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Between Meso-Scale and Local Scale: Downscaling Weather Forecast and Upscaling Atmospheric Dispersion

Guest Editor:

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Deadline for manuscript submissions:
closed (1 June 2023)

Message from the Guest Editor

In this Special Issue, we propose to bring together research and application articles on multi-scale modeling and simulation. In particular, the articles will focus on:

- Any theoretical consideration allowing a better understanding of the multi-scale physics of flows and dispersion in the atmosphere;
- Any practical consideration allowing us to carry out rigorous and, if possible, efficient simulations of the dispersion from the smallest scale to the largest scale (or vice versa);
- The presentation of multi-scale modeling systems for the dispersion of chronic or accidental releases;
- Taking into account uncertainties and data assimilation when weather forecasts and/or dispersion simulations are carried out at different scales;
- The estimation of source terms when it involves retro-dispersion simulations at multiple scales.

This list is not exhaustive, and this Special Issue of the journal Atmosphere will aim to share the knowledge and experience of researchers and engineers who must work both at the local scale and at the meso-scale to address atmospheric dispersion.

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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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