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Foreword

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2007 EastFIRE Conference: introduction to special issue

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Wildland fire is a global process, subject to regional characterization, with localized impacts on natural resources, people and their social systems. Fire science strives to meld international- and national-scale applicability with regional- and local-scale application. Satellite observations reinforce the belief that as the basic combustion and behaviour processes governing fire are globally consistent, models of those processes should be adaptable to local conditions. Although the Canadian Forest Fire Danger Rating System is a notable exception, years of scientific effort have gone into developing fire systems that are often not accepted outside of their region of origin within a nation, or across national boundaries. The United States are regionally divided into east, interior west and west coast in terms of ecosystem domains and demographic distributions. The eastern United States are approximately bounded by the west side of the Mississippi Valley and the Atlantic Ocean, are home to over 70% of the USA population and more than 50% of USA forests, are strongly dominated by non-Federal wildland ownership, and experienced the two historically (19th century) highest human-impact wildland fires in USA history (Pestigo and Hinckley). Post-World War II fire suppression assumed a strong western focus as vast acreages of Federal timber resources were impacted by fire, and fire research coevolved as a modern science to support a maturing fire management mission. But as we entered the 21st century, the importance of fire management for timber resource protection was being overshadowed by the demographic driver known as the wildland–urban interface (WUI), and climate change was increasingly being viewed as at least an equal to fuel accumulation as a causative reason for the strong upward trend in acres burned and suppression dollars spent over the past 20 years. These distributions and trends heightened the sense that the eastern region of the USA receives less than an equitable portion of fire research applications. As such, it seemed useful to conduct a continuing exchange for broadly relevant fire research information in an underserved regional market. The regional practitioner community would thus have available applicable science regardless of place of origin, and the science community would be better apprised of the regional application nuances expected of their products. The EastFIRE Conferences were started to serve as an eastern marketplace for the focussed exchange of fire science information.

The 2007 EastