Special Issue

Advanced Numerical Modeling Techniques in Meteorology: Exploring the Frontier of Weather Prediction and Data Assimilation

Message from the Guest Editors

The field of meteorology is undergoing a transformative phase, driven by revolutionary breakthroughs in the application of artificial intelligence (AI), advancements in numerical modeling techniques, and the burgeoning potential of quantum computing. This Special Issue of *Atmosphere* aims to provide a comprehensive overview of these cutting-edge methodologies, offering insights into their applications, challenges, and prospects. The intersection of advanced numerical modeling techniques, hybridization of AI-integrated physics models, and quantum computing heralds a new era in meteorology. By embracing these innovative approaches, meteorologists can enhance the accuracy of weather predictions, improve data assimilation processes, and tackle previously insurmountable challenges. This Special Issue of *Atmosphere* aims to foster collaboration, stimulate discussion, and inspire further research in these groundbreaking areas. We invite contributions from researchers, practitioners, and experts to share their insights, findings, and visions for the future of meteorological science. If you are interested, please scan the QR code or click the link after the code for more specific details.

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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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