



INTERNATIONAL SUMMER SCHOOL ORVIETO TODI ITALY 20 - 27 JULY 2025



IN PARTNERSHIP WITH



PRESENTATION

The International Summer School takes place from 20 to 27 July 2025, in collaboration with **LARES Italia**, the National Union of Graduates in Civil Protection.

The initiative, now in its third edition, was originally conceived by **Professor Maroc** of the **University of Blida 1 (Algeria)**, **Dr. Endro Martini**, collaborator of **Alta Scuola** and **Scientific Director** of the International Summer School, and **Giovanni Selli, President of Alta Scuola**. Their shared vision laid the foundations for this international event, dedicated to dialogue, knowledge-sharing, and environmental cooperation.

This year's theme is particularly relevant: Risk Management in all its dimensions—knowledge, forecasting, prevention, protection, planning, and preparedness.

As in previous editions, the program combines classroom lectures with field exercises, practical demonstrations, and technical visits, offering a dynamic and hands-on learning experience.

A key moment of this edition

is the **international event on Wednesday, 23 July in Assisi**, dedicated to **water management in the era of climate change**.

Entitled **“Sister Water”**, the event marks the **800th anniversary of the Canticle of the Creatures** by Saint Francis of Assisi—a timeless celebration of the relationship between humans and nature.

Distinguished scholars and professionals from leading international institutions take part in the event, including:

University of Blida 1 (Algeria)
Association of Young Architects of Mali

Federal University of the Amazon (Brazil)

UFMS – Federal University of Mato Grosso do Sul (Brazil)

We welcome around **50 participants** from **Algeria, Brazil, and Mali**. Each international delegation is led by a coordinator who also serves as a speaker, sharing experiences and perspectives from their respective countries.

In a global context shaped by climate change, **international cooperation in environmental and territorial policy** is more

crucial than ever.

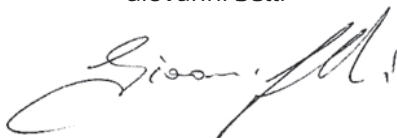
Through this initiative of **scientific exchange and intercultural dialogue**, we aim to highlight the unique value of **Orvieto and Todi**, the **Region of Umbria**, and **Italy as a whole**, showcasing their **environmental, cultural, and scientific excellence**.

At the same time, the Summer

School creates a shared space where participants can **learn from each other's experiences**, enriching their understanding and building lasting connections. Italy presents itself as an **international reference point** for the study, management, and protection of environmental, historical, and cultural heritage.

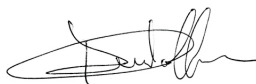
PRESIDENT OF ALTA SCUOLA

Giovanni Selli



PRESIDENT OF LARES ITALIA

Danilo Calabrese



ITALIAN SCIENTIFIC DIRECTOR

Endro Martini



ALGERIAN SCIENTIFIC DIRECTOR

Mourad Maroc



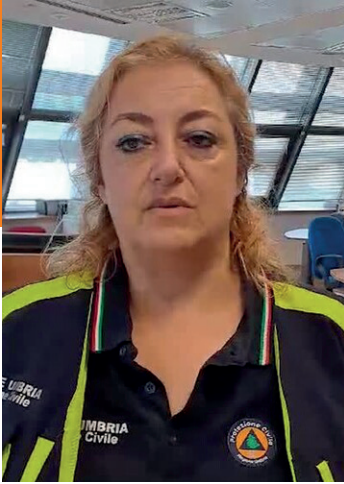
Giovanni SELLI, President of Alta Scuola

Danilo CALABRESE, President of LARES Italia

Mourad MAROC, Algerian Scientific Coordinator (Université de Blida 1 - Algeria)

Endro MARTINI, Scientific Coordinator (Alta Scuola Consultant)

Paola CERCHICE, Alta Scuola Secretariat



Stefania TIBALDI

The Umbria Region Functional Centre and the Italian Civil Protection Service

The Umbria Region Functional Centre is one of 21 Regional Functional Centres, coordinate by the central hub in Rome of the National Civil Protection Department. Italian National System of Civil Protection was established by a specific law in 1992, nowadays held by the Civil Protection Code (Law 1/2018 that comprises all Civil Protection acts issued after 1992

law), and involves many different Institutions and organisations:

- Public (Government, Ministries, Regions, Provinces, Municipalities, Operational Bodies etc.);
- Scientific/Academic (Universities, Research Institutes, etc.);
- Society (Volunteers, private companies, non-governmental organizations, etc.)

The main tasks of the Italian Civil Protection Service are:

- Preparedness: analyse and identify risks and affected areas;
- Prevention: reduce or mitigate damages and enhance people awareness for self-protection measures;
- Response: fulfil basic needs of a population affected by an event;
- Recovery: restore normal life conditions.

On the base of first two points, was build the Italian Early Warning System based on Regional Functional Centres (Directive of the President of the Council of Ministers – 27 February 2004.)

The role of the Functional Center, in the context of “Risk Prevention and Containment Activities” in Real Time, is to forecast the occurrence and evolution of events and their possible effects (risk scenarios) with the aim of issuing warnings to activate Local Civil Protection systems in short time.

The main dues are:

- collect and share data (field instruments, RADAR, satellite, ...);
- analyses in real time (numerical modelling, ...)
- assume responsibility for such information and assessments by issuing and disseminating Notices and Bulletins.

The Regional Alerting System, whose the Functional Centre belongs, is focused on:

- Hydraulic risk: due to floods affecting the watercourses of the major network;

- Hydrogeological risk: due to localised phenomena such as landslides, run-offs in urban areas, floods affecting minor water-courses;
- Hydrogeological risk for Thunderstorms: due to high impact weather.

Daily, Functional Centre's experts evaluate risk scenarios based on weather forecast and hydrological and hydraulic numerical simulation and tag them with a colour code (Alert Code) from Green to Red. The alerting document is, usually, issued before 2 pm.

During the event Functional Centre monitors the evolution of the phenomena using remote sensing and field instruments, pay attention to some thresholds overcoming, to support Local Authorities in their emergency activities.

Besides usual instrumentation Umbria Region Functional Centre uses several Hydrologic (MISDc, HEC-HMS, Topkapi, Stafom,...) and Hydraulic (HEC-RAS) models and a Land Slide Early Warning System (LEWS). All are used both in forecasting and monitoring phase.

During monitoring phase, operators are supported by automatic alarm system based on classical field sensor and RADAR retrivals.

Stefania Tibaldi (born in Tolentino on March 8, 1968) is a civil and building engineer who graduated with honors from the University of Ancona. After passing the public competition for the Province of Macerata, she held roles of increasing responsibility in technical fields—such as urban planning, school construction, hydraulic works, and Civil Engineering—from 1997 to 2016.

Since April 1, 2016, she has served as a manager at the Marche Region, initially in the Energy and Civil Engineering sector, and later in the Water and Land Protection department.

She is currently a permanent employee of the Umbria Region, where she works as the Director of the Civil Protection and Emergency Services Department. Her responsibilities include emergency planning, coordination of the Regional Operations Center, crisis management (e.g., during the COVID-19 pandemic), coordination of volunteers, and post-event response activities.



Naïma Rabahi TOULOUM

Algeria's disaster risk management (DRM)

Algeria's disaster risk management (DRM) strategy has evolved over decades in response to catastrophic natural events that have shaped institutional learning and risk governance. The 1980 El Asnam earthquake (Ms 7.2), causing over 3,000 deaths and 3 billion USD in losses, marked a turning point in disaster awareness and triggered the development of a national risk management architecture. Since then, Algeria has faced recurrent hazards, such as the 2001 Bab El Oued floods, the 2003 Boumerdes earthquake, the 2008 Ghardaïa floods, and more recent climate-induced extreme events, which have intensified the need for integrated disaster risk reduction (DRR). Algeria's alignment with the ongoing implementation of the Sendai Framework for Disaster Risk Reduction (SFDRR) reflects a transition from reactive to proactive risk governance. The legal backbone of Algeria's DRR policy is enshrined in Law 24-04 of 2024, which supersedes Law 04-20 of 2004. It provides a comprehensive framework targeting 18 major risks and emphasizes prevention, preparedness, coordination, and citizen engagement. It mandates contingency planning (ORSEC), interministerial and intersectoral governance, and the integration of DRR into spatial and urban planning (SNAT). This framework aligns with a decentralized governance system involving national (ministerial), regional (wilayas), and local authorities. The National Delegation for Major Risks (DNRM), established by Decree 11-194 (2011), plays a central coordinating role, promoting horizontal and vertical policy coherence across sectors. At the national (ministerial), regional (wilaya), and local levels of authority delegates lead intersectoral committees that integrate DRR into local development actions. Algeria's governance of disaster risk reflects a multi-stakeholder ecosystem comprising of civil protection agencies, research centers (e.g., CGS, CRAAG, CRAT, CNTS), technical bodies (e.g., ONM, ANRH, CTC), and sectoral ministries. These institutions contribute to hazard mapping, seismic micro-zoning, vulnerability assessments, and early warning systems.

Investments in structural protection measures demonstrate Algeria's commitment to resilience-building. Moreover, the creation of national and local risk databases, integration of DRR into school curricula, and public awareness campaigns indicate progress toward fostering a culture of risk prevention. However, early warning systems and emergency preparedness mechanisms -notably ORSEC plans - still require modernization and digitalization to improve responsiveness and coordination, especially in rural and climate-vulnerable areas. International cooperation has also played a pivotal role. Algeria collaborates with the World Bank, UNDP, the EU, Japan, and Germany through initiatives focused on capacity building, risk governance, and climate adaptation. For instance, the CapDel program has piloted local participatory DRR planning in ten municipalities, while the ClimGov project has strengthened Algeria's climate governance framework in support of its Nationally Determined Contributions (NDCs). Algeria's DRM strategy exhibits a clear trajectory toward integrated, risk-informed development and governance. The legal and institutional advancements, including Law 24-04, the reinforcement of the DNRM, and expanded cooperation networks, provide a solid foundation. Despite these advancements, Algeria still faces critical challenges. To support the achievement of the Sendai Framework's priorities, Algeria must focus on strengthening areas such as implementation, intersectoral collaboration, local capacity, and financial risk management. Emphasizing a move towards more anticipatory, inclusive, and climate-responsive governance—along with investments in data, technology, and human capital—will be important for safeguarding development progress and further enhancing national resilience. Algeria's risk management trajectory reflects a strong political will and significant institutional progress, and efforts are maintained continuously to make risk governance more fully anticipatory, inclusive, and climate-responsive.

Dr. Naïma Rabahi TOULOUM is a highly accomplished Algerian researcher and senior official with over 20 years of experience in materials science, disaster risk reduction (DRR), and the conservation of built heritage. She currently serves as Director of Studies at the National Delegation for Major Risks (DNRM), under the Ministry of the Interior, Local Government, and Territorial Planning. In this role, she leads strategic planning, policy development, scientific analysis, and international cooperation in the field of natural hazards and climate-related disaster management.

Dr. Rabahi holds a Ph.D. in Civil Engineering from the University of Science and Technology Houari Boumediene (USTHB), a Magister in Materials Science and Engineering, and a State Engineer degree in Ceramics from the

University of Boumerdes. From 2007 to 2022, she served as lead researcher and team coordinator at the National Center for Integrated Building Research (CNERIB), where she conducted applied research on construction materials, concrete degradation, and the preservation of historic stone structures. She contributed to major national projects, including the Djamaa El Djazair (Great Mosque of Algiers), and served as an expert in technical standardization in collaboration with the national standards body. Her academic contributions include teaching at several Algerian universities, supervising postgraduate theses, and serving on scientific juries. She has authored peer-reviewed articles in international journals such as the *Journal of Archaeological Science: Reports*, *Bulletin of Engineering Geology and the Environment*, and *Materials and Structures*, and has presented her research at global conferences.

