# Special Issue

# Advances in High-Resolution Climate Modeling

### Message from the Guest Editor

High-resolution climate modeling has become an important tool for deepening our understanding climate of dynamics and generating actionable climate information for climate adaptation. This Special Issue brings together cutting-edge research on the development, validation using new observational datasets, and application of high-resolution climate models (km-scale or finer) at both regional and global scales. It highlights how these models enhance our understanding of climate processes, especially extreme events and urban climate. Contributors to this issue delve into key advancements in model parameterization, the increasing use of machine learning techniques in high-resolution climate simulations, and applications across sectors for climate mitigation and adaptation. The issue also addresses the challenges of computational cost and data management, proposing solutions to further improve the accessibility and utility of high-resolution modeling for climate impact assessments and adaptation planning.

### Guest Editor

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### Deadline for manuscript submissions

closed (17 October 2025)

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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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