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Statistical Methods in Weather Forecasting

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Message from the Guest Editors

Dear Colleagues,

Weather related events have a deep impact on several fields of economy, so reliable prediction of the different weather quantities are of crucial importance. Nowadays all major meteorological services issue ensemble forecasts, which opens the door for probabilistic forecasting.

However, ensemble forecasting requires enormous computational resources, so to approximate high-resolution outputs of numerical weather prediction models, stochastic generators using spatial and time series models are applied. Further, ensemble forecasts often exhibit systematic errors which call for some form of post-processing. In the last 15 years a variety of different approaches to statistical calibration of ensemble forecasts have been developed from parametric methods to machine learning techniques.

This Special Issue of Atmosphere aims to exhibit a collection of recent development in statistical calibration, weather generators, spatial modeling and other stochastic approaches to weather prediction.

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Dr. Annette Möller
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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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