



CALL FOR PAPERS

IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing Special Issue on “Generative AI for Remote Sensing Image Processing”

Recent advances in generative artificial intelligence (AI) models, such as ChatGPT, have attracted widespread attention and reshaped perspectives on data generation and representation. In the field of image processing, methods such as generative adversarial networks (GANs) and diffusion models have shown strong capability in learning complex data patterns and generating realistic, high-quality images. These techniques offer promising prospects for remote sensing, where data are often limited by cloud cover, noise, missing information, and limited labeled samples. By generating complementary or high-quality data, generative approaches can help overcome these challenges and improve the effectiveness of remote sensing image processing.

Building on these capabilities, generative approaches are increasingly being applied to remote sensing image processing and analysis. Typical applications include image enhancement, restoration, and super-resolution, as well as cloud and haze removal, missing data recovery, and cross-modal translation between optical, SAR, and hyperspectral images. Moreover, generative methods enable the synthesis of realistic and diverse samples for data augmentation, which can enhance the accuracy and robustness of downstream tasks such as classification, detection, segmentation, and change detection. Integrating generative learning with physical models and domain constraints further improves interpretability and consistency with real-world imaging principles. This special issue aims to present recent advances in generative AI for remote sensing image processing, generation, and data augmentation. It welcomes contributions covering theoretical development, model design, and practical applications in Earth observation.

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

- Generative models for remote sensing image quality enhancement, restoration, and reconstruction;
- GANs, diffusion models, and variational approaches for remote sensing image processing;
- Physics-informed and model-guided generative learning;
- Synthetic data generation and augmentation for improving downstream tasks;
- Cross-modal and multi-sensor image synthesis and fusion;
- Evaluation metrics and benchmark datasets for generative remote sensing tasks.

Schedule

Dec. 01, 2025, Submission system opening

May 31, 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 “**Generative AI for Remote Sensing Image Processing**” 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.

Guest Editors

Yong Chen

Jiangxi Normal University, China (chenyong1872008@163.com)

Wei He

Wuhan University, China (weihe1990@whu.edu.cn)

Xi-Le Zhao

University of Electronic Science and Technology of China, China (xlzhao122003@163.com)

Naoto Yokoya

University of Tokyo, Japan (yokoya@k.u-tokyo.ac.jp)