCI  
*The problem with simpl(istic) fundamental concepts in archaeology and their formal representation in a digital environment the case of archaeological site*
- NIKOLAOS A KAZAKIS, NESTOR C TSIRLIGANIS  
*Scientific Datasets in Archaeological Research*
- GISLI PALSSON  
*From Site to SEAD: bridging the gaps between fieldwork, laboratory analysis and online archiving*
- KEITH MAY  
*Paths through the Labyrinth: Finding ways to express data from differing archaeological recording methodologies to enable cross-search and reuse*
- ANGELA TRENTACOSTE, SARAH WHITCHER KANSA, ERIC C. KANSA, ANTHONY TUCK  
*Linked Open Data in the Etruscan World: A Zooarchaeology Case Study*



### 3A A dialogue between archaeological science and computer visualization

- MER UZUNEL  
*3D Structural Analyses of Euromos Zeus Lepsynos Temple*
- DOUGLAS CAWTHORNE, STEFFAN DAVIES  
*Authenticating Anastylis: Para Data in the Digital Reconstruction of Greyfriars Church Leicester and the Tomb of King Richard III*
- MELDA KÜÇÜKDEMIRCI, SALVATORE PIRO, NIYAZI BAYDEMIR, DANIELA ZAMUNER, ELIF ÖZER  
*The application of mathematical and statistical integration Approach on archaeological prospection data, case studies from aizanoi turkey*
- CARLOTTA CAPURRO, DRIES NOLLET, DANIEL PLETINCKX  
*ENAME 1288: A walk through Saint Saviour abbey*
- BARBARA CERASETTI  
*Hydrology and Social Transition in the late 2nd millennium BC , Murghab Alluvial Fan, Turkmenistan*

### 4B New trends in 3D Archaeology

- DIRK RIEKE-ZAPP  
*3D digitization - state-of-the-art and future challenges*
- HERBERT D.G. MASCHNER  
*A Revolution in Archaeology: 3D Technologies and the Democratization of Prehistory.*
- ROMÁN RANGEL Y JIMÉNEZ-BADILLO  
*Recognizing the shape of archaeological objects by extracting local orientations of points on the surface of 3D models.*
- GIULIANO DE FELICE  
*The new trend of 3D archaeology is ... going 2D!*
- ANDRÁS PATAY-HORVÁTH  
*Master-hand Attributions of Classical Greek Sculptors by 3D- Analysis at Olympia - Some Preliminary Remarks.*

### 5D Predictivity and postdictivity in archaeology

- CARLO CITTER, ANTONIA ARNOLDUS-HUYZENDVELD, GIOVANNA PIZZILO  
*Predictivity-Postdictivity: a theoretical framework.*
- IRMELA HERZOG  
*Retrodicting the distribution of rural settlement locations recorded on a map created in 1715 AD*
- FRANCESCO CARRER  
*Inductive models, deductive models and ethnoarchaeological models: strengths, weaknesses and new perspectives*
- PHILIP MATTHEW NORMAN HITCHINGS, E B BANNING  
*Bayesian Optimal Allocation of Archaeological Survey Effort: A Case Study in Wadi Quseiba, Jordan*
- PHILIP VERHAGEN, LAURE NUNINGER, FRÉDÉRIQUE BERTONCELLO, ANGELO CASTRORAO BARBA  
*Estimating the "memory of landscape" to predict changes in archaeological settlement patterns*

## 9E Moving the focus from "know how" to "know why" 3D modeling cultural heritage

- MAURIZIO CATTANI, FLORENCIA DEBANDI, ANDREA FIORINI  
*3D documenting archaeological excavations: a case study with field operations and some considerations on the Bronze Age nuragic settlement of Tanca Manna (Nuoro - Sardinia)*
- LORENZO TEPPATI LOSÈ  
*Integrated survey techniques for the study of an archaeological site of medieval Morocco.*
- MARC GRELLERT, MIEKE PFARR-HARFST, PIOTR KUROCZYNSKI, SANDER MÜNSTER  
*Virtual Reconstruction and Scientific/Academic 3D Models – Fundamental Considerations*
- FEDERICO BUCCELLATI, ERIC KANSA  
*The Value of Energetic Analysis in Architecture as an Example for Data Sharing*
- MARTIN UNOLD, FREDIE KERN, KAI-CHRISTIAN BRUHN  
*Annotating instead of Modelling*

