

## Special Issue

# Advanced AI Methods for Extreme Weather Monitoring and Risk Assessment

### Message from the Guest Editors

This Special Issue aims to platform recent advances in advanced artificial intelligence methods for extreme weather monitoring, spatiotemporal characteristic analysis, and risk evaluation, which are fundamental to meteorological forecasting, disaster early warning, urban safety governance, and climate change adaptation. Traditional statistical and numerical methods face limitations in capturing nonlinear atmospheric variations and complex extreme weather mechanisms; meanwhile, advanced AI techniques offer powerful tools for high-dimensional meteorological data mining, dynamic pattern recognition, and refined risk quantification, improving the accuracy and efficiency of extreme weather research and practical applications. The areas of interest for this Special Issue include, but are not limited to, advanced AI modeling for extreme weather; data fusion of AI algorithms with satellite and in situ meteorological observations; probabilistic and statistical AI methods for extreme weather analysis; intelligent identification and prediction of compound extreme weather; AI-driven extreme weather risk assessment and early warning; and engineering.

### Guest Editors

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Dr. Tingyu Yan  
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### Deadline for manuscript submissions

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## Atmosphere

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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!

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### Editor-in-Chief

Dr. Daniele Contini

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