Special Issue

Global and Regional Perspectives on Particulate Matter and Air Quality: Environmental and Health Impacts, Challenges, Policies, and Solutions

Message from the Guest Editors

Particulate matter (PM) air pollution is one of the most critical environmental challenges of our time. The Global Burden of Disease study group confirms that particulate matter is the leading contributor to the global disease burden, while the World Bank estimates the global health costs associated with PM exposure at USD 8.1 trillion. These findings highlight its profound socio-economic and public health implications while underscoring the urgent need to address PM pollution as a pivotal aspect of improving air quality worldwide. The complex interplay between natural and anthropogenic sources complicates the challenge of achieving cleaner air. Additionally, variations in PM concentrations and composition across geographic regions, driven by local emission profiles and meteorological conditions, demand tailored mitigation strategies informed by scientific evidence. This Special Issue seeks to advance the understanding of PM air pollution by bringing together research on global and regional studies that investigate its sources, health impacts, environmental implications, economic evaluations, future scenarios, and potential solutions.

Guest Editors

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Deadline for manuscript submissions

30 October 2025

Atmosphere

an Open Access Journal by MDPI

Impact Factor 2.3
CiteScore 4.9

mdpi.com/si/229958

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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

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