



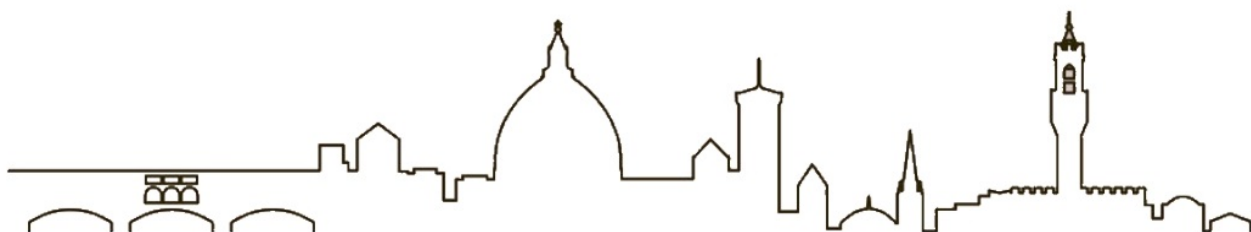
**ISRS 2023**

# **15<sup>th</sup> International Symposium on River Sedimentation**

**Sustainable Sediment Management in a changing Environment**

Florence, 5-8 September 2023

**FINAL PROGRAM**



# CONTENTS

**ABOUT THE SYMPOSIUM** *page 2*

**TOPICS OF THE 2023 SYMPOSIUM** *page 3*

**ORGANIZATION** *page 4*

**KEYNOTE SPEAKERS** *page 5*

**PROGRAM OVERVIEW** *page 6*

## **PROGRAM**

**Tuesday, Sept 05** *page 7*

**Wednesday, Sept 06** *page 7*

**Thursday, Sept 07** *page 12*

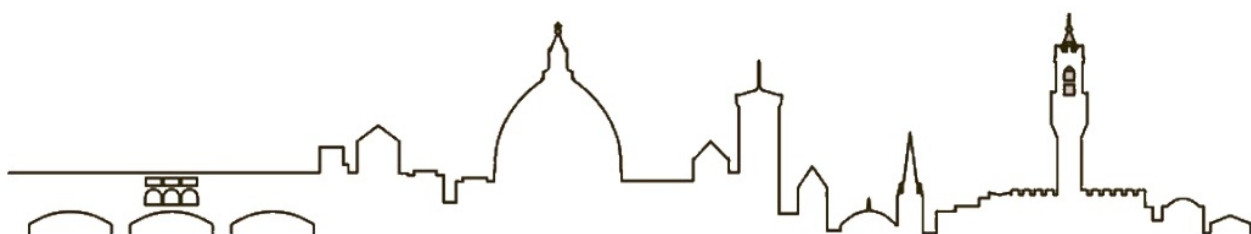
**Friday, Sept 08** *page 17*

**POSTERS** *page 18*

**TECHNICAL VISITS** *page 21*

**GENERAL INFORMATION** *page 23*

**ACKNOWLEDGEMENTS** *page 26*



## ABOUT THE SYMPOSIUM

The International Symposium on River Sedimentation (ISRS) is a triennial event initiated in 1980 by the Chinese Hydraulic Engineering Society (CHES) with the support of UNESCO. The objective of ISRS is to provide a forum for scientist, engineers, researchers, and decision makers to exchange ideas, research results, advanced techniques, and to share their experiences and information on sediment study and management. The International Research and Training Center on Erosion and Sedimentation (IRTCES) in Beijing is the permanent secretariat of ISRS. The WASER (World Association for Sediment and Erosion Research) was inaugurated at the 9th ISRS in 2004, and the ISRS has been served as the official symposia of WASER since then. The first ISRS was held in Beijing (China), after that it moved to various countries across the world including U.S.A., India, Germany, Russia, South Africa.

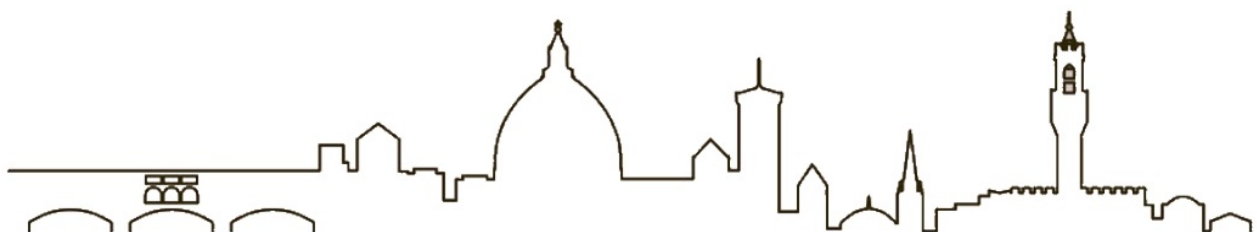
The 2023 symposium entitled '*Sustainable Sediment Management in a changing Environment*' is hosted in Florence (Italy), and organized jointly by the University of Florence and the University of Padua.

Florence, a UNESCO heritage site and an internationally visited tourist attraction, is crossed by the Arno River. In its history, Florence was hit by several disastrous floods; the most recent 1966 flood caused many deaths and severe damage to many of its most precious art works and threatened the economic and social viability of the city and its residents. Recently, the Arno River has been made the object of thorough monitoring activities and engineering evaluations about the interactions between the river structures, flow hydraulics and bed sediment dynamics. The Arno River and its basin thus provides an excellent demonstration on typical sediment-related problems and sediment management approaches in Italy.

The Local Organizing Committee warmly welcomes participants, speakers, sponsors, supporters and the entire scientific community.

Luca Solari  
Chairperson of the Local Organizing Committee  
University of Florence, Italy

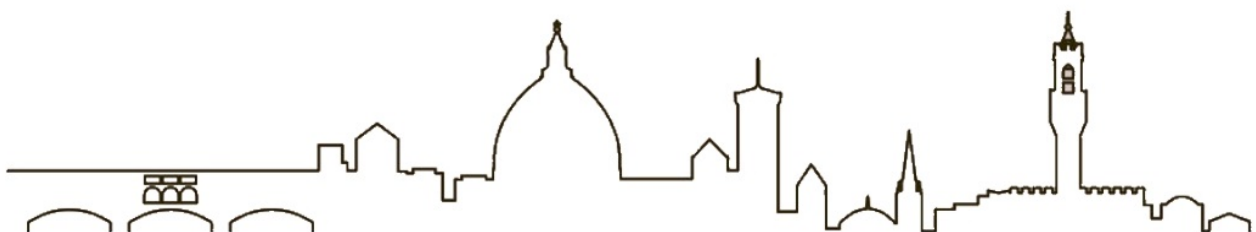
Stefano Lanzoni  
Co-Chairperson of Local Organizing Committee  
University of Padua, Italy



## TOPICS OF THE 2023 SYMPOSIUM

The conference will be organized with parallel sessions that include these topics:

- Sediment and pollutant transport.
- Morphodynamics.
- Ecohydraulics.
- Sediment related disaster and climate change.
- Reservoir sedimentation, interactions between sediment and hydraulic structures.
- Sustainable sediment management at the river-coastal basin scale.
- Social, economic and political issues related to sediment and water management.



## ORGANIZATION

### LOCAL ORGANIZING COMMITTEE

Luca Solari, Chair, Dpt. of Civil and Environmental Engineering, University of Florence  
Stefano Lanzoni, Co-chair, Dpt. of Civil, Environmental and Architectural Engineering, University of Padua  
Costanza Carbonari, Dpt. of Civil and Environmental Engineering, University of Florence  
Lorenzo Cappietti, Dpt. of Civil and Environmental Engineering, University of Florence  
Giampaolo Di Silvio, Dpt. of Civil, Environmental and Architectural Engineering, University of Padua  
Simona Francalanci, Dpt. of Civil and Environmental Engineering, University of Florence  
Giovanni Gigli, Dpt. of Earth Sciences, University of Florence  
Lorenzo Innocenti, Dpt. of Civil and Environmental Engineering, University of Florence  
Lorenzo Lotti, Dpt. of Civil and Environmental Engineering, University of Florence  
Enio Paris, Dpt. of Civil and Environmental Engineering, University of Florence  
Massimo Rinaldi, Dpt. of Earth Sciences, University of Florence  
Veronica Tofani, Dpt. of Earth Sciences, University of Florence

### INTERNATIONAL ADVISORY COMMITTEE

Helmut Habersack, Austria – Chair	Benjamin van der Waal, South Africa
Subhasish Dey, India – Vice Chair	Mengzhen Xu, China
Cheng Liu, China – Vice Chair	Guang-Quan Liu, China
Weiming Wu, USA – Vice Chair	Hong-Wei Fang, China
Jos Brils, Netherlands	Wensheng Zhang, China
Valentin Golosov, Russia	Zhao-Yin Wang, China
Qing He, China	Des Walling, UK
Bruce Melville, New Zealand	Giampaolo Di Silvio, Italy
Jean Minella, Brazil	Junke Guo, USA
Luca Solari, Italy	

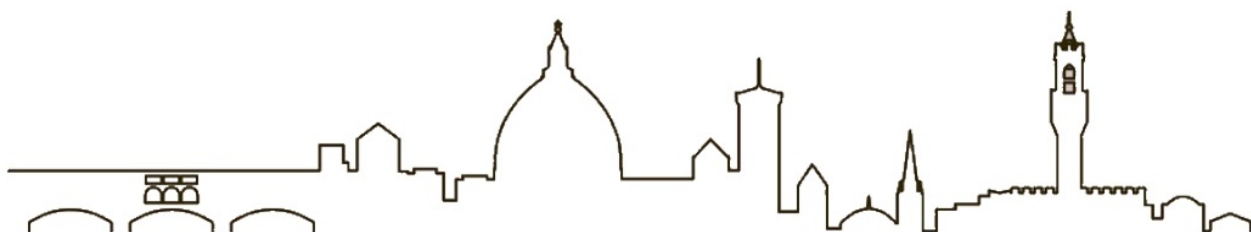
### SCIENTIFIC SECRETARIAT

Costanza Carbonari, Dpt. of Civil and Environmental Engineering, University of Florence  
[info@isrs2023.it](mailto:info@isrs2023.it)

### ORGANIZING SECRETARIAT



AIM Group International /Florence Office  
Viale G. Mazzini, 70 – 50132 Florence, Italy  
Ph. +39 055 233881 / fax +39 055 2480246  
[isrs2023@aimgroup.eu](mailto:isrs2023@aimgroup.eu)



## KEYNOTE SPEAKERS



### **Delta development and artificial land creation with sediment**

***Zhaoyin Wang and Mengzhen Xu***

Professor in Tsinghua University (China) and the Chairman of the Advisory Council of the International Research and Training Center on Erosion and Sedimentation (UNESCO).