## 10A ArcheoFOSS: free/open source software and archaeological research, ten years later

- ALESSANDRO BEZZI, LUCA BEZZI, FABRIZIO FURNARI, ROMAIN JANVIER  
*ArcheOS Theodoric v. 5.0, ten years later*
- LUCA MANDOLESÌ  
*pyArchInit - python for archaeology - Part II*
- JERZY SIKORA, JACEK SROKA, JERZY TYSZKIEWICZ  
*Strati5 - open mobile software for Harris matrix*
- LOUP BERNARD  
*ArkeoGIS, merging European archaeological sites, artefacts and geographical datas online: state of art and further developments*
- FINNEGAN POPE-CARTER, CHRYS HARRIS, THOMAS SPARROW, CHRIS GAFFNEY  
*ArcheoPY: Developing Open Source Software for Archaeological Geophysics*

## 10B Electronic resources for archaeology: from databases to digital open data

- DOUG ROCKS-MACQUEEN  
*The Past and Future of Open Access in Archaeology*
- FRANCESCA ANICHINI, MARGHERITA BARTOLI, PAOLA LILIANA BUTTIGLIONE, ELEONORA DELPOZZO, ILENIA GALLUCCIO, GABRIELE GATTIGLIA, CLARA ANNARITA GIANNITRAPANI, SILVIA LISCHI, SAVERIO GIULIO MALATESTA, FLAVIA MORANDINI, DANIELA MUSMECI, FELICE PERCIANTE, MARIELA QUARTARARO, SARA LINDA RUSSO, FRANCESCA SIMI  
*Are the open archaeological data fashionable? The Italian Manifesto for Open Data in Archaeology (MODA)*
- ALESSANDRA CARVALE, ALESSANDRA PIERGROSSI  
*Digital resources for archaeology. The contribution of the on-line projects by ISMA-CNR*
- VALERIA BOI, MIRELLA SERLORENZI, ILARIA JOVINE, MILENA STACCA  
*SITAR: starting point, challenges and future development of an archaeology data sharing platform*
- FEDERICO NURRA  
*Use of cartographical Open Data in the context of the project SITAN*

## ROUNDTABLE 1 - Challenging Digital Archaeology – the discussion continues

11.00-11.30 Coffee break

11.30-13.30

### 2C Supporting researchers in the use and reuse of archaeological data

- STEPHEN STEAD, DOMINIC OLDMAN, JONATHAN WHITSON CLOUD  
*Exploring inferences, time and space in the annotation of museum catalogues: The Sloane catalogues*
- MARIA THEODORIDOU, MARTIN DOERR, EDELTRAUD ASPÖCK, ANJA MASUR  
*Mapping archaeological databases to CIDOC-CRM*
- CERI BINDING, DOUGLAS TUDHOPE  
*Connecting ARIADNE vocabularies for data integration and cross search*
- MATTEO DELLEPIANE, FEDERICO PONCHIO, MARCO CALLIERI, ROBERTO SCOPIGNO  
*Ariadne media service: easy publishing of advanced visual media for archeological databases*
- FABRIZIO GALEAZZI, MARCO CALLIERI, MATTEO DELLEPIANE, ROBERTO SCOPIGNO, JULIAN RICHARDS  
*ADS 3D viewer: a web-based dynamic working environment for archived 3D data*

