Special Issue

Characteristics and Trends of Air Pollutants and Their Relationship to Atmospheric Circulations

Message from the Guest Editors

Air pollutants, such as particulate matter (PM), ozone (O_3), nitrogen oxides (NO$_x$), sulphur dioxide (SO_2), carbon monoxide (CO), and volatile organic compounds (VOCs), are major contributors to environmental degradation and public health issues. Atmospheric circulations play a pivotal role in shaping the distribution, transport, and transformation of air pollutants. Large-scale systems, such as the jet stream, monsoons, and trade winds, influence pollutant dispersion across continents, while localized phenomena like sea breezes and mountain–valley circulations affect regional air quality. Understanding the relationship between air pollutants and atmospheric circulations is critical for improving air quality forecasting, public health strategies, and environmental policies. This Special Issue intends to collect articles on the characteristics and trends of air pollutants and their relationship to atmospheric circulations. We invite contributions that deal with the variability and predictability of atmospheric pollutants, particularly in the polar regions, and the relationship between the characteristics and trends of these pollutants and atmospheric circulation.

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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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