### **Role of bed level variability on tracer dispersal in an equilibrium bed**

***Enrica Viparelli***

Professor in the Department of Civil and Environmental Engineering at the University of South Carolina (USA).



### **Entrainment, transport and mixing of fine iron mine tailings in the Paraopeba River, Brazil**

***Marcelo H. Garcia***

M.T. Geoffrey Yeh Chair in Civil Engineering and Professor and Director of the “Ven Te Chow” Hydrosystems Laboratory at the University of Illinois Urbana-Champaign (USA).



### **Modelling river bedform evolution**

***Junke Guo***

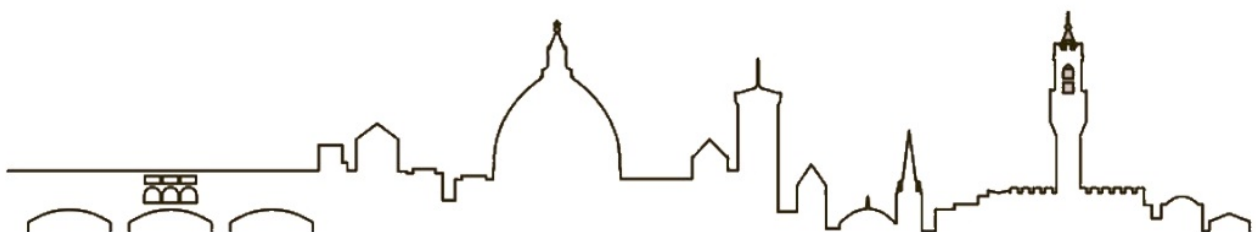
Associate Professor in the Department of Civil and Environmental Engineering at the University of Nebraska—Lincoln, USA



### **Accounting natural variability in 1D bedload prediction: a field case study**

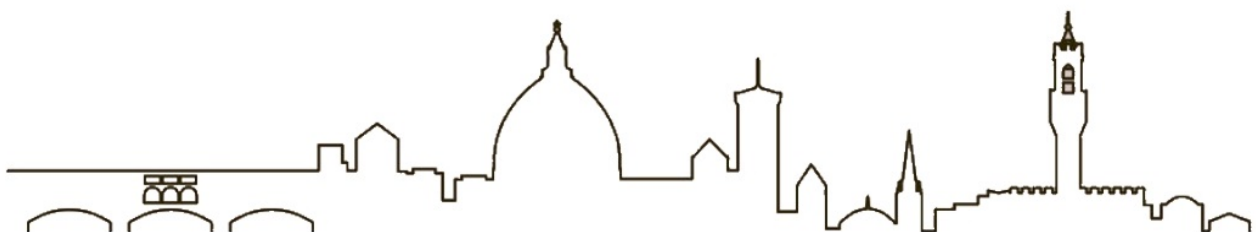
***Alain Recking***

Research Engineer at INRAE, France, and currently carries out his research at the Institute for Geoscience and Environment (IGE) in the Grenoble Alps University.



# PROGRAM OVERVIEW

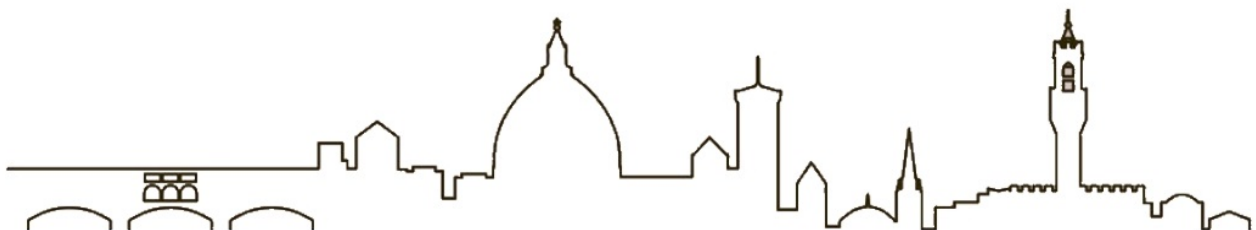
Time	Tuesday Sept. 05	Wednesday Sept. 06	Thursday Sept. 07	Friday Sept. 08
8:30 - 9:00		Opening and welcoming	KEYNOTE - Marcelo Garcia	Technical visit 1: Bilancino reservoir Gathering: entrance of Hotel Mediterraneo
9:00 - 9:30		KEYNOTE - Enrica Viparelli	Parallel sessions 5A,B	
9:30 - 10:00		Session 1A	Coffee Break   Poster Session	Lunch
10:00 - 10:30				
10:30 - 11:00		Parallel sessions 2A,B	KEYNOTE - Zhayin Wang	Lunch
11:00 - 11:30		Lunch   Poster Session	Lunch   Author/Reviewer workshop	
11:30 - 12:00		Parallel sessions 3A,B	Parallel sessions 6A,B	Technical visit 2: San Niccolò hydroelectric plant Gathering: entrance of Hotel Mediterraneo
12:00 - 12:30				
12:30 - 13:00		KEYNOTE - Junke Guo	KEYNOTE - Alain Recking	Closing
13:00 - 13:30		Coffee Break   Poster Session	Coffee Break   Poster Session	
13:30 - 14:00		Parallel sessions 4A,B	Parallel sessions 7A,B	
14:00 - 14:30				
14:30 - 15:00		Social drink	Awards and announcements	
15:00 - 15:30	Registration   WASER Council			
15:30 - 16:00				
16:00 - 16:30				
16:30 - 17:00				
17:00 - 17:30				
17:30 - 18:00				
18:00 - 18:30				
18:30 - 19:00				
19:00 -	Welcome reception at <i>Circolo Canottieri</i>			



# PROGRAM

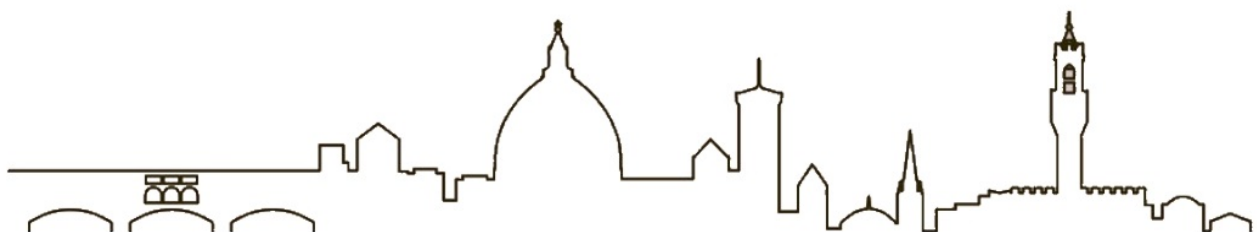
Tuesday, Sept 05	
15:00- 18:00	Registration
19:00	<p><b>Welcome Reception</b></p> <p><i>Venue: Circolo Canottieri - Ponte Vecchio</i></p>

Wednesday, Sept 06	
8:30- 9:00	<b>Opening and welcoming</b>
9:00- 10:00	<p><b>KEYNOTE TALK</b></p> <p>Role of bed level variability on tracer dispersal in an equilibrium bed</p> <p><b>Enrica Viparelli</b></p>
	<p><b>Session 1A: Sediment transport</b></p> <p><b>chair: Stefano Lanzoni</b></p>
10:00- 10:20	<p>Sediment budget and transport changes at the Danube, Niger and Mekong rivers</p> <p><b>Helmut Habersack</b></p> <p><i>University of Natural Resources and Life Sciences, Vienna, Austria</i></p>
10:20- 10:40	<p>Sediment storage control of fluvial sediment transport in gravel bed streams</p> <p><b>Marwan Hassan</b></p> <p><i>The University of British Columbia, Vancouver, Canada</i></p>
10:40- 11:00	<p>Contrasting fluvial responses to large dam removals with and without sediment management</p> <p><b>Amy East</b></p> <p><i>U.S. Geological Survey Pacific Coastal and Marine Science Center, USA</i></p>
11:00- 11:30	Coffee Break
	<p><b>Session 2A: Sediment and pollutant transport</b></p> <p><b>chair: Mengzhen Xu, Joongcheol Paik</b></p>
11:30- 11:42	<p>Sediment transport and associated pollutant release in rivers and lakes</p> <p><b>Lei Huang</b></p> <p><i>Tsinghua University, China</i></p>
11:42- 11:54	<p>Sediment entrainment in two urban gravel bed rivers</p> <p><b>Amelia Remers</b></p> <p><i>University of Salford, UK</i></p>
	<p><b>Session 2B: Sediment related disasters and climate change</b></p> <p><b>chair: Cheng Liu, Maggie J Creed</b></p>
	<p>Experiments of natural hazard mitigation and ecological restoration in an artificial step-pool channel</p> <p><b>Kehan Huang</b></p> <p><i>Tsinghua University, China</i></p>
	<p>Influence of debris flows on river sedimentation</p> <p><b>Maohua Le</b></p> <p><i>China Institute of Water Resources and Hydropower Research</i></p>

