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Remote Sensing of Aerosols

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Message from the Guest Editor

Recent developments in remote sensing, such as novel satellite technologies (LiDAR, polarized or multi-angle techniques) or coordination of ground-based instruments as networks, have allowed a better characterization of aerosols at a global scale. Aerosols play an important role in the radiative balance of the Earth climate system. Nowadays, a large uncertainty is assigned to the indirect effect of aerosols, related with their interaction with clouds. This is mainly due to the highly variable aerosol properties in space and time. Present climate models account for this variability by parametrizing the aerosol emissions, formation in the atmosphere and transport.

A significant progress in the characterization of the aerosol distribution, life-cycles and profiles has been provided by recent developments in remote sensing techniques. This allows a better estimation of heating/cooling radiative rates, which plays an important role in atmospheric chemistry, and aerosol properties under cloudy conditions, crucial for a better understanding of the indirect effect.

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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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