Special Issue

Hydroclimate Extremes Under Climate Change

Message from the Guest Editor

As the climate continues to change, extreme hydrological events —such as intense rainfall, prolonged droughts, and severe floods —are becoming more frequent and intense. These shifts in hydroclimate patterns present serious challenges to water resource management, infrastructure resilience, and ecosystem health. Understanding how these extremes are evolving across both space and time is crucial for effective planning and climate adaptation. This Special Issue invites original research on hydroclimatic extremes in the context of climate change, with a focus on both historical analyses and future projections. Contributions using CMIP6 climate model outputs, regional frequency analysis, non-stationary extreme value approaches, and spatial modeling techniques are particularly encouraged. Studies should aim to identify trends, evaluate non-stationarity, and quantify uncertainties in hydroclimate variables across diverse geographic and climatic settings. We also welcome research on compound events (e.g., simultaneous droughts and heatwaves) and the role of climate teleconnections (e.g., ENSO, NAO) in influencing regional hydrology.

Guest Editor

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Deadline for manuscript submissions

24 February 2026

Atmosphere

an Open Access Journal by MDPI

Impact Factor 2.3
CiteScore 4.9

mdpi.com/si/245739

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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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