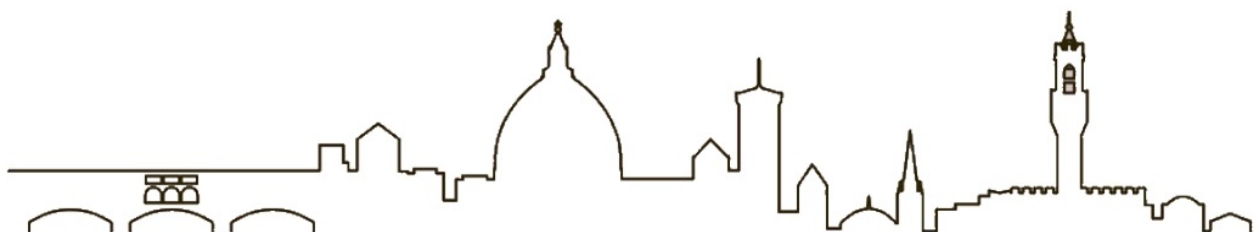




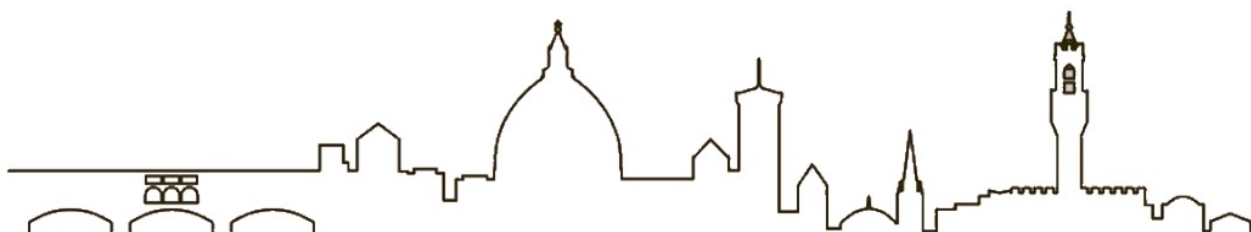
11:54- 12:06	<p>Experimental investigation on the effect of turbulence on sediment transport: set-up and preliminary results</p> <p><b>Daniel Rebai</b> <i>Politecnico Milano, Italy</i></p>	<p>Predicting landslide dam outburst flood peak discharge</p> <p><b>David C. Froehlich</b> <i>Consulting Engineer, Cary, USA</i></p>
12:06- 12:18	<p>Hyperconcentrated flow and flood disaster prevention in the Yellow River basin</p> <p><b>Junhua Li</b> <i>Yellow River Institute of Hydraulic Research, China</i></p>	<p>Climate change and sediment transport: risk mitigation for shallow water offshore foundations</p> <p><b>Ana Margarida Bento</b> <i>University of Porto, Portugal</i></p>
12:18- 12:30	<p>Numerical modelling of hyperconcentrated flows in the Xiliugou River</p> <p><b>Ruixun Lai</b> <i>Yellow River Institute of Hydraulic Research, China</i></p>	<p>Research Review on the Secondary Suspended River in the Lower Yellow River</p> <p><b>Linjuan Xu</b> <i>Yellow River Institute of Hydraulic Research, China</i></p>
12:30- 13:50	Lunch	Poster Session
	<b>Session 3A: Sediment and pollutant transport</b> <i>chair: Weiming Wu</i>	<b>Session 3B: Morphodynamics</b> <i>chair: Luca Carniello, Costanza Carbonari</i>
13:50- 14:02	<p>Flow Competence and Critical Shear Stress in Coarse-Bed Streams</p> <p><b>David C. Froehlich</b> <i>Consulting Engineer, Cary, North Carolina, USA</i></p>	<p>On the eigenvalues of the Saint-Venant and Exner system of equations</p> <p><b>Hasan Eslami</b> <i>Politecnico Milano, Italy</i></p>
14:02- 14:14	<p>Characteristics of sediment concentration in Yanguan section of Qiantang River Estuary based on measured data before the main flood season</p> <p><b>Jiahao Xu</b> <i>Zhejiang University of Technology, China</i></p>	<p>An experimental analysis of channel bed aggradation due to sediment overloading in near-critical flow conditions</p> <p><b>Hasan Eslami</b> <i>Politecnico Milano, Italy</i></p>
14:14- 14:26	<p>Suspended sediment monitoring in a river with a hyperband acoustic profiler, example on the Rhône and Isère river in France</p> <p><b>Stéphane Fischer</b> <i>UBERTONE, France</i></p>	<p>How is the length of symmetrical branches affecting the stability of riverine bifurcations?</p> <p><b>Lorenzo Durante</b> <i>University of Genoa, Italy</i></p>



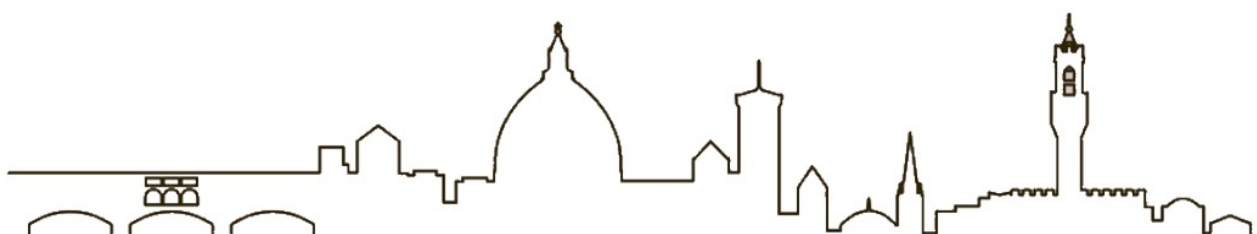
14:26- 14:38	Suspended sediments open the way to microplastic sedimentation in shallow aquatic systems  <b>Mirco Mancini</b> <i>University of Girona, Spain</i>	Pool-riffle morphodynamics in response to varying sediment supply  <b>Yunlong Lei</b> <i>Tsinghua University, China</i>
14:38- 14:50	Suspended sediment monitoring using acoustic backscatter in rivers  <b>Céline Berni</b> <i>INRAE, France</i>	Characteristics of drag forces acting on a step-pool unit  <b>Chendi Zhang</b> <i>Chinese Academy of Sciences, China</i>
14:50- 15:02	Mud transport in rivers – settling velocity and interactions with the bed  <b>Kyle Strom</b> <i>Virginia Tech, USA</i>	Temporal variations in boulder mobility and bed mobility controlled by episodic sediment supply in a step-pool channel  <b>Jiamei Wang</b> <i>Tsinghua University, China</i>
15:02- 15:14	Experimental study on sheet flow sediment transport of fine silt  <b>Liqin Zuo</b> <i>Nanjing Hydraulic Research Institute, China</i>	Planform Dynamics and cut off of the wandering reach in Lower Yellow River After 1999  <b>Min Zhang</b> <i>Yellow River Institute of Hydraulic Research, China</i>
15:14- 15:26	Gravity currents as a pathway to segregate transport of microplastics  <b>Marianna Soler</b> <i>University of Girona, Spain</i>	Cumulated morphological evolution of the urban area when considering the levee failure  <b>Xiaoli Zhang</b> <i>Yellow River Institute of Hydraulic Research, China</i>
15:30- 16:30	<b>KEYNOTE TALK</b> Modelling river bedform evolution <b>Junke Guo</b>	
16:30- 17:00	Coffee Break	Poster Session
	<b>Session 4A: Sediment and pollutant transport</b> <b>chair: Kyle Strom, Jordi Colomer</b>	<b>Session 4B: Ecohydraulics</b> <b>chair: Teresa Serra, Riccardo Rainato</b>
17:00- 17:12	Effect of Freeze-Thaw Action on Bedload Sediment Transport Rate of Rivers in Cold Regions  <b>Wang Le</b> <i>North China Electric Power University, China</i>	River type-specific approach to quantify clogging based on multiple parameters  <b>Alcides Aybar Galdos</b> <i>Karlsruhe University of Applied Science, Germany</i>



