Special Issue

Simulation, Assessment, and Impacts of Extreme Hydroclimatic Events

Message from the Guest Editors

Over the last few decades, extreme hydroclimatic events have been intensifying in frequency and severity due to both climate change and human activities. These hydroclimatic extremes pose significant threats and challenges to the well-being of society and the natural environment. On the contrary, extreme precipitation may lead to flash floods, infrastructure and property damage, and economic and environmental disruption. Therefore, working to enhance societal resilience, efforts to simulate and assess these hydroclimatic extremes play a vital role in understanding spatial and temporal dynamics and in identifying effective measures needed to minimize the associated risk. Hydrological and hydrodynamic simulations help to assess past, present, and future conditions, providing valuable insights for early warning systems and adaptive planning. By incorporating observed and freely available present and future data, remote sensing techniques, and socio-economic–environmental parameters, models and tools can effectively assess the hydroclimatic extremes and support decision-makers in improving disaster preparedness and building more climate-resilient communities.

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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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