Dr. Rabahi has also pursued advanced professional training in France, Belgium, and Japan, including a JICA fellowship in 2024 on the disaster risk reduction of buildings. She is recognized for her analytical rigor, leadership, and commitment to public service. Her interdisciplinary expertise makes her a key contributor to Algeria's efforts to enhance resilience to natural and climate-induced risks at both national and local levels.

Daniele SPIZZICHINO

Conservation and enhancement of cultural heritage: the Italian experience

ISPRA, Institute for Environmental
Protection and Research
Geological Survey of Italy
UNESCO Chair UNIFI

daniele.spizzichino@isprambiente.it



Keywords: *climate change, cultural heritage preservation, natural hazards, risk mitigation.*

ISPRA (Italian National Institute for Environmental Protection and Research) is one of the leading national institutions for research and monitoring of natural risks threatening both natural and cultural heritage, particularly those triggered by meteorological and climatic forces. In recent decades, average temperatures in Italy have risen significantly, accompanied by increasingly intense and frequent heat waves. These climatic anomalies lead to a higher incidence of extreme events such as heavy rainfall and prolonged droughts, which affect the stability of cultural heritage, significantly alter the natural, human, and infrastructural environment. These conditions contribute to the deterioration of frescoes, sculptures, and historic building materials, compromising their integrity, authenticity, and long-term survival. Climate change is altering biological cycles and geomorphological dynamics in the short term, with potentially irreversible effects in the long term, such as landslides, subsidence, glacial and periglacial melting, and coastal instability. The specific impact of climate change on cultural heritage varies across both spatial and temporal scales, depending on the type of threat. In areas where cultural heritage is concentrated (exposure), large-scale phenomena over longer temporal scales include instability, collapses, widespread erosion, sea level rise, coastal line stability, and hydraulic phenomena. At the micro-scale, issues such as weathering, blackening, stone recession, humidity, and capillary rise are observed. Natural risks, ongoing meteorological and climatic trends, combined with urbanization, air pollution, and human activity, exacerbate conservation challenges. ISPRA regularly maps these risks to identify the most

vulnerable areas and prioritize in-depth analyses and mitigation funding. Mountainous and hilly areas, with their widespread historic villages and town centers, are particularly prone to landslides, while cities of art, such as Florence and Rome, risks from hydraulic hazards and structural degradation caused by air pollution. In Venice, rising sea levels and exceptional tides pose increasing threats. Heavy rainfall and unstable terrain contribute to landslides, endangering historic buildings of great value. In regions such as Calabria, Sicily, Puglia, Liguria, and Campania, coastal erosion threatens numerous cultural assets near the sea. Additionally, seismic and volcanic hazards are widespread across Italy. IS-PRA has long employed advanced technologies such as satellite remote sensing, for the structural monitoring of cultural assets. Techniques like radar interferometry enable the detection of ground movements and early signs of instability. These data, products, and services are essential tools for continuous, high-precision monitoring, supporting targeted interventions for the protection of high-risk sites. The future of cultural heritage conservation in the context of ongoing climate change depends on the integration of advanced technologies and strengthened institutional cooperation. The adoption of artificial intelligence and big data analytics is expected to revolutionize how cultural heritage is monitored and safeguarded. Continued investment in research and innovation is essential to ensuring the protection of cultural assets for future generations. Climate change is accelerating degradation processes that seriously threaten the integrity of historical and archaeological sites. The adoption of integrated management strategies, supported by cutting-edge monitoring technologies, represents the most effective path to ensuring the protection and sustainable enhancement of this extraordinary heritage.

Daniele SPIZZICHINO

Researcher, Civil & Environmental Engineer ISPRA – Institute for Environmental Protection and Research, Dept. for the Geological Survey of Italy.

Daniele Spizzichino holds a degree in Environmental Engineering from the University of Rome (1999). He got the PhD on Earth System Sciences: Environment, Resources and Cultural Heritage at Modena and Reggio Emilia (2012). Daniele has developed a very strong expertise in ICT (e.g. hydrological risk analysis, digital maps on natural risk elaboration, Earth Observation, GIS, geo-hazard and risk assessment, geotechnical modelling) applied to cultural heritage protection domains. He has worked and coordinate, as a researcher and professional consultant, several research team work. Since 2000 his geotechnical engineering skills has been especially addressed to: executive design of Cultural Heritage low impact mitigation measures; monitoring system imple-

mentation (e.g. remote sensing, satellite and traditional topographical network), natural hazard risk assessment and protection plan for Natural and Cultural Heritage. In particular, he has been extensively supporting national and international organizations (e.g. UNESCO, WMF, ICOMOS) in several research projects of the World Heritage sites such as: (Machu Picchu) Peru, (Aksum, Lalibela) Ethiopia, (Tiwanaku) Bolivia, (Ester Island) Chile, Georgia (Vardzia and David Gareji), Armenia, Jordan (Petra), (Bamiyan Valley) Afghanistan, (Lumbini and Katmandu) Nepal, Madagascar (Antananarivo), (Pompei, Tarquinia and Roma) and many others. Author and co-author of more than 150 publications and books. He has published several articles in scientific journal, papers and conference proceedings. He is a member of many associations (ICOMOS, AGI (TC301), ICL, IAEG). He is currently employed – as senior researcher – at ISPRA, Dept. for the Geological Survey of Italy, elected member of the scientific board of the institute and adjunct professor to the UNESCO Chair on prevention and sustainable management on Geo-Hydrological Hazards. Currently holds in ISPRA the role of Area Manager for Geodynamics, Georesources, Hazards and the impacts of natural and anthropogenic events.



Mr Hamet Alpha DIOP

Conservation and enhancement
of cultural heritage in Mali

Mali is a West African country with a surface area of 1,241,238 km². It is a vast country whose subsoil is renowned for its wealth of precious stones and various fossils (gold, oil, gas, lithium, etc.). A land rich in cultural diversity (numerous distinctions and UNESCO classification), the territory has been home to several powerful West African empires, including the Ghana Empire, the Mali

Empire, and the Songhai Empire, which dominated trans-Saharan trade at the time.

An ancient land of history, civilization, knowledge, and know-how, it harbors remarkable tangible and intangible heritage (the manuscripts of Timbuktu, the Tomb of Askia, the Cliffs of Bandiagara (Dogon Country), the ancient cities of Djenné, etc.).

Mali's cultural heritage is a treasure whose sustainability is important to all humanity. This rich heritage is our common good and must be passed on to future generations because it embodies the identity and values of an entire people. Populations and institutions strive to preserve it even in times of crisis. Awareness of the plight of the population and its assets after these unfortunate events (various crises) has led to reflections on the restoration, conservation, enhancement, and development of sites.

Post-crisis management has sometimes made the task very difficult, but the authorities have made it a permanent challenge, and thus the Head of State has declared 2025 the Year of Culture (a return to the roots for a new beginning). Awareness-raising efforts and funding from the government and international organizations such as UNESCO have been put in place to achieve the set objectives, even if the task proves difficult.

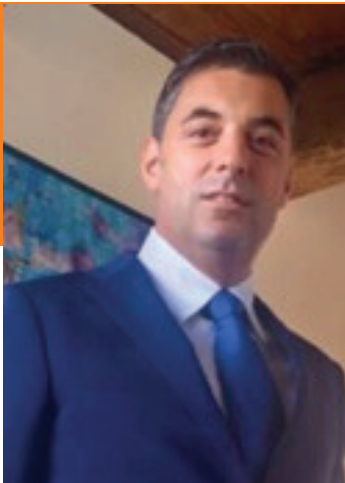
We will focus on the conservation and enhancement of cultural heritage in Mali.

This topic raises three major questions:

- ***What policy is in place to manage Malian heritage?***
- ***What is the current state of cultural heritage conservation and promotion in Mali?***
- ***How can we mobilize the necessary financial and material resources for the sustainable conservation and promotion of heritage?***

Mr. Hamet Alpha DIOP is a Malian architect registered on the list of the order of architects of the year 2017. He works in the architecture studio ALDI Bioclimatics Designs.

A former student of Ibn Khaldoun University in Tunis and having obtained his diploma in June 2016, he has been passionate about architectural heritage since university, hence his end-of-study dissertation entitled «Ethnological Museum of Mali» which is based on architectural, sociological, cultural, religious research... of all the ethnic groups of Mali. Concerned about the future of the rich Malian heritage, he decided to document himself and integrate the various organizations and structures that could guide him, train him and help him in his quest. Member of ICOMOS-MALI and Consultant of UNESCO, he carried out missions during which he visited various sites, made an inventory and proposed solutions in order to conserve, protect and raise awareness among the local population on the importance of its various sites and on the value of earthen architecture, and monitor the renovation of works in certain cases. It has evolved on several aspects of architecture including school, administrative, health infrastructure, etc. Nowadays he works on several projects such as the Military Hospital of Mali, the Hospital of 4th reference of Mali, the project of 4000 housing units, projects of the General Staff of the Armies of Mali and several classified projects. He participated in the first edition of the International Summer School (ALTA SCULA) in August 2023 where he gave a presentation. He had to participate in the ICOMOS 2023 general assembly in Sydney. Since 2018, he has been the president of the Association of Young Architects of Mali.



Mr Costantino KOUNAS

The Culture of Prevention in Civil Protection: The Role of Citizens, Volunteers, and Professionals.
LARES ITALIA

The culture of prevention is a fundamental pillar of the Civil Protection system, especially in territories exposed to natural and man-made risks such as the Umbria Region. In a context marked by frequent seismic events, landslides, and floods, prevention cannot be delegated solely to institutions;

it must actively involve citizens, volunteers, and professionals, who are considered key actors in risk management.

A strategic role in this field is played by LARES Italia, the association of graduates and professionals specialized in emergency planning and management, which makes a significant contribution to the technical and cultural training of the Civil Protection system. LARES promotes training programs not only for sector operators but also for citizens, aiming to increase awareness and response capacity within the population.

In Umbria, many awareness-raising initiatives actively involve LARES, such as the national campaign “Io non rischio” (“I don’t take risks”), implemented in Umbrian towns with the participation of trained volunteers who inform citizens about the correct behaviors to adopt in case of emergency. Furthermore, through its involvement in local projects, LARES contributes to the participatory drafting of Municipal Civil Protection Plans, enhancing both technical knowledge and local awareness.

These examples show that effective Civil Protection must be based on citizen empowerment, the active engagement of volunteers, and the presence of well-trained professionals. The contribution of organizations like LARES Italia is essential for building a widespread culture of prevention founded on competence, shared responsibility, and community resilience.

Mr. Costantino KOUNAS *Expert in managing European funding, specialized in vocational education and training, adult education, networking and coordination of transnational partnerships. He holds a degree in Economics and Business and is a certified business consultant with recognized expertise in subsidized financing for enterprises. With over two decades of experience, he has successfully coordinated numerous*

European projects and collaborated extensively with public authorities and European institutions. He is engaged in promoting the Culture of Prevention by training experts and managing the implementation of regional, national, and European projects, in which he is responsible for coordinating project activities on behalf of LARES Italia. He currently serves as Director of Lares Umbria, Head of the Planning and Programming Department of Lares Italia, and is a member of the Cabinet of the National Governing Council.



Gianluca LOFFREDO

Post-earthquake reconstruction: problems and solutions

This analysis addresses the multifaceted challenges of post-seismic reconstruction in Central Italy following the seismic events of August 24 and October 30, 2016. Commencing with an examination of damage documented by shakemaps, the study delineates critical issues and proposed solutions across two distinct yet intrinsically interconnected intervention scales: the urban macro-scale and the building/

infrastructure micro-scale.

