Special Issue

50th Anniversary of the Metaphorical Butterfly Effect since Lorenz (1972): Multistability, Multiscale Predictability, and Sensitivity in Numerical Models

Message from the Guest Editors

Well accepted is the fact that Lorenz (1963, 1972) laid the foundation for chaos theory, which is viewed as the 3rd scientific achievement of the 20th century after relativity and quantum mechanics. The metaphorical butterfly effect presented by Lorenz in 1972 turns 50 in 2022. Over the past five decades, advances in chaotic models and real-world models have significantly improved our understanding of the nature and predictability of weather and climate. For example, by generalizing the Lorenz 1963 model, Shen et al. (2021) proposed a revised view of ''weather possesses chaos and order; it includes emerging organized systems (such as tornadoes) and recurrent seasons'', in contrast to the conventional view of "weather is chaotic".

To celebrate the 50th anniversary of the metaphorical butterfly effect in 2022, the special issue calls for research and review articles that report improved understanding regarding original and metaphorical butterfly effects, as well as recent advances in theoretical and real-world models that address multistability, multiscale predictability, and sensitivity.

Guest Editors

Dr. Bo-Wen Shen

Department of Mathematics and Statistics, San Diego State University, San Diego, CA 92182, USA

Prof. Dr. Roger A. Pielke Sr.

ATOC/CIRES, University of Colorado, Boulder, CO 80303, USA

Prof. Dr. Xubin Zeng

Department of Hydrology and Atmospheric Sciences, 1133 E. James E. Rogers Way, The University of Arizona, Tucson, AZ 85721, USA

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Atmosphere
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
atmosphere@mdpi.com

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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!

Editor-in-Chief

Dr. Daniele Contini
Institute of Atmospheric Sciences and Climate (ISAC), National Research Council (CNR), Str. Prv. Lecce-Monteroni km 1.2, 73100 Lecce, Italy

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