### 3A A dialogue between archaeological science and computer visualization

- NICHOLAS ANDRE HOLMER, KASSANDRA MCFARLAND, BUCK BENSON, HERBERT D.G. MASCHNER  
*Using online digital content as a reference collection: a critique*
- JACOPO CREZZINI, FRANCESCO BOSCHIN, SIMONA ARRIGHI, MARCO GIAMELLO, ANNAMARIA RONCHITELLI  
*Zooarchaeology, Prehistoric Art and digital imaging: quantitative analysis of bone modifications using 3D microscopy*

### 4B New trends in 3D Archaeology

- VALERIA VITALE  
*The Iseum in Pompeii: a case study on the use of an RDF ontology to document 3D visualisation of archaeological heritage.*
- VALERIA POSCETTI, JUAN TORREJÓN VALDELOMAR, WOLFGANG NEUBAUER, FLORIAN MARTIN MÜLLER  
*The Roman Villa of Oberlienz: A multidisciplinary 3D reconstruction.*
- RICCARDO OLIVITO, EMANUELE TACCOLA, NICCOLÒ ALBERTINI  
*Hand-free interaction in the virtual simulation of the agora of Segesta.*
- CATRIONA COOPER  
*Auralization: analysing the sound properties of cultural heritage.*
- LUIGI SAMBUELLI, ANDREA FILIPELLO, CHIARA COLOMBERO  
*Combined use of ultrasonic tests and photogrammetry in the 3D modelling of fractures. An application on the Egyptian sculpture of Uahka II.*

## 5B Continuing the Revolution with Spatial Methods & Archaeological Interpretation

- MORITZ MENNENGA, GARY NOBLES  
*Hot or cold: Intra-site spatial analysis using spatial autocorrelation*
- REBECCA ELIZABETH KIBBLE  
*Using open-source GIS to enable the multi-scalar, spatio-temporal analysis and visualisation of complex zooarchaeological datasets.*
- CHRISTOPHE LANDRY, BERTRAND MOULIN  
*When GIS Goes to the Countryside : Detecting and Interpreting Roman Orchards from the “Grand Palais” (Drôme, France)*
- 
- JOAN NEGRE PÉREZ, JUAN ANTONIO BARCELÓ ÁLVAREZ  
*Reading between the dots. The use of non-Euclidean metrics for the study of settlement patterns in heterogeneous regions.*
- IRENE ORTIZ NIETO-MÁRQUEZ  
*Dinamic processes of static objects. how and why?*

## 5D Predictivity and postdictivity in archaeology

- KAYT ARMSTRONG, CHRISTINA TSIGONAKI, APOSTOLOS SARRIS, NADIA COUTSINAS  
*Site Location Modelling and Prediction on Early Byzantine Crete: Methods employed, challenges encountered*
- ANTONIO PORCHEDDU  
*Predicting and Postdicting a Roman road in the Pre-Pyrenees area of Lleida (Spain).*
- EMERI FARINETTI  
*Modelling regional landscape through the predictive and postdictive exploration of settlement choices: the theoretical framework and a case study*
- LAURA SORO, LOREDANA FRANCESCA TEDESCHI, MAURIZIO MINCHILLI  
*N[Move] - Spatial models of walking accessibility between nuragic sites*

## 6E Low Altitude Aerial Photography for archaeology – where is the revolution leading us?

- FRANCESCO PERICCI, MATTEO SORDINI, STEFANO CAMPANA  
*UAV mapping of archaeological contexts*
- NICOLAS POIRIER, FLORENT HAUTEFEUILLE, CARINE CALASTRENC, LAURENT AUGEREAU  
*Low altitude thermal survey: determination of the best flight conditions to detect archaeological anomalies*
- WOJCIECH OSTROWSKI, KASPER JAN HANUS, ŁUKASZ MISZK, MIKOŁAJ KOSTYRKO  
*Is GoPro a hero? Limits, issues and perspectives of non-SLR cameras for LAAP.*
- TODD BRENNINGMEYER, KOSTIS KOURELIS, MILTIADIS KATSAROS  
*The Lidoriki Project - Low Altitude Aerial Photography, GIS, and Traditional Survey in Rural Greece*
- GIANLUCA CANTORO, CHRISTINA TSIGONAKI, KAYT ARMSTRONG, APOSTOLOS SARRIS  
*Integrating low altitude with satellite and airborne aerial images: photogrammetric documentation of Early Byzantine settlements in Crete*