At the urban planning macro-scale, diverse strategic approaches are highlighted, tailored to specific local criticalities. In Camerino, managing the complexity of construction sites within a historic urban fabric characterized by partial demolitions necessitated a special public coordination ordinance for private activities. Conversely, the near-total devastation in Arquata del Tronto mandated a drastic solution involving complete demolition and geomorphological reconfiguration of the building's foundations. In contexts such as Pescara del Tronto and Pioraco, studies identifying high hydrogeological risk (debris flow, avalanches) led to the decision for partial relocation.

Concurrently, the analysis descends to the building and infrastructure scale where urban strategies translate into specific technical solutions. In particular interventions on historic public buildings are discussed, exemplified by the Palazzo Ducale Da Varano in Camerino, where the seismic improvement project incorporates an invasive intervention involving the cutting and repositioning of cloister capitals. The seismic upgrading of a school in Ascoli Piceno is also presented, illustrating the application of modern technology with base isolation systems for the reinforced concrete structure. Furthermore, the abstract details the consolidation of foundations in Arquata del Tronto utilizing active tie-rods and the reconstruction of the bridge in Castelsantangelo sul Nera, the latter necessitating the relocation of adjacent residential units. These examples highlight how technical solutions related to individual infrastructure and building, as well as cultural heritage, are drastically connected with overall urban planning as Leitmotiv of the reconstruction's principles in order to optimize the effort to attain satisfactory outcomes with respect to cost-benefit performance.

Gianluca LOFFREDO was born in Avellino on July 29, 1976. He graduated with honors in Physics in 2000 with a thesis on the greenhouse effect and the consequences of carbon dioxide variations on the thermal field in the atmosphere. In 2004, he obtained his PhD in Physics with an experimental research thesis aimed at validating scientific instrumentation for the ESA (European Space Agency) INTEGRAL space mission. Between 2004 and 2009, he continued his research activity with Professor Filippo Frontera, who received the Enrico Fermi Prize in 2010, as part of ESA projects, including INTEGRAL. He is one of the five inventors of an international patent in the field of X-ray focusing, in collaboration with the Italian Space Agency. In 2010, he graduated with honors in Civil Engineering and founded ArchLiving, an Engineering Company, which grew exponentially over the years, becoming a national reference. During that period, he coordinated and designed building and infrastructural interventions for over 400 million euros. Since 2016, he has been carrying out research activities at the Department of Structural Engineering in Ferrara in the field of seismic and hydrogeological risk mitigation for infrastructural works, especially in the railway sector, also performing teaching activities. Since 2017, he has been the coordinator of the Scientific Committee of Geosismica, the RemTech session related to territorial seismic risk, coordinating interventions by authoritative national and international specialists in the field of seismic and hydrogeological risk mitigation. In 2020, during the Covid-19 pandemic, he filed a patent application for an industrial invention for a localized sanitization and lighting device, for which he received the patent certificate in 2022. From January 2021, he has been the Government's Deputy Special Commissioner for the reconstruction of areas affected by the 2016 earthquake, working on the implementation of Special Ordinances in the Marche region. Since June 2022, he has been an expert at the structure of the Special Commissioner for supporting the implementation of interventions to be carried out through the resources of the PNRR Complementary Fund (PNC) in the territories affected by the seismic events of 2009 and 2016. From February 2023, he has been Deputy Commissioner for the Ischia landslide emergency, actively collaborating with the Special Commissioner Giovanni Legnini also for the reconstruction of the territories affected by the 2017 Ischia earthquake. He is the author of numerous scientific publications in the fields of astrophysics, structural engineering, seismic risk, post-natural disaster planning, and the technical-legal aspects of the drafting reconstruction code. Since August 2023, he has been appointed by General Francesco Figliuolo as an expert for post-flood reconstruction in Emilia Romagna. For the past two years, he has been a lecturer at the II level University Master's Degree on Internal Areas coordinated by Professor Massimo Sargolini, at the National School of Administration, at the Ferrara International PhD Workshop, as well as a commentator at numerous conferences on the topic of natural disaster risk mitigation. In December 2024, he graduated in Legal Sciences, and from January 2025, he was appointed the Government's Deputy Special Commissioner for post-earthquake and landslide reconstruction of the island of Ischia. From January 2025, he has been a highly qualified lecturer for the Metallic Constructions Course in the master's degree in construction engineering at the "G. d'Annunzio" University of Chieti-Pescara. From June 2025, he has been Vice Commissioner for the Emilia-Romagna, Marche, and Tuscany flood of May 2023.



Diego ZURLI

Methodologies for adapting human space to changes induced by natural events: urban regeneration and re-habitation of settlements affected by seismic events: case history

“Resilient” is today one of the most frequently used adjectives by scholars, architects, and urban planners. It expresses the urgent need to adopt behaviors and strategies capable of effectively facing the

multiple challenges affecting territorial governance. The objective is to promote innovation processes in urban policies in order to gradually develop a culture of prevention, integrating both regulatory frameworks and operational practices. The Umbria region has sought to address this specific issue - together with the broader question of urban systems' vulnerability - since the early stages of organizing its own civil protection system. Over the years, strategies and intervention methodologies have been developed to address the problem of seismic risk prevention and reconstruction after seismic events that have marked the transition from an approach aimed at the individual building to one applied at the urban scale. For example, this led to the introduction of the concept of integrated reconstruction and the definition of new urban planning tools such as the so called Integrated Recovery Programs. The core idea was to intervene with seismic prevention efforts across whole blocks identified as structurally and typologically vulnerable. This approach has been applied both in post-earthquake reconstruction and, more broadly, in ordinary planning activities that involve public funding. This communication aims to provide a broad overview of the initiatives undertaken over the years and the evolution of the strategies implemented to address the problem of prevention and reconstruction at the urban scale.

Diego ZURLI, architect, he has held numerous top positions in public administration and private companies; among these, the management of the Government of the Territory Department of the Umbria Region, the one's of EAUT (Ente Acque Umbre-Toscane), the Quadrilatero Umbria-Marche company, ecc. He was involved in planning, construction and management of large hydraulic infrastructures and public works projects of national interest. He has collaborated with some universities and writes essays and articles in periodicals, magazines and specialized publications on public infrastructures and the environment.

Gianluca FAGOTTI

The Integrated Project for the Post-Earthquake Reconstruction of Castelluccio di Norcia: Procedures, Techniques, Implementation.



Following the 2016 seismic events that almost completely destroyed the village of Castelluccio di Norcia, the Extraordinary Commissioner, the Special Reconstruction Office of Umbria, and the Municipality of Norcia identified the reconstruction of the village as one of the community's most urgent and essential priorities. As a result, efforts were made to rebuild the village as quickly as possible.

The unified reconstruction of Castelluccio is based on the application of a seismic isolation platform extended across the entire historic center — an original and effective approach for the integrated rebuilding of a village with such unique characteristics.

The reconstruction project of Castelluccio represents an innovative model that combines seismic risk mitigation with multiple objectives: enhancing territorial quality, respecting and promoting local identity, regenerating the affected areas through new integrated revitalization strategies, reactivating social and territorial dynamics, and ultimately rebuilding not just the physical structures but the community itself.

The innovative nature of the Castelluccio project is evident in several aspects. For the first time, post-earthquake reconstruction is being carried out on a seismically isolated platform for an entire historic settlement, despite the site's challenging topography, which requires terracing of the platform due to significant slopes.

Another noteworthy feature in the history of post-earthquake reconstruction is the decision to carry out a unified intervention, coordinated by the State in collaboration with private property owners. This unified approach represents a groundbreaking solution that will optimize construction processes and significantly reduce reconstruction time by aligning project planning with implementation phases.

Gianluca FAGOTTI, Civil Engineer, is currently the Manager of the Private Reconstruction Service at the Special Office for the Reconstruction of the Umbria Region, with over twenty-five years of experience in public administration, specifically in the field of post-earthquake reconstruction. He has

been actively involved in damage assessment inspections during seismic emergencies.

He collaborates closely with the Office of the Extraordinary Commissioner in drafting regulatory proposals related to private reconstruction. His work includes research, analysis, and continuous updates with a particular focus on current technical regulations and best practices for damage repair and post-earthquake reconstruction interventions.

He is a lecturer in the second level Master's program "Seismic Improvement, Restoration, and Consolidation of Historic and Monumental Buildings", and a contract professor for the course "Territorial Law and Public Works Legislation" at the University of Perugia.

Gianluca Fagotti is the sole Project Manager (RUP) for the reconstruction of Castelluccio di Norcia, and currently serves as President of the Order of Engineers of Perugia.

Mario TOZZI



Video communication at this link
<https://www.youtube.com/@altascuola>

Mario TOZZI (Born in Rome on December 13, 1959) he is a geologist, science communicator, essayist, author, and Italian television personality. He is a senior researcher at the Institute of Environmental Geology and Geoengineering of the CNR and is responsible for outreach at the Italian Federation of Earth Sciences. He is known for his science communication work on television and for his numerous publications.



Fausto GUZZETTI

Geo-hydrological hazards in a warning climate

Climate change is unequivocal, as demonstrated by rising global temperatures, changing precipitation patterns, and an increase in the frequency and intensity of extreme weather events. However, the consequences of a warming climate on geohydrological hazards—particularly floods and landslides—remain difficult to quantify and project into the future. In the talk, I will explore the evolving relationship

between climate, floods, landslides, and their hazards, and their present and future impacts in a warming climate. I will begin by presenting key evidence concerning the spatial and temporal occurrence of natural hazards. I will then review the current scientific understanding of flood and landslide hazards, drawing on findings from the literature and from empirical research, to assess how these hazards are influenced by climatic drivers and their possible future scenarios. In the final part of the presentation, informed by my experience at the Italian Department of Civil Protection, I will address key issues and challenges in using information and knowledge on flood and landslide hazards for risk reduction. I will conclude by highlighting key challenges and opportunities in translating scientific understanding into actionable strategies to enhance resilience in the face of growing risks.

Fausto GUZZETTI holds a degree in Geology (1983) and a PhD in Geography (2004). Since 1985, he has been a researcher at the Italian National Research Council (CNR). He was Director of the CNR Institute for Geo-Hydrological Protection (2009–2019) and Director General for Technical and Scientific Activities at the Italian Department of Civil Protection (2019–2023). A former President of the Natural Hazards Division of the European Geosciences Union (2002–2006), he received the Soloviev Medal in 2021. He is a corresponding member of the Accademia Nazionale dei Lincei and member of the Academia Europaea. His research focuses on landslide hazard and risk in a warming climate.

Philippe NARDIN

Climate change adaptation: strategies in water management

Climate change affects water management in multiple ways, ranging from changes in rainfall and thus seasonal and annual patterns in floods and droughts, water availability or dilution capacity and impacts on our health, economic activities and water-dependent (cool) ecosystems.

Water management includes water quality and quantity management, as well as hydromorphology and sedimentology. The management of fresh water from rivers, lakes and groundwater, estuarine waters, but also flood zones or seepage areas are crucial elements for ecosystems, drinking water supply and wastewater management, as well as for many economic sectors and systems, including agriculture, transport and energy. The presentation will focus on the countries of the European Union and in particular the countries of the South by assessing the future availability of water and the socio-economic implications and more specifically the impact of climate change on water availability in Europe and in particular an intensification of water scarcity in the Mediterranean countries.

Southern European countries, such as Spain, Portugal and Greece, are expected to experience a gradual decrease in water availability.

Countries in central and northern Europe, on the other hand, are expected to see an increase in annual water availability.

Currently, around 51.9 million people in Europe are exposed to water scarcity, representing 10.5% of the total population.

Adaptation mechanisms are needed to mitigate the effects of climate change on water resources, especially in the Mediterranean regions.

There is an urgent need to adapt to climate change. Water plays a central role in this area, but the political world has not yet recognized this notion. As a result, adaptation measures in the area of water management are often under-represented in national plans or in international investment portfolios.