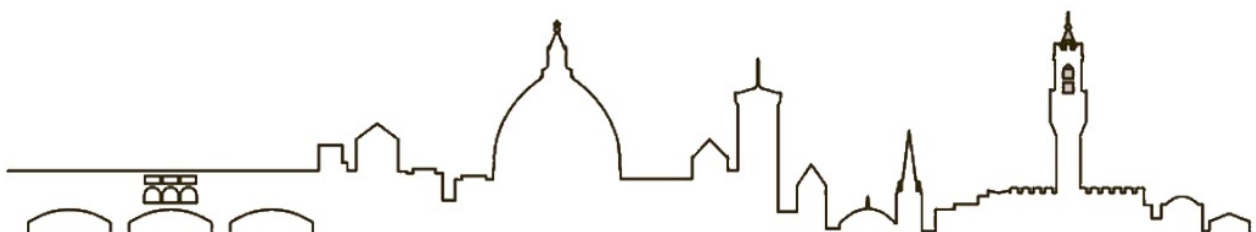
17:12- 17:24	<p>Impacts of ice cover on river sediment transport</p> <p><b>Hui Fu</b> <i>Institute of Water Resources and Hydropower Research, China</i></p>	<p>Establishment and evaluation of water ecosystem model: a case study of the lower reaches of Jinsha River</p> <p><b>Lu Yongjun</b> <i>Nanjing Hydraulic Research Institute</i></p>
17:24- 17:36	<p>Hydraulic characteristics and simulation of river ice processes in the Yellow River</p> <p><b>Xinlei Guo</b> <i>Institute of Water Resources and Hydropower Research, China</i></p>	<p>The research of the influence of hydrodynamic variation in tidal reach on mangrove</p> <p><b>Sun Jieying</b> <i>Waterway and Sedimentation Engineering of Ministry of Transport, China</i></p>
17:36- 17:48	<p>Turbulent Characteristics of Flow in Wide and Narrow Alluvial Channels</p> <p><b>Sukhjeet Arora</b> <i>IIT Guwahati, India</i></p>	<p>Application of artificial step-pools in natural hazard mitigation and river restoration</p> <p><b>Mengzhen Xu</b> <i>Tsinghua University, China</i></p>
17:48- 18:00	<p>Evaluation of continuous sand flux time-series downstream of a dam during a flushing event</p> <p><b>Benoît Camenen</b> <i>INRAE, France</i></p>	<p>Modeling hydraulic habitat suitability of the Ganga River</p> <p><b>Kumar Gaurav</b> <i>Institute of Science Education and Research, India</i></p>
18:00- 18:12	<p>The applicability of the analytic solutions for suspended sediment in waves with different boundary conditions and diffusivity</p> <p><b>Yiqin Xie</b> <i>Institute of Water Resources and Hydropower Research, China</i></p>	<p>Estimation of the plant-induced turbulent kinetic energy from the perspective of vortex dynamics</p> <p><b>Ke Xiang</b> <i>Tsinghua University, China</i></p>
18:12- 18:24	<p>Influence of suspended sediment diameter on the sediment concentration profile</p> <p><b>Qian-lu Xiao</b> <i>Yellow River Institute of Hydraulic Research, China</i></p>	<p>Hydro-morphological and ecological effects of a sediment pulse in a regulated Alpine river developed for hydropower</p> <p><b>Livia Servanzi</b> <i>University of Insubria, Italy</i></p>
18:24- 18:36	<p>Laboratory investigation on the evolution of silty beach profile beneath the piled wharf considering ship berthing</p> <p><b>Li Bin</b> <i>Dalian University of Technology, China</i></p>	<p>Interactions between flow and submerged flexible vegetation: from the plant scale to the canopy scale</p> <p><b>Guojian He</b> <i>Tsinghua University, China</i></p>



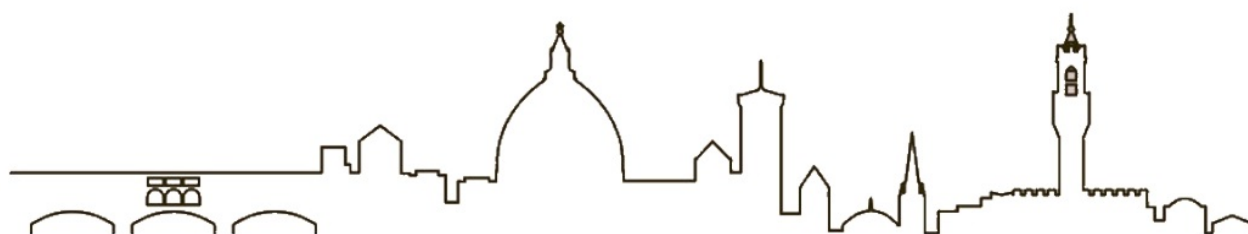
18:36- 18:48	<p>An update of the in-situ coastal experiment to continue assessing the performance and design of geotextile sandbag structure</p> <p><b>Li Yongqing</b> <i>Dalian University of Technology, China</i></p>	<p>Experimental study and simplified analysis method on river flood discharge evaluation for various bank vegetation</p> <p><b>Jiazhen Li</b> <i>Institute of Water Resources and Hydropower Research, China</i></p>
18:48- 19:00	<p>Contribution of field observations on sand-bed open-channel flows in Haiti to the study and prediction of the value of Coles' wake-strength parameter <math>\Pi</math></p> <p><b>Michel A. Verbanck</b> <i>Université Libre de Bruxelles, Belgium</i></p>	<p>Responses of COD Distribution to Floods in Jinmeng Bay, China</p> <p><b>Wang Dan</b> <i>Tongji University, China</i></p>
19:00- 19:12	<p>Sediment stratification and mixing in the Qiantang Estuary in September 2019</p> <p><b>Qiu-Shun Wang</b> <i>Zhejiang Institute of Hydraulics and Estuary, China</i></p>	<p>Effect of vegetation on the lateral dispersion at the apex section of a meandering channel</p> <p><b>Nina Benistati</b> <i>University of Palermo, Italy</i></p>
19:15	<p style="text-align: center;"><b>Social drink</b></p> <p style="text-align: center;"><i>Venue: Grand Hotel Mediterraneo</i></p>	



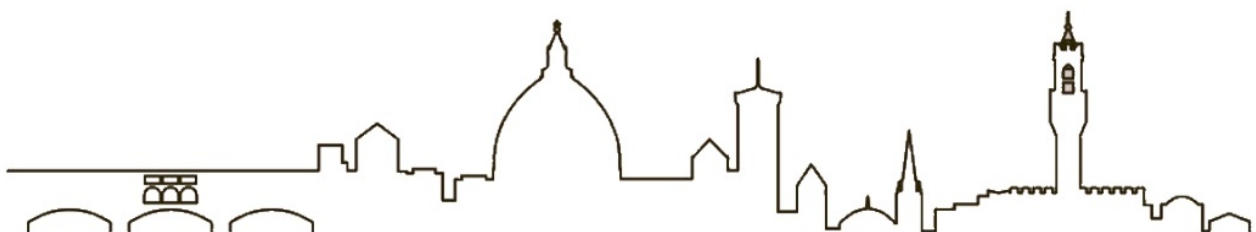
<b>Thursday, Sept 07</b>		
8:30- 9:30	<p align="center"><b>KEYNOTE TALK</b>            Entrainment, transport and mixing of fine iron mine tailings            in the Paraopeba River, Brazil  <i>Marcelo Garcia</i></p>	
	<p align="center"><b>Session 5A: Morphodynamics</b>  <i>chair: Andrea D’Alpaos,            Enrica Viparelli</i></p>	<p align="center"><b>Session 5B: Reservoir sedimentation;            interactions between sediment and            structures</b>  <i>chair: Guangquan Liu, Alessio Radice</i></p>
9:30- 9:42	<p>The hydro-morphodynamic adaptation            in a sediment starving estuary</p> <p align="center"><b>Chunyan Zhu</b>  <i>East China Normal University, China</i></p>	<p>Regime Change of Sediment Suspension            in the sub-saturated Jingjiang reach of            the Yangtze River, China</p> <p align="center"><b>Dong Chen</b>  <i>Chinese Academy of Sciences</i></p>
9:42- 9:54	<p>Rationalizing the differences among            hydraulic relationships through a            process-based Model</p> <p align="center"><b>Fan Xu</b>  <i>East China Normal University, China</i></p>	<p>Modeling the effect of land cover            change on sediment accumulation in            small agricultural reservoirs in Tuscany            region</p> <p align="center"><b>Enrica Caporali</b>  <i>University of Florence, Italy</i></p>
9:54- 10:06	<p>Revisiting the relationships between            channel geometry and sediment grain            size in mountain rivers</p> <p align="center"><b>Giulio Calvani</b>  <i>EPFL, Switzerland</i></p>	<p>Experimental Study on Bed Erosion by            Clear Water Downstream of the Dam</p> <p align="center"><b>Yujiao Liu</b>  <i>Changjiang River Scientific Research            Institute, China</i></p>
10:06- 10:18	<p>Bed material load controls active            channel width in sedimentation zones:            data from Western North America</p> <p align="center"><b>Andrew Nelson</b>  <i>Northwest Hydraulic Consultants, USA</i></p>	<p>Reservoir sedimentation of the            Xiaolangdi reservoir and channel            erosion in the lower Yellow River</p> <p align="center"><b>Chen Jianguo</b>  <i>Institute of Water Resources and            Hydropower Research, China</i></p>
10:18- 10:30	<p>Exploring the impact of river            restoration on morphodynamics in a            mountain catchment in Scotland, UK</p> <p align="center"><b>Maggie Creed</b>  <i>University of Glasgow, UK</i></p>	<p>Tool for sediment management in the            Marmolejo reservoir. Calibration of the            sedimentation model            with machine learning</p> <p align="center"><b>David López Gomez</b>  <i>CEDEX, Spain</i></p>



