

Editorial

Atmosphere: An International and Interdisciplinary Scientific Open Access Journal

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The new online, Open Access journal *Atmosphere* has been launched to present reviews, regular research papers, communications and short notes on atmospheric topics. These topics include experimental and theoretical work related to the physical atmosphere, such as turbulence, atmospheric flow, dynamic and physical processes and mechanisms, atmospheric chemistry, such as changes in atmospheric composition, including aerosols, ozone, air pollution, chemical weather, meteorology and scale interaction, climate, climate change and environmental science, including water and energy cycles.

Given the current state of knowledge, it is difficult to write about air pollution without meteorology or to write about climate without atmospheric composition, clouds and radiation. Each of these disciplines may have specialized journals. However, it has been recognized that atmospheric research increasingly requires overlap between multiple disciplines. As a response, *Atmosphere* shall offer an excellent opportunity to publish the latest multi-disciplinary results, with a high potential to reach a much broader scientific community, stakeholders and the interested general public.

The atmosphere is a strongly nonlinear thermo-hydro-dynamical system, which can be characterized by its composition, its thermo-dynamical state and its motion. It envelopes the Earth and consists of several layers with different chemical and physical states that are changing with time due to natural and human forcing. The lower part of the atmosphere, the troposphere, is characterized by fast processes and high variability, which is called *weather* at a clearly defined point in time. Weather encompasses all meteorological quantities such as air temperature, air pressure, and water vapor in all phases, wind and radiation. The accumulation of atmospheric states over longer time periods is called *climate*. Both faces of atmospheric research, weather and climate, will be covered in *Atmosphere*.

The atmosphere is characterized by processes on very different spatial and temporal scales: turbulence and cloud microphysical processes occur very quickly (in seconds or minutes), convection and gravity waves are active for minutes and hours and chemistry that involves numerous ubiquitous compounds in gas, liquid and solid phases in the atmosphere is spanning time scales from sub-seconds to years. Mesoscale phenomena include among others cloud clusters, land-sea breezes and topographically initiated effects, which cover up to 200 kilometers and have durations of approximately one day. Cyclones persist for a few days, and on the synoptic scale some wave patterns can have lifetimes of several weeks and stretch over large parts of the Earth.

Weather and climate are of utmost importance for society and the interest in obtaining information about weather and climate is growing rapidly. This covers daily weather forecasts as well as questions about climate change, meaning possible changes in global, regional and local climates, and related changes in extreme events. It is obvious that a good understanding of atmospheric processes is crucial for climate impact studies linking global climate change to its potential regional effects such as changes in weather patterns and severe weather, water management and ecosystems.

Climatic changes are strongly related to changes in the composition of the atmosphere, which can be initiated and influenced by natural and anthropogenic processes, and which can alter air quality and regional weather on short time scales. This in turn might affect human health. The observed changes in the atmosphere clearly require in-depth observation and understanding of the associated processes and their interactions on different time and spatial scales. This is the basis for weather forecasts and for regional climate change projections.

Consequently, any work related to the enhancement of our knowledge of atmospheric processes and their interaction is of great importance to society. This is why *Atmosphere* is designed to cover a relatively wide range of atmospheric topics reflecting the complexity and interaction of processes in the atmosphere as a part of the Earth System.

High quality, innovative, pioneering and relevant papers are invited. They will be subject to a rigorous peer review process and, if accepted, published online, providing as short a turnaround time as possible. In addition, the Editorial Board recognizes the value of in-depth coverage and scope, such that no restrictions are placed on the length of the submission. This provides the opportunity to share data and results in detail. MDPI, with 14 years of publishing experience, boasts a professional editorial staff currently publishing more than 30 peer-reviewed journals, of which all major journals are already covered by the Science Citation Index (Web of Science) and Scopus. Long-term archiving is guaranteed through the immediate deposit of published articles with the Swiss National Library (SNL).

The Editorial Board sees *Atmosphere* as an exciting new journal and we are fully committed to drive it to a position in which it is recognized for its high quality and leading edge research. This, of course, depends on its readership and potential authors. On behalf of the Editorial Board, I invite you to submit your manuscripts, review papers and suggestions for Special Issues to *Atmosphere* and I am looking forward to receiving your contributions.