Therefore, significant investments and policy changes are needed. These should be guided by the following principles:

- Integrate adaptations into the broader development context;
- Strengthen governance and improve water management;



- Improve and share knowledge and information about climate and adaptation measures, and investing in data collection;
- Building long-term resilience through stronger institutions, and investing in infrastructure and well-functioning ecosystems;
- Invest in cost-effective and adaptive water management as well as technology transfer;
- Mobilize additional funds through the increase in national budget allocations and financing mechanisms for adaptation in the field of water management.

This is why we intend to develop this work within the framework of an INTERREG MED NEXT programme with Algeria, Italy and France relating to natural disasters affecting these areas, especially forest fires and floods.

The implementation of a project integrating early warning for forest fire and flood risks is a necessity to protect populations, preserve ecosystems and strengthen resilience to recurrent natural disasters and in particular a high vulnerability to forest fires. ecological (protected areas) and economic with an exposed population and a need for local capacity building. It will also be an opportunity to develop in these territories the sustainability of water management, particularly for forest fires, but also how to conserve water linked to heavy rainfall in these same territories for human, agricultural and industrial use.

This project will be accompanied by an awareness raising of the populations with training for the benefit of elected officials, teachers, middle and high school students but also vulnerable communities with the decisive role of women and young people who are present on site when the incidents occur and will be able to ensure these different actions within the framework of a real and concrete resilience of the communities.

Philippe NARDIN *has an extensive experience (more than 40 years) in Disaster Risk Management and Crisis Management. He has been contributing to develop a better global civil protection network offering a wide range of tools aimed at providing in complex situations a coherent, effective and coordinated response to disasters caused by the impacts of natural hazards.*

He has been the team leader for European Civil protection (EU CP TEAM) in many important disasters in particular for Earthquake in Boumerdes (Algeria) 2003 – 3600 DCD and more than 25,000 casualties and Earthquake and Tsunami of South East-Asia (2004) – Approximately 500,000 people DCD or missing and more than 600,000 Casualties.

In Indonesia, he has been the Head of project for « Strengthening the operational capacity and crisis management capacity of the Indonesian Civil Protection and the National Authorities» after the Earthquake and

tsunami that hit South East Asia on 30 December 2004. In a three years framework, the following activities were carried out:

Strengthening and development of a National Centre for Management of the Catastrophes at BAKORNAS (Indonesian Civil Protection) and capacity building of personnel and staff;

- Development and setting-up of two Operational Rooms for emergency management in Jakarta and Bali and the installation of six Regional Operational Centres of coordination and management of the catastrophes in Aceh, Padang, Jambi, Jakarta, Yogyakarta, Bali;
- Training of personnel involved in response to emergency management at central and regional levels;
- Drafting laws and regulations, emergency plans and standard operating procedures at national and regional level;
- Public awareness and information campaigns for the prevention of disasters.

He was the head of rescue operations in many major crisis operations in France, Europe and the world for natural, technological and man-made disasters (consular protection, consequence of terrorist acts, etc.). He was also the commander of the rescue operations during the hijacking of the aircraft at Marignane airport. He was the coordinator for France, the EU and the United Nations during the evacuation of French and European citizens during the events in Lebanon in 2006.

Philippe was an active professional. He has developed a large network, in France, Europe, the Mediterranean region, the Near and Middle East, in ASEAN states, in France. During his professional career, he has led several European and international training programs and created, with the European Commission, the first training courses for the European Civil Protection Mechanism (HLC, OPM, ...) as well as the first thematic trainings in projects such as EU FIRE 4, EU ACR7, as well as full-scale European and Table-Top exercises in the field of natural or technological hazards as well as terrorist attacks with CBRN involvement. As part of all these activities and the UCPM, he enabled at the European level, the training of more than 6,000 experts at team level, at the highest level of expertise and also providing training for the certification of modules or experts ready to be deployed.

Philippe has been an active professional. He has developed a large network, in France, in Europe, in Mediterranean area, in Middle West, in ASEAN States, in China.

In ASEAN States, he developed an important partnership with the ministries or Agency for Civil Protection in particular for: technical assistance, Disaster prevention and preparedness, development and implementation of Early Warning Systems (EWS), operational capacity building, training on preparedness and response to Natural Technological and made man risks, training on management of response to major emer-

gencies, Preparation of Laws and statutory texts in the Field of the Risk prevention and the organization of Rescue and Emergency;

He directed the European Consortium for the Programme « EU CHINA Disaster Risk Management » “intended to ensure the implementation and the reinforcement of the capacities of the Chinese Government in Crisis Management and Disasters. This programme of a 5 year- duration has started on June 1, 2012, and closed on May 31, 2017. During this period, more than 5,000 Chinese participants were trained in risk management and in operations relating to floods, forest fires, industrial risks, storms through online, virtual or in-person courses.

In addition, since 2021, he has been the director of a major training project for Chinese firefighters (Guangxi region) in the prevention and fight against industrial and petrochemical fires. As well, since August 2023, he has been selected as Team Leader by the Ministries of the Interior and Hydraulics of the Ivory Coast Republic for the design and the development of an operational system for the implementation of emergency measures aiming at the management of disaster crises related to floods and landslides, as well as the implementation of an early warning service for the authorities and populations.

He is deeply convinced that the role of modern civil protection systems is gradually evolving towards a different type of organization. This perspective clearly benefits from his broad experience gained in civil protection and emergency services in Agencies and Ministries.

His view is a result of a shared and increased understanding of what factors contribute to disaster risks, and how those risks can be reduced. Through his career, Philippe has been able to see how multi-hazard mapping and risk assessment towards the design of an effective and efficient decision-making system are among the most challenging steps to understand and build a better resilience to natural disasters. Based on the recent advances in remote sensing techniques, there is a significant increase in natural hazards related studies.

Mourad MAROC

Water in the desert, a new vision towards the protection of resources in the Saharan territories in Algeria, case of study; Fouggaras system of irrigation as a monument to Preserve and Protect.



Algeria belongs to the domain of the Arid diagonal. However, hydraulics does not have the place it deserves as a priority. Compared to the levels of agricultural, industrial and urban development, hydraulics lag far behind, a symptom of distortions in development plans, detrimental to life (water cuts in cities) and to planning. The rigor of the environment is at the origin of cultural systems and spatial organization, which depends on access to water. Being a unique source of life, irrigation, characterized in the Sahara, exists everywhere, where a range of types is exploited depending on the regions and oases. The Sahara has been a true laboratory of irrigation technics. Today, the methods of water supply are uniform, but the arrangement remains as varied as before, perpetuating the initial organization.

The foggara in the Algerian Sahara has often been portrayed as a traditional ingenious but immutable irrigation system incapable of keeping up with the radical socioeconomic and environmental transformations of the 20th and 21st centuries. Yet, oasis populations continue to use a large number of foggaras. The aim of this study was to reveal the importance of institutions in adapting and preserving the living character of foggaras.

Keywords: water, Sahara, laboratory of irrigation technics, Foggara, irrigation system, preserving,

Doctor Mourad MAROC is a professor at the Institute of Architecture and Urbanism University of Blida01. He has more than 23 years of higher education experience, then a permanent associate teacher, he has held more than 25 international conferences through several universities in the world (Canada, Argentina, Paraguay, Iran, Sultana of Oman, Italy, France, Serbia, Tunisia, Romania, etc). in the field of his specialty "ARCHITECTURE in Arid and Saharan Environments". He develops several experiments on techniques of preservation of traditional building materials in the extreme South East of Algeria in the region of

TASSILI N' ajjer.IL Also has articles published in several national and international scientific journals in 04 languages (Arabic, French; English and Spanish). His new area of interest and research is the management of water in arid and Saharan environments see the studies relating to the various systems of preservation of existing underground water in the great south of Algeria. He has the approval of qualified architect of monuments and sites Protected by the Algerian Ministry of Culture. As he is also the head of several projects for the restoration and renovation of ancient cities in the great south of Algeria.

Costas YANNOPOULOS

Best practices in using technology to protect vulnerable populations in crisis and danger



Founded in 1995 by 10-year-old Andreas Yannopoulos, The Smile of the Child (TSoC) is a non-profit organization supporting more than 2.2 million adults and adolescents with tools, technology and other resources.

The Smile of the Child is a leading Greek organization dedicated to protecting children and supporting vulnerable groups which has enhanced its nationwide services through technological innovations.

Focused on safeguarding children at risk and vulnerable adults, the organization has developed tools to support emergency response during natural disasters, crises, and search and rescue operations, in collaboration with state authorities.

'The Smile of the Child' has brought technology to the service of children, of vulnerable groups and of our highly risk of missing fellow human beings in order to find their way back to their families.

Key solutions include:

- the European Missing Alert Automated System, enabling rapid issuance of disappearance alerts (Amber Alert Hellas & Missing Alert Hellas). A system for the production and publication of disappearance materials for Amber Alert Hellas and Missing Alert Hellas, thanks to which TSoC immediately provides the necessary services in order to find the person who is missing and to return him/her safely to their family without losing valuable time.
- a state-of-the-art Mobile Command Center that autonomously coordinates real-time search and rescue efforts. The Mobile Command Center operates as a Coordinating Center in collaboration with the Police, the Fire Brigade and the General Secretariat of Civil Protection and in constant connection and communication with the Operations Center of the Organization 'The Smile of the Child', and the telephone centers of the 4 Help/hotlines that it operates.
- a National Digital Autonomous Communication Network ensuring secure, two-way voice and data communication with GPS tracking.

“National Digital Autonomous Communication Network” is consisted from digital bases and vehicles transceivers, digital mobile transceivers and repeaters across Greece. Depending on its design, “National Digital Autonomous Communication Network” is able to manage up to 15 sites with 1.600 users per site. The “National Digital Autonomous Communication Network” gives the opportunity to the Organization “The Smile of the Child” to help immediately and effectively in case it is required, without depending exclusively on the existing infrastructure of telecommunications providers and to be able to operate autonomously even in cases of emergency, of natural or other disasters and of Search and Rescue Operations.

- a Digital Management and Information System of Volunteers and Collaborating Agencies and Actions, so that in case of Missing or Emergency, the 7.000 certified volunteers of the Organization can be mobilized.

These innovations allow the organisation to respond effectively and independently, even when conventional infrastructure is compromised.

Costas YANNOPOULOS, *President of BoD, The Smile of the Child, born in Athens in 1952, pursued studies in Marketing in the UK while working, graduating from Waltham Forest College and attending Birkbeck, University of London. After returning to Greece in 1980, he became Managing Director of Grundy Electronics Intl SA and later founded a technology business, collaborating with major companies like IBM and Hewlett Packard. His entrepreneurial career paused when his son Andreas was diagnosed with cancer. Honouring Andreas’ vision to support children in need, he founded “The Smile of the Child” in 1995. Under his leadership, the organisation has become a key player in child protection, both nationally and internationally. Yannopoulos also serves as President of the European Antibullying Network and has received several honours, including the European Citizenship Award (2014) and an Honorary Doctorate from the University of Patras (2021) for his lifelong commitment to children’s rights.*

Angiolo MARTINELLI

Is sustainable water use possible?

In all scientific forums and international negotiation contexts, the principle of restoring and protecting the water cycle from source to sea, and managing water resources at the level of river basins—whether national or transboundary—is constantly emphasized.

However, political interests and conflicts between countries sharing such resources often prevent this principle from being implemented where it is most critically needed.

Since the 1980s, Italy, and since 2000, the European Union, have recognized that the management and protection of water resources must be based on river basin or district planning, distinguishing between Flood Risk Management Plans (introduced in Europe in 2007) and Water Resources Management Plans. Water balances, analysis of pressures and impacts, permits and regulation of uses, hydromorphology, and control of priority and hazardous substances form the foundation of these plans.

