Special Issue

Dynamic Responses to Magnetosphere–Thermosphere–Ionosphere Coupling: Exploring Solar Cycles and Geomagnetic Activity

Message from the Guest Editors

This Special Issue invites researchers who focus on understanding the physical mechanisms underlying geomagnetic storms driven by the interaction between high-speed streams and low-speed streams. We particularly encourage contributions employing diverse space-frequency analysis methodologies to investigate High-Intensity, Long-Duration Continuous AE Activity (HILDCAAs). The scope includes enhancing space weather monitoring and forecasting programs by exploring the physical processes associated with these events and their effects on the equatorial, low-latitude, and high-latitude ionosphere. This Issue aims to deliver a comprehensive analysis of HILDCAAs across different phases of the solar cycle, offering valuable insights into the interactions between solar wind dynamics and Earth's upper atmosphere. By fostering innovative studies on CIR/HSS-driven storms and their impacts, this Special Issue seeks to bridge gaps in our knowledge of space weather phenomena. We aim to inspire new approaches for mitigating the risks posed by these events to technological systems and infrastructure, contributing to the advancement of space weather prediction capabilities.

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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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