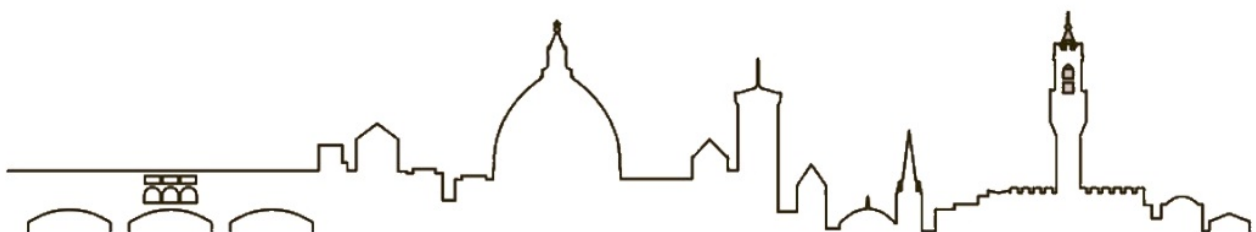
10:30- 10:42	Hydrological and sedimentological responses to an alpine river to the 2022 summer drought  <b>Riccardo Rainato</b> <i>University of Padua, Italy</i>	Study on the event-scale hysteresis characteristics of cascade reservoirs in the upper Yangtze River-- a new method was proposed  <b>JuLi Xue</b> <i>Wuhan University, China</i>
10:42- 10:54	Causes and trend prediction of water level diverse variation in the Middle Yangtze River following the operation of three Gorges Dam  <b>Guangyue Zhang</b> <i>Wuhan University, China</i>	Research on riverbed sediment grain size change of the Lower Yellow River after the operation of Xiaolangdi reservoir  <b>Xiangping Zhang</b> <i>Yellow River Institute of Hydraulic Research, China</i>
11:00- 11:30	Coffee Break	Poster Session
11:30- 12:30	<b>KEYNOTE TALK</b> Delta development and artificial land creation with sediment <b>Zhaoyin Wang and Mengzhen Xu</b>	
12:30- 13:50	Lunch	Author/ Reviewer workshop by Amy East
	<b>Session 6A: Morphodynamics</b> <i>chair: Michele Palermo, Ana Margarida Bento</i>	<b>Session 6B: Sediment and pollutant transport</b> <i>chair: Simona Francalanci, Liqin Zuo</i>
13:50- 14:02	Coastal systems under climate change and increasing human pressure: the case of the Venice Lagoon  <b>Andrea D'Alpaos</b> <i>University of Padua, Italy</i>	Influence of a windstorm-affected area on the transmission of a mountain basin's sediment fluxes  <b>Riccardo Rainato</b> <i>University of Padua, Italy</i>
14:02- 14:14	Evolution and distribution characteristics of flow channels and branches in the Yellow River Estuary  <b>Zuwen Ji</b> <i>Institute of Water Resources and Hydropower Research, China</i>	The Severaisse observatory: a collaborative site dedicated to the study of sediment transport and its interactions with morphology  <b>Adele Johannot</b> <i>University Grenoble Alps, INRAE, France</i>
14:14- 14:26	Role of sediment supply in the recovery of mudflats in the Yangtze River Delta during the storm events  <b>Zhonghao Zhao</b> <i>East China Normal University, China</i>	Review of sediment's characteristics of carbon sink and potential value on carbon neutrality in river ecosystem  <b>Zhao Huiming</b> <i>Institute of Water Resources and Hydropower Research, China</i>



14:26- 14:38	Modeling the morphodynamic equilibrium of an intermediate reach of the Po River (Italy)  <b>Elisabetta Taschin</b> <i>University of Padua, Italy</i>	Microplastic retention by lagoons surrounded by vegetation in wetland areas  <b>Teresa Serra</b> <i>University of Girona, Spain</i>
14:38- 14:50	Periodic analysis on morphology evolution of the south channel in Changjiang Estuary, China  <b>H. Huang</b> <i>Hohai University, China</i>	Bedload sediment transport on the continental slope under internal waves  <b>Zhipeng Zang</b> <i>Tianjin University, China</i>
14:50- 15:02	Storm-driven sedimentation sustains the accretion of salt marshes and shapes their topography  <b>Luca Carniello</b> <i>University of Padua, Italy</i>	Water and sediment simulation of shoal-trough evolution and regulation line optimization in Maozhou Estuary of Lingding Bay  <b>Yongjun Lu</b> <i>Nanjing Hydraulic Research Institute, China</i>
15:02- 15:14	Influence of beach erosion during wave action in designed artificial sandy beach-take Haikou Bay in China as example  <b>Zhou Yingtao</b> <i>Shanghai Urban Construction Design &amp; Research Institute, China</i>	Mainstream Swing Rule in the Sanguanmiao to Weitan Reach of the Lower Yellow River  <b>Chunjin Zhang</b> <i>Yellow River Institute of Hydraulic Research, China</i>
15:14- 15:26	Experimental study on mega-cusps and dune erosion caused by intersecting storm waves  <b>Sheng Yan</b> <i>Dalian Maritime University, China</i>	Erosion and sedimentation processes in a semi-arid basin of the Brazilian Savanna under different land-use, climate-change, and conservation scenarios  <b>Henrique Chaves</b> <i>University of Brasilia, Brasil</i>
15:30- 16:30	<b>KEYNOTE TALK</b> Accounting for natural variability in 1D bedload prediction: a field case study <b>Alain Recking</b>	
16:30- 17:00	Coffee Break	Poster Session
	<b>Session 7A: Morphodynamics</b> <i>chair: Benoît Camenen, Jaimei Wang</i>	<b>Session 7B: Sustainable sediment management at the basin scale</b> <i>chair: Enio Paris, Giada Artini</i>

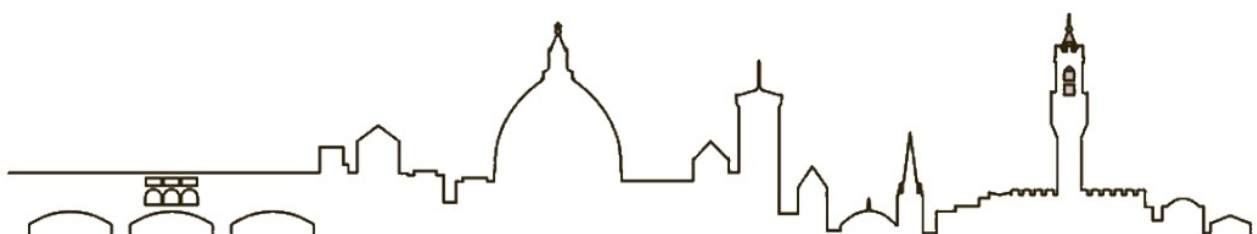


17:00- 17:12	<p>Experimental study of roughness distribution effect on flow resistance in gravel-bed channels with structured block ramps</p> <p><b>Xingyu Chen</b> Tsinghua University, China</p>	<p>River management practices in the Middle Valdarno sub-basin</p> <p><b>Pina De Cicco</b> Land Reclamation Authority Middle Valdarno, Italy</p>
17:12- 17:24	<p>Numerical analysis of protected bank instability under the combined impacts of river flow and groundwater flow</p> <p><b>Yueyao Zhou</b> Wuhan University, China</p>	<p>The spatiotemporal variations of land use and soil erosion in rocky mountainous areas of northern China</p> <p><b>Ying Zhao</b> Institute of Water Resources and Hydropower Research, China</p>
17:24- 17:36	<p>Kinematic characteristics of blunt nosed chevrons in movable bed channels</p> <p><b>Michele Palermo</b> University of Pisa, Italy</p>	<p>The influence of urban drainage system on fluvial sediments - case study: the Reglia dei Mulini in Camucia</p> <p><b>Matteo Isola</b> Land Reclamation Authority Upper Valdarno, Italy</p>
17:36- 17:48	<p>Dynamic changes of environmental flow of riparian habitat with channel evolution on the main stem of Middle Yangtze River</p> <p><b>Shanshan Deng</b> Wuhan University, China</p>	<p>Analysis on the Variation of Water and Sediment and Its Cause of Formation at Zhimenda Station at the Source of the Yangtze River in More than 60 Years</p> <p><b>Zhou Yinjun</b> Changjiang River Scientific Research Institute, China</p>
17:48- 18:00	<p>Influence of riparian vegetation on streambank stability: evidence from both field observations and laboratory experiments</p> <p><b>Lekui Zhu</b> Chinese Academy of Sciences, China</p>	<p>Sustainable sediments and water management in the lower Cornia valley through river restoration and recharge aquifer</p> <p><b>Riccardo Benifei</b> Land Reclamation Authority Tuscany Coastal areas, Italy</p>
18:00- 18:12	<p>Numerical study of sediment transport and hydro-morphology of the Clain river using a hydro-sedimentary 2D numerical model for different scenarios</p> <p><b>Alaa Ghzayel</b> Institute P prime, France</p>	<p>An integrated set of measures for sustainable sediment management at the Le Grazie artificial reservoir, Central Italy</p> <p><b>Alessia Flammini</b> University of Perugia, Italy</p>