However, participatory approaches to decision-making—still limited in Italy—are gaining ground, alongside the growing adoption of Nature-Based Solutions (NBS) and Natural Water Retention Measures (NWRM). These approaches focus on green infrastructure and the enhancement of diverse ecological contexts to build greater resilience against floods, droughts, and water scarcity, in alignment with EU Directives, the Green Deal, the Zero Pollution ambition, and the recently published Water Resilience Strategy (WRS) by the European Commission on June 4, 2025.

The WRS prioritizes improving the efficiency of water use—Water Efficiency First—but efficiency and good management alone do not always address the root of water-related challenges.

Reducing network losses and modernizing water infrastructure for all uses is an economically demanding challenge. It requires proper planning, equitable allocation of authorized resources, substantial funding, and—where possible—the digitalization of systems.

In contexts of limited water availability or frequent and prolonged droughts—such as those increasingly affecting the Mediterranean Basin—it is essential to diversify water sources and storage options, and to interconnect water supply systems to allow for better resource management



during crisis periods, when water availability falls below optimal demand. Meeting this need, which calls for both public and private investment—especially by network operators—has been partially supported in Italy by NEXT GEN EU / PNRR funding totaling €4.5 billion. Currently, the Ministry of Infrastructure and Transport (MIT) is implementing interventions under the National Strategic Plan for Water Infrastructures (PNISSI), though resources remain insufficient.

Improving water resilience in Italy is only achievable through interconnected and synergistic actions across multiple sectors, ensuring the sustainable use and circularity of water resources.

Solely improving efficiency and reducing current demand will not be enough to effectively tackle water scarcity.

Climate scenarios in Italy are highly diverse across regions: northern areas experience extreme events and reduced snowpack contributions, while central and southern regions face prolonged droughts. In this context, a coordinated response is essential—covering everything from the interconnection of systems and replacement of outdated infrastructure, to strengthening monitoring of pollution by hazardous substances and nutrients, efficient irrigation management, and development of water reuse systems.

As highlighted in the Water Resilience Strategy itself, its implementation requires significant public and private investment. In this regard, it is vital to establish a targeted financial support system to implement the Water Framework Directive (WFD) and its revisions, as well as related directives. This includes a strong focus on improving water infrastructure, implementing innovative technologies—also aimed at ensuring the security of critical infrastructure—and promoting nature-based solutions for the sustainable management and protection of water resources.

Angiolo MARTINELLI currently serves as Director of the Division for the Sustainable Use of Water Resources and Development of Global Water Initiatives within the General Directorate USSA of the Italian Ministry of the Environment and Energy Security (MASE).

He is an environmental expert with specialized knowledge in geochemistry–geo-hydrology and agriculture–environment.

He began his professional career as an external researcher at the Department of Earth Sciences at the University of Perugia.

He has worked as a consultant for both public administrations and private companies in the fields of water management, land-use planning, and project design.

From 1986 to 2002, he periodically worked in various international cooperation settings, participating in projects and partnerships in several countries (Africa, Latin America, and the Middle East).

From 2004 to 2019, he held executive roles at the Environmental Protec-

tion Agency of the Umbria Region (2004–2011) and later in the Lazio Region. Among his various responsibilities, he was in charge of environmental reporting, monitoring and control of the water cycle, air quality, contaminated sites, IPPC facilities and waste, project development and management, as well as coordination of human and financial resources. He is the author and editor of books on environmental protection and water resource management, as well as various national and international publications on the same topics.



Mario GIULIACCI

Science and Its Role in Environmental Issues

The growing awareness in the field of climate change, as in any other branch of science, largely occurs through in-person cultural meetings like this one, promoted by the “Alta Scuola”.

Indeed, face-to-face encounters among experts in the many different aspects of climate science facilitate the exchange of information based on the most recent research in the field.

Science must make its voice heard, as today environmental issues are too often in the hands of overly ideological movements.

The five major oil producers plan to increase supply by 50% by 2030.

Meanwhile, renewable energies are struggling, both due to high costs and opposition stemming from their impact on the landscape.

As a result, it will likely be impossible to avoid the point of no return between 2035 and 2040, unless fourth-generation nuclear energy is embraced.

Mario GIULIACCI born in Città della Pieve (Province of Perugia), he graduated in Physics and later completed a one-year specialization in Atmospheric Physics at the University “La Sapienza” in Rome.

In 1969, he joined the Italian Air Force Meteorological Service as an officer through a public competition. From 1983 to 1990, he directed the Milan-Linate Meteorological Center with the rank of Colonel.

From 1992 to July 2010, he was in charge of the weather column for *Corriere della Sera* and *La Gazzetta dello Sport*.

From 1986 to 1993, he taught Atmospheric Physics in the Physics degree program at the University of Milan, and from 1994 to 2010, in the Environmental Sciences degree program at the University of Milan-Bicocca.

From 1995 to July 2010, he presented daily video weather forecasts for the Canale 5 news broadcasts at 8:00 a.m. and 8:00 p.m.

In 2012, he launched his own professional weather website:

www.meteogiuliacci.it.

He is the author and/or co-author of around ten publications on meteorology, as well as numerous scientific articles.

Giovanni SELLI Endro MARTINI

Integrated flood and drought
management in small river basins:
the case of the Paglia river



The Paglia River is an Italian river with a basin area of 1,200 km². It originates on Mount Amiata in Tuscany and flows through the regions of Tuscany, Lazio, and part of the Orvieto area in Umbria, before joining the Tiber River downstream of the Corbara Dam. The river passes through several populated areas across the three regions.

Its hydrological regime is torrential and has been described by researchers as “complex and unpredictable.” In July 2012, the river was nearly dry: at the Ponte Adunata station in Orvieto Scalo, the flow rate was



around 0.2 cubic meters per second, a drought that led to the declaration of a state of emergency. On November 12, 2012, at the same station, the flow rate reached approximately 2,800 cubic meters per second—a disastrous flood that caused extensive damage in the Orvieto area and, subsequently, along the Tiber River all the way to Rome. Fortunately, there were no casualties, but the cost of emergency management in Umbria alone (including direct and indirect damages) was estimated at €110 million.

Historically, the Paglia River is known for its floods, high water events, and drought periods. To mitigate the risks associated with floods and droughts—exacerbated by climate crises that lead to flash floods and prolonged dry spells—the Italian Parliament included a “Reservoir Plan” in the 2018 Budget Law. This plan supports the construction of infrastructure to store floodwaters and make them available for various uses during drought periods, including maintaining the river’s ecological minimum flow.

The Central Apennine River Basin Authority, appointed by the Ministry of Infrastructure to oversee the Reservoir Plan, has initiated the drafting of a Technical-Economic Feasibility Study for a system of reservoirs to be built in the Paglia River basin. This initiative is being developed following the outcomes of a Public Debate involving 23 municipalities, 3 provinces, and 3 regions. Alta Scuola is collaborating with the Central Apennine River Basin

Authority to support the public debate process.

At present, the “Feasibility Document of Project Alternatives” has been submitted to the Public Debate. This document includes a series of scenarios and sub-scenarios. The resulting report will outline the hydrological and hydraulic issues of the Paglia basin, the procedure undertaken, the cost-benefit analyses conducted (with initial results), and the participatory processes already launched—particularly through the River Contracts tool. The Public Debate will still be ongoing in the affected areas at the time of the Summer School.

Giovanni SELLI, *current President of Alta Scuola - Cultural and Scientific Association - Research and Studies Centre for the Maintenance and Conservation of Historic Places in Unstable Territories, on the nomination of the President of the Umbria Region, is a self-employed professional who has carried out architectural, structural, geotechnical, plant design and works management activities since 1979, first as a Surveyor and then as an Engineer. He graduated in Civil Engineering at the Sapienza University of Rome presenting a master’s thesis, supervisor prof. Giovanni Calabresi, on “Analysis of a slope in Landslide - The landslide Ivancich in the Municipality of Assisi - Hypothesis of stabilization with deep sinks sub-horizontal”. The professional activity has mainly developed in the post-earthquake reconstruction in Umbria, following the 1984 earthquakes, 1997 and 2016, and also in Abruzzo as a result of the earthquake of 2009. He participated as a volunteer assisting the Civil Protection in the post-earthquake checks 1997, 2009 and 2016. He is director and administrator of voluntary associations and member of associations for the promotion and dissemination of music.*

Endro MARTINI, *Environmental Geologist*

He graduated in Geological Sciences in 1972 from the University of Pisa and joined the Order of Geologists in 1975. After graduation, he worked as a professional in Italy and Algeria from 1972 to 1977. From 1977 to 2010 civil servant of the Umbria Region. Head of the “Geological Sector of the Soil Protection, Quarries, Mines and Mineral Waters Service”, of the “Hydrogeological Risk, Quarries and Environmental Assessments” Service and of the “Territory Enhancement and Landscape Protection, Information Technologies, Promotion and Coordination of Community Projects” Service. Member of the National Geological Committee, of the Technical Committee of the Basin Authorities first of the Arno and then of the Tiber and of the National VIA-VAS Commission. In the 1980s he was in charge of the GNDCl’s Great Risk Franous Events Research Unit. He collaborated in drafting Law 183/89 on soil protection and the Sarno Decree in 1998 on Hydrogeological Structure Plans. Responsible for the Environment and Risk Prevention measure by drafting the Regional Multi-Risk Plan, POR FERS Umbria 2007-

2013. Founder with others of the National Table of River Contracts. Author of more than 60 publications on geological and environmental issues; has given numerous lectures in courses, conferences and congresses in Italy and abroad. Between 2016 and 2023, he promoted and implemented 4 Know-How Exchange projects with Moldova. President of the Alta Scuola from 2012 to 2021. Member of the Italian Society of Environmental Geology where he coordinates the River Contracts Thematic Area at national level. Member of the National Commission of Water Resources of the National Council of Geologists, Member of the Steering Committee of the National Table of River Contracts, Member of IRSEF. He continues to deal with territory, environment, water, river contracts and sustainable development in Italian and transnational projects (UNDP Algeria - Interreg Adrion - KEP Italy, International Summer School Alta Scuola , etc.) both as a freelancer and as a volunteer.

Scientific Director of the International Summer school.

Retired since 2010, he loves music and is a Fiorentina fan.



Nicola BERNI

Emilia-Romagna multirisk early warning system and 2024 Bologna city flood casestudy

The Emilia Romagna Region civil protection “early warning system” (EWS) for weather related criticalities, floods, landslides, coastal and avalanche risks, is commonly considered a “best practice” within the national civil protection service.

The EWS (web portal <https://allertameteo.regione.emilia-romagna.it/>) is composed

by subjects, tools, procedures defined and shared among national and local authorities, aimed at the activities of risk forecasting, warning, monitoring and activation of the civil protection system. Essential functions linked together are:

- 1) the forecast of the expected meteorological, hydrogeological and hydraulic situation and the assessment of the criticality level on the territory connected to the forecasted meteorological phenomena;
- 2) the civil protection “early action” (EA) planned activities at local scale to prepare for the expected scenario and to monitor and manage possible emergencies.
- 3) communication among institutional and non-institutional subjects, people correct behavioral rules for self-protection.

The forecasted meteorological, hydrogeological and hydraulic situation, formulated with the support of physical-mathematical modeling, provides the qualitative and quantitative elements for the evaluation of the risk level, classified into 4 increasing levels with a green, yellow, orange and red color code: each color code, for the different types of phenomena being assessed, is associated with different reference event scenarios and potential effects and damage on the territory. The alert color code corresponds to the activation of the operational phases of attention, pre-alarm and alarm, according to the civil protection planning at different level (from regional to local) for EA (effective and prompt communication is a crucial part of the system). The combination of these functions is expressed in two distinct and successive temporal phases:

- 1) forecasting phase: before the event occurs, which corresponds to the activation of prevention actions aimed at reducing/mitigating possible damage on the territory and preparing for the management of any emergency situations, in reference to civil protection planning;

2) event phase: when the event occurs, which corresponds to the activation of monitoring, contrast and management actions of the emergency in progress.

