



Call for papers

IEEE Transactions on Geoscience and Remote Sensing *Special Issue on Spectral Unmixing of Remotely Sensed Data*

Submission deadline: 30 September 2010

A Special Issue of the *IEEE Transactions on Geoscience and Remote Sensing* on the topic of *Spectral Unmixing of Remotely Sensed Data* has been recently approved by the *IEEE Geoscience and Remote Sensing Society* (GRSS). Spectral unmixing has been an alluring exploitation goal since the earliest days of remote sensing. Due to limited spatial resolution, the spectral signatures collected in natural environments are invariably a mixture of the signatures of the various materials found within the spatial extent of the ground instantaneous field view of the imaging instrument. In recent years, the availability of instruments with a number of spectral bands that exceeds the number of spectral mixture components has fostered active research efforts in this area.

This *Special Issue on Spectral Unmixing of Remotely Sensed Data* is intended to present the state-of-the-art and the most recent developments in spectral unmixing from a remote sensing perspective. The *Special Issue* is expected to bring together experts from different institutions to provide a sample of latest-generation techniques in this active research area. The focus will be on recent developments in techniques and applications of spectral unmixing for data sets collected by hyperspectral imagers, which have substantially increased their spectral resolution (imagers with hundreds of narrow spectral channels are currently available, and instruments with thousands of spectral bands are under development), thus producing a nearly-continual stream of high-dimensional image data which demands effective techniques for data interpretation with sub-pixel precision.

Although analysis of hyperspectral data will be an important component of the *Special Issue*, contributions on spectral unmixing for other types of remotely sensed data are also welcome. Particular attention will be given to the possibility of applying spectral unmixing concepts to scenes with moderate spectral resolution (multispectral), and to the use of spectral unmixing for data compression purposes. High-quality contributions are solicited with emphasis placed on (but not limited to) the following topic areas:

- Linear and nonlinear mixture models for analysis of remotely sensed data
- Incorporation of spectral similarity measures in spectral mixture modeling
- Data dimensionality issues for spectral mixture analysis
- Automatic and semi-automatic endmember extraction in remotely sensed data
- Supervised endmember extraction and pure class modeling
- Adaptive endmember selection and multiple endmember spectral mixture analysis
- Unconstrained versus constrained fractional abundance estimation in remotely sensed data
- Blind source separation and its relation with spectral unmixing of remotely sensed data
- Incorporation of sparsity and spatial information in spectral unmixing of remotely sensed data
- Quantitative assessment of spectral unmixing
- Statistical validation of spectral mixture analysis models
- Extension of spectral unmixing to multispectral scenes
- Applications of spectral mixture analysis of remotely sensed data
- Analysis of intimate mixtures in remotely sensed data: soil, vegetation and other application-specific studies
- Spectral unmixing in planetary exploration
- High performance computing implementations of spectral unmixing techniques

Inquiries about the *Special Issue* may be directed to the Guest Editors listed below. Papers can be submitted using the manuscript central web link: <http://mc.manuscriptcentral.com/tgrs> and selecting *Spectral Unmixing Special Issue* from the 'Manuscript type' pull-down menu.

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