

Special Issue

AI-Enhanced Sensor Data Integration and Processing

Message from the Guest Editor

The rapid proliferation of high-resolution sensor observations presents unprecedented opportunities for environmental and oceanic sciences, while simultaneously imposing greater computational demands on numerical modeling. This Special Issue focuses on the critical challenge of efficiently assimilating diverse sensor data into dynamical models under acceptable computational costs. We invite contributions that explore AI-driven approaches to enhance data assimilation processes, addressing fundamental bottlenecks in computational efficiency and the mismatch between model physics and observational variables.

- machine learning surrogate models for accelerating forward operators
- neural network-based observation operators for sensor data
- deep learning approaches for variational data assimilation
- AI-driven ensemble data assimilation techniques
- hybrid physics-AI models for environmental prediction
- multi-sensor fusion using AI techniques
- real-time processing of high-resolution sensor streams
- quality control and bias correction of sensor observations
- uncertainty quantification in sensor data assimilation
- adaptive sensor placement and observation strategies

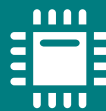
Guest Editor

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Deadline for manuscript submissions

15 October 2026



Sensors

an Open Access Journal
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Impact Factor 4.0
CiteScore 9.4
Indexed in PubMed

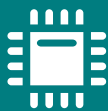


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Message from the Editor-in-Chief

Sensors is a leading journal devoted to fast publication of the latest achievements of technological developments and scientific research in the huge area of physical, chemical and biochemical sensors, including remote sensing and sensor networks. Both experimental and theoretical papers are published, including all aspects of sensor design, technology, proof of concept and application. Sensors organizes Special Issues devoted to specific sensing areas and applications each year.

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