As case study the recent Bologna town flood of late 2024 is described.

Emilia Romagna faced 4 major floods in last 2 years. Providing targeted and Impact Based Forecasts/Warnings (IBF), especially in a climate change scenario, is a demanding challenge, very difficult to guarantee, but it has to be faced with a shared commitment by every institution involved, together with citizens.

Nicola BERNI, *environmental engineer and Msc in integrated prevention and emergency planning. Currently Manager at Emilia-Romagna Region Agency for Territorial Security and Civil Protection. Previous working experiences: researcher in hydrology at the National Research Council in Perugia (Institute for floods/landslides risk prevention); Head office at Umbria Region Early Warning Centre, Emergency Operation Room and Planning for Civil Protection; participation in many national emergencies and international projects; Senior Project Manager for Cima Research Foundation for UN "Early Warning's For All" initiative in the Greater Horn of Africa. Author of many scientific and technical papers/publications about natural risks prevention and management.*



Marcos Paulo CERETO

Manaus: on a journey through
architecture in water world
*Núcleo Arquitetura Moderna
na Amazônia (Nama)*

Curso de Arquitetura e Urbanismo Faculdade de Tecnologia / Universidade Federal do Amazonas

Prof. Dr. Marcos Cereto

Project team: Angelo Pontes, Alex Martins, Beatriz Atem, Eliana Rego, Ester Komorowski, Isabela Cavalcante, Giova-

na Damasceno, Giovanna Assis, Julia Mendes, Juliana Cambeiro, Maria Eduarda Cohen, Mariana Normando e Nathyele Dias.

The geographical condition of Manaus in Brazil is peculiar within the Amazonian scenario. While the waters have enabled displacements and exchanges between different peoples and cultures from various localities for over 10,000 years¹, human permanence amidst flood and drought periods has become a human challenge in the face of climate emergency. The implementation of European models of economic development and urbanization in the city and region since the 16th century, without considering geographical characteristics, constitutes the object of this work: a rescue of the Amazonian aquatic vocation.

With an estimated population of 2,063,689 and a density of 181.01 inhabitants per square kilometer, the municipality's area is 11,401.09 km², however, the urban and transition area does not cover 10% of the total. Demographic growth was accentuated in two moments: starting from 1850 with the golden age of rubber and later in 1967 with the beginning of activities in the Manaus Free Trade Zone. Urban planning did not keep pace with demographic growth in these two moments and caused various social and environmental problems that persist to this day.

Planning the urban space based on river transport on the Negro River and in the igarapés enables a reconnection of the city with its vocation and a control over the expansion of the urban area. The work presents a Masterplan with intermodal connections at 6 points in the city (Parque das Tribos, Ponta Negra, São Raimundo, Centro, Distrito Industrial, and Puraquequara) along 50 km, starting from the Amazon River, Negro River, Tarumã-Açu River, and igarapé da Bolívia.

Connecting the existing road network to a mass river transport system

- considering a series of necessary interventions to ensure perennial navigation in the igarapés, during both floods and droughts - enhances a new perspective for the waters, altering the consolidated view of them as the back of the urban lot on lands bordering the igarapés. Consolidating the Parque das Tribos and Puraquequara neighborhoods as hubs for modal connection between the north and east zones of the city is a real possibility for reducing urban travel time and CO2 emissions.

The aquatic vocation enhances an amphibious architecture using guidelines suitable for architecture², considering best practices established since the indigenous peoples and Brazilian modern architecture in the Amazon: preserving the sacred soil - without earth movement and with maximum permeability - whether in aquatic or terrestrial environments, with stilts, floating structures, or pilotis; utilizing macro coverings as shelter that protect sand preserves the building from pathologies and people from the elements; applying cross and permanent ventilation in all environments a way to contribute to reducing air conditioning use - enabled by *mosquito* screens; implementing interdependence between the building's floor plan and existing or designed vegetation; and considering cosmology - taking into account the building's shape and solar orientation, to reduce energy consumption.

¹ Neves, E. Ovelho e nova arqueologia amazônica. **Revista USP**, São Paulo, n.44, p.86-111, dezembro/fevereiro 1999-2000.

² Cereto, M. Novos Modernos na Amazônia. In: Valença, M.; Paiva, R. **Arquiteturas Contemporâneas**. 1. ed. Natal: Edufrn, 2024. p. 557-576.

Marcos CERETO is an architect, researcher and Professor of Faculdade de Tecnologia at Universidade Federal do Amazonas (UFAM), Manaus/Brazil. His work focuses on the modern architecture of the Amazon and its national and transnational connections with Latin American cultural institutions. He is a Professor and an Advisor of Architecture an Urbanism Graduate and Professor and Advisor of Design postgraduate Program (PPGD) at UFAM. He is founder of Nama - Núcleo Arquitetura e modernidade na Amazônia and organizes anual Seminars (Sama), since 2016 and Editor of Journal Amazonia Moderna (2017-23) an Journal Docomomo Brasil (2024 -). He is the curator of Contemporary Exhibition Architecture in The Amazon (XAMA), in Brazil, 2018-23, Amazonie en construction - l'Architecture de fleuves volants in Paris, 2019, Resilient Amazonia Architecture in Seoul, South Korea 2021, and one of curator of Bienal Internacional de Arquitetura de São Paulo 2025.

@mcereto | @nama.amazonia | www.nama.ufam.edu.br



Ariel ORTIZ GOMES Maria Margareth ESCOBAR RIBAS LIMA

Pantanal, Its Waters and Its Cultural Heritage



This lecture proposes a reflection on the Brazilian Pantanal from its hydrographic conformation and associated cultural dynamics. It starts from the contextualization of the Plata Basin and the formation of the Paraguay Basin as structuring elements of the Pantanal, highlighting its role in the conformation of the landscape and in the constitution of routes of human occupation over the centuries. Through these waterways, important urban centers such as Asunción, Corumbá, Poconé, Cáceres and Buenos Aires were consolidated, revealing the centrality of water as a vector of settlement and territorial development.

In this context, a cultural heritage strongly linked to the floodable environment is outlined, manifested in practices such as the traditional management of cattle, the Pantanal entourages and the ways of life adapted to the water regime. Also noteworthy is the encounter between indigenous populations – such as the Guató, Cadueles and Terena – and the colonizers, whose interactions forged hybrid knowledge and a unique cultural landscape.

Finally, the lecture discusses strategies and actions aimed at preserving the geographical, environmental and cultural heritage of the Pantanal, emphasizing the urgency of integrated public policies, instruments of territorial protection and appreciation of traditional communities. The objective is to contribute to the permanence and recognition of this biome as a territory of high ecological and sociocultural relevance.

*Speakers: PhD. Maria Margareth Escobar Ribas Lima e Dr. Ariel Gomes
Federal University of Mato Grosso do Sul – BRASIL - UFMS*

Ariel ORTIZ GOMES *Professor of Higher Education at UFMS. Degree in Environmental Engineering. Professor at UFMS. Master's and PhD in Environmental Sanitation and Water Resources (PGTA/UFMS). Visiting Researcher*

at TU Dresden (Germany), in Hydro Science Engineering (2017-18). Coordinated Undergraduate Courses in Environmental Engineering (2021-23) and Environmental Sanitation (2013-15) and Environmental Management (2011-13). Main topics of interest: Environmental and Urban Planning, Statistics, Geoprocessing and Modeling of environmental systems. Experience in studies, reports and projects in the following themes: recovery of degraded areas; hydrological, hydraulic and water quality modeling; solid waste management plan, evaluation and adaptation of effluent treatment systems; expertise in water supply systems. (Text provided by the author) ariel.gomes@ufms.br

Maria Margareth ESCOBAR RIBAS LIMA, Architect and urban planner from Universidade Gama Filho, Rio de Janeiro – RJ - Brazil, 1975-1981; Master in History, Theory and Criticism from the Federal University of Rio Grande do Sul – UFRGS, Porto Alegre – RS - Brazil, 1997–2000, PhD from the Regional Development Program of UNIDERP/ANHANGUERA in Campo Grande - MS – 2011-2016 and beyond -PhD by the Faculty of Fine Arts of the University of Lisbon, in Portugal, in 2019-2020. She is currently an assistant professor at the Federal University of Mato Grosso do Sul, in the Architecture and Urbanism Course (FAENG) teaching classes in the disciplines of History of Art, Architecture and Urbanism and Cultural Heritage. He held the position of Regional Superintendent of the State Superintendence of IPHAN/MS from 1999 to 2011. During the period he was at the head of IPHAN-MS, he worked with the identification of the cultural heritage of Mato Grosso do Sul, when he participated and contributed to the transformation from the 11th Sub-Regional-IPHAN/MS to the Regional Superintendent of the State Superintendence of IPHAN/MS in preservation actions and physical structuring, servers and budget contribution of the then created Superintendence in Mato Grosso do Sul. In 2012 she was honored by the Government of the State of Mato Grosso do Sul at the Festival of South America in Corumbá / MS, in addition to the publication of books and coordinated the Geopark Proposal Bodoquena Pantanal (MS), during the period from 2006 to 2011 .

Massimiliano FAZZINI

Climate risk in the Mediterranean basin: floods and droughts.



The climatic extremes s.l. is undoubtedly the most obvious sign of the current climate crisis underway, particularly in an area characterised by a complex morphology such as the “Mare nostrum”. Due to a series of natural and anthropic variables, the Mediterranean basin is statistically proving to be a climatic hot spot, to such an extent that it represents a natural laboratory for analysing the impacts of climate

change, particularly in its coastal and mid and high mountain areas. Prolonged dry spells alternate with short phases of unstable weather, dramatically affecting the varied and delicate morph climatic systems that characterise its territory. The recent drastic average temperature increase - about 20% higher when compared to the global signal - also contributes to sudden changes in the already precarious morph dynamic balances existing in a geologically “young” land. The impulsive retreat of glaciers, the rise, albeit slight, of the mean sea level, and extensive areas of gradual drying are only some of the most obvious aspects of the effects of the altered climate signal. The greatest challenges therefore become that of finding adaptation in a climate that is changing faster and more dramatically than predicted by simulated climate scenarios. Consequently, exceptional or extraordinary atmospheric events are increasing in frequency and magnitude year after year; more specifically, the meteoric signal causes an exponential increase in problems related to hydraulic and hydrogeological risk and the availability in quantity and quality of water, the planet’s white gold. Consequently, the search for protocols and “tools” to mitigate the climatic s.l. as much as possible. risk for the population becomes a priority intellectual and operational work in one of the most densely anthropised areas of the planet.

Massimiliano FAZZINI

Associate Professor in Climatology and Climate Risk at the University of Camerino and the University of Ferrara, Massimiliano Fazzini is an expert in applied meteorology, geology, and climate change. He holds a degree in Geology and earned a PhD in Applied Geology, Hydrogeology, and Geomorphology with a specialization in Applied Climatology from the University of Perugia.

Fazzini is well known for his work in mountain and snow-related weather fore-

casting. Since 2013, he has served as the official meteorologist for Alpine Ski World Cup races in Cortina d'Ampezzo, also collaborating with the International Ski Federation (FIS) and the Cortina 2021 Foundation. His expertise includes the use of physical-mathematical models, satellite animations, and weather radar to ensure the safety and efficiency of sporting events.

