



6<sup>th</sup>

International  
Symposium  
on Shallow-Flows  
(IAHR)

September 15 - 18, 2025  
Torino, Italy



Hosted by  
Spain Water  
and IWHR, China

## DAY 1 Conference Programme

15 September

- 08:30 – 09:00 **Check in Workshop Ubertone**  
Hydraulics and Fluid Mechanics Lab  
Politecnico di Torino, Corso Duca degli Abruzzi 24, 10129, Torino
- 09:00 – 17:00 **Workshop Ubertone**  
Hydraulics and Fluid Mechanics Lab,  
Politecnico di Torino, Corso Duca degli Abruzzi 24, 10129, Torino
- 17:00 – 18:00 **Registration and Check in**  
Rooms R  
Via Paolo Borsellino 28-44, 10138 Torino
- 18:00 – 21:00 **Welcome Reception**  
Rooms R  
Via Paolo Borsellino 28-44, 10138 Torino

## DAY 2 Conference Programme

16 September

- 08:45 – 09:00 **Conference Opening**  
Welcome from Costantino Manes (Conference Chair)
- 09:00 – 10:00 **Keynote 1, Room R3, Prof. Heidi Nepf (MIT)**  
Competing influence of vegetation-generated turbulence and sediment cohesion on sediment transport
- Track a – Room R3**
- 10:00 – 11:00 **Parallel Session 1.1a - Turbulence in Open Channel Flows** *Chair: Sébastien Proust*
- 10:00 – 10:20 Turbulence convection velocity in shallow open-channel flows. *S. Cameron* ID-93
- 10:20 – 10:40 The vertical-velocity skewness in the inertial sublayer of turbulent wall flows. *E. Buono*
- 10:40 – 11:00 Direct numerical simulation of the origin mechanism of additional vortices near the free surface in open channel flows. *C. Hu* ID-74
- 11:00 – 11:30 Coffee break
- 11:30 – 13:10 **Parallel Session 1.2a - Shallow wakes, jets and mixing layers** *Chair: Emmanuel Mignot*
- 11:30 – 11:50 Combined jet-wake influence from ship traffic on ocean surface transport in Galveston Bay, TX. *K-A. Chang* ID-14
- 11:50 – 12:10 Shear layer types in compound channel flows. *V. Dupuis* ID-96

**DAY 2** Conference Programme

**16** September

12:10 – 12:30	Impact of the flow structures observed downstream of a confluence on the mixing of suspended sediments. <i>R. Finance</i>	ID-29
12:30 – 12:50	Experimental Mixing Layer Analysis in Vegetated Channels covered by Reed Beds. <i>G. Lama</i>	ID-19
12:50 – 13:10	Shallow mixing layers in partially vegetated open-channel flows. <i>S. Proust</i>	ID-4
13:10 – 14:20	Lunch	
14:20 – 15:40	<b>Parallel Session 1.3a - Sediment transport and morphodynamics</b> Chair: <i>Bernhard Vowinckel</i>	
14:20 – 14:40	Triggering and propagation debris flow model. <i>M. Barbini</i>	ID-56
14:40 – 15:00	Combining Sampling and Acoustic Inversion for SSC Measurements, Example on an Alpine River. <i>S. Fischer</i>	ID-25
15:00 – 15:20	Bedload transport across scales on a rough bed with an array of boulders. <i>C. Escauriaza</i>	ID-111
15:20 – 15:40	Integrated design of levees and river channels based on spatio-temporal three-dimensional energy distribution of excess flood flow. <i>S. Fukuoka</i>	ID-50
15:40 – 16:10	Coffee break	
16:10 – 17:10	<b>Parallel session 1.4a - Sediment transport and morphodynamics</b> Chair: <i>Rui Lage Ferreira</i>	
16:10 – 16:30	Transverse mixing of suspended sediment in a river confluence. <i>I.W. Seo</i>	ID-67
16:30 – 16:50	The transition from viscous to inertial particle behavior in sediment transport simulations. <i>B. Vowinckel</i>	ID-88
16:50 – 17:10	Modelling Fluid-Soil Regime Transitions in the Sedimentation of Cohesive Clay Suspensions. <i>Y. Yuan</i>	ID-5

