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IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
Special Issue on "Foundation Models and Multi-Source Remote Sensing for Water Resources Monitoring, Assessment, and Management"

Water resources are among the most important natural resources for human survival, life-supporting ecosystems, food and agriculture, energy, and resilience to climate change. Although the Earth is largely covered by water, the freshwater directly available for human use remains scarce and unevenly distributed. Growing pressure from climate change, population growth, land-use change, floods, pollution, and intensive water use has made monitoring and managing water resources a major scientific, environmental, and policy challenge. Sparse observation networks, high costs, and limited coverage constrain field-based monitoring alone, making remote sensing an effective solution for continuous, large-scale, repeatable observation of water-related processes. Earth observation now forms the backbone of this information, with sensors ranging from optical instruments (Sentinel-2, Landsat 8/9, PRISMA, EnMAP) to radar (Sentinel-1), thermal and microwave radiometers, altimetry and SWOT, and gravimetric missions (GRACE, GRACE-FO). Advances in deep learning, Geospatial Foundation Models, vision transformers, and self-supervised learning are opening new opportunities for water-body extraction, flood mapping, drought assessment, water-quality estimation, and reservoir monitoring, though sensor and regional variability and a lack of reference data still limit model transferability. This Special Issue invites original research and review papers on recent advances in remote sensing, multi-source data fusion, and Geospatial Foundation Models for water resources monitoring, assessment, and management.

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

- Multispectral and hyperspectral remote sensing for surface water mapping and monitoring.
- Multi-source data fusion for water resources assessment using optical, SAR, thermal, LiDAR, UAV, and in situ observations;
- Geospatial Foundation models for water body extraction, flood detection, hydrological modeling, and transferable water resources applications
- Flood mapping, flood susceptibility assessment, and flood risk monitoring using Earth observation data.
- Remote sensing of water quality, groundwater-related indicators, soil moisture, evapotranspiration, and drought conditions.
- Explainable and uncertainty-aware deep learning methods for sustainable water resources planning and management.
- Land cover change impacts on water resources, climate, agriculture, and ecosystems.
- Monitoring of snow, glaciers, wetlands, rivers, lakes, reservoirs, and irrigation systems using Remote Sensing data.

Schedule
Sep. 01, 2026 Submission system opening
Apr. 30, 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 **"Foundation Models and Multi-Source Remote Sensing for Water Resources Monitoring, Assessment, and Management"** 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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