In academia, Fazzini has taught at various Italian and international universities, including Roma Tre University, the University of Siena, the University of Ferrara, and Paris Sorbonne University – Denis Diderot. He is also a national DEKRA certifier for meteorologists and weather technicians and holds meteorologist and snow specialist (nivologist) qualifications from Météo France. From 2006 to 2012, he was a member of the Scientific Council of the International Association of Climatology.

His research focuses on the relationships between climate change, morphoclimatic and morphodynamic systems, with particular emphasis on cold physical environments and urban microclimates. He is the author of about 150 international scientific publications and has participated as a speaker at numerous national and international conferences.



Silvia FABBROCINO

Groundwater Ecosystem Services: challenges and future opportunities

Department of Earth, Environment and Resources Science (DiSTAR), University of Naples Federico II, Naples , Italy

Istituto Nazionale di Geofisica e Vulcanologia (INGV), Sezione di Napoli Osservatorio Vesuviano, Naples, Italy

Groundwater is a vital component of hydrological cycle and support critical ecosystem services worldwide. Groundwater dependent ecosystems (GDEs) are crucial for the survival of life on Earth. They support and directly influence the elements of human well-being, such as safety, health, good social relations, freedom of choice, and action. Each type of GDE offers a range of services, which can be categorized as support, provision, regulation, and cultural.

Groundwater, ecosystems, and human beings can benefit from improved resource management, joint water and land management, natural based solutions, and better ecosystem protection.

Looking towards the future, the critical needs for sustainable groundwater management practices in Italy are examined.

Silvia FABBROCINO. *Aggregate professor of Engineering Geology at University of Naples Federico II and affiliated with the National Institute of Geophysics and Volcanology (INGV)–Vesuvius Observatory, with the Augmented Reality for Health Monitoring Laboratory (ARHeMLab-DI-ETI), and with the inter-university “Center for Studies on Bioinspired Agro-environmental Technology (BAT Center), in 2003 she received a PhD in Environmental and Applied Geology at University of Naples Federico II. First as a member of National Research Group U.O.4.21–CNR-GNDICI and then as assistant professor, she is involved in several research projects, concerning applied geological and hydrogeological problems of porous and fractured media (above all groundwater resources management and safety) developed at the University of Naples. She is also involved in research projects focused on analysis of natural risk (AMRA s.c.a.r.l.;INGV; BAT Center), on augmented reality for health monitoring (ARHeMLab), on thematic cartography (ISPRA) and on seismic vulnerability of distributed infrastructures (Laboratory Stre-*

Ga-University of Molise). Her teaching activities deal with applied geological, geotechnical and hydrogeological themes. She was scientific coordinator of the Project "Groundwater and Energy: a strategy for the sustainable development" and of the Project "The Agri-Food Sustainability Supply Chain for 2030 Agenda" P.O.R. Campania FSE 2014-2020. She was scientific director of the "Cooperation agreement for the implementation of joint actions to protect, promote and develop mineral and thermal waters under municipal jurisdiction between the Municipality of Castellammare di Stabia and the Interdepartmental Research Center "Environment" (C.I.R.A.M.) University of Naples Federico II. She is associate investigator of the Project M.A.C.IN.A. – Multilevel Application for Cultural Information Archives. A focus on the Inner Areas of Abruzzo and Sardinia PNRR Missione 4, «Istruzione e Ricerca» - Componente 2, «Dalla ricerca all'impresa» – Linea di investimento 1,1, Finanziato dall'Unione europea – NextGenerationEU . She is component of the Technical Board of National Association for Soil Bioengineering and of the Water Resources Commission of the Italian National Council of professional geologists (CNG). She is a member of The International Association of Hydrogeologists (IAH/) and of the Italian Geotechnical Association (AGI) She is author of 70 papers, many of them published on national journals and proceedings of national and international conferences.



Rudy ROSSETTO

Managed Aquifer Recharge: a solution to adapt to water scarcity in the context of climate change

Institute of Crop Science
Scuola Superiore Sant'Anna

As climate change intensifies, the European Union and Italy have implemented strategic frameworks to reduce vulnerability and increase adaptive capacity. Among the innovative strategies explored, particular emphasis is placed on the use of non-conventional water resources—such as treated wastewater, desalinated water, and rainwater harvesting—through water banking, or Managed Aquifer Recharge (MAR).

MAR involves the intentional recharge of aquifers with the goal of enhancing water availability, counteracting droughts, reducing land subsidence, mitigating saline intrusion, and supporting groundwater-dependent ecosystems. Drawing on international examples, including large-scale implementations in Australia, Israel, and Spain, the presentation demonstrates MAR's technical viability and flexibility. It outlines systems such as Induced Riverbank Filtration or Soil-Aquifer Treatment, which show how surplus water can be seasonally stored in aquifers and recovered during scarcity.

In Italy, experimental MAR facilities have evolved since the 1960s, gaining momentum with EU co-financed LIFE projects like TRUST, AQUOR, and WARBO. The LIFE REWAT initiative represents a significant step forward, combining natural processes such as rainwater harvesting with technological innovation, including real-time monitoring and automated operations based on hydrological and water quality data. The LIFE REWAT Infiltration basin (in Suvereto, Italy) achieved a storage capacity of up to 1.3 million cubic meters, with 460,000 cubic meters recharged in its first operational year.

MAR is a cost-effective solution—typically costing €1–1.5/m³ compared to €5–6/m³ for reservoirs—with added benefits such as land conservation and potential reuse of salinized aquifers. However, successful implementation demands careful regulation, coordinated investment, environmental monitoring, and capacity building. MAR emerges as a promising tool for adaptive water management in the face of climate

uncertainty. Growing public and institutional interest in MAR, as well as its integration with agricultural policy, highlights its potential for broader application. Disseminating scientific findings and increasing awareness among stakeholders are pivotal to scaling up this approach for sustainable water security.

Rudy ROSSETTO

Researcher at Scuola Superiore Sant'Anna and Coordinator of the Seasonal School and of the Course .

I deal with surface and subsurface hydrology and hold a MSc in Earth Science from Uni. of Pisa (IT), a MSc in Geoenvironmental Engineering from Cardiff Uni. (UK), and a PhD in Engineering Geology from Uni. of Siena (IT).

Main research fields are development and application of GIS integrated groundwater and solute transport numerical models to water management issues (special focus on the Mediterranean environment) and the analysis of functionalities of blue infrastructures (phyto-treatment plants and Managed Aquifer Recharge schemes) for the provision of water related agro-ecosystem services. I coordinated the EU HORIZON 2020 FREEWAT project (FREE and open source software tools for Water resource management www.freewat.eu) and WP8 leader in EU FP7 MARSOL (Managed Aquifer Recharge as a solution to drought and water scarcity www.marsol.eu) Sant'Alessio induced riverbank filtration case study, and the Italian - Israeli bilater project PHARM-SWAP MED (removal of PHARMaceuticals from the Soil-WATER-Plant continuum in MEDiterranean Environment) and scientific/technical coordinator of the EU LIFE REWAT project (www.life-rewat.eu).

Since 2012 I am Co-Editor in Chief of Acque Sotterranee-Italian Journal of Groundwater (<http://www.acquesotterranee.online/index.php/acque>). He will also teach in the groundwater flow modelling Module. More info at https://www.researchgate.net/profile/Rudy_Rossetto



Endro MARTINI

Scientific Director Summer School

Participatory governance tools in risk and water management

Participatory Governance Tools are methodologies and procedures aimed at actively involving all stakeholders (citizens, organizations, public institutions, etc.) in the decision-making processes of an entity or organization.

The objective is to ensure transparency, inclusion, and accountability in decisions,

taking into account different perspectives and interests.

The main tools include:

- **Public Assemblies and Forums:** Meetings open to all citizens to discuss and debate issues of common interest, allowing for the presentation of proposals and collective discussion.
- **Concertation Tables:** Periodic meetings between representatives of different stakeholder groups to define shared goals and strategies.
- **Questionnaires and Surveys:** Tools to collect opinions and feedback from a large number of people, providing useful data for decision-making.
- **Co-design Workshops:** Meetings where citizens, experts, and administrators work together to develop concrete projects and solutions, promoting a collaborative approach.
- **Monitoring Bodies and Oversight Committees:** Entities that monitor the work of an institution and evaluate its compliance with established objectives, ensuring transparency and accountability.
- **Thematic Working Groups:** Sessions focused on specific topics, where participants can explore issues of interest in depth and propose solutions.

The benefits of participatory governance include:

- Greater legitimacy of decisions
- Increased effectiveness of policies
- Improved trust between citizens and institutions
- Promotion of active citizenship

Participation in these processes contributes to shaping more aware and responsible citizens.

In summary, participatory governance is based on the belief that the involvement of all interested parties is essential for making more

effective, fair, and sustainable decisions.

The presentation will detail the River Contract (Contratto di Fiume) as a participatory governance tool in the management of flood risks and water resources.

Endro MARTINI, *Environmental Geologist*

He graduated in Geological Sciences in 1972 from the University of Pisa and joined the Order of Geologists in 1975. After graduation, he worked as a professional in Italy and Algeria from 1972 to 1977. From 1977 to 2010 civil servant of the Umbria Region. Head of the “Geological Sector of the Soil Protection, Quarries, Mines and Mineral Waters Service”, of the “Hydrogeological Risk, Quarries and Environmental Assessments” Service and of the “Territory Enhancement and Landscape Protection, Information Technologies, Promotion and Coordination of Community Projects” Service. Member of the National Geological Committee, of the Technical Committee of the Basin Authorities first of the Arno and then of the Tiber and of the National VIA-VAS Commission. In the 1980s he was in charge of the GNDCI’s Great Risk Franous Events Research Unit. He collaborated in drafting Law 183/89 on soil protection and the Sar-no Decree in 1998 on Hydrogeological Structure Plans. Responsible for the Environment and Risk Prevention measure by drafting the Regional Multi-Risk Plan, POR FERS Umbria 2007-2013. Founder with others of the National Table of River Contracts. Author of more than 60 publications on geological and environmental issues; has given numerous lectures in courses, conferences and congresses in Italy and abroad. Between 2016 and 2023, he promoted and implemented 4 Know-How Exchange projects with Moldova. President of the Alta Scuola from 2012 to 2021. Member of the Italian Society of Environmental Geology where he coordinates the River Contracts Thematic Area at national level. Member of the National Commission of Water Resources of the National Council of Geologists, Member of the Steering Committee of the National Table of River Contracts, Member of IRSEF. He continues to deal with territory, environment, water, river contracts and sustainable development in Italian and transnational projects (UNDP Algeria - Interreg Adrion - KEP Italy, International Summer School Alta Scuola , etc.) both as a freelancer and as a volunteer.

Scientific Director of the International Summer school.

Retired since 2010, he loves music and is a Fiorentina fan.



Raffaele DAVANZO

Architect

Preservation of the cultural heritage
in Orvieto

The special laws for the protection of the historic centers of Orvieto and Todi began in 1978 with Law no. 230, which initially concerned exclusively the problems related to the geological instability of the two cities: the consolidation of the Rupe di Orvieto and the Colle di Todi, both in serious difficulty due to continuous collapses due to water infiltration and landslides. Once the geological sites were made safe, it was established that it was also necessary to intervene on the architectural and historical-artistic heritage of the two cities, which at this point were considered as an unrepeatable unicum: where container and content had to be seen from the same point of view, that of conservation. Various national laws, starting from 1984 and up to 1997, allowed intervention on many buildings, also with the aim of being able to insert or ensure the continuity of important public institutions: municipal buildings, schools, museums, theaters, archives and libraries. But also very important churches, such as the cathedrals of the two cities, San Francesco and San Domenico in Orvieto, San Fortunato and the Temple of the Consolazione in Todi, but also many so-called minor churches for which initially a use as many locations of a widespread Museum for both cities was envisaged: unfortunately this objective failed due to the difficulty of identifying entities or groups that could have managed these initiatives, which instead could have constituted a first example, valid also for many other cities in Italy. On the other hand, the lack of maintenance after the restoration interventions has unfortunately meant that some buildings are now in conditions similar to those that were found in the mid-80s. I would like to mention with regret only the church of San Francesco Orvieto, and the Palazzo Monaldeschi in the same city, formerly home to a highly regarded Art High School.