**Track b – Room R3B**

10:00 – 11:00	<b>Parallel Session 1.1b - Stratification effects and gravity currents</b> Chair: <i>Alan Cuthberston</i>	
10:00 – 10:20	Experimental Analysis of Gravity Currents Interacting with Large-Scale Roughness. <i>C. Adduce</i>	ID-11
10:20 – 10:40	Effect of ship traffic on the lateral displacement of dense, saline waters from a deep ship channel to shallow bay water in Galveston Bay, TX. <i>A. Socolofsky</i>	ID-13
10:40 – 11:00	Adjustment time of the lock exchange for a linearly stratified lock and ambient. <i>B. Biemond</i>	ID-112
11:00 – 11:30	Coffee break	

DAY 2 Conference Programme

16 September

11:30 – 13:10	<b>Parallel Session 1.2b - Stratification effects and gravity currents</b> <i>Chair: Scott Socolofsky</i>	
11:30 – 11:50	Hydrodynamics of river confluences in the presence of buoyancy effects: quantifying dispersion by gravity currents. <i>L. Gostiaux</i>	ID-42
11:50 – 12:10	LES of the Collision between Gravity Currents of Unequal Volumes. <i>A. Kokkinos</i>	ID-103
12:10 – 12:30	Sustained gravity currents advancing on heating walls. <i>S. Lanzini</i>	ID-34
12:30 – 12:50	The role of vehicles in smoke movement within transversely ventilated tunnels subject to a longitudinal airflow. <i>C. Peruzzi</i>	ID-40
12:50 – 13:10	Stratification and sediment transport in shallow bar-built estuaries: interactions of tides, infragravity waves, and wind. <i>M. Williams</i>	ID-108
13:10 – 14:20	Lunch	
14:20 – 15:40	<b>Parallel Session 1.3b - Heat and mass transport in shallow flows</b> <i>Chair: Dubravka Pokrajac</i>	
14:20 – 14:40	Pollutant intrusion into a city block during urban flooding: an experiment on the mass transport processes. <i>S. Proust</i>	ID-6
14:40 – 15:00	Presentation withdrawn. <i>N. Wang</i>	ID-31
15:00 – 15:20	Transverse mixing of pollutants in a Piedmont river with alternating riffle-pool sequences (application to the Middle Durance). <i>V. Thiercelin</i>	ID-23
15:20 – 15:40	Physical modeling of flows and pollutants in a Mondego estuarine natural cavity. <i>R. Adhemar</i>	ID-66
15:40 – 16:10	Coffee break	
16:10 – 17:40	<b>Parallel session 1.4b - Ecological aspects of shallow flows</b> <i>Chair: Megan Williams</i>	
16:10 – 16:30	Investigating Microalgae Orientation in von Kármán Swirling Flow. <i>L. Coombs</i>	ID-99
16:30 – 16:50	Hydraulic Simulation for the Evaluation of Riparian Vegetation in Regulated Rivers. <i>B. Höller</i>	ID-35
16:50 – 17:10	Mesohabitat evaluation using the SERGHEI shallow-water solver. <i>P. Vezza</i>	ID-85
17:10 – 17:40	Climate change and ecological impact in a regulated boreal river in Northern Sweden. <i>L. Sjöstedt</i>	ID-86
18:00 – 19:15	<b>Visit to the Hydraulics and Fluid Mechanics Laboratory at Politecnico di Torino</b>	

