

Special Issue

Sustainable Environmental Science: Application of Machine Learning and Artificial Intelligence in Earth Systems

Message from the Guest Editors

Addressing sustainability challenges requires models that capture interactions across climate, water, land, ecosystems, and human activity, and that translate complex evidence into decisions. Alongside rapid advances in Earth observation (satellites, drones, and in situ monitoring) and Earth-system simulations, ML/AI can fuse heterogeneous observations and model outputs, improve predictive skill for extremes, and provide uncertainty-aware products for monitoring, attribution, and scenario assessment.

This Special Issue aims to advance ML/AI through impactful applications in Earth systems that generate actionable insights for sustainability outcomes. We welcome contributions and interdisciplinary submissions that connect algorithmic innovation to improved environmental understanding, forecasting and early warning, ecosystem and land-surface monitoring, exposure and risk mapping, and sustainable natural-resources management, including evaluation of mitigation and adaptation options. The goal is to highlight advances that translate into measurable sustainability outcomes, from reduced risk and exposure to improved planning, policy monitoring, and operational decision support.

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Message from the Editor-in-Chief

I encourage you to contribute a research or comprehensive review article for consideration for publication in Sustainability, an international open access journal which provides an advanced forum for research findings in areas related to sustainability and sustainable development. The journal publishes original research articles, reviews, conference proceedings (peer reviewed full articles) and communications. I am confident you will find the journal contributes to enhancing understanding of sustainability and fostering initiatives and applications of sustainability-based measures and activities.

Editor-in-Chief

Prof. Dr. Steve W. Lyon

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