



*water*

an Open Access Journal by MDPI



## Application of Hydrodynamic Simulation and Artificial Intelligence in Hydraulic Engineering

Guest Editors:

**Dr. Xin Zhao**

School of Civil Engineering,  
Tianjin University, Tianjin, China

**Prof. Dr. Leon Boegman**

Environment Fluid Dynamic  
Laboratory, Department of Civil  
Engineering, Queen's University,  
Kingston, ON, Canada

**Dr. Mohammad Reza Najafi**

Department of Civil and  
Environmental Engineering,  
Western University, Ontario, ON  
N6A 3K7, Canada

Deadline for manuscript  
submissions:

**closed (30 April 2023)**

### Message from the Guest Editors

Dear Colleagues,

Anthropogenic changes in the internal or external conditions of the water body will lead to changes in the ecosystem and the implementation of water resources management plans will have a positive or negative impact on surface water resources. In order to improve management and utilization of surface water resources, decision-making must be based on reliable scientific models. However, the complexity of natural water bodies and the application of commonly applied process-based models faces many challenges, such as the selection of empirical parameters, high computational cost, and assessing the impacts of uncertainty in boundary conditions and process parameterizations. In contrast to process-based models, Artificial Intelligence (AI) and Machine Learning (ML) methods develop relationships purely from data and are particularly suitable for application in complex and non-linear systems.

This Special Issue of *Water* focuses on the application of AI and ML for the simulation of surface water hydrodynamics, water quality, and management.

Dr. Xin Zhao

Prof. Leon Boegman

Prof. Mohammad Reza Najafi

Guest Editors



[mdpi.com/si/140493](https://mdpi.com/si/140493)

**Special** *Issue*



*water*



an Open Access Journal by MDPI

## Editor-in-Chief

### **Dr. Jean-Luc PROBST**

Laboratory of Functional Ecology and Environment, Centre National de la Recherche Scientifique (CNRS), University of Toulouse, Campus ENSAT, Auzeville Tolosane, France

## Message from the Editor-in-Chief

In the context of global changes, the sustainable management of water cycles, going from global and regional water cycles to urban, industrial and agricultural water cycles, plays a very important role on the water resources and on their relationships with food, energy, biodiversity, ecosystem functioning and human health. *Water* invites authors to provide innovative original full articles, critical reviews and timely short communications and to propose special issues devoted to new technological and scientific domains and to interdisciplinary approaches of the water cycles. We ensure a critical review process and a quick turnaround between submission and final decision.

## Author Benefits

**Open Access:** free for readers, with article processing charges (APC) paid by authors or their institutions.

**High Visibility:** indexed within Scopus, SCIE (Web of Science), Ei Compendex, GEOBASE, GeoRef, PubAg, AGRIS, CAPlus / SciFinder, Inspec, and other databases.

**Journal Rank:** JCR - Q2 (*Water Resources*) / CiteScore - Q1 (Water Science and Technology)

## Contact Us

---

Water Editorial Office  
MDPI, Grosspeteranlage 5  
4052 Basel, Switzerland

Tel: +41 61 683 77 34  
[www.mdpi.com](http://www.mdpi.com)

[mdpi.com/journal/water](http://mdpi.com/journal/water)  
[water@mdpi.com](mailto:water@mdpi.com)  
[X@Water\\_MDPI](https://twitter.com/Water_MDPI)