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Biomass Burning Aerosols

Guest Editor:

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Message from the Guest Editor

Biomass-burning aerosols emitted from wildfires greatly impact the global climate by scattering and absorbing solar radiation and functioning as cloud condensation nuclei and ice nuclei. Some pyro-convection systems even lifted the biomass-burning aerosols to the upper troposphere and lower stratosphere, exerting long-lived radiative effects. Despite the importance, large biases exist in the representation of biomass-burning aerosols' emissions, injection heights, and microphysical and radiative properties in the numerical models. These biases eventually translate to large uncertainties in the estimation of biomass-burning aerosols' radiative effects. This Issue focuses on the measurement of the microphysical and radiative properties of biomass-burning aerosols, as well as modeling of the emission, transport, and climatic effects of biomass burning cross different spatiotemporal resolutions. Using novel approaches, like machine/deep learning techniques, for predicting future biomass burning emissions and injection height is strongly encouraged. Long-term remote sensing analyses on the characteristics of biomass-burning aerosols and wildfires are also welcomed.

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Special Issue

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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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