# The digital river

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3.1 Advanced methods in turbulence modelling of fluvial systems A

1. Effect of active filtering on flow around a partially submerged freshwater mussel, Hao Wu, George Constantinescu, Jie Zheng.

2. Mass and momentum exchange in lateral bank cavities with increasing aspect ratio using large-eddy simulation, Pablo Ouro, Carmelo Juez, Mario Franca.


4. Large-eddy simulation of turbulent free surface flows past a surface-piercing circular cylinder, Zhihua Xie, Thorsten Stoesser, Junqiang Xia.

5. Investigation of water surface treatments in DES simulations and their effects on outer bank cell production in river bends, H. K. Schreiner, Colin Rennie, A. Mohammadian.

3.2 Advanced methods in turbulence modelling of fluvial systems B


3.3 Data analysis

1. GIS and remote sensing for tracking morphological changes and vegetation coverage at the reach scale: the Po River case study, Michael Nones, Massimo Guerrero.


4. Application of Convolutional Neural Network Method to Measure Free Surface Velocity in Open Channel Flow, Ting-Yu CHEN, Howard H-C HO.

3.4 Monitoring techniques

1. Remote gauging of open channel flow: Estimation of depth averaged velocity from surface velocity and turbulence, Graeme Smart, Hamish Biggs.

2. Determining image-based grain size distribution with suboptimal conditioned photos, Martin Detert, Volker Weitbrecht.


3.5 Applications

1. Improved floodplain vegetation roughness for 1D hydraulic models, Alessandra Crosato, James Zulfan, Andrés Vargas-Luna.


3. A quantitative assessment of hydrodynamic impacts due to variable discharges on the backwater deposits of Durgapur Barrage over River Damodar in India using MIKE 11, Sayak Nandy, Manas Kumar Das, Bibhas Chandra Barman, Ramendra Bikas Sahu.


6. Assessment of river embankments security: a case study, Angelo LEOPARDI, Giovanni de Marinis, Cristiana Di Cristo, Massimo Greco, Giuseppe Del Giudice, Stefano Sarracini, Annalaura Gabriele, Nicola Cifì.

7. Numerical modelling approaches for flow near groynes - comparison with experiments, Lindert Ambagts, Frank Platzek, Mohamed Yossef, Manuela Baron.

3.6 Floods and morphodynamics

1. Flood simulation in urban areas obtained by GPU-accelerated 2D shallow water model with internal boundary conditions, Susanna Dazzi, Renato Vacondio, Alessia Ferrari, Marco D’Oria, Paolo Mignosa.

2. Depth averaged numerical simulation of non-cohesive river dike breaching due to overtopping flows, Lydia KHELOUI, Ismail RIFAI, Kamal EL KADI ABDERRAZAK, Benjamin DEWALS, Riadh ATA.

4. A 2D Shallow water model with depth-dependant porosity applied to the Severn River, Vita Ayoub, Carole Delenne, Renaud Hostache, Patrick Matgen.

5. Simulation of hydro-sedimentary processes during a dam flushing event using three 1D numerical software, Emilio Corrales Lalinde, Violaine Dugué, Thierry Fretaud, Matthieu Secher, Eric Valette, Jean-Baptiste Faure, Benoît Carenen.

6. Automated quantification of river morphodynamics from satellite imagery for large multithreaded rivers, Joep Rawee, Freke Huthoff, Denie Augustijn, Carolien Wegman, Mattijn van Hoek.


3.7 Numerical techniques

1. New approaches to solving the Saint-Venant equations, Ben R. Hodges, Frank Liu, Cheng-Wei Yu.

2. Simulation of resonant gravity waves in shallow water flows using a depth-averaged URANS model, Adrian Navas-Montilla, Carmelo Juez, Mario Franca, Javier Murillo.

3. A high-order augmented Riemann solver for the treatment of bottom steps and porosity discontinuities in the Shallow Water Equations with porosity, Alessia Ferrari, Renato Vacondio, Paolo Mignosa.


5. Control theory-based update of water levels in 1D hydrodynamic models, Miloš Milašinović, Dušan Prodanović, Budo Zindović, Nikola Rosić, Nikola Milivujević.


7. Large Eddy Simulation for flows through emerged or slightly submerged square obstacles, Marina OUKACINE, Rajae RTIMI, Nicole GOUTAL, Vincent LOIZEAU, Sofiane BENHAMADOUCHE, Frédérique LARRARTE, Sébastien PROUST.


3.8 The future of river modelling

1. Automating flood-safe ecological river modelling and design, Sebastian Schwindt, Gregory Pasternack.

2. Combination of Machine-learning Method and Sediment Transport Model to Forecast Sediment Budget in Watershed, Shu-Hao Chang, Howard H-C HO.

3. Two-dimensional modelling of hydro-morphodynamic processesin a gravel-bed river: new insights fromin situmeasurementprogress and interoperability applications, Coraline Bel, Magali Jodeau, Nicolas Claude, Pablo TASSI.


3.9 The future of river modelling B

1. Inundation hazard analysis using open data from the web: application to the Rio Muaguide in Mozambique, Davide Biotto, Giorgio Cancelliere, Benedetta Corti, Anna Giovannini, Alessio Radice, Sara Rrokaj.

2. Physical and numerical model studies of the Martigny bend as part of 3rd correction of the Rhone River, Azin Amini, Jean-Noël Saugy, Stephanie André, Khalid Essyad, Tony Arborino, Giovanni de Cesare.

3. The application of hydrogeomorphological tools to improve agricultural watershed management in Quebec (Canada), Nicolas Stämpfli.


5. Flood risk analysis and communication using digital twins of urban areas, Torsten Heyer, Juergen Stamm.