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Black Carbon Optical Properties, Atmospheric Evolution, and Model Simulations

Guest Editors:

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Deadline for manuscript submissions:
closed (15 September 2023)

Message from the Guest Editors

Dear Colleagues,

Black carbon (BC, i.e., soot), consisting of carbonaceous fractal-like aggregates, is an important type of light-absorbing aerosol particle. BC particles not only aggravate air pollution and pose significant health risks to the general public, but also change atmospheric radiative forcing and influence global climate. Fresh BC particles are hydrophobic but are converted into a hydrophilic state following their aging processes. Secondary aerosols coated on BC particles significantly change the optical scattering and absorption capacity of BC particles. Although great progress has been made in the field of atmospheric BC aerosols, it is highly challenging to quantify their optical properties and trace their evolution (also known as aging) processes in the air. Accurate model simulations on the mixing structures and optical properties are urgently required in climate models. Papers addressing BC observation and simulations are invited in this Special Issue, especially those concerning BC atmospheric aging, optical properties, and model simulations.

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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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