



# Water and Cultural Heritage

## L'Eau et le Patrimoine Culturel

### 7<sup>TH</sup> INTERNATIONAL SYMPOSIUM ON THE CONSERVATION OF MONUMENTS IN THE MEDITERRANEAN BASIN

7ÈME SYMPOSIUM INTERNATIONAL SUR  
LA CONSERVATION DES MONUMENTS  
DANS LE BASSIN MÉDITERRANÉEN

#### PROGRAM (SUBJECT TO MODIFICATION)

JUNE 6-9, 2007 – ORLÉANS, FRANCE  
6-9 JUIN 2007 – ORLÉANS, FRANCE



VAL DE LOIRE  
PATRIMOINE MONDIAL



In June 2007, the 7th International Symposium on the Conservation of Monuments in the Mediterranean Basin takes place in Orléans, following previous symposia in Bari (1989), Geneva (1991), Venice (1994), Rhodes (1997), Sevilla (2000) and Lisbon (2004). This International Symposium is an opportunity for scientists, technicians and experts in the field of monument conservation and restoration to present their work and share ideas and experiences.

The theme chosen for the 2007 session, "Water and Cultural Heritage", is a reference to the classic problem of the interactions between water and building materials. It will also refer to problems associated with monuments in permanent contact with water, such as fountains, thermal baths, hammams and water pipes, as well as bridges, quays, mills and castles surrounded by moats.

This event is organized by the University of Orléans and the International Rivers and Heritage Institute (Mission Val de Loire – World Heritage), with the scientific certification of the International Group for the Monuments Conservation in the Mediterranean Basin. The International Rivers and Heritage Institute is supported by the Centre Region, the Pays de la Loire Region and the French Government. It aims to pull together the skills in managing heritage in river corridors that have been developed in the Val de Loire, and put these knowledge and know-how at the disposal of everyone at national and international level.

The symposium is supported by the Centre Region, the Conseil Général of Loiret, the City of Orléans, and the Direction of Cultural Affairs of the Centre Region.

## PROGRAM

(subject to modifications)

Wednesday, 6 june / Museum of Orléans

**09h00 Opening of the reception desk** - Registration for the afternoon visits - Possibility to visit the Museum

**14h30 Official opening of the 7th Symposium**

Official speeches: Conseil régional du Centre, Conseil général du Loiret, Municipalité d'Orléans, Université d'Orléans, Mission Val de Loire

**15h30 Break**

**15h45 Scientific opening of the 7th Symposium**

Mr. Fulvio ZEZZA, Architecture Faculty, University of Venice, Italy; Mr. Michel RAUTUREAU, University of Orleans, France; Mr. Ary BRUAND, University of Orleans, France; Mr. Alain PLANCON, University of Orleans, France; Mr. Vincent PERTHUISOT, International Rivers and Heritage Institute, Mission Val de Loire, France

**16h45 Guided visit of the city of Orleans** (the Loire quays, the old city, the cathedral, etc.)

**19h30 Cocktail offered by the City of Orleans** at the Hotel Groslot

Thursday, 7 june / Campus of the University of Orléans - Faculty of Law, Economy and Management

**08h30 Welcome** - Registration for the Saturday field trips

**09h00 Plenary session:** participants information and presentation of posters (3 minutes each)

**09h30 1st work session:** Each 20 minutes presentation will be followed by a 5 minutes debate

Amphi 1: General and technical studies (Chairman: Emilio Galan)

**Assessing the cleaning methods on the limestone façades in the Formerly Workers**

Hospital of Madrid, Spain / Perez Monserrat E. M.; Varas M.J.; Fort R.; Alvarez de Buergo M.

Damage from hygric swelling / Scherer G.W.; Wangler T. P.; Duffus P.

Amphi 2: Case-studies (Chairman: Luis Aires Barros)

**Two Sydney forts fighting the tide of decay / Faddy J.**

Chianalea di Scilla (reggio Calabria, Italia): a case-study of sea water between buildings / Barila G.

