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

Special Issue on
"Fusion and Inference of Multi-modal Ocean Observation and Remote Sensing Data"

With the continuous development of ocean observation and monitoring technologies and the ongoing improvement of the global ocean observation network, the variety and scale of ocean observation and remote sensing data have seen rapid growth. Marine science big data, primarily sourced from observations and monitoring, especially remote sensing, serves as an effective tool for understanding key processes in ocean physics, chemistry, biology, and more. With the support of artificial intelligence technologies, leveraging marine science big data for scientific perception, understanding, and prediction has become an important means to overcome traditional limitations. Furthermore, physical information neural networks are employed to predict and forecast the spatio-temporal evolution of ocean meteorology and marine environments.

While integrating marine observation data and artificial intelligence methods has already brought about new advancements in traditional ocean science, the diversity of sources and acquisition methods of ocean big data has led to challenges in data fusion, cross-modal inference, composite computation, and collaborative applications. These challenges arise from the multi-modal characteristics of ocean observation data, including differences in spatio-temporal scales, uneven spatial distributions, and variations in sample distributions.

This special issue focuses on ocean observation and remote sensing data to address the challenges posed by the multi-modal characteristics of ocean observation and remote sensing big data in data fusion, inference, computation, and application. The aim is to advance the core issues of artificial intelligence and big data technologies in marine science applications, promote the development of tools and methodologies for ocean science cognition, and enhance the theoretical research and technical system of artificial intelligence in oceanography.

This special issue primarily revolves around the multi-modal issues of marine observation big data, and the topics include but are not limited to:

- Identification, content understanding, classification, and segmentation of multi-modal remote sensing images in the ocean domain.
- Fusion techniques for multi-modal ocean observation and remote sensing data.
- Completion of spatio-temporal data fields in multi-modal ocean observation and remote sensing datasets.
- Cross-modal retrieval of textures in ocean remote sensing images.
- Physics-guided multi-modal big data prediction and forecasting in the ocean domain.
- Cognition of ocean processes and phenomena based on multi-modal observation and remote sensing data.
- Predicting and forecasting typical ocean disasters based on multi-modal observation and remote sensing data.
- Knowledge-driven collaborative inference of multi-modal ocean data.

Schedule
Submission Date Start: 01 Jan 2024
Submission Date End: 31 Dec 2024

Format(to be modified)

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 using the Manuscript Central interface, and select the "**Fusion and Inference of Multi-modal Ocean Observation and Remote Sensing data**" special issue manuscript type. Prospective authors should consult the site: https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8855039 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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Guest Editors:

Xiaofeng Li, Institute of Oceanology, Chinese Academy of Sciences, China (Xiaofeng.Li@ieee.org)

Jie Nie, Ocean University of China, China (niejie@ouc.edu.cn)

Martin Gade, University of Hamburg, Germany (martin.gade@uni-hamburg.de)

Ferdinando Nunziata, University of Naples, Italy, (ferdinando.nunziata@uniparthenope.it)