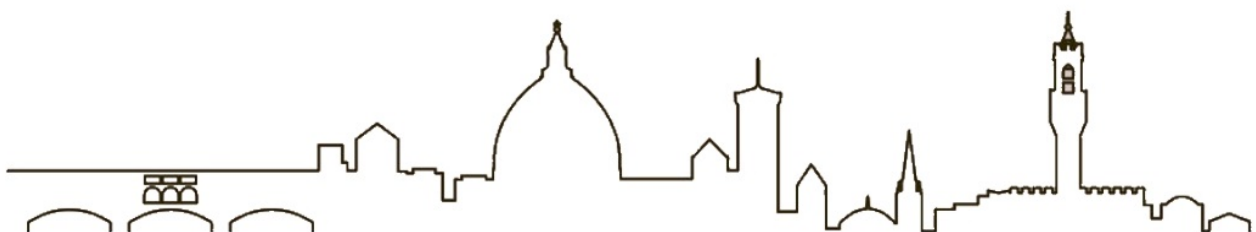




18:12- 18:24	2D Sediment Modelling to Simulate Short Term Geomorphic Flood Response for River Restoration  <b>Zayd Abid-Waheed</b> <i>University of Salford, UK</i>	Impacts of Changes in Runoff and Sediment Loads of the Yellow River on its Lower Reaches and Countermeasures Proposed  <b>Chuanquan Wang</b> <i>Shandong Yellow River Reconnaissance Design &amp; Research Institute Co., China</i>
18:24- 18:36	Comparative analysis on variations of runoff and sediment load of the typical rivers in the world  <b>Hongling Shi</b> <i>Institute of Water Resources and Hydropower Research, China</i>	Works for the restoration of the Bruna river's sections  <b>Martina Bencistà</b> <i>Land Reclamation Authority South Tuscany, Italy</i>
18:36- 18:48	Suppression of Scour around Circular Cylinder by Jet Flow  <b>Yanwei Niu</b> <i>Chang'an University, China</i>	Sedimentation basin in the Massaciuccoli lake area, EU Phusicos project "According to nature"  <b>Antonio Difonzo</b> <i>Land Reclamation Authority North Tuscany, Italy</i>
18:48- 19:00	Assessing the effects of flash floods on Wadi geomorphological changes induced by sediment transport in Oman  <b>Mahmood M. Al-mamari</b> <i>Kyoto University, Japan</i>	Excavation problems in mechanical drainage reclamation of the Pisan plain  <b>Lorenzo Galardini</b> <i>Land Reclamation Authority Lower Valdarno, Italy</i>
19:00- 19:12	WASER and its Establishment  <b>Cheng Liu</b> <i>International Research and Training Center on Erosion and Sedimentation, China</i>	
19:15	<b>Awards and announcements</b>	



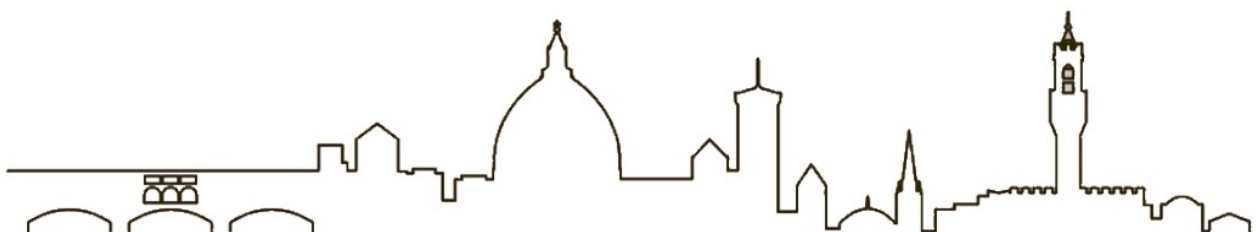
<b>Friday, Sept 08</b>	
8:30- 12:30	<p><b>TECHNICAL VISIT 1: BILANCINO RESERVOIR</b></p> <p>Gathering: entrance of Grand Hotel Mediterraneo</p>
13:00- 15:00	<p>Lunch</p> <p><i>Venue: Grand Hotel Mediterraneo</i></p>
15:30- 17:30	<p><b>TECHNICAL VISIT 2: SAN NICCOLO' HYDROELECTRIC PLANT</b></p> <p>Gathering: entrance of Grand Hotel Mediterraneo</p>
18:00- 19:00	<p><b>Closing</b></p> <p><i>Venue: room # 401, Santa Teresa, School of Architecture</i></p>



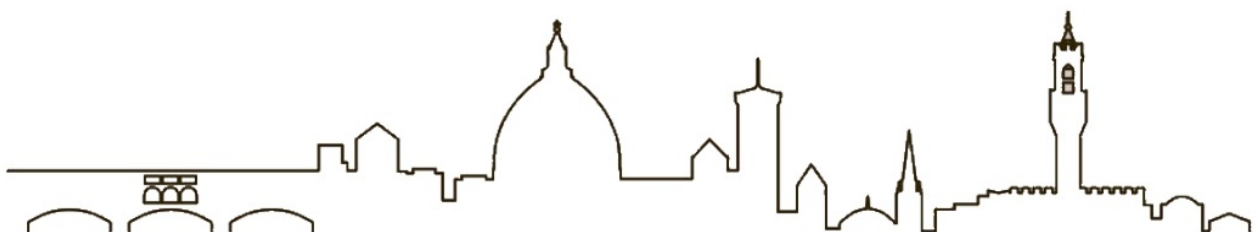
## POSTERS

*Ref no. / Title / Authors / Affiliation of the presenter Author*

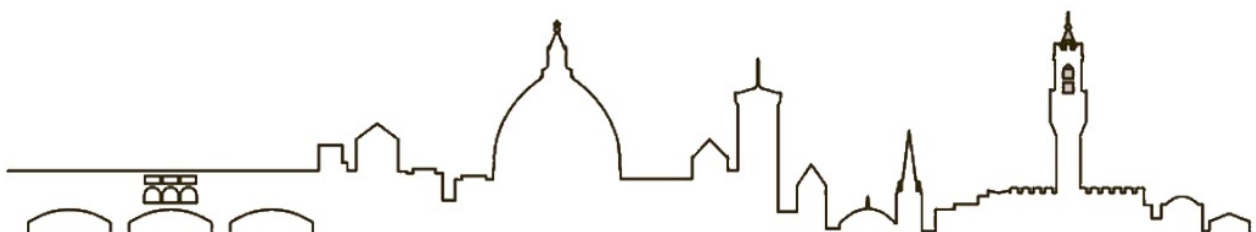
1. Gravel-bed characterization and flow velocity profile  
D. Termini, F. Lavignani, **N. Benistati**  
Department of Engineering, University of Palermo, Italy
2. A new multi-criteria methodology for sustainable management of river sediment  
I Bonamini, F. Di Grazia, S. Francalanci, V., Francalanci, S. Franceschini, B. Gumiero, L. Innocenti, **A. S. Kasa**, L. Lotti, E. Paris, M. Rinaldi, S. Sadun, C. Simoncini, L. Solari, L. Sulli  
Department of Civil and Environmental Engineering, University of Florence, Italy
3. Transient dispersion of active swimmers in an open-channel flow  
Guangmiao Li, Zheng Gong, Weiquan Jiang, Jie Zhan, Bohan Wang, Xudong Fu, Mengzhen Xu, and **Zi Wu**  
State Key Laboratory of Hydrosience and Engineering; Department of Hydraulic Engineering, Tsinghua University, Beijing, China.
4. An Investigation of Incipient Motion through the Euler-Lagrange Equations  
Brandon Dillon, **Kyle Strom**  
Civil and Environmental Engineering, Virginia Tech, USA
5. Introduction to a New Book “Sediment Transport Dynamics” by Weiming Wu **Weiming Wu**  
Department of Civil and Environmental Engineering, Clarkson University, USA
6. Assessing Model Accuracy for a Stratified Small Bay using Radar and Drifters: Validation Results  
Dong Hyeon Kim, **Jin Hwan Hwang**  
Institute of Construction and Environmental Engineering, Seoul National University, Seoul, Korea
7. Influence of mineral compositions of sediment particles on dissolved oxygen consumption in the sediment-laden flow  
Feng Qing, Xiao Qian-lu, Zheng Yan-shuang, **Li Bin**  
Key Laboratory of Lower Yellow River Channel and Estuary Regulation, MWR, China.
8. Two Catastrophic Debris Flood Hazards Due to the Shift from Drought to Extreme Rainfall in Post-earthquake Mountain Areas  
**Jiamei Wang**, Marwan A. Hassan, Xingyu Chen, Xudong Fu  
Department of Hydraulic Engineering, State Key Laboratory of Hydrosience and Engineering, Tsinghua University, Beijing, China.
9. Variation of river habitat diversity in the middle Yangtze River during erosional process after dam impoundment  
**Bowen Yu**, Li Chen, Changwu Yu, Chenggang Yang  
State Key Laboratory of Water Resources and Hydropower Engineering Science, Wuhan University, China.



10. Numerical study of pollutant transport considering the flow–sediment–bed–contaminant interactions in river channel under heavy rain  
**Tao Chen**, Chunchen Xia, Junping Liu, Feifeng Cao, Lulu He, Wei Han  
College of Civil Engineering, Zhejiang University of Technology, Zhejiang, China
11. Recovery characteristics of suspended sediment in the downstream reaches of the Three Gorges Reservoir  
**Yule Wang**, Li Chen, Jin Yuan, Xiaohua He  
State Key Laboratory of Water Resources and Hydropower Engineering Science, Wuhan University, China
12. Temporal scour evolution at wood bundles under clear water condition  
D. Roy, S. Pagliara, **M. Palermo**  
DESTEC-Department of Energy, Systems, Territory and Construction Engineering, University of Pisa, Italy
13. Effect of Fixed Weir Removal on River Bed Variation : Preliminary results  
**H. Miwa**, T. Wada, Y. Kajikawa, T. Kojima, N. Kanou, R. Nishikawa, N. Makabe  
Department of Social Systems and Civil Engineering, Tottori University, Japan
14. Using principles of fluvial sedimentology to investigate microplastic distribution in fluvial deposits: insights from the Arno River (Italy)  
**Francesca Uguagliati**, Alessandro Michielotto, Massimiliano Zattin & Massimiliano Ghinassi  
Dept. of Geosciences, University of Padova, Italy
15. A Multiphase Flow Modeling of Gravity Currents on Slope  
B. Kim, **J. Paik**  
Dept. of Civil Engineering, Gangneung-Wonju National University, South Korea
16. Hydraulic Model Tests on Accumulation and Removing of Driftwood in Continuous Channel  
Y. Fushimi, **Y. Watanabe**, H. Watabe, T. Itoh, T. Ishikawa, K. Hashimoto  
Dept. of Civil and Environmental Engineering, Kitami Institute of Technology, Japan
17. The optimization of cascade check dam system for mitigating debris flow  
**Kai Sun**, Xudong Fu  
Department of Hydraulic Engineering, State Key Laboratory of Hydrosience and Engineering, Tsinghua University, Beijing, China.
18. Describing of dunes washing out process  
**Giada Artini**, Lorenzo Innocenti, Enio Paris  
Department of Civil and Environmental Engineering, University of Florence, Italy.
19. Sedimentological variability in influence of the Itumbiara Dam  
Kamila Almeida dos Santos, Guilherme da Cruz Reis, **Klebber Teodomiro Martins Formiga**  
School of Civil and Environmental Engineering, Universidade Federal de Goiás, Brazil.
20. Field Experiment on Landslide Dams Failure  
N. Harada, Y. Satofuka, and **I. Kimura**  
Faculty of Sustainable Design, University of Toyama, Japan.



