



Multiscale Aspects of Mesoscale and Microscale Flows

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Message from the Guest Editors

There is currently great interest in “bridging the gap” between mesoscale and microscale models. With increasing computational power, however, the horizontal scales to which they apply are beginning to overlap: whereas state-of-the-art CFD models have horizontal dimensions of a few kilometres, high-resolution mesoscale models are now frequently run with a horizontal resolution of a kilometre or less. Hence, there is a need for improved understanding of the multiscale aspects of mesoscale and microscale flows. To this end, this Special Issue of *Atmosphere* will examine how atmospheric models on one hand, and CFD models on the other, benefit from the inclusion of processes across the nominal mesoscale-microscale divide. Potential topics include (but are not limited to) the following:

- Downscaling, coupling, and data assimilation;
- Flow and dispersion over complex topography;
- Roughness interfaces;
- Scale interactions;
- Urban and vegetation canopies;
- Subgrid-scale parameterisations.

Review papers that summarise recent developments and discuss implications for future research are particularly 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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