The social club of the manzanera in Calpe, Alicante (Spain) (work of Ricardo Bofill).

Study of the alteration of his materials / Cereceda L. M.; Spairani Berrio Y.; Garcia Del Cura M. A.; Prado Goeva R.; Huesca Tortosa J. A.

**10h45 Break** - Free visit of the posters exhibition

**11h15 2nd work session:** Each 20 minutes presentation will be followed by a 5 minutes debate

Amphi 1: General and technical studies (Chairman: Emilio Galan)

**Controlling crystallization pressure by surface modification / Scherer G.W.; Valenza J. J. II; McNall M. R.**

**Investigating moisture/salt load damages of salt-resistant plasters: from laboratory specimens to practical test panels / Nasraoui M.; Mertz J.-D.**

**Performance of selected materials containing different mixtures of salts after water repellent treatment / De Clercq H.**

Amphi 2: Case-studies (Chairman: Luis Aires Barros)

**Rainwater drainage system investigation of an historical hammam by using non-destructive methods / Tavukcuoglu A.; Disli G.; Tosun L.; Grinzato E.; Caner-Saltik E.N.**

"Salus per aquam": architecture and technics make an healthy union with water in thermal and hydrotherapeutic baths, collective hygienical establishments, specialistic sanitary housebuildings / Campisi T.

**The Zaghouan-Carthage aqueducts and their nymphaea (Tunisia) / Ferchiou N.**

**12h30 Lunch at the University restaurant** - Free visit of the posters exhibition

**14h30 3rd work session:** Each 20 minutes presentation will be followed by a 5 minutes debate

Amphi 1: General and technical studies (Chairman: Ary Bruand)

**Improvements in the decayed microstructure of marble by treatments with nano dispersive solutions / Caner-Saltik E. N.; Orial G.; Mertz J.-D.; Demirci S.; Hugon P.; Akoglu K.G.; Caner E.**

**Pore network modification by salt crystallization of experimentally weathered sedimentary stones / Angeli M.; Benavente D.; Hebert R.; Bigas J.-P.; Menendez B.; David C.**

**A novel application of mesoporous molecular sieves: consolidating stonework / Mosquera Diaz M. J.; De Los Santos D. M.**

**Thermal recording during experimental weathering of limestones: the role of imbibition on salt crystallization and rock decay / Hebert R.; Angeli M.; Bigas J.-P.; Benavente D.**

Amphi 2: Case-studies (Chairman: Luis Aires Barros)

**Sea salt dispersion in stream valleys and stone decay / Kouli M.; Zezza F.; Cheilakou E.**

**Restoration and technological and functional rehabilitation in a Veneto villa / Michieletto P.; MORELLI M.**

**Characterization of a brick masonry by NDT analyses : the Terese convent case study, Venice / Zezza F.; Galgaro A.; Di Sipio E.; Di Pietro F.**

**Safeguard and conservation of the fountain of the 99 spouts of L'Aquila: state of art within past, present and future / Quaresima R.; Volpe R.**

16h10 Break - Free visit of the posters exhibition

16h30 4th work session: Each 20 minutes presentation will be followed by a 5 minutes debate

Amphi 1: General and technical studies (Chairman: Ary Bruand)

**Laboratory thermographic analysis of masonry specimens. Capillarity and drying /**  
Cristian Magalhaes A.; Matias L.; Vilhena A.; Pina Santos C.; Do Rosario Veiga M.

**Evaluation of the durability of water-repellents applied on limestone, after 6-year of ageing in natural environment /** Moreau C.; Verges-Belmin V.; Leroux L.; Fronteau G.; Barbin V.

**Segmentation of X-ray tomographic images: contribution to weathering analysis of building limestones originating from historical buildings /** Le Trong E.; Rozenbaum O.; Rouet J.-L.; Bruand A.