## 8B Urban Digital-Scapes: Computer application to the study of past urban developments

- GABRIELLA CARPENTIERO, LEONARDO BIGI, CARLO TESSARO  
*Multi-scale approach for the reconstruction of past urban environment. From Remote Sensing to close range analysis: the case of Dionysias (Fayoum, Egypt)*
- BARTOMEU VALLORI-MÁRQUEZ, MIGUEL ÁNGEL CAU ONTIVEROS  
*The Roman city of Palma (Mallorca, Balearic Islands). The use of rescue archaeology data to redefine a Roman city through a GIS project.*
- MAURA MEDRI, VALERIA DI COLA  
*Baths of the Swimmer and Sanctuary of Bona Dea in Ostia (V, X,2): a Spatial Analysis application*
- HANNA STÖGER  
*A Space Syntax enquiry into ancient Roman neighbourhoods: Can we measure community-building in Roman cities?*
- CHIARA PICCOLI, JOHN BINTLIFF  
*Enhancing GIS urban survey data with the 3rd dimension: a procedural modelling approach*

## 10A ArcheoFOSS: free/open source software and archaeological research, ten years later

- MARCO CALLIERI, MATTEO DELLEPIANE, MARCO POTENZIANI, GUIDO RANZUGLIA, ROBERTO SCOPIGNO  
*Open source for CH: experience gained in ten years of service*
- IAN JOHNSON  
*Building domain-agnostic databases using design patterns*
- NÉHÉMIE STRUPLER  
*Archaeological science as community enterprise*
- GABRIELE GATTIGLIA, FRANCESCA ANICHINI  
*#epicfail? Has Open Source in archaeology failed?*

## ROUNDTABLE 7 - Digital Technologies and Quantitative Methods in the Study of Prehistoric Art

13.30-14.30 Lunch time talk: Special Guest Professor Dominic Powlesland

14.30-15.00 Poster session

15.00-16.40

## 9F Machine learning and Pattern Recognition for Archaeological Research

- GEORG ROTH  
*Improving clustering: Using silhouettes to estimate the optimal number of clusters.*
- DIEGO JIMENEZ-BADILLO, SERGIO MOTA-GUTIERREZ, SALVADOR RUÍZ-CORREA, ROGELIO HASIMOTO BELTRAN, MARIO CANUL KU  
*A new approach for classifying archaeological objects based on 3D shape similarity analysis*
- YUHE ZHANG, PENGBO ZHOU, KANG LI, GUOHUA GENG, XIANRAN WEI  
*Virtual Restoration Method of Terracotta Warriors and Horses of Qin based on classified template registration in collections of 3D models*
- STÉPHANIE DUBOSCQ, JUAN ANTONIO BARCELO, KATIA FRANCESCA ACHINO, BERTA MORELL, FLORENCE ALLIESE, JUAN FRANCISCO GIBAJA  
*Discovering prehistoric ritual norms. A machine learning approach.*

## 4B New trends in 3D Archaeology

- CHRISTINE WITTICH, TARA HUTCHINSON  
*Dynamic Characterization and 3D Reconstructions of Massive Human-Form Archaeological Statues for Earthquake Loading.*
- IGOR BARROS-BARBOSA, KIDANE FANTA, PANAGIOTIS PERAKIS, CHRISTIAN SCHELLEWALD, LISE KVITTINGEN, THEOHARIS THEOHARIS  
*Establishing Parameter Values for the Stone Erosion Process.*
- WILLEM VLETTER  
*An 4-D analysis of historical road and path networks.*

