Special Issue

Understanding Cloud Processes and Cloud–Climate Feedback: Progress, Challenges, and Perspectives

Message from the Guest Editor

Cloud processes span a wide range of temporal and spatial scales, from the microphysics of individual cloud droplets to the macrophysics of cloud systems at the regional and global scales. These processes are vital to the Earth–atmosphere system. However, significant challenges persist in the understanding of cloud properties, largely due to limitations in observations and model parameterizations. Moreover, the uncertainties in cloud feedback mechanisms continue to limit our understanding of future climate change. This Special ims to bring together recent research on the characteristics of cloud processes, cloud feedback mechanisms, and their implications for climate sensitivity. Submissions are invited from studies that have used satellite or in situ observations, advanced modeling techniques, and theoretical approaches to enhance our understanding of cloud macro- and micro-physics, cloud radiative effects, and the effects of clouds on regional and global climate patterns. Papers contributing to garnering insight into the mechanisms of aerosol–cloud–climate interactions are also welcome.

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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