Special Issue

Advancing Flood Detection, Monitoring & Simulation: Integrating Machine Learning, Remote Sensing & Hydrodynamic Model

Message from the Guest Editors

The increasing severity of global flood events necessitates the development of advanced methodologies for flood detection, monitoring, and simulation. Hydrodynamic models, remote sensing, and machine learning represent effective approaches to flood risk management. The issue aims to address evolving challenges in flood resilience and adaptive strategies in the context of climate change, ultimately developing solutions to protect communities, infrastructure, and sustainable development from extreme rainstorm floods. We welcome manuscripts that link the following themes:

- Machine learning-enhanced flood early warning systems and flood forecasting;
- Hydrodynamic and hydrological modeling for urban and catchment scale flood inundation and risk assessment;
- Remote sensing and UAV-based real-time flood inundation mapping and monitoring;
- Dynamic flood vulnerability assessment using geospatial analytics;
- Integrated machine learning and remote sensing approaches for flood intelligent detection;
- Urban flood resilience evaluation using integrated computational models and AI.

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Message from the Editor-in-Chief

Hydrology is the study of the waters of the Earth. *Hydrology* has close ties with hydraulics, hydrogeology and the multiple sciences that study the atmosphere, the land surface, the soil and the subsoil, and ranges from complex problems of risk, forecasting and optimization of water resources to interactions with ecological, urban, social and economic systems.
The purpose of *Hydrology* is then to provide a journal where research results and real-world problems can be presented and discussed in order to bridge the traditional gaps between the academic world and the professionals and decision makers. Therefore, *Hydrology*, invites authors to submit their original theoretical, field, experimental, and numerical studies on hydrology with strong emphasis on multidisciplinary approaches and interdisciplinary topics, which cross the typical boundaries of our science.

Editor-in-Chief

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