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Fire Meteorology: Observations and Modeling from Micro- to Meso-Scale

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Message from the Guest Editors

Wildland fires include complex physical processes across different spatial and temporal scales. At the microscale, the inertia due to wind flow compensates the induced buoyancy from the pressure gradient between the fire plume and the ambient air; at the mesoscale, flow oscillations can contribute to extreme fire behavior. The short-term variation of weather conditions affects the local fire behavior, while their seasonal and inter-annual variations affect fuel production and flammability over large areas. Over the last decades, the measurement, observation, and modeling of wildland fires have been incorporated into the fundamental understanding of the physics and chemistry involved in the behavior of wildland fires. Today, the advances in remote sensing, geographical information systems, and computational resources are revealing new horizons in this topic. The purpose of this Issue is to present innovative studies covering fire meteorology, including:

- Flow dynamics across different spatial scales during a wildland fire;
- Prevailing weather conditions and in situ measurements during high-impact wildland fire events;
- Advances in fire observation techniques and fire modeling.

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Special Issue

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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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