## 5B Continuing the Revolution with Spatial Methods & Archaeological Interpretation

- OLIVER NAKOINZ  
*How to detect and interpret patterns in cultural landscapes?*
- JOHN POUNCETT, CHRISTOPHE SNOECK, RICK SCHULTING  
*Coming to Knowth: Areal interpolation, strontium isotope analysis and Neolithic mobility*
- VINCENZO SPAGNOLO, DANIELE AURELI, PAOLO BOSCATO, FRANCESCO BOSCHIN, JACOPO CREZZINI, GIULIA MARCIANI, STEFANO RICCI, ANNAMARIA RONCHITELLI, GIULIO POGGI  
*Integration between spatial analysis in a GIS environment and 3D models for the study of Middle Palaeolithic contexts: Molare Rockshelter (Scario – SA) and Oscurusciuto Rockshelter (Ginosa – TA)*
- KELIN FLANAGAN, WALTER R T WITSCHHEY, CLIFFORD T BROWN  
*The Fractal Topology of Archaeological Site Distributions: Killing the Spherical Chicken in the Vacuum*

## 6E Low Altitude Aerial Photography for archaeology – where is the revolution leading us?

- MATTHIAS LANG, THORSTEN BEHRENS, KARSTEN SCHMIDT  
*A fully integrated UAV-system for archaeological prospection - Workflow and experiences on the Celtic oppidum Heidengraben*
- KARIM SADR  
*A comparison of accuracy and precision in detecting stone-walled structures using satellite imagery, high resolution aerial photography and LiDAR; a case study from the South African Iron Age.*
- KATE WELHAM, LAWRENCE SHAW, ADAM STANFORD  
*A comparison of data obtained from low altitude aerial imaging from remotely piloted aircraft, and Lidar. A case study from the New Forest National Park, UK.*
- DIEGO BELLIDO CASTAÑEDA, LAURA GONZÁLEZ LÓPEZ, MERCEDES FARJAS, SERAFÍN LÓPEZ CUERVO, JULIO ZANCAJO  
*UAV on the geometric documentation of archaeological sites: technology approach and analysis of products' accuracy. mleiha (uae).*

## 8A Digital cities: documenting and transmitting the archaeological-architectonical record

- BERNARD D. FRISCHER, PAOLO LIVERANI, MATTHEW R. BRENNAN  
*Documenting and Restoring the Augusteum of Rusellae (Roselle, Italy)*
- FRANCESCA ANICHINI, MARA FEBBRARO, GABRIELE GATTIGLIA, FABIANA SUSINI, VALERIO NOTI  
*The representation of archaeological-architectonical record of Pisa*
- JOSÉ MARÍA MARTÍN CIVANTOS, MÉRIDA RAMÍREZ BURGOS  
*GIS and digital platform for Guadix (Granada, Spain)*
- ALEXANDRA CHAVARRIA  
*Digital Padova: recording, analysing and telling stories of a medieval city*

## 8B Urban Digital-Scapes: Computer application to the study of past urban developments

- ERMAL SHPUZA  
*The effect of gridiron street pattern on urban growth: evolution of Adriatic and Ionian coastal cities 1800-2010*
- BENJAMIN N. VIS  
*Shaped by the Paths Shaping the City: Examples of BLT Mapping Maya Urban Circulation Space*
- JEFFREY BARRON GLOVER, ROBERT BRYANT, BRENNAN COLLINS, TIM CRIMMINS, MARNI DAVIS, JOE HURLEY, IAN JOHNSON, MICHAEL PAGE  
*The digital Atlanta project: an interdisciplinary approach to remapping Atlanta's past*
- SORIN HERMON, GEORGIOS ARTOPOULOS, NIKOLAS BAKIRTZIS  
*3D virtual environments for simulating past urban experiences in pluri-cultural spaces – the Pafos Gate, Nicosia as a case-study*