Amphi 2: Biological aspects (Chairman: Michel Rautureau)

**Influence of water on the microbial communities of Altamira cave (Cantabria, Spain) /** Portillo M. C.; Gonzalez J. M.; Cuevva S.; Sanchez-Moral S.; Saiz-Jimenez C.

**Consequences of a high microbial diversity detected in caves containing paleolithic paintings /** Gonzalez J. M.; Portillo M. C.; Saiz-Jimenez C.

**Microbial communities in painting-holding shelters in Aragon (Spain) /** Gonzalez J. M.; Portillo M. C.; Alloza R.; Saiz-Jimenez C.

17h45 End of the work session

19h00 Cocktail offered by the University of Orléans

Friday, 8 june / Campus of the University of Orléans - Faculty of Law, Economy and Management

08h30 Welcome - Registration for the Saturday field trips

09h00 Plenary session: participants information and presentation of posters (3 minutes each)

10h00 5th work session: Each 20 minutes presentation will be followed by a 5 minutes debate

Amphi 1: General and technical studies (Chairman: Michèle Prats)

**Effect of protective surface treatments on the hydraulic properties of porous building stones /** Beck K.; Parant M.-A.; Bailli P.; Brunet-Imbault B.; Muller F.; Al-Mukhtar M.; Rouet J.-L.

**Suitability and evaluation of andalusian white marls as raw materials for a hydraulic lime production for building restoration /** Galan E.; Markopoulos T.; Miras A.

Amphi 2: Case-studies (Chairman: Maria Kouï)

**The building complex of the Arsenal in Kaliakra, Mount Athos /** Hadjiantoniou P.

**Aerial water conduits in the Roman Aqueduct of Carthage: crusts and mortars /** Alvarez A.; Figueiredo M.-O.; Veiga J. P.; Silva T. P.; Pitarch A.

10h50 Break - Free visit of the posters exhibition

Posting of the field trip groups

11h15 6th work session : Each 20 minutes presentation will be followed by a 5 minutes debate

Amphi 1: Heritage Management (Chairman: Michèle Prats)

**Study of saving and conservation of Oserkon II tomb, Tannis, Egypt /** Helmi F. M.; Barania A. A.; Mohamed R. A.

**Rainwater collection structures in the Karst region /** Frangipane A.

**Volubilis archaeological site (Morocco): identification of building stones and determination of their provenance /** Cadot-Leroux L.; Varti-Matarangas M.; Dessandier D.; Kamel S.

Amphi 2: Case-studies (Chairman: Maria Kouï)

**Thermal waters, salt damage and monument stone decay /** Aires-Barros L.; Dionisio A.; Basto M. J.

**A survey on the deterioration processes of the Renaissance monument to Giovanni Calfurnio in the St. Anthony basilica in Padova /** Fassina V.; Benchiarin S.; Baccelle Scudeler L.; Molin G.; Stefaní C.

**Recovery of historic memory of the patrimony of the royal site of La Isabela and the Sacedon Baths /** Trallero Sanz A. M.; Fernandez Tapia E. J.; Maza Vazquez F.; Sancho Oloriz A. P.; Nunez Perez D. J.; Ruiz Castillo J.; Cidoncha Maranon A.

12h30 Lunch at the University restaurant - Free visit of the posters exhibition

14h30 7th work session: Each 20 minutes presentation will be followed by a 5 minutes debate

Amphi 1: Heritage Management (Chairman: Vincent Rotgé)

**Restoration of the inundation sluice of Hedikhuijzen in the Netherlands /** Van Balen K.; Romeo C.; Hayen R.; Tak K.; Verhey B. J.; Swolfs M.

**Functional fitting of bridges and viaducts /** Siviero E.

**Management of architectonical patrimony of catalan rivers in front of risk of flooding. The case of the Muga river basin (Catalonia, Spain) /** Pavon Gamero D.; Ribas Palom A.; Serra Cervantes D.

**Tunisian southern inheritance: to restore correctly and develop durably, vector of local development /** Abichou H.; Sghaier M.; Jouve A.-M.

