

Special Issue

Novel Approaches to Predict Extreme Events in Atmospheric Flows: From Turbulence to Climate

Message from the Guest Editor

In the current era, extremes hold a very special place, especially in the context of atmospheric science.

Despite their importance, the chaotic dynamics of atmospheric flows impose significant uncertainties regarding how the future intensities and spatial distributions of climatic extremes will vary. At the opposite end of the spectrum, the detection of extremes in turbulent variables continues to be an active area of research. Therefore, to make progress towards these issues, we encourage submissions that propose novel approaches (both theoretical and experimental) to diagnose extremes spanning across scales from turbulence to the climate. In this Special Issue, we invite submissions on topics that include, but are not limited to, the following: Statistical models to predict extreme events across multiple scales.

Novel theoretical and experimental approaches to detect extreme events.

The impacts of extremes on ecosystem greenhouse gas exchanges.

Assessments of artificial intelligence/machine learning approaches in extreme event predictions.

Guest Editor

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Deadline for manuscript submissions

closed (30 April 2026)



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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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