



CALL FOR PAPERS

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

“Space-Air-Ground Collaborative Monitoring and Network Computing: Architectures and Solutions”

Space-Air-Ground Collaborative Monitoring (SAG-CM) integrates three technological pillars: space-based satellite remote sensing for kilometer-scale periodic observation, UAV-based airborne systems enabling meter-level dynamic tracking, and ground sensor networks capturing centimeter-resolution localized measurements. Its theoretical framework emphasizes the synergistic integration of multi-source heterogeneous data, where satellite platforms deliver macro-scale temporal patterns, UAVs provide mesoscale environmental dynamics, and terrestrial sensors ensure microscale precision. Furthermore, recent advancements in communication-computation convergence technologies have significantly enhanced onboard edge computing capabilities on satellites and UAVs, enabling real-time data processing and adaptive sampling while reducing reliance on centralized cloud infrastructures. These innovations will propel SAG-CM systems toward achieving multi-tier observational capabilities—combining meter-scale geolocation accuracy, kilometer-range spatial coverage, and regional-level cross-domain correlations—thereby overcoming the resolution-coverage trade-offs inherent in traditional monitoring paradigms. However, the system-level challenges of fusing multi-source data with heterogeneous spatiotemporal resolutions, asynchronous acquisition frequencies, and divergent error propagation mechanisms remain critical barriers requiring novel cross-disciplinary solutions.

This special issue encourages scholars to publish research papers on the novel SAG-CM architectures, multi-source data fusion methods, and applications of SAG-CM for various monitoring scenarios.

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

- Artificial intelligence-empowered SAG-CM architecture designs
- Collaborative mechanism design and controller deployment optimization of SAG-CM networks
- Communication and computing integration assisting SAG-CM, including communication and computing collaboration in satellite networks, air networks, etc.
- Multi-source data analysis, modeling, and preprocessing for SAG-CM
- Fusion method and performance optimization of multi-source heterogeneous data in SAG-CM, including multi-temporal and spatial resolutions
- Multi-source data fusion for prewarning, recognition, detection, etc.
- Evaluation index modeling based on the multi-source data of SAG-CM
- Artificial intelligence-driven automatic SAG-CM platform and process
- Applications of SAG-CM for various monitoring scenarios, such as ecological environment and agriculture

Schedule

Jul. 1, 2025, Submission system opening

Jan. 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 “Space-Air-Ground Collaborative Monitoring and Network Computing: Architectures and Solutions” 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).

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