Amphi 2: Case-studies (Chairman: Anna Lobovikov-Katz)

**The "Palombaro" ("Sassi" of material, Italy): the interaction between water and construction materials /** Guida A.; Bixio A.; Conte A.; Mecca I.

**An interdisciplinary approach to assess water infiltration in monumental stone facades : the case of the Basilica of Collemaggio – L'Aquila (Italy) /** Quaresima R.; Ambrosini D.; Paolletti D.

**The preservation of a roman aqueduct in Arcadia from spring water /** Kouï M.; Yfantis D.; Cheilakou E.; Raftopoulou S.; Stratis E.; Zezza F.

16h10 Break - Free visit of the posters exhibition

16h30 8th work session: Each 20 minutes presentation will be followed by a 5 minutes debate

Amphi 1: Heritage Management (Chairman: Vincent Rotgé)

**Conservation of cultural landscape along rivers through actions of risks mitigation /** Verdelli L.

**Problématique de la conservation d'un patrimoine fluvial, archéologique, ethnologique, architectural, dans son contexte naturel en Basse Loire angevine et armoricaine /** Cayla P.

**Piercentre, an information system of the stone, quarries and monuments of the Centre Region (France) /** Dessandier D.; Gateau C.; Lepretre J.-P.

Amphi 2: Case-studies (Chairman: Anna Lobovikov-Katz)

**Water and stability in the castle of Fontanellato /** Coisson E.; Montrasio L.; Ottonei F.

**The roman amphitheatre of Durres: water form resource to problem /** Coisson E.; Ghiretti A.

**Characteristics of bricks used in the domes of some ottoman bath buildings /** Ugurlu E.; Boke H.

17h45 Plenary session: conclusions of the symposium and practical details concerning the field trips (Mr. F. Zezza)

18h30 End of the work session

18h45 Departure to the farewell dinner

Saturday, 9 june / Field day

Itinerary n°1: Upstream from Orleans

Visits of the Briare canal-bridge, the Château de Sully (currently under renovation), the roman basilica of Saint-Benoit-sur-Loire (to be confirmed)

Itinerary n°2: Downstream from Orleans

Visit of the Château de Chambord and Château de Cheverny (to be confirmed)

## POSTERS LIST

General and technical studies

**Study of spontaneous water imbibition into limestones rocks** / Al-Mukhtar M.; Adib-Ramezani H.; Beck K.; Van T.T.

**Applying near infrared reflectance spectroscopy (NIRS) to cultural heritage** / Barrios Neira J.; Montealegre L.; Ortega A.; Merono J. E.; Aguilera M. J.

**The impact of thermal and hydric expansion on the decay of porous building stones** / Benavente D.; Cultrone G.; Rodriguez-Guerrero A.; Gomez-Heras M.

**Study of heat – and light – induced desorption of hydrated sulfates by powder X-ray thermodiffraction** / Cardell-Fernandez C.; Sanchez-Navas A.; Martin-Ramos J. D.

**Water and soluble salts on porous material: an experimental study of damages on bricks** / Colombo C.; Conti C.; Costanzi F.; Montonatos S.; Negrotti R.; Poli T.; Realini M.; Valentini M.

**Estimation of water permeability of building brecciated dolostones** / Cueto N.; Benavente D.; Garcia Del Cura M. A.

**Pore structure, fluid transport and natural stone decay: an experimental approach** / Figueiredo C. A. M.; Folha R.; Dionisio A.; Mauricio A.; Alves C.; Aires-Barros L.

**An integrated methodology for the moisture performance assesment of historic buildings** / Karoglou M.; Moropoulou A.; Bakolas A.; Krokida M. K.; Maroulis Z. B.; Konstantopoulos D. K.; Maroulis V. Z.

**Origin of yellowing on white marbles: natural and anthropogenic factors** / Pozo Rodriguez M.; Carretero M. I.

**Contribution of 3-D X-ray microtomographic image for the characterisation of weathered and unweathered building limestones** / Rozenbaum O.; Le Trong E.; Rouet J.-L.; Bruand A.

