Advances in Wind and Wind Power Forecasting and Diagnostics

Guest Editor:

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Deadline for manuscript submissions:
27 May 2024

Message from the Guest Editor

Wind forecasting has many scientific and socio-economical applications in a diverse range of areas, such as wind energy, airport operations, wildfires, ground transportation, shipping, generation of wind waves, wind-driven ocean currents, and human thermal comfort. High winds can cause hazards. Winds from tornadoes and hurricanes can leave a trail of death and destruction in communities visited by these storms. Because of the importance of renewable energy, especially wind energy, in reducing countries' consumption of carbon-based fuels, wind and wind energy forecasting have garnered much attention in the renewable energy community.

Wind forecasting can be carried out utilizing a number of methods. Wind forecasts can come from numerical prediction models where the dynamical and thermodynamical variables are solved from a set of coupled partial differential equations based on principles of geophysical fluid dynamics and thermodynamics or empirical models using statistics or machine learning. Additionally, wind forecasts can be derived from combining numerical weather forecasts and statistical or machine learning models.

mdpi.com/si/152077

Special Issue

Editor-in-Chief

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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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Journal Rank: CiteScore - Q2 (*Environmental Science (miscellaneous)*)

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