

## Guest Editorial: Recent Advances in Remote Sensing of Wildland Fires in the Eastern United States

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Wildland fire has significant impacts on public health, ecosystems and even climate. During the past decades, remote sensing has becoming a significant tool for wildland fire detection and analysis. For wildland fire study, the eastern United States has some special characteristics compared to the western United States. Specifically, in the eastern states, wildland fires are usually relatively small in size, and prescribed burning is frequently used as an efficient approach of land management to reduce hazardous fuels, improve wildlife and livestock habitat, and control invasive species. Since the eastern states have the greatest amount of the wildland urban interface (WUI) exposed to human activities, fires can have a significant impact on public health. So, it is critically important to develop efficient approaches for detecting active fires, assessing fire impacts, and predicting potential fire risks in the eastern United States. The second EastFIRE Conference, held at George Mason University, June 5-8, 2007, brought together researchers, land managers, and technicians to share information on remote sensing applications to wildland fires in the eastern states. Based on the session chair's suggestions, manuscripts were selected for this special section of the *Journal of Applied Remote Sensing* (JARS). After an extensive peer review, nine papers were accepted for publication for the EastFIRE special section, covering various aspects of remote sensing applications for wildland fires, including fuel moisture retrieval, fuel loading estimation, active fire detection, burned area assessment, and fire emission estimation. They are listed here with a brief synopsis of their content.

Pouliot et al. [1] introduced the 2005 biomass burning emission inventory for the contiguous United States, which was developed by integrating data from multiple sources, and it is the first EPA inventory utilizing remote sensing information. Their approach may be faster, less expensive, and more accurate compared to previous methods.

Zheng et al. [2] combined satellite remote sensing data and forest inventory and analysis (FIA) data to estimate forest aboveground biomass (ABG). Their results show good accuracy at the state level and provide useful information for regional fuel-loading estimates.

Liu et al. [3] studied the impacts of plume rise of prescribed burning on air quality using the community multiscale air quality (CMAQ) model, and found significant sensitivity of simulated PM<sub>2.5</sub> concentrations to plume rise.

Al-Saadi et al. [4] compared biomass burning emissions and demonstrated necessary steps towards reduction of uncertainties in biomass burning emissions estimates.

Li et al. [5] investigated vegetation change over the 2007 Georgia wildfire regions, and presented an effective approach to monitor vegetation change caused by fires, and assess fire severity and vegetation recovery rate.

Bhoi et al. [6] studied the type and spatiotemporal variability of aerosols emitted from the 2007 Okefenokee forest fire by integrating multi-sensor remote sensing measurements, and demonstrated high concentration of fine mode aerosols during the fire episode.

Wang et al. [7] analyzed the characteristics of the small and low intensity fires in the southeastern United States with a database of massive fire events. Their statistical analysis provided approaches to improve the use of NASA MODIS data with fire detection algorithms for detecting low intensity fires at the regional scale.

Dasgupta et al. [8] evaluated an inverse radiative transfer model based live fuel moisture content (LFMC) retrievals over grasslands, and found that under the experimental conditions used in the study, prior information on leaf area index (LAI) and soil moisture can improve LFMC estimation significantly.

Soja et al. [9] compared satellite-derived fire data to ground-based data, and presented a methodology to estimate total area burned by wildfire, prescribed, agricultural, and rangeland burning by combining NASA MODIS and NOAA GOES ABBA data.

We hope you enjoy reading these significant contributions to eastern United States wildland fire research and applications. We also appreciate the time invested by the reviewers and their valued suggestions and improvements to these manuscripts.

The editors would like to thank the session chairs of the 2007 EastFIRE Conference who evaluated the presentations and suggested manuscripts for this special section.

## References

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