Special Issue

The Uncertainty of Estimating Aerosol Climate Effects Using Atmospheric Models

Message from the Guest Editor

Atmospheric models have become an important tool for studying how Earth responds to anthropogenic activities. The downside is that model-based estimations have more considerable uncertainty. These uncertainties might result from the systematic model bias, which includes the physical mechanisms described by the model code and the external forcers used as model input data. Furthermore, the model year-to-year internal variability, which is the natural year-to-year fluctuations during model simulation without year-to-year changes in external forces, is also a considerable uncertainty source.Estimating aerosol effects with atmospheric models definitely involves the issues of uncertainty mentioned above. For instance, one aerosol–cloud interaction parameterization might overestimate/underestimate the aerosol Twomey effect. Sharing experiences about these uncertainties is helpful for setting up model experiments and better understanding modeled aerosol climate effects. We welcome researchers to contribute to this Special Issue by sharing their experiences.

Guest Editor

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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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