## 9C Modelling the archaeological process

- **SORIN HERMON, VALENTINA VASSALLO, LOLA VICO, ELENA CHRISTOPHOROU, GIANCARLO IANNONE**  
*A 3D visual and geometrical approach to epigraphic research; the Soli (Cyprus) inscription as a case study*
- **ISTO HUVILA, DANIEL LÖWENBORG, LISA BÖRJESSON, BODIL PETERSSON, NICOLÒ DELL'UNTO, PER STENBORG**  
*What is archaeological information?*
- **MATTHIAS LANG, CHRISTIAN CHIARCOS, PHILIP VERHAGEN**  
*IT-assisted Exploration of Excavation Reports - Using Natural Language Processing in the archaeological research-process*
- **ANNA MARIA MARRAS**  
*Mind mapping and archaeological research. Concepts, themes and know-how dissemination*

## 10B Electronic resources for archaeology: from databases to digital open data

- **ANDREW DUFTON, MICHAEL JOHNSON, ELIZABETH FENTRESS**  
*Exploring sustainable publication and the web: a case-study from the Villa Magna Project*
- **STEFANO COSTA, ALESSANDRO CARABIA, ENRICO ZANINI**  
*GQBWiki goes open*
- **MONTEIL AURÉLIE, BOULETREAU VIVIANE**  
*Archaeological contents: from open access to open data*
- **FINNEGAN POPE-CARTER, GRAEME ATTWOOD**  
*Legacy Data - Open strategies for closed data*

16.40-17.00 Coffee break

17.00-18.40

## 3B Occupation floors of Hunter-gatherers in the Digital Era

- **FRANCESCA ROMAGNOLI, AMELIA BARGALLÓ, MARÍA GEMA CHACÓN, MARIA JOANA GABUCIO, BRUNO GÓMEZ DE SOLER, PABLO SAÑUDO, MANUEL VAQUERO**  
*A storey is a floor, but a floor could be many stories! The problem of time in the definition of occupation floor.*
- **ALEJANDRO GARCÍA-MORENO, SABINE GAUDZINSKI-WINDHEUSER, JAROD HUTSON, LUTZ KINDLER, EDUARD POP, WIL ROEBROEKS, GEOFF SMITH, ELAINE TURNER, ARITZA VILLALUENGA**  
*Evaluating the influence of hydrological processes on Pleistocene "occupation floors": a comparative case study of archaeological material orientation from Schöningen 13II-4 and Neumark-Nord 2/2 (Germany).*
- **JENS AXEL FRICK**  
*Visualizing occupation layers in homogenous sediments: Examples from the Grottes de la Verpillière I & II, Burgundy, France*
- **FABIO MARTINI, DOMENICO LO VETRO, MICHELE DE SILVA, GIOVANNA PIZZILO, ENRICO ORTISI, VINCENZO DE TROIA, PAOLO MACHETTI**  
*Ritual use of Romito Cave during the Late Upper Palaeolithic: an integrated approach for spatial reconstruction*



## 5J Spatial analysis in ethnoarchaeology and experimental archaeology

- JONAS ALCAINA-MATEOS, CARLA LANCELOTTI, JAVIER RUIZ-PEREZ  
*Revisiting kriging methods for microspatial data: an ethnographical approach*
- JOAN NEGRE PÉREZ, MYRIAN ÁLVAREZ, IVAN BRIZ I GODINO, DÉBORA ZURRO HERNÁNDEZ, JORGE CARO SAIZ, JAVIER RUIZ PÉREZ  
*The influence of spatial demarcations on the modelling of intra-site anthropic markers. An ethno-archaeological case study from Lanashuaia-II, a shell-midden in Tierra del Fuego (Argentina).*
- FRANCESCO CARRER  
*Interpreting intra-site activities and post-depositional processes: ethnoarchaeological case studies from the western Italian Alps*

## 6E Low Altitude Aerial Photography for archaeology – where is the revolution leading us?

- MARCO BLOCK-BERLITZ, BENJAMIN DUCKE, BENJAMIN GEHMLICH, NIKLAAS GÖRSCH, SÖREN STARK  
*Thirteen desert castles: Towards best practice in 3D reconstruction from video streams with low-cost UAV kits.*
- EMANUEL DEMETRESCU, ENZO D'ANNIBALE  
*Massive archaeological 3D survey with UAV support for technical drawings production: the case study of Sarmizegetusa Ulpia Traiana.*

