Special Issue

Carbon Neutrality, Renewable Energy and Climate Change Impacts

Message from the Guest Editors

This Special Issue focuses on the interdisciplinary nexus of carbon neutrality, renewable energy development, and climate change impacts, addressing the urgent global challenge of balancing decarbonization goals with atmospheric environmental stability. It welcomes original research and critical reviews exploring the synergies and trade-offs between renewable energy deployment and climate change dynamics, including regional climate simulations, statistical or dynamical downscaling techniques for climate models, climate-driven variations in renewable energy potential, atmospheric feedback effects of low-carbon energy transitions. Topics cover quantitative assessments of greenhouse gas mitigation via renewable energy, climate change impacts on energy system, carbon-neutral pathways for atmospheric pollution co-control, and regional/global policy frameworks for integrated energy-climate governance. We aim to advance evidence-based insights for optimizing renewable energy strategies under climate change, bridging atmospheric science, energy engineering, and environmental policy to support actionable solutions for global carbon neutrality and atmospheric sustainability.

Guest Editors

Dr. Junhong Guo

College of Environmental Science and Engineering, North China Electric Power University, Beijing 102206, China

Dr. Xander Wang

School of Climate Change and Adaptation, University of Prince Edward Island, Charlottetown, PE C1A 4P3, Canada

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Atmosphere
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
atmosphere@mdpi.com

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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

Dr. Daniele Contini
Institute of Atmospheric Sciences and Climate (ISAC), National Research Council (CNR), Str. Prv. Lecce-Monteroni km 1.2, 73100 Lecce, Italy

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