9:00 – 10:00	<b>Keynote 2, Room R3, Prof. Dubravka Pokrajac (University of Aberdeen)</b> Generalised Shallow Water Equations	
<b>Track a – Room R3</b>		
10:00 – 11:00	<b>Parallel Session 2.1a - Sediment Transport and Morphodynamics</b> Chair: <i>Cristian Escauriaza</i>	
10:00 – 10:20	Stabilization of river channel with sand and gravel moving on outcropped mudstone bed. <i>S. Fukuoka</i>	ID-51
10:20 – 10:40	Experimental investigation on the development processes of the channel with floodplain vegetation. <i>C-L. Jang</i>	ID-62
10:40 – 11:00	Enhancing a 2D depth-averaged hydro-morphodynamic model with the effects of curvature- and density-induced secondary flows. <i>T. Lazzarin</i>	ID-17
11:00 – 11:30	Coffee break	
11:30 – 13:10	<b>Parallel Session 2.2a - Sediment Transport and Morphodynamics</b> Chair: <i>Paolo Perona</i>	
11:30 – 11:50	Dislodgement of spherical bed particles under turbulent flow. <i>S. Maldonado</i>	ID-100
11:50 – 12:10	The Role of Localized Drag Asymmetry in Forming Forced Fluvial Bars. <i>M. Musa</i>	ID-106
12:10 – 12:30	Propagation of a dispersive aggradation wave in a supercritical flow. <i>H. Eslami</i>	ID-27
12:30 – 12:50	Virtual Plastic Particle Transport in Open-Channel Flows: A Combined PIV and Maxey-Riley Approach. <i>S. Restrepo Velasquez</i>	ID-115
12:50 – 13:10	Experimental dataset for erosion in flood waves and rigid structures interaction. <i>J. Segovia-Burillo</i>	ID-37
13:10 – 14:20	Lunch	
14:20 – 15:40	<b>Parallel Session 2.3a - Turbulence in open channel flows</b> Chair: <i>Olivier Eiff</i>	
14:20 – 14:40	High resolution remote imagery elucidates intermittent behavior and myriad turbulent mixing structures of a plunging riverine inflow into a lake. <i>S. Thorez</i>	ID-10
14:40 – 15:00	On the generation of secondary flows over fine-sediment ribbons. <i>M. Trevisson</i>	ID-69
15:00 – 15:20	The characterization of roughness-induced flow regimes. <i>M. Trevisson</i>	ID-95
15:20 – 15:40	Wave dissipation in combined wave current turbulent flows. <i>C. Manes</i>	ID-15
15:40 – 16:10	Coffee break	

16:10 – 17:10	<b>Parallel session 2.4a - Shallow Flows and Hydraulic Structures</b> Chair: <i>Mario Morales-Hernández</i>	
16:10 – 16:30	Riding the Wave: propagation of the dam break wave on the forest surface. <i>E. Buono</i>	ID-82
16:30 – 16:50	Weak hydraulic jump of power-law fluids in channels with an abrupt deviation. <i>V. Di Federico</i>	ID-65
16:50 – 17:10	Deriving Dynamic Flow Releases from Hydrodynamic Principles. <i>P. Perona</i>	ID-76
<b>Track b – Room R3B</b>		
10:00 – 11:00	<b>Parallel Session 2.1b - Numerical simulations of shallow flows</b> Chair: <i>Sergio Maldonado</i>	
10:00 – 10:20	Numerical investigations of canopy resistance on pulsating flows. <i>L. Brandt</i>	ID-90
10:20 – 10:40	Toward more versatile shallow-water models. <i>S. Boyaval</i>	ID-77
10:40 – 11:00	Catchment scale flash flood simulation with an HPC enabled shallow water solver. <i>D. Caviedes-Voullième</i>	ID-53
11:00 – 11:30	Coffee break	
11:30 – 13:10	<b>Parallel Session 2.2b - Numerical simulations of shallow flows</b> Chair: <i>Damien Violeau</i>	
11:30 – 11:50	Numerical investigation of vegetation effects on the hydrodynamics in an asymmetrical compound channel. <i>L.E.D. de Oliveira</i>	ID-79
11:50 – 12:10	Physics-informed neural networks solution for the 2D Shallow Water Equations over complex topography. <i>G. de Almeida</i>	ID-105
12:10 – 12:30	Theoretical and Numerical Analysis of Wave–Vegetation Interaction. <i>D. De Padova</i>	ID-78
12:30 – 12:50	Shallow water modelling of levee failure-induced inundations: the case of the Lamone River in September 2024. <i>A. Ferrari</i>	ID-73
12:50 – 13:10	A HPC Distributed-Heterogeneous Shallow Water Solver for Tsunami Modelling. <i>R. Lage Ferreira</i>	ID-113
13:10 – 14:20	Lunch	
14:20 – 15:40	<b>Parallel Session 2.3b - Heat and mass transport in shallow flows</b> Chair: <i>Tew-Fik Mahdi</i>	
14:20 – 14:40	Dynamics of model microplastic particles in a bifurcation flow. <i>E. Mignot</i>	ID-81
14:40 – 15:00	DNS of mass transport in the turbulent free-surface wave flow over a shallow wavy bottom. <i>M. Mazzuoli</i>	ID-117
15:00 – 15:20	How to compute scalar mixing with a 2D advection-diffusion equation? Application to a pollutant spreading during an urban flood. <i>E. Mignot</i>	ID-3