21. Using Terrestrial Laser Scanner To Validate The Performance Of Low-Cost UAV On A Monitoring Sedimentological Change In An Urban Channel  
Kamila A. dos Santos, João B. Ramos Cortes, Thiago A. Mendes, Gilson de Farias Neves  
Gitirana J., **Klebber Teodomiro Martins Formiga**  
School of Civil and Environmental Engineering, Universidade Federal de Goiás, Brazil
22. Derivation and Evaluation Empirical Formulae for Geometric Characteristics of Meandering  
**Jaafar S. Maatooq** and Luay K. Hameed  
Hydraulic Structures Branch, Civil Engineering Dept., University of Technology, Iraq
23. Study on vertical distribution of sediment concentration in the Qiantang Estuary  
**Yingbiao Shi**, Wenlong Cheng, Jun Zhang  
Zhejiang Institute of Hydraulics & Estuary, Hangzhou, China
24. Seismic monitoring of bedload transport at the Rutor proglacial stream  
**E. Corte**, V. Coviello, M. Bonfrisco, C. Camporeale, F. Comiti, S. Tamea  
Dept. Environment, Land and Infrastructure Engineering, Politecnico di Torino, Italy
25. Sediment transport influenced by spatial distribution of terraces  
Z. Gao, **J. Gao**, G. Zhang, Q. Ji, H. Fan, H. HAO, M. Ji  
College of Water Resources and Architectural Engineering, Northwest A&F University, China.

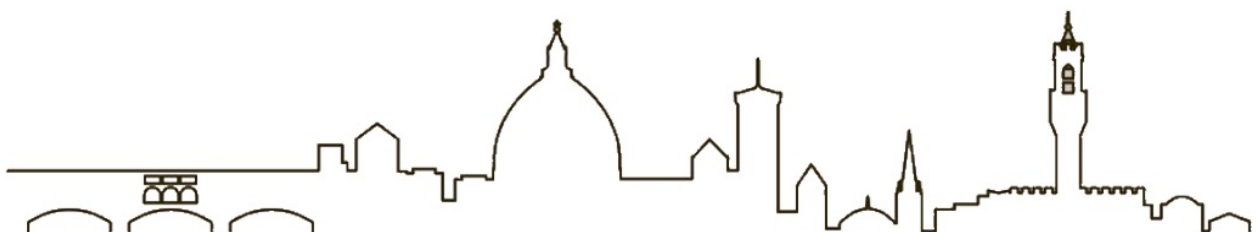


## TECHNICAL VISITS

### VISIT TO THE BILANCINO RESERVOIR

Bilancino Lake, on the spurs of the Mugello area, is the most important reservoir of drinking water that Central Tuscany has at its disposal. It is our largest reserve of water with a storage capacity of 70 million cubic metres of water. It became operational at the end of the last century, two centuries after it was first planned and because of the increase in responsibility of the local and regional administrations, faced with widespread historical need for water in a vast and unique area worldwide, which had to start resolving its problems in a structural way. Today, the reservoir permits a secure water supply to more than one million people, plus tourists, as well as to production sectors like industry and agriculture, enabling stable capacities in the river Arno to the intake facilities of the Anconella river waterworks in Florence. In addition, it is the main expansion tank of the river Arno, where the waters of the river Sieve and torrents end up during times of high water to defend against flooding. It is also a source of clean energy and contributes in its own way to the fight against the climate chaos caused by the emission of greenhouse gases into the atmosphere due to the use of fossil fuels (charcoal, petroleum, etc.). Thanks to the hydroelectric power station on the dam, the force of the water generates millions of kW/h of electricity.

This technical visit is hosted by the company Publiacqua S.p.A. entrusted with the management of the integrated water service from the Optimal Territorial Area n.3 Medio Valdarno, a territory, the backbone of Tuscany, which involves 4 provinces, Florence Prato, Pistoia and Arezzo.



## VISIT TO THE HISTORICAL SAN NICCOLÒ WEIR ON THE ARNO RIVER IN FLORENCE WHERE A NEW HYDROELECTRIC PLANT IS BEING INSTALLED

Since the year 1200, the San Niccolò weir furnished water to the mills used for various manufacturing activities and, later, for water supply to the local population. In 1875, the structure of San Niccolò weir was reinforced and two stone tunnels crossing the Arno were constructed upstream of the weir. Inside one of them a large pipe for the new aqueduct was laid down. The second tunnel was intended to be used as a filtering tunnel for the water of the Arno.

However, the tunnels were eventually used by residents as a means of crossing the river. Notably during the second world war, partisans were able to transfer food and munitions across the Arno River. In 1959, when the 'Fabbrica dell'acqua' was demolished, the tunnel was also abandoned. With no maintenance, the tunnel deteriorated rapidly and is now inundated. The current project aims to both restore the old weir and install a run-of-river hydroelectric plant.

The technical visit is hosted by the company Iniziative Bresciane S.p.A., a group active in the production of electricity from renewable sources, with a focus on identifying potentially interesting sites, designing, building and managing small and medium-sized hydroelectric plants, and the construction company PAC S.p.A. that is currently restoring 13 weirs and installing 12 hydroelectric plants along 55 km of the Arno River as part of a project financing promoted by the Tuscany Region.

**la SMART GRID**

CAPACITÀ DI RICARICA delle COLONNINE per VEICOLI ELETTRICI

**5 %**

Prodotto energia annua 12 centrali

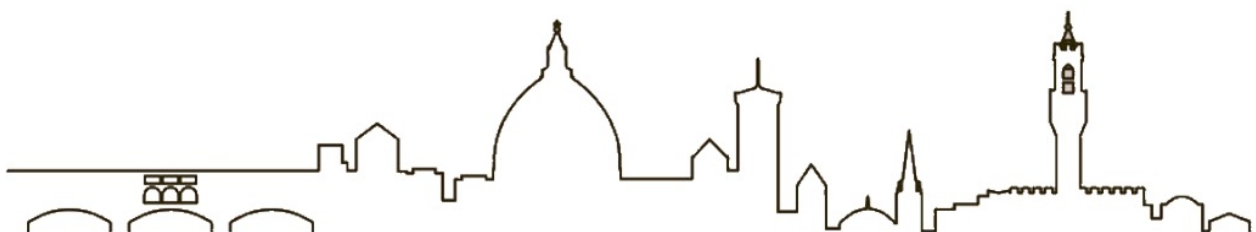
**55 GWh annui**

Impianti idroelettrici integrati perfettamente nel territorio

Traversa San Niccolò

Attenzione: questo profilo di scarico non favorisce il deflusso e causa l'impedimento del livello di valle con l'aumento della portata.

San Niccolò



## GENERAL INFORMATION

### CONGRESS VENUE

Grand Hotel Mediterraneo  
Lungarno del Tempio, 44  
50121 Florence (IT)

### WEBSITE

The ISRS 2023 official website is <https://www.isrs2023.it/>

### LANGUAGE

English is the official language.

### REGISTRATION DESK HOURS

The Registration Desk will be opened as follows:

Wednesday 6	08.00 - 18.30
Thursday 7	08.00 - 18.30

### CONGRESS NAME BADGE

Upon registration you will receive your name badge to access the conference venue.

The badge and the congress kit will be delivered at the registration desks from the Organizing Secretariat. You are kindly requested to wear your badge during all sessions and events.

### CERTIFICATES OF ATTENDANCE

Certificates of attendance will be sent by email after the conference to all the registered participants that will attend the scientific sessions.

### INTERNET ACCESS Wi-Fi

Internet access Wi-Fi is available for congress participants throughout the public areas.

To log in please access the wireless Internet access "**Mediterraneo**" and follow the instructions to log-in for free.

