

Preface

For millions of years our atmosphere has been in a state of constant change, and it continues to change today. Most of the changes are triggered by natural processes and not influenced by human beings. But some significant changes primarily observed during the last century, such as the increasing levels of greenhouse gas emissions, are obviously due to human activities. Since there is no other habitat for us or future generations but this planet, it is our responsibility to understand these changes and investigate their causes. Only if reliable predictions about the future development of our atmosphere are possible, can we develop reasonable solutions without creating new and even more serious problems elsewhere.

In a changing world our traditional approaches to solving environmental problems, taken alone, are doomed to fail. Accordingly, new perspectives and new strategies are needed to prevent us from destroying ourselves. Anthropogenic climate change and the interaction with air quality endanger the social and economic basis of all people around the world. This implies an urgent need to promptly develop efficient, sustainable mitigation and adaptation strategies in response to the damage already done.

As the editors of the highly recommended book “Interdisciplinarity and Climate Change” (see Further Reading, [Chap. 1](#)) point out, it is necessary to create a “framework for coherently integrating the findings of distinct sciences, on the one hand, and for integrating those findings with political discourse and action, on the other” ... so as to find “... ways to conceptualise and measure relationships between social activities and climate outcomes in pursuit of reduction in greenhouse gases.”

This first volume of the series “The Reacting Atmosphere” is a point of departure. It presents the idea of approaching air quality and climate change from a “systemic view,” describes the objectives and strategy of the Research Network and provides a brief overview of the developments over the last several years in the context of establishing the Research Network. In the volumes to come we will report on the results of current projects and the progress of the Network. By pursuing this approach, we hope to attract researchers from the various disciplines to join our efforts, and to spark the interest of those researchers with expertise not yet included in our Network. We further aim to foster transdisciplinary research and initiate new projects to improve our systemic view. Accordingly, contributions from researchers working in these areas are very welcome.

We are aware of the fact that this project is extremely challenging and that our goals are very ambitious. However, we feel that it is high time to turn the idea into a reality by combining competences in atmospheric physics and chemistry, applied mathematics, and socio-economic science, allowing us to go beyond the current state of the art in understanding the role of the atmosphere in global change. We believe that it is time for us as scientists at the forefront of atmospheric research to more openly and clearly communicate our findings to political decision makers and the general public, and to assess actions and measures taken. And we feel that it is time to disseminate our knowledge to all areas of education. Join us for the journey of achieving these goals.



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