## DAY 3 Conference Programme

## 17 September

15:20 – 15:40	2D Shallow flows with passive transport: a highly scalable HPC implementation. <i>M. Morales-Hernández</i>	ID-60
15:40 – 16:10	Coffee break	
16:10 – 17:10	<b>Parallel session 2.4b - Stratification effects and gravity currents</b> <i>Chair: Claudia Adduce</i>	
16:10 – 16:30	Spatial-temporal observations of thermocline dynamics in an enclosed former estuary. <i>H. Clercx</i>	ID-43
16:30 – 16:50	Modelling the impact of topography and river flow on salt-wedge dynamics in micro-tidal estuaries. <i>A. Cuthbertson</i>	ID-21
16:50 – 17:10	Fast gravity currents in porous media. <i>V. Di Federico</i>	ID-72
17:30 – 18:45	<b>Visit to the Hydraulics and Fluid Mechanics Laboratory at Politecnico di Torino</b>	

## DAY 4 Conference Programme

## 18 September

9:00 – 10:00	<b>Keynote 3, Room R3, Prof. Guido Boffetta (Università di Torino)</b>  From flatland to dimensional phase transitions in turbulence	
<b>Track a – Room R3</b>		
10:00 – 11:00	<b>Parallel Session 3.1a - Ecological aspects of shallow flows</b> <i>Chair: Carlo Camporeale</i>	
10:00 – 10:20	Reynolds stress distribution around an idealized stone at shallow depths. <i>D. Nilsson</i>	ID-30
10:20 – 10:40	HPC Lagrangian particle transport in SERGHEI framework. <i>P. Vallés</i>	ID-39
10:40 – 11:00	Influence of Bed Roughness on the Fully Developed Open Channel Flow Over Musselbeds. <i>T. Lazzarin</i>	ID-18
11:00 – 11:30	Coffee break	
11:30 – 13:10	<b>Parallel Session 3.2a - Turbulence in open channel flows</b> <i>Chair: Qiang Zhong</i>	
11:30 – 11:50	Effect of porous rectangular patch of emergent vegetation on turbulent coherent structures in channel flow. <i>A. Del Gaudio</i>	ID-24
11:50 – 12:10	Canopy patch of streamwise-oriented plates in open-channel flow. <i>O. Eiff</i>	ID-109
12:10 – 12:30	Impact on shallow flow's free surface by rippled bottoms: Further study on resonance and instability. <i>J. Fan</i>	ID-98

