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IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
Special Issue on "Synergistic Change Detection with Multimodal Remote Sensing:
Algorithms, Challenges, and Applications"

Change detection, a key technique in the field of Earth observation, aims to identify surface changes over time and is widely used in land use monitoring, urban expansion, forest inventory, disaster assessment, and emergency response. Conventional change detection methods typically rely on multi-temporal images of the same modality. However, due to limitations such as satellite revisit cycles and imaging conditions, especially in emergency response scenarios, it is often challenging to obtain high-quality multi-temporal images of the same modality in a timely manner. This greatly restricts the practical application of change detection in real-world scenarios. Recent advances in remote sensing have expanded data modalities beyond traditional optical imagery to include Synthetic Aperture Radar (SAR), Hyperspectral Image (HSI), LiDAR, and Thermal Infrared data. Each modality offers unique insights, and their synergistic integration in change detection holds immense potential for enabling more robust, comprehensive, and detailed characterization of the changes on the Earth's surface. However, the utilization of multi-modal images faces challenges such as the heterogeneity in feature representations, the inconsistency in data quality, the black-box nature of change detection architectures, and the scarcity of high-quality training data, all of which substantially hinder the performance improvement and practical deployment of multi-modal change detection. This Special Issue invites innovative research on synergistic change detection with multimodal remote sensing images. The primary objective is to improve the accuracy, robustness, and interpretability of change detection methods, and expanding their practical applicability in the fields of environmental monitoring, urban dynamics, and disaster response.

The broad topics include (but are not limited to):
- Benchmark datasets for change detection across various modalities
- Registration and geodetic alignment of heterogeneous remote sensing dataset
- Change detection methodologies for specialized modalities such as Thermal Infrared, LiDAR, and Polarimetric SAR
- Heterogeneous change detection
- Fusion of multimodal data (e.g., Optical, SAR) for change detection
- Multi-class/Semantic change detection
- Time series/Continuous change detection
- Interpretable change detection
- Cross-domain change detection
- Foundation model for change detection
- The application of change detection in environmental monitoring, urban dynamics, and disaster response
- Standardized evaluation metrics, protocols, and comprehensive performance analysis for change detection algorithms

Schedule
December 1, 2025   Submission system opening
June 30, 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 "**Synergistic Change Detection with Multimodal Remote Sensing: Algorithms, Challenges, and 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 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, 2024, IEEE J-STARS, as a fully open-access journal, is charging a flat publication fee $1,800 per paper.

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