Case-studies

**Chianalea di Scilla (Reggio Calabria, Italia): a case-study of sea water between buildings** / Barila G.

**Stones of monuments in biocalcarenites and travertines: morphology and type of deterioration** / Barrios Neira J.; Montealegre L.; Sebastian E.; Cultrone G.; Beck K.; Al-Mukhtar M.; Alcover J.-F.

**Definition of microclimatic parameters based on water transfer and porous media properties to conserve prehistoric constructions : Cueva Pintada at Galdar, Gran Canaria, Spain** / Benavente D.; Canaveras J. C.; Sanchez-Moral S.

**Weathering processes affecting rock paintings in Villar del Humo Archaeological Park (Cuenca, central Spain)** / Benavente D.; Canaveras J. C.; Sanchez-Moral S.; Diez-Herrero A.; Gutierrez-Perezil.; Alonso-Azcarate J.; Lario J.

**Weathering processes in the court of "El Salvador" Church of Baeza (Province of Jaén, Andalusia, Spain)** / Campos Sunol M. J.; De La Torre M. J.

**The restoration of the roman bridge of Cordoba (Spain): a petrophysical investigation** / Cultrone G.; Sebastian E.; Luque A.; Urosevic M.

**Water management at Durocortorum (Rheims, France), diversity of archaeological structures and promotion of an undervalued cultural heritage** / Fronteau G.; Moreau C.; Chopin E.; Berthelot F.; Ardhuin M.; Balmelle A.; Rabaste Y.; Rollet P.

**Different types of deterioration of the Royal Summerhouse in the Royal Garden of Prague Castle** / Kopecka I.; Kolisko J.; Novotny J.

**Stone decay in civil heritage constructions due to salt crystallisation: salinetes bridge (SE Spain)** / MARTINEZ MARTINEZ J.; Barnabeu A.; Benavente D.; Del Cura G.

**Effectiveness of silica polymer-colloid for consolidating sedimentary stone** / Mosquera Diaz M. J.; De Los Santos D. M.; Mosquera M. J.

**The conservation state of Hafsid masonry from medieval reconstruction works at the Roman Aqueduct of Carthage, Tunisia** / Pereira Da Silva T.; Figueiredo M.-O.; Veiga J. P.

**The sinter of the ssocia Pretoria in Palermo** / Rizzo G.; Ercoli L.; D'Agostino F.

**The Idol's Fountain (Braga, NW Portugal). A water/rock monument** / Sequeira Braga M. A.; Alves C.; Silva P.; Lemos F. S.; Lima A.; Pamplona P.; Aires-Barros L.

**Influence of indoor environmental conditions on building materials of Algete Church (Madrid, Spain)** / Taborda Duarte M.; Varas M. J.; Fort R.

**Assessing the deterioration of frescoes using geochemical and geological data: two examples from Egypt** / Voudouris K.; Moussa A.; Stratigis J.; Ali M.; Christaras B

Biological aspects

**Physical and mineralogical analysis of bioremediated limestones** / Anne S.; Rozenbaum O.; Rouet J.-L.; Plançon A.

**Microbial Communities involved in the deterioration of Santa Clara-a-Velha Monastery (Coimbra, Portugal)** / Miller A. Z.; Laiz L.; Dionisio A.; Macedo M. F.; Saiz-Jimenez C.

**Biological mortars – an original concept for heritage conservation** / Orial G.; Bousta F.; Vieweger T.; Loubiere J.-F.

**On the presence of acidobacteria in the cave of Dona Trinidad (Malaga, Spain)** / Stomeo F.; Gonzales J. M.; Saiz-Jimenez C.

Heritage Management and Enhancement

**Exhibition of paintings and free-hand drawing** / LoboVikov-Katz A.

**Karst soil and rising damp in Sassari: guide lines for restoration of Canopeleno complex** / Rosina E.; Gizzi S.; Scudino D.; Della Torre S.; Valentini M.