

Special Issue

Exploring the Earth's Ionosphere with a Dynamical Systems Approach

Message from the Guest Editors

Modelling the Earth's ionosphere as a whole, or regions of it, is a well-established branch of applied physics in which space physics and geophysics intersect. In this field, many lines of research co-exist; for example, empiric models co-exist with first principle models, and multi-instrument inversion techniques may aid in the assimilation of real data in theoretical modelling. Moreover, the growing use of machine learning and artificial intelligence techniques in this field offers unprecedented opportunities to exploit the large datasets associated with aeronomy and near-Earth space physics in order to create new empirical and hybrid models. This Special Issue of *Atmosphere* aims to collect research that represents the Earth's ionosphere as a dynamical system that can be delineated using first principles, as deduced from a collection of empirical data and observations, or may be designed specifically for a particular phenomenon or set of phenomena.

Guest Editors

Dr. Massimo Materassi

Dr. Ryan M. McGranaghan

Dr. Giulia D'Angelo

Deadline for manuscript submissions

closed (1 August 2025)



Atmosphere

an Open Access Journal
by MDPI

Impact Factor 2.3
CiteScore 4.9



mdpi.com/si/226773

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

[mdpi.com/journal/
atmosphere](https://mdpi.com/journal/atmosphere)





Atmosphere

an Open Access Journal
by MDPI

Impact Factor 2.3
CiteScore 4.9



[mdpi.com/journal/
atmosphere](https://mdpi.com/journal/atmosphere)



About the Journal

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

Author Benefits

Open Access:

free for readers, with article processing charges (APC) paid by authors or their institutions.

High Visibility:

indexed within Scopus, SCIE (Web of Science), Ei Compendex, GEOBASE, GeoRef, Inspec, CAPlus / SciFinder, Astrophysics Data System, and other databases.

Journal Rank:

CiteScore - Q2 (Environmental Science (miscellaneous))