Raffaele DAVANZO. *After a post-graduate experience (1974) in the university environment of the Department of History and Restoration of the Faculty of Architecture of Florence, as winner of a national competition Davanzo entered as director architect in the Superintendence for Cultural Heritage of Umbria (1979). In particular he dealt with the*

territories of Orvieto, Todi, Amelia and Terni both from the point of view of the specific protection of the heritage (therefore managing the authorizations and the control of private works on protected buildings); but fundamentally as a design architect and director of works of many restoration interventions financed by the Ministry of Culture, also in the context of some Special Laws following earthquakes and for the recovery of the centers of Orvieto and Todi. Among these, various restoration interventions on the Cathedral of Orvieto (facade, various cycles of frescoes, stone surfaces), on San Domenico and on the Town Hall, also in Orvieto; on the municipal buildings of Todi, on the Cathedral and on San Fortunato of Todi, etc. Among other things, he also designed and directed the arrangement of the two municipal libraries of Todi and Orvieto and of the State Archives of Terni, the latter in the fifteenth-century Palazzo Mazzacoli. After retiring, he devoted himself both to direct professional activity and to the study and publication of numerous essays on the history of architecture and restoration. Since 2010, he has been a member of the Board of Directors of the Istituto Storico Artistico Orvietano (which organizes various cultural activities, from conferences to conventions, to the publication of a Bulletin and the magazine Lettera Orvietana, with at least two issues per year). Since 2019 to June 2025, he has also been President of the aforementioned Historical Institute.

Sunday 20 July 2025 | Orvieto
Arrival and opening day

17:00 ORVIETO CONGRESS PALACE:

Opening ceremony. ROUNDTABLE. Light dinner.

20:00 Transfer to Todi (Ciuffelli Technical Institute) and guest accommodation.

Monday 21 July 2025 | Foligno
REGIONAL CIVIL PROTECTION CENTRE
*Civil Protection against natural
and anthropogenic hazards
and conservation of cultural heritage*

09:15-10:45

Greetings from the National Civil Protection Department - ON LINE (TBC)

Stefania TIBALDI (Head of the Civil Protection Service in Umbria)

"The civil protection system in Umbria"

Naima RABAH TOULUM (Director of Studies at the National Delegation for Major Risks. Ministry of the Interior, Local Authorities and Land Planning – Algeria)

"The Algerian strategy for disaster risk management"

COFFEE BREAK - (15 minutes)

11:15-13:00

Daniele SPIZZICHINO (ISPRA, and UNESCO UNIFI Adjunct Chair)

"Conservation and enhancement of cultural heritage: the Italian experience"

Hamet ALPHA DIOP (President of the Association of Young Architects of Mali)

"Conservation and enhancement of cultural heritage in Mali"

Constantino KOUNAS (LARES ITALY)

"The Culture of Prevention: The Experience of LARES Italia"

PACKED LUNCH

Afternoon / Evening Activities

14:30

Bus transfer to Spoleto

15:30

Visit to the Rocca Albornoza accompanied by the mayor of Spoleto Andrea Sisti

17:30

Return to Todi for dinner. Free evening

Tuesday 22 July 2025 | Todi
*Renovation and consolidation of existing buildings
and urban regeneration after earthquake*

09:15-10:45

Gianluca LOFFREDO (Deputy Commissioner Reconstruction Italian Earthquake 2016)

"Post-earthquake reconstruction: problems and solutions"

OPEN MIC DISCUSSION

COFFEE BREAK - (15 minutes)

11:15-13:00**Diego ZURLI** (Scientific Committee for New Generations in Umbria)*"Methodologies for adapting human space to changes induced by natural events: urban regeneration and re-habitation of settlements affected by seismic events: case history"***Gianluca FAGOTTI** (Head of the Reconstruction Service Umbria Region)*"Reconstruction after the earthquake ... and not only: the case of Castelluccio di Norcia"*

LIGHT LUNCH

Afternoon / Evening Activities**15:00**

Technical visit to the consortium's clay quarry and factory POROTON T2D to Todi. Production of earthenware, bricks for civil construction, hollow bricks and blocks for bearing masonry using innovative technologies.

18:00*Back to the ISTITUTO CIUFFELLI.*

DINNER. FREE EVENING

Wednesday 23 July 2025 | Assisi
MORNING REPORTS | AFTERNOON ROUND TABLE
"SISTER WATER" - International conference on water
Climate change adaptation strategies -
Civil Protection strategies in water management

09:00 am Reception

HALL OF CONCILIATION IN ASSISI made available by the City of Assisi

09:30 INSTITUTIONAL GREETINGS**Valter STOPPINI** (*Mayor of Assisi*)**Stefania PROIETTI** (*President of Umbria Region*)**Fabrizio LEGGIO** (*Councillor, Municipality of Assisi*)**Fra Marco MORONI** (*Custodian of the Sacred Convent of Assisi*)**Danilo CALABRESE** (*LARES ITALIA President*)**Giovanni SELLI** (*Alta Scuola President*)Video Message by **Mario TOZZI** (*Science Communicator, Researcher at the Italian National Research Council (CNR) and Geology Expert*)**10:00** TO FOLLOW: Reports**Fausto GUZZETTI** (*Istituto di matematica applicata e tecnologie informatiche "Enrico Magenes", Genova, Italy*)*"Geo-Hydrologic Hazards and Risk in a Changing Climate"***Philippe NARDIN** (*CIVPROM International SAS, France*)*"Climate change adaptation: strategies in water management"*

COFFEE BREAK - (15 MINUTES)

11:15-13:00**Mourad MAROC** (*University Blida 01 Algeria*)*"Faults and earthquakes: a geological approach to seismology". "Water in the desert, a new vision towards the protection of resources in the Saharan territories in Algeria, case of study; Fougara system of irrigation as a monument to Preserve and Protect"*

Costas YANNOPOULOS (*President of the Board of Directors, The Smile of the Child*)
"Best practices in using technology to protect vulnerable populations in crisis and danger"

Angiolo MARTINELLI (*Head of Div V Ministry for the Ecological Transition ITALIA*)
"Is sustainable water use possible?"

MODERATE by *Alta Scuola*

LIGHT LUNCH

Afternoon / Evening Activities

14:30-16:30

ADAPTATION OF WATER MANAGEMENT TO CLIMATE CHANGE

Technical and Institutional Round Table - INTRODUCED and MODERATE by

Endro MARTINI (*Alta Scuola*)

Costantino KOUNAS (*LARES Italia*)

PARTICIPANTS

Video Message by **Mario GIULIACCI** (*Meteorologist and Science Communicator*)

Marcos CERETO (*Federal University of Amazonas - Manaus- Brazil*)

Hamet ALPHA DIOP (*President of the Association of Young Architects of Mali*)

Marco MARCHETTI (*Foundation Sorella Natura - Assisi*)

Andrea SISTI (*President of Umbria Waste and Water Authority and Agronomist World Academy Foundation President*)

OPEN MIC DISCUSSION

CONCLUSIONS OF **Thomas DE LUCA** (*Assessor for the Environment, Energy and Territorial Planning, Climate Change Mitigation of the Umbria Region*)

16:30

GUIDED CITY VISIT OFFERED BY THE MUNICIPALITY OF ASSISI

18:00

FREE EVENING AND FREE DINNER

21:30

Transfer by bus from Assisi to Todi, return to ISTITUTO CIUFFELLI

Thursday 24 July 2025 | Orvieto ALTA SCUOLA HEADQUARTER Floods risk and water management

08:00 am Transfer by bus from Todi to Orvieto

09:15-10:45

Giovanni SELLI (*Alta Scuola President*)

Endro MARTINI (*Scientific Director Summer School*)

"Integrated flood and drought management in small river basins: the case of the Paglia river"

Nicola BERNI (*Regional Civil Protection Agency Emilia Romagna*)

"The floods in Emilia-Romagna in 2023 and 2024"

COFFEE BREAK - (15 minutes)

11:15-13:00

Marcos CERETO (Federal University of Amazonas - Manaus)
"Manaus: on a journey through architecture in water world"
 VIDEO PRESENTATION by

Margareth ESCOBAR RIBAS LIMA (UFMS - Univ. Federal de Mato Grosso do Sul)
Ariel ORTIZ GOMES (UFMS - Universidade Federal de Mato Grosso do Sul)
"Pantanal, Its Waters and Its Cultural Heritage"

OPEN MIC DISCUSSION

Among organisers, speakers and leaders of participating delegations

PACKED LUNCH

Afternoon / Evening Activities

15:00

Bus transfer from Orvieto to Todi

16:00

TECHNICAL VISIT TO TODINI - PRESTIGIOUS WINERY AND AGRICULTURAL ESTATE
 Return to the ISTITUTO CIUFFELLI

DINNER - FREE EVENING

Friday 25 July 2025 | Orvieto
ALTA SCUOLA HEADQUARTER
Adaptive water management
in the era of climate change (floods and droughts)

08:00 am Transfer by bus from Todi to Orvieto

09:15-10:45

Massimiliano FAZZINI (climatologist UNICAM)

"Climate risk in the Mediterranean basin: floods and droughts"

Silvia FABBROCINO (CNG University of Naples Federico II Department of Earth Sciences, Environment and Resources)

"Groundwater ecosystems and their services: the challenge for the future"

COFFEE BREAK - (15 minutes)

11:15-13:00

Rudy ROSSETTO (Institute of Crop Science - Scuola Superiore Sant'Anna)

"Managed Aquifer Recharge: a solution to adapt to water scarcity in the context of climate change"

Endro MARTINI (Scientific Director Summer School)

"Participatory governance tools in risk and water management"

PACKED LUNCH

Afternoon / Evening Activities

14:30-15:30

Raffaele DAVANZO (Former President of the Orvietano Historical and Artistic Institute)
"Preservation of the cultural heritage in Orvieto"

15:30-16:30

Visit to the Cultural Heritage in Orvieto

19:00

Transfer by bus from Orvieto to Todi - Return to the Istituto Ciuffelli

DINNER - FREE EVENING

Saturday 26 July 2025
TERNI-MARMORE

09:00- 15:00

Visit to the Marmore Waterfalls

(Report on the Piediluco – Marmore - Nera River Contract)

PACKED LUNCH

Afternoon / Evening Activities
TODI: CITY HALL

16:30

Closing Ceremony.

ROUNDTABLE

PARTICIPANTS:

Institutions, partners, sponsors, heads of foreign delegations

DELIVERY CERTIFICATES OF PARTICIPATION

APERITIF WITH LIGHT DINNER

Sunday 27 July 2025

DEPARTURE FROM TODI FOR THE RETURN HOME



con l'Alto patrocinio di



Ministero degli Affari Esteri
e della Cooperazione Internazionale



AGENZIA ITALIANA
PER LA COOPERAZIONE
ALLO SVILUPPO



CITTÀ DI
ASSISI

SEMPER PARATI SEMPER VIGILANTES



Comune di Orvieto



Comune di Todi



Comune di Terni



Regione Umbria

Evento organizzato in collaborazione con
LARES Italia e Consiglio Nazionale dei Geologi



UNIONE NAZIONALE LAUREATI
ESPERTI IN PROTEZIONE CIVILE



CONSIGLIO NAZIONALE
DEI GEOLOGI

Sostenitori



Comune di Todi



Comune di Orvieto

Con il patrocinio di:



Museo Multimediale
Cascata delle Marmore





www.altascuola.org



design: graphisphaera.it