### COFFEE BREAKS

Coffee break stations will be available in the Lobby Area as follows:

Wednesday 6	Thursday 7
11:00 - 11:30	11:00 - 11:30
16:30 - 17:00	16:30 - 17:00

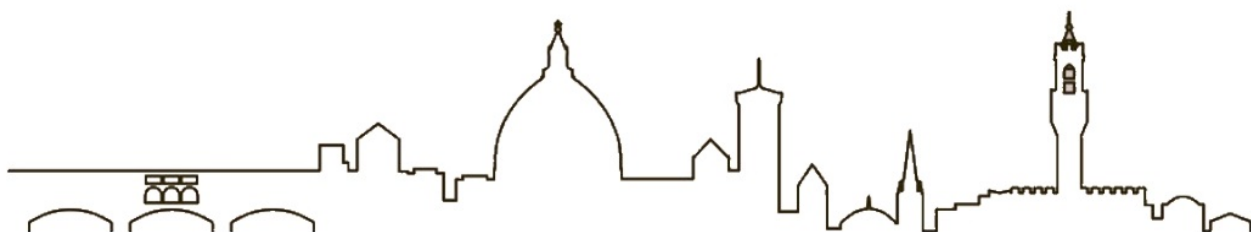
### WORKING LUNCHES

Working lunch will be available in the restaurant close to the Lobby Area on Wednesday 6 and Thursday 7, 12:30-14:00

### CONGRESS WELCOME RECEPTION

The Congress Welcome Reception will be hosted at **Circolo Canottieri Arno, Lungarno Anna Maria Luisa de' Medici, 8, Tuesday 5, 19.00 - 21.00.**

Admission is free for all the participants.





## CONGRESS SOCIAL DRINK

The Congress Social Drink will be hosted at **Grand Hotel Mediterraneo (Conference venue)**.

*Wednesday 6, 19.00 - 20.00.*

Admission is free for all the participants.

## MOBILE PHONES

Please do not forget to turn your mobile phones to silent mode during sessions.

## NON-SMOKING POLICY

The ISRS 2023 Congress is a Non-Smoking event. Delegates are reminded that smoking in enclosed spaces is illegal in Italy.

## LIABILITY AND INSURANCE

The Congress Secretariat and Organizers cannot accept liability for personal accidents or loss of or damage to private property of participants. Participants are advised to take out their own personal travel and health insurance for their trip.

## SAFETY AND SECURITY

Please do not leave bags or suitcases unattended at any time, whether inside or outside the session halls.

## FIRST AID

Should you require first aid assistance, please contact the registration desk or any uniformed member of the meeting staff.

## TIME ZONE

Florence local time in September is GMT + 2 hour (CEST).

Timing indicated in the program is to be considered on a CEST - Central European Summer Time basis (GMT + 2)

## CURRENCY

Euro (EUR) – All major credit cards (Visa, MasterCard, American Express) are accepted in most of the restaurants, shops etc.

## ELECTRICITY

The electric current supplied is 220 V.

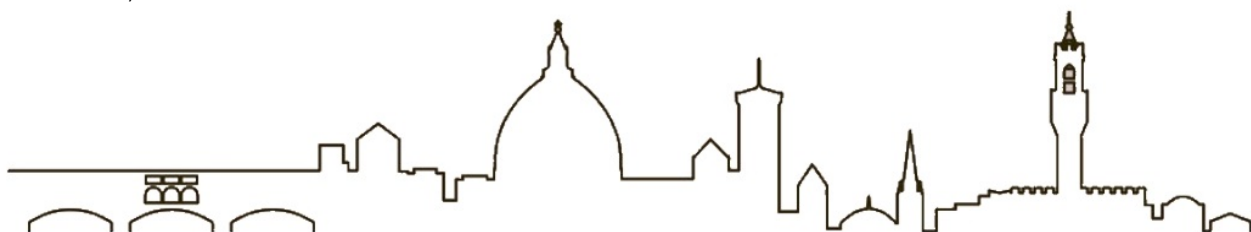
Round, two-pin plug points are available, as elsewhere in Europe. In case you have any devices from the USA or UK, please remember to bring a transformer/adapter.

## BANKING

Most Florence banks open between 08:30 and 13:30 and 14:45 to 15:45 Monday to Friday. They are closed on weekends and public holidays and most of them have a cash dispenser and a currency exchange service.

## USEFUL TELEPHONE NUMBERS IN FLORENCE

- Medical emergency: 118
- Fire emergency: 115
- Police: 113
- Florence airport - information: 055 3061300 - lost luggage: 055 3061302
- For international calls from Italy: 00 + country code + number
- For international calls to Italy: +39 + city code + number
- 24hour Pharmacies:  
Santa Maria Novella Station  
Via Calzaiuoli, 7 r



## TRAVEL TO FLORENCE

Travel to Florence is via several International Airports: Florence “Amerigo Vespucci”, Pisa “Galileo Galilei”, Bologna “Guglielmo Marconi”, Rome-Fiumicino “Leonardo da Vinci”, Milan Malpensa Airport, and more. In addition, the city has excellent high speed train service connecting to Rome, Milan, Venice, Pisa, Bologna, Verona, Naples. Once in the Florence area, ICC 2021 participants can move easily and safely about the city by walking, the tram, busses, and taxi cabs. The city has a central position in Italy.

### ▪ By Airplane

#### Florence Airport

The international airport Amerigo Vespucci is situated on the north-west suburban area of Florence, just 4 km from the city centre. It is a 25-minute ride by shuttle bus Volainbus operating between the airport and the central railway station. Tickets can be bought on board or at the newspaper stall or at the Bookshop: it costs € 6.00 one way and Euro 10,00 round trip.

Taxis can be found outside the airport; with a 15-minute ride you reach the city centre at a conventional price:

Working days: Euro 22,00, Festive days: Euro 24,00, Night service (22,00-06,00): Euro 25,30

Supplements: Luggage Euro 1,00 each, From 4<sup>th</sup> passenger Euro 1,00 each

Vespucci Airport is connected to some of Europe’s major airports: Amsterdam, Barcelona, Brussels, Bucharest, Dusseldorf, Frankfurt, London Gatwick and City, Madrid, Munich, Paris C. De Gaulle, Paris Orly, Tirana, Zurich, Wien.

#### FLORENCE “AMERIGO VESPUCCI” AIRPORT

Tel (+39) 055 30615 - [www.aeroporto.firenze.it](http://www.aeroporto.firenze.it)

#### FLIGHT INFORMATION

Tel (+39) 055 3061700 - (+39) 055 3061702

#### Pisa Airport

Pisa’s Galilei Airport is about 80 km from Florence. It is linked to Florence by rail and road and is connected to the Tuscan capital by train (every hour) and Terravision bus (full flight coverage with 18 return journeys). For information about timetables and fares visit [www.terravision.eu](http://www.terravision.eu) For information [www.pisa-airport.com](http://www.pisa-airport.com)

#### Bologna Airport

After the upgrading of the railway line “Freccia Rossa” between Florence and Bologna in just 35 minutes, also Bologna airport is a stop of easy access to Florence. Bologna and Florence airports are also connected by the “Appennino shuttle bus” For timetables visit [www.appenninoshuttle.it](http://www.appenninoshuttle.it) - For information [www.bologna-airport.it](http://www.bologna-airport.it)

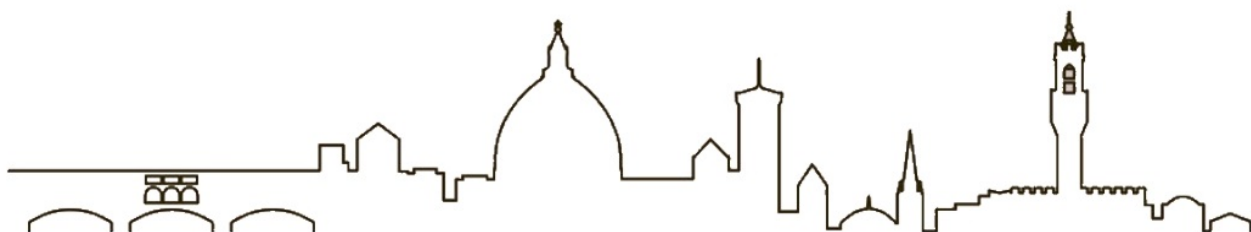
### ▪ By Train

The city’s main railway station is Firenze SMN (Santa Maria Novella).

Situated in the city centre, it is conveniently close to the major tourist attractions. The station area is also the principal node for buses serving the city and surrounding area (see Getting around by bus). Other important railway stations are Firenze Campo di Marte and Firenze Rifredi. Local trains connect these two stations with the central one; otherwise, you can catch the ATAF bus to the city center: Italian railway services are made by Trenitalia and by Italo.

### ▪ By Car

If you arrive in Florence by car, park it and use public transportation or special tourist transportation to reach the chief parts of the city. Pay particular attention to the notices marking the points of access to the Limited Traffic Zone (ZTL), which corresponds to the historic centre (monitored by electronic gates with information in English), to enter which requires previous authorization. If you are looking for accommodation, the hotelier to whom you have applied or the garage where you intend to park can provide you with temporary access to the ZTL according to a specific procedure.



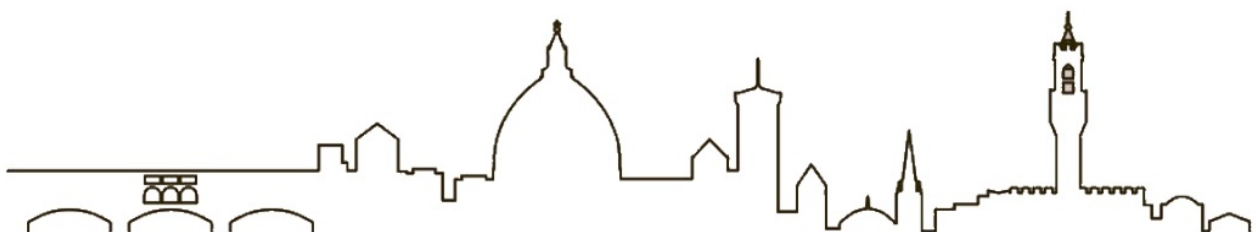
# ACKNOWLEDGEMENTS

## MAIN SPONSORS



# UBERTONE

## CO-SPONSOR





**ISRS 2023**

