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The Physics, Dynamics, and Prediction of Extreme Weather in a Changing Climate

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Message from the Guest Editors

As the global temperature keeps rising, the world is facing increasing risks of extreme weather, such as torrential rainfall, heatwaves, and wildfires, which impact human health and safety and disrupt our societies. Thus, more than ever, we need to improve our understanding of the physics and dynamics of extreme weather and enhance our predicting skills of those events.

Here we cordially invite your contribution to this special issue of Atmosphere, which intends to highlight the community's new knowledge of extreme weather processes and advances in our forecasting skills. The topics include, but are not limited to,

- tropical cyclones,
- extreme precipitation and flooding,
- drought,
- dust storms,
- hailstorms,
- heat waves.

The investigation approaches can be based on

- conventional observation,
- remote sensing,
- numerical simulations,
- machine learning.

We believe that process-level understanding is vital for intellectual and practical merits. We also value the development of new methodologies in the weather forecast, data assimilation, and [illegible] and the use of machine learning.

Special Issue

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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!

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