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Atmospheric Black Carbon: Monitoring and Assessment

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Message from the Guest Editor

Dear Colleagues,

Atmospheric black carbon (BC) absorbs radiation in the ultraviolet and visible spectra. BC, emitted from the incomplete combustion of fossil fuel, biofuel, and biomass, is one of the strongest absorptive aerosols for solar radiation. Once being emitted into the atmosphere, BC particles quickly become inhomogeneous during the aging processes. BC and its mixtures influence local and global climate directly by strongly absorbing solar radiation. Due to their complex geometry and mixing structure, our understanding of the optical properties of carbonaceous aerosols is still limited, which makes carbonaceous aerosols one of the largest uncertainties in the estimation of aerosol radiative forcing.

This Special Issue focuses on the monitoring and assessment of BC aerosols, including chemical composition, size distribution, mixing state, optical properties, spatial and temporal distributions, and source apportionment. Moreover, novel methods and techniques for the remote sensing of carbonaceous aerosol properties and other topics related to the climate effects of carbonaceous aerosols are also welcome.

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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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