Special Issue

Advances in Tropical Cyclone Prediction: Observation, Simulation, and Verification

Message from the Guest Editors

Improved tropical cyclone (TC) predictions have come a long way during the past two decades. The advancement of high-performance computing, physical parameterizations, and data assimilation (DA) techniques has contributed significantly to the understanding of physical processes and led to improvements in TC prediction. Recent cyclones Harvey (2017), Irma (2017), Hato (2017), Michael (2018), Kong-rey (2018), Goni (2020), Amphan (2020), and Tauktae (2021), among others, have wreaked havoc, causing fatalities and property damage. Accurate forecasts of these extreme events underscore the need for better understanding of physical processes, especially for rapid intensification. The official forecasts rely on numerical weather prediction (NWP) models as well as statistical models (including single or multimodal ensembles). The success of a TC forecast entails prediction of the large-scale as well as storm-scale environment, hence requiring rigorous testing, evaluation, diagnostic studies, and tuning of the forecast models based on field experiments. In this Special Issue, authors are invited to submit original and review articles to advance the understanding and prediction of TCs.

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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

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