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IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing

Special Issue on “Artificial Intelligence in Coastal Wetlands Remote Sensing”

Coastal wetlands—salt marshes, mangroves, tidal flats, and estuarine systems—are among the most ecologically valuable and dynamic ecosystems on the planet. They serve as natural buffers against storms, provide essential habitats for diverse flora and fauna, and play a critical role in global carbon cycling and climate regulation. Yet, these fragile ecosystems are increasingly threatened by sea-level rise, land use change, pollution, and other anthropogenic pressures.

The growing urgency to monitor, model, and manage coastal wetlands with greater precision has elevated the importance of remote sensing technologies. Recent advances in artificial intelligence (AI), deep learning, and data science have opened up transformative opportunities to harness the vast potential of multi-sensor, high-resolution, and time-series remote sensing data for wetland research and conservation.

This Special Issue seeks to showcase the latest developments in AI-enhanced remote sensing for coastal wetland mapping, monitoring, and modeling. We welcome high-quality original research articles, technical developments, and critical reviews that highlight novel methodologies, emerging applications, and interdisciplinary approaches. Submissions may explore algorithmic innovations, new sensor integrations, or field-informed AI applications that support sustainable wetland management. By fostering collaboration among remote sensing scientists, ecologists, AI researchers, geospatial analysts, and environmental managers, this Special Issue aims to accelerate innovation and promote scalable, science-based solutions for the sustainable stewardship of coastal wetlands.

The broad topics include (but are not limited to):

- Deep learning techniques for coastal wetland classification and change detection
- Multi-source data fusion (e.g., SAR, optical, LiDAR) for ecosystem monitoring
- Time-series analysis and spatiotemporal modeling of wetland dynamics
- AI-supported quantification of blue carbon stocks and greenhouse gas fluxes
- AI applications in modeling hydrological, geomorphological, and biogeochemical processes
- High-resolution and large-scale coastal wetland observation using AI
- Early warning systems for wetland vulnerability and resilience
- AI-enhanced assessments of wetland degradation, restoration, and connectivity
- Contributions to the UN Sustainable Development Goals (SDGs) via AI and remote sensing
- Biodiversity monitoring and invasive species detection through intelligent sensing

Schedule

December 1, 2025, Submission system opening

May 31, 2026, Submission system closing

Format

All submissions will be peer reviewed according to the IEEE Geoscience and Remote Sensing Society guidelines. Submitted articles should not have been published or be under review elsewhere. Submit your manuscript on <http://mc.manuscriptcentral.com/jstars>, using the Manuscript Central interface and select the “**Artificial Intelligence in Coastal Wetlands Remote Sensing**” special issue manuscript type. Prospective authors should consult the site <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9082768> for guidelines and information on paper submission. All submissions must be formatted using the IEEE standard format (double column, single spaced). Please visit http://www.ieee.org/publications_standards/publications/authors/author_templates.html to download a template for transactions. Please note that since Jan. 1, 2025, IEEE J-STARS, as a fully open-access journal, is charging a flat publication fee \$1,800 per paper.

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