CALL FOR PAPERS

IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
Special Issue on "Multisource and Multimodal Remote Sensing: Representation, Understanding, Reasoning, and Generation"

Remote sensing is entering a new stage driven by the rapid expansion of heterogeneous data sources, sensing modalities, and application requirements. Data from optical, SAR, hyperspectral, LiDAR, infrared, temporal, textual, and geospatial sources provide complementary information for Earth observation. However, they differ substantially in spatial, spectral, temporal, physical, and semantic characteristics. Representing, aligning, fusing, and interpreting such heterogeneous data are therefore essential for advancing intelligent remote sensing beyond single-sensor and task-specific paradigms.

Recent advances in self-supervised learning, vision-language models, foundation models, and generative artificial intelligence have expanded the methodological capabilities of multisource and multimodal remote sensing. They support heterogeneous representation learning, cross-modal alignment, spatiotemporal and semantic reasoning, and controllable content generation, among other capabilities. Persistent challenges include limited annotations, modality and domain discrepancies, uncertainty and robustness, interpretability, computational efficiency, and reliable real-world deployment. This Special Issue focuses on methodological advances in ***representation***, ***understanding***, ***reasoning***, and ***generation*** for ***multisource and multimodal remote sensing***. It provides a focused venue for research on heterogeneous representation and alignment, multimodal understanding and reasoning, remote sensing content generation, and related benchmark and evaluation studies.

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

- Representation learning and multimodal fusion (e.g., representation, adaptation, alignment, self-supervised learning)
- Low-level vision, restoration, and enhancement (e.g., denoising, pansharpening, super-resolution, modality translation)
- Visual understanding and intelligent interpretation (e.g., classification, detection, segmentation, change detection)
- Spatial, temporal, semantic, and multimodal reasoning (e.g., spatial relation modeling, RAG, VQA, temporal reasoning)
- Generative modeling and cross-modal generation (e.g., captioning, image translation, controllable generation)
- Efficient, robust, and trustworthy multimodal remote sensing (e.g., uncertainty estimation, robustness, interpretability)
- Datasets, benchmarks, and evaluation with clear methodological contributions or application insights

Schedule

September 1, 2026	Submission system opening
May 31, 2027	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 "Multisource and Multimodal Remote Sensing: Representation, Understanding, Reasoning, and Generation" 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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