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Properties of Cirrus Cloud by Lidars: Observation and Theory

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Message from the Guest Editors

Cirrus clouds cover over 30% of the Earth's surface and have a significant impact on the radiative budget of our planet and, consequently, on the climate. The radiative characteristics of cirrus clouds and microphysical aspects must be studied because of the strong spatial and temporal variability of the clouds. A lack of knowledge concerning the radiative characteristics of cirrus clouds is one of the main sources of uncertainty in modern numerical models of the Earth's radiative balance. Therefore, many international groups have dedicated their research to cirrus cloud characteristics these years.

In this Special Issue, studies on the microphysical and radiative characteristics of cirrus clouds are welcomed, either via direct data collection from aircrafts or by ground-based lidar and radar soundings, as well as the remote sensing of cirrus clouds from satellites. Besides, the numerical calculation of the optical characteristics and the microphysical characteristics of cirrus clouds, comparisons of experimental data with data banks obtained from theoretical calculations, and the parametric use of cirrus clouds for improving models are all appropriate research topics.

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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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