Special Issue

Application of Big Data and Machine Learning in Hydrological Forecasting and Water Resource Management

Message from the Guest Editors

In recent years, hydrology has entered a data-rich era with unprecedented volumes of information from satellite remote sensing, ground-based sensor networks, and climate reanalysis models. However, transforming these raw data into actionable insights requires advanced computational tools capable of handling high dimensionality, noise, and nonlinear dynamics characterizing hydrological systems. This Special Issue aims to showcase recent progress in machine learning (ML) and artificial intelligence (AI) methods tailored to hydrological science, emphasizing approaches that move beyond conventional black-box models toward interpretable, physics-informed, and reinforcement learning-based methodologies that align with real-world hydrological behavior and constraints. This Special Issue welcomes the submission of both theoretical advancements and practical applications, emphasizing interdisciplinary work that advances understanding and prediction capabilities for complex water systems.

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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.

Editor-in-Chief

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