



The Stable Boundary Layer: Observations and Modeling

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Deadline for manuscript
submissions:

closed (15 July 2021)

Message from the Guest Editors

The stable boundary layer is strongly connected with a number of applications, spanning from weather and climate forecasting to wind energy and air quality prediction. While convective boundary-layer behavior and evolution are generally detailed and well characterized, understanding and modeling SBL is still an open challenge because of the heterogeneity of physical processes and phenomena coming into play, and their complex mutual interactions. These include intermittent turbulence, radiative cooling, internal atmospheric waves, low-level jets, orographic flows and sub-mesoscale motions, as well as land–surface coupling (soil temperature and heat flux): most of these are still not fully characterized, and their impact has not yet been assessed properly. In addition, both in-situ and remote sensing measurements become more complicated and less reliable under stable stratification conditions. This Special Issue intends to highlight the recent progress in observing, modeling, and parametrizing the SBL, contributing to clarify both the main relevant features of the SBL and its role in the lower atmosphere and in the climatic system.





an Open Access Journal by MDPI

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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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Journal Rank: CiteScore - Q2 (*Environmental Science (miscellaneous)*)

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