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The eastern United States, with over 70% of US population and 50% of its forests, is underserved in wildland fire research. Demographic and climate trends bring 21st century challenges for eastern US fire management. Ten selected papers presented at the 2007 EastFIRE Conference are published in this issue of IJWF.

LANDFIRE produces consistent and comprehensive data products describing vegetation, wildland fuel, fire regimes and ecological departure from historical conditions across the United States. LANDFIRE products are used for landscape-level fire management planning and prioritization, community and firefighter protection, effective resource allocation, and collaboration between government agencies and the public.

This paper describes the development of the LANDFIRE fuel data products. The LANDFIRE fuel products are seamless spatial data layers currently covering the conterminous United States. The seamless and comprehensive nature of these data enables simulation of fire behavior at multiple scales from stands to entire regions. Such capability improves resource allocation, improves firefighter protection and enhances spatial modeling capability.

We used remotely sensed LIDAR data, field sampling, and forest productivity models to estimate fuel loading, consumption, and fuel accumulation in the Pine Barrens of New Jersey. We then calculated return intervals for desired fuel loadings to assist fire managers make decisions regarding the effectiveness and longevity of hazardous fuel reduction treatments.

We explored local response in Community Wildfire Protection Plans in the eastern United States, specifically the use and interpretation of the wildland–urban interface. Document review and case study analysis revealed tremendous variation in plans regarding use of the wildland–urban interface, planning scale, planning templates, and participants.

This paper presents a mathematical model for determining the effect on ground-fire propagation of the winds generated by discrete structural fires that produce plumes and consume air to sustain the burning of the building. Fire in this mixed continuous or discrete fuel system simulates fire in the wildland–urban interface.

Computer-generated infrared remote-sensing scenes of fire are tools for understanding how real remote-sensing systems view fires. Using fundamental knowledge of fire physics, we created a night-time scene of a grassfire. The synthetic scene is qualitatively and quantitatively similar to real infrared remote-sensing images of fires.

A new ecological monitoring tool called *FFI* has been developed to assist managers with collection, storage and analysis of ecological information. The flexibility designed into *FFI* means it can be used for monitoring a broad range of ecosystems. Though developed for application in the US, *FFI* can potentially be used to meet monitoring needs internationally.

We combined remote sensing and conventional sampling techniques to measure the characteristics of fuels and fire behavior in longleaf pines woodlands in the south-eastern USA. We found that fuels were spatially organized into fine-scale structures we call wildland fuel cells. Fire behavior and wildland fuel cell structure varied at the same scale and were correlated, showing promise for connecting fuels, fire behavior and fire effects.

Seasonal soil moisture trends were monitored on six North Carolina pocosin sites from January 2005 to November 2007. The soil moisture responses and the potential for sustained smoldering were influenced by seasonal and yearly differences in precipitation, hydrologic factors and soil properties.

Prescribed burning is a useful forest management technique that is extensively used in the southern USA. However, smoke from prescribed burning can degrade air quality, especially if it invades urban areas. This study uses a regional modeling framework to simulate a smoke incursion event in Georgia that resulted in severe air quality effects to Atlanta.
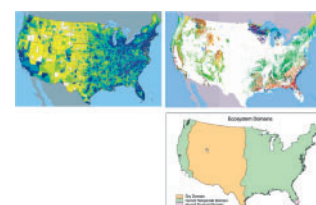
Images: US Census Bureau (top left), US Climate Change Science Program and the Subcommittee on Global Change Research (top right), and RG Bailey (bottom)