Special Issue

Hydrological Extremes and Drought Management—Challenges, Innovations, and Solutions

Message from the Guest Editors

This Special Issue of *Atmosphere*, titled **"Hydrological Extremes and Drought Management – Challenges, Innovations, and Solutions"**, aims to compile a collection of high-quality studies that explore the intersection of hydrological extremes, novel modeling approaches, and sustainable management solutions. Potential topics include, but are not limited to, the following:

- Hybrid modeling frameworks that combine physics-based hydrological models with AI/ML methods
- Development of integrated hydro–climate models for regional and local drought/flood forecasting
- Use of Earth Observation data and sensor networks for real-time hazard monitoring
- Uncertainty analysis and ensemble projections using CMIP6, CORDEX, or other climate model datasets
- Evaluation of adaptation and mitigation strategies under different socio-economic scenarios (e.g., SSPs)
- Risk mapping and resilience assessment of water systems in arid, semi-arid, and urban regions
- The application of spatial statistics, time–frequency analysis, and nonlinear dynamics in hydro-climatology
- Compound and cascading hazard analysis under climate extremes

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Deadline for manuscript submissions

31 October 2025

Atmosphere

an Open Access Journal by MDPI

Impact Factor 2.3
CiteScore 4.9

mdpi.com/si/237646

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About the Journal

Message from the Editor-in-Chief

Continued developments in instrumentation and modeling have driven atmospheric science to become increasingly more complex with a deeper understanding of concepts, mechanisms, and interactions. This is the field that innovation built and it has led to a better appreciation for the complexity with atmosphere. Human life is intertwined in this complexity as we strive to better understand our atmosphere. Climate change is constantly stretching the limits of our thinking and forcing new ideas and concepts to be played out. Welcome to the Anthropocene!

Editor-in-Chief

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