Special Issue

A Dynamical System for the Earth's lonosphere—Space Weather through Complex System Science

Message from the Guest Editor

All over Physics, modelling a system is trying to predict its evolution, and this is where Dynamics comes into the play. Then, modelling a physical system is representing it as a Dynamical System. This all is applicable to the Earth's ionosphere too: indeed, one of the most fundamental issues of ionospheric modelling is constructing dynamical models to predict the behaviour of the Earth's ionospheric region. Writing a Dynamical System for a region of the Earth's ionosphere is complicated. Many branches of physical sciences must hence be involved: particle and fluid mechanics, electromagnetism, chemistry and (non-equilibrium) thermodynamics, and this all renders the task of writing "simple" dynamical models extremely difficult in principle.

This Special Issue is an attempt to collect new and updated examples of ionospheric global or local models based on Dynamical System Theory. In particular, submissions are encouraged about ionospheric applications of (but not limited to):

- non-equilibrium thermodynamics,
- chaos theory,
- complex systems,
- · artificial intelligence and neural networks,
- stochastic dynamics.

Guest Editor

Dr. Massimo Materassi

Institute for Complex Systems of the National Research Council CNR ISC, Via Madonna del Piano 10, 50019 Sesto Fiorentino, Italy

Deadline for manuscript submissions

closed (30 July 2024)



an Open Access Journal by MDPI

Impact Factor 2.3 CiteScore 4.9



mdpi.com/si/195127

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

mdpi.com/journal/ atmosphere





an Open Access Journal by MDPI

Impact Factor 2.3 CiteScore 4.9



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))