## 7B New Cultural Heritage economies in the digital era

- AUGUSTO PALOMBINI  
*The bottom-up approach to project funding: an analytical overview of crowdfunding in archaeology*
- DARIA HOOKK, VLADIMIR OPREDELENOV, TATIANA KHARITONOVA  
*Modeling of a communication with virtual visitors of the museum web-site “Virtual archaeology”*
- FRANCESCO ULIANO SCELZA  
*Archaeology, GIS and urban planning. Territorial polity and economy of cultural heritage*
- DOMENICO PARISI, LUCINA GIACOPINI, CRISTINA DELOGU  
*Simulating the role of the Tiber in ancient Rome*

## 7D About reasoning and the illusiveness of interfaces in the practice of digital and virtual archaeology

- JAVIER PEREDA  
*Enhancing Engagement with Online Cultural Heritage*
- BRUNO FANINI, ALFONSINA PAGANO  
*Visual and rewarding strategies in gesture-based Serious Games*
- TOMMASO EMLER, FABIO QUICI  
*Paleontology 2.0 - Public awareness of paleontological sites through new technologies*
- TOMMASO EMLER, MATTIA FABRIZI  
*Interactive communication and Cultural Heritage*

## 9C Modelling the archaeological process

- SVETA MATSKEVICH, ILAN SHARON  
*Modelling the archaeological record: A look from the Levant – past and future approaches*
- STAVROS ANGELIS, AGIATIS BENARDOU, NEPHELIE CHATZIDIAKOU, PANOS CONSTANTOPOULOS, COSTIS DALLAS, LORNA M. HUGHES, LEONIDAS PAPACHRISTOPOULOS, ELIZA PAPAKI, VAYIANOS PERTSAS  
*Documenting and reasoning about research on ancient Corinthia using the NeDiMAH Methods Ontology (NeMO)*
- IGOR BOGDANOVIC, JUAN ANTONIO BARCELÓ, ANTONI PALOMO, RAQUEL PIQUÉ, XAVIER TERRADAS  
*From Data to Knowledge - telearchaeological approach*
- ALBERTO BELUSSI, SARA MIGLIORINI, PATRIZIA BASSO, PIERGIOVANNA GROSSI  
*The Archaeological Urban Information System of the Historical Heritage of Verona*

## 9F Machine learning and Pattern Recognition for Archaeological Research

- ELENA SIZIKOVA, THOMAS FUNKHOUSER  
*Automatically Assembling Frescos from Noisy Pairwise Fragment Measurements*
- DIEGO JIMENEZ-BADILLO, EDGAR ROMAN-RANGEL  
*Application of the bag-of-words approach to the analysis of archaeological sherds and artifacts*
- ØYVIND ØDEGÅRD, STEIN M. NORNES, THIJS J. MAARLEVELD, ASGEIR J. SØRENSEN  
*Autonomy in Marine Archaeology*
- VLAD-ANDREI LĂZĂRESCU, VINCENT MOM  
*Pottery Studies of the 4th Century Necropolis at Bârlad-Valea Seacă, RO*

## 10B Electronic resources for archaeology: from databases to digital open data

- ANTHONY CORNS, LOUISE KENNEDY  
*From Lamp-light to Laser-light: Opening access to the historic and contemporary imaging of monuments*
- NICHOLAS ANDRE HOLMER, BUCK BENSON, JESSE PRUITT, ROBERT SCHLADER, NICHOLAS CLEMENT, HERBERT D.G. MASCHNER, COREY SCHOU, JONATHAN HOLMES  
*From past to present: Reconciling years of Arctic archaeological data into a single visual database*
- TAMAKI SUZUKI, IVAN VASILIEV  
*High-resolution Image Database for the Conservation of Cultural Heritage: Documentation of Architecture and Paintings of the Medieval Churches in the East Europe.*

20.00 City hiking (further info on [CAA web site](#))