



## CALL FOR PAPERS

### IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing Special Issue on “Mathematical Morphology in Remote Sensing and Geoscience”

Historically, mathematical morphology was the first consistent non-linear image analysis theory, which from the very start included not only theoretical results but also many practical aspects. Mathematical morphology is capable of handling the most varied image types, in a way that is often subtle yet efficient. It can also be used to process general graphs, surfaces, implicit and explicit volumes, manifolds, time or spectral series, in both deterministic and stochastic contexts. In the last five years, connected signal representations and connected operators have emerged as tools for segmentation and filtering, leading to extremely versatile techniques for solving problems in a variety of domains including information science, geoscience, and image and signal analysis and processing. The application of mathematical morphology in processing and analysis of remotely sensed spatial data acquired at multi-spatial-spectral-temporal scales and by-products such as Digital Elevation Model (DEM) and thematic information in map forms has shown significant success in the last two decades. From data acquisition to the level of making theme-specific predictions, there exists several phases that include feature extraction (information retrieval), information analysis/characterization, information reasoning, spatio-temporal modelling and visualization. Relatively, numerous approaches/frameworks/schemes/ algorithms are available to address information retrieval when compare to those approaches available to address the rest of the topics. With the availability of data across various spatial/spectral/temporal resolutions, besides information extraction, other topics like pattern retrieval, pattern analysis, spatial reasoning, and simulation and modeling of spatiotemporal behaviors of several terrestrial phenomena and processes also need to be given emphasis. This special issue intends to bring high quality papers on theory and applications of mathematical morphology and scaling theories in addressing aforementioned intertwined topics.

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

- Theory and applications of classical and modern mathematical morphology
- Mathematical morphology in color spaces
- Advances in filtering and segmentation and applications in remotely sensed data processing and analysis.
- Feature-based classification and clustering
- Morphological neural networks
- Stochastic geometry for deep learning
- Mathematical morphology in terrestrial pattern retrieval, terrestrial pattern analysis, quantitative spatial reasoning, geo-modelling, simulation and visualization, morphological interpolations and extrapolations
- Mathematical morphology in processing and analysis of Digital Elevation Models (DEMs)
- Applications of classical and modern mathematical morphology: Hyperspectral image analysis; 3-D object retrieval, stereoscopic image superpositions; texture hierarchical segmentation; stereoscopic image superpositions; cartographic images with emphasis on remote sensing, geoscience and information mining.

#### Schedule

October 1, 2020 Submission system opening

March 31, 2021 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 “Mathematical Morphology” 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). Please visit [http://www.ieee.org/publications\\_standards/publications/authors/author\\_templates.html](http://www.ieee.org/publications_standards/publications/authors/author_templates.html) to download a template for transactions. Please note that as of Jan. 1, 2020, IEEE J-STARS will become a fully open-access journal charging a flat publication fee \$1,250 per paper.

#### Guest Editors

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