## DAY 4 Conference Programme

## 18 September

12:30 – 12:50	Turbulence Induced by River Bedforms in Supercritical Flows. <i>S. Farazande</i>	ID-80
12:50 – 13:10	Effects of Bed Roughness on Near-Bed Turbulence Characteristics in Emergent Vegetated Channel Flows. <i>Y. Lu</i>	ID-83
13:10 – 14:20	Lunch	
14:20 – 15:20	<b>Keynote 4, Room R3, Prof. Gabriel Katul (Duke University)</b>	
	Gas transfer across air-water interfaces in inland waters: from micro-eddies to super-statistics.	
15:20 – 16:40	<b>Parallel Session 3.3a - Modelling shallow flows</b> Chair: <i>Costantino Manes</i>	
15:20 – 15:40	Observation and modelling the water temperature in a tidal flat. <i>X. Chen</i>	ID-118
15:40 – 16:00	A hybrid LES/RANS computation using mapped inlet condition. <i>J. Paik</i>	ID-52
16:00 – 16:20	A simple hydrodynamic model for sediment dynamic in shallow alpine lakes. <i>M. Viscido</i>	ID-120
16:20 – 16:40	Flow Instability and Turbulent Properties of Karmen Vortices in Atmosphere. <i>D. Chen</i>	ID-122
<b>Track b – Room R3B</b>		
10:00 – 11:00	<b>Parallel Session 3.1b - Numerical simulations of shallow flows</b> Chair: <i>Gustavo De Almeida</i>	
10:00 – 10:20	Coupled shallow surface flow and variably-saturated subsurface flow simulation with SERGHEI. <i>Z. Li</i>	ID-45
10:20 – 10:40	Eddy resolving simulations of flows around bridge piers with debris. <i>F. Giordana</i>	ID-48
10:40 – 11:00	Numerical simulation of wave-current interaction in a 2D channel. <i>S. M. Mousavi</i>	ID-16
11:00 – 11:30	Coffee break	
11:30 – 13:10	<b>Parallel Session 3.2b - Numerical simulations of shallow flows</b> Chair: <i>Daniel Caviedes-Voullième</i>	
11:30 – 11:50	Urban Flood Simulation: Coupling Porosity Model with Suspended Sediment Transport. <i>S. Nash</i>	ID-97
11:50 – 12:10	River Floods and Morphodynamic Processes: the role of Dune Evolution to Upper Stage Plane Bed in the Po River. <i>A. Pilbala</i>	ID-36
12:10 – 12:30	Equivalent riverbed slope in irregular channels. <i>A. Valiani</i>	ID-20
12:30 – 12:50	Numerical modeling of Favre waves in non-prismatic channels with wave breaking. <i>B. Jouy</i>	ID-2

# DAY 4 Conference Programme

# 18 September

12:50 – 13:10	SERGHEI-SWMM: A High-Performance, Portable Urban Flood Simulation Model with Parallel Computing Capabilities and Practical Application. <i>N. Zheng</i>	ID-8
13:10 – 14:20	Lunch	
14:20 – 15:20	<b>Keynote 4, Room R3, Prof. Gabriel Katul (Duke University)</b>  Gas transfer across air-water interfaces in inland waters: from micro-eddies to super-statistics.	
15:20 – 16:40	<b>Parallel Session 3.3b - Numerical simulations of shallow flows</b> <i>Chair: Alessandro Valiani</i>	
15:20 – 15:40	Catchment soil erosion based on 2D shallow water equations with a highly scalable HPC implementation. <i>D. Caviedes-Voullième</i>	ID-57
15:40 – 16:00	GPU-based numerical modeling of scalar transport in arbitrary meshes. <i>L. Sicard</i>	ID-32
16:00 – 16:20	Efficient GPU-Based 1D and 2D Water Quality Modeling for Shallow Water Flows. <i>M. Wang</i>	ID-33
16:20 – 16:40	Ill-posedness of the Shallow Water Equations. <i>T.F. Mahdi</i>	ID-110
16:40 – 16:50	<b>Closing Ceremony</b>	

## Conference information

### Venue

The conference will be held at the Politecnico di Torino – Rooms R  
Via Paolo Borsellino 28-44, 10138 Torino



### Registration

Pre-registered participants can collect their conference kit at the registration desk. The registration desk will be open at the following times:

Monday, September 15 – 08:30 – 18:30

Tuesday, September 16 – 08:00 – 18:00

Wednesday, September 17 – 08:30 – 17:30

Thursday, September 18 – 08:30 – 17:00

### Badges

All delegates and exhibitors are kindly requested to always wear their name badge. Entrance to the meeting rooms will be limited to regularly enrolled participants.

### Language

Official language will be English. No simultaneous translation will be provided.

## Social Dinner

September 17th – Arcadia Restaurant Galleria Subalpina, 16 Torino at 8:00 p.m.

### Liability

The congress participants agree that neither the Organizing Committee nor the conference Secretariat can be held liable or assume any responsibility for any damage to, or loss of property or for injuries to persons during the congress. Participants are advised to arrange for their own health, travel and personal insurances. The congress organization does not cover individuals against cancellation of bookings, theft or damage to belongings.

### Disclaimer

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