Special Issue

Tropical Monsoon Circulation and Dynamics

Message from the Guest Editors

Recent studies on tropical monsoon circulation and dynamics have revealed that there are significant changes in monsoon behavior, particularly in the context of climate change. Previous research has shown a doubling of summer monsoon depressions (MDs) over the North Arabian Sea from 2001 to 2022 compared to the previous two decades. This increase is attributed to alterations in mid-latitude circulation patterns, specifically the Silk Road Pattern, which influences rainfall distribution across northwestern India and the Arabian Sea. Concurrently, research indicates that the South Asian summer monsoon (SASM) is projected to weaken due to enhanced latent heating over the Tibetan Plateau (TP), which affects low-level westerly winds over the northern tropical Indian Ocean. This weakening trend raises concerns about future precipitation patterns and their implications for water resources in South Asia, where millions of people depend on monsoon rains for agriculture and their livelihoods. Future studies are essential in order to deepen our understanding of these dynamics and their broader implications.

Guest Editors

Dr. Debashis Nath
School of Earth Sciences, Yunnan University, Kunming 650000, China
Dr. Rizwan Karim
Xishuangbanna Tropical Botanical Garden (XTBG) of the Chinese Academy of Science, Menglun Town, Xishunagbanna Prefecture, China

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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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