

SPECIAL ISSUE on High-Performance Computing for Climate Informatics

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DESCRIPTION

This special issue in [Open Computer Science](#) focuses on High-Performance Computing for Climate Informatics

Climate informatics includes a wide range of disciplines, including paleoclimatology, hurricane reconstruction utilizing data from climate downscaling employing large-scale models to predict weather conditions on a hyper-local level, ice cores, and the socio-economic ramifications of climate and weather. Mitigating the effects of climate change and successfully adapting to them necessitates efficient climate change strategic planning by countries worldwide, whose decision-making involves complicated models and data sources. Because weather forecasting is notoriously difficult, increasing accuracy requires computing power and large data.

Machine Learning (ML) in High-Performance Computing (HPC) helps scientists look at climate data flexibly, using figures from previous events to make accurate predictions. It aids in analyzing climate systems' complexity and allows researchers to grasp better how little interactions might influence weather. Machine learning models also help multiple imputations, resulting in similar or synthetic data that further speed climate science research. Big Data can handle the systematization, processing, and appraisal of heterogeneous data and information sources that traditional discipline analytic methods can't. The value of big data in climate studies is well recognized, and its forms are regularly used to study and monitor worldwide trends. It makes understanding and predicting easier, allowing for more adaptable decision-making and optimizing models and structures. Artificial intelligence (AI) technology can aid in the fight against climate change.

Data bias, privacy erosion, and purposeful exploitation have all been raised as issues with machine learning applications, all of which can lead to prejudice and injustice. While the future may be exciting, it's also crucial to realize that HPC is already solving major global concerns, including climate change, disease diagnosis, and sustainable energy usage. These applications represent important and forward-thinking milestones for various industries, and we're already seeing what's possible in the future. Thus, HPC is a crucial tool for monitoring and researching the planet's climate, from weather forecasting to biosphere modeling and tracking the evolution of natural resources. Planet-scale simulations can help demonstrate the dangers of climate change and future implications like no other instrument could. With technology far ahead of where it was even two years ago, the future of systems like HPC is bright, exciting, and long-term.

TOPICS:

- Advanced Machine learning in data assimilation for climate informatics
- Enhanced futuristic large climate predictive model for long- and short-term climate forecasts

- Convergence of Paleoclimate reconstruction with novel computing algorithms for climate informatics modeling
- AI-based High-Performance Computing for advanced climate detection and forecast models
- Data fusion of geospatial modeling and Geographic Information Systems (GIS) in big data analytics for climate informatics
- Analysis on opportunities and challenges in climate science information and decision making
- Assessment of multiple model simulations for climate informatics
- Convergence of geographic information science and advanced informatics for climate change predictions
- high-performance computation-based Data-intensive multi-disciplinary model for climate informatics
- Edge computing paradigm for advanced climate informatics

Authors are requested to submit their full revised papers complying the general scope of the journal. The submitted papers will undergo the standard peer-review process before they can be accepted. Notification of acceptance will be communicated as we progress with the review process.

HOW TO SUBMIT

Before submission authors should carefully read the [Instruction for Authors](#), available online.

Manuscripts can be written in TeX, LaTeX (strongly recommended) - the journal's [LATEX template](#). Please note that we do not accept papers in Plain TEX format. Text files can be also submitted as standard DOCUMENT (.DOC) which is acceptable if the submission in LATEX is not possible. **For an initial submission, the authors are strongly advised to upload their entire manuscript, including tables and figures, as a single PDF file.**

All submissions to the Special Issue must be made electronically via online submission system Editorial Manager: <http://www.editorialmanager.com/opencs/>

All manuscripts will undergo the standard peer-review process (single blind, at least two independent reviewers). **When entering your submission via online submission system please choose the option "SI: High-Performance Computing for Climate Informatics".**

Submission of a manuscript implies that the work described has not been published before and it is not under consideration for publication anywhere else.

The deadline for submissions is October 10, 2023, but individual papers will be reviewed and published online on an ongoing basis.

Contributors to the Special Issue will benefit from:

- Critical peer-review
- no space constraints
- quick online publication upon completing the publishing process (**continuous publication model**)
- better visibility due to **Open Access** – free, unrestricted and permanent access to all the content
- **liberal policies on copyrights** (authors retain copyrights) and on self-archiving (no embargo periods)
- promotion of published papers to readers and citers

- **long-term preservation** – content archiving with Portico

We are looking forward to your submission!

In case of any questions please contact [Editorial Office](#)
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