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IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
Special Issue on
“Data Quality Issues and Solutions in AI-based Remote Sensing Applications”

The development of artificial intelligence (AI) in remote sensing has brought transformative advances across multiple fields, including environmental monitoring, precision agriculture, disaster response, and urban planning. As known, the success of AI-based remote sensing applications relies heavily on the quality of remote sensing data. However, remote sensing data collection often occurs in uncontrolled environments, leading to noise and errors caused by environmental factors, sensor limitations, and other external influences. Such data quality issues can significantly hinder the performance of AI algorithms. Moreover, remote sensing datasets are typically massive and complex, incorporating diverse types of data from various sources such as satellites, drones, and ground sensors. In order to gain comprehensive insights, advanced remote sensing applications involve fusing data from multiple sensors or platforms, which would introduce more quality issues, including alignment mismatches, temporal inconsistencies, and resolution conflicts. Addressing these challenges is critical for seamless remote sensing data integration, enabling AI algorithms to extract meaningful patterns from fused datasets.

This special issue aims to address the urgent need for a focused discussion on data quality in the context of AI-based remote sensing applications. By bringing together novel research, case studies, and theoretical advancements, we aim to drive innovations in remote sensing data quality assessment and management practices that can support more accurate and trustworthy AI applications. This collection of works will serve as a critical resource for researchers, engineers, and decision-makers looking to optimize the quality of remote sensing data and enhance the reliability of AI-driven analyses in geoscience.

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

- Data quality assessment and metrics in AI-driven remote sensing applications
- Robust data cleaning strategies for high-dimensional remote sensing data
- Challenges and solutions in fusing heterogeneous remote sensing data sources
- Approaches to leverage synthetic data while maintaining quality in remote sensing
- Data quality problems and solutions in AI-generated content (AIGC) for geoscience
- Correction for sensor-induced errors and environmental interference in remote sensing
- Practical applications addressing remote sensing data quality issues in precision agriculture
- Practical applications addressing remote sensing data quality issues in environmental monitoring
- Case studies showcasing the impact of data quality on AI model performance in remote sensing

Schedule

01 Mar 2025 Submission system opening

31 Dec 2025 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 “**Data Quality Issues and Solutions in AI-based Remote Sensing Applications**” 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 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 as of Jan. 1, 2024, IEEE J-STARS, being a fully open-access journal since 2020, charges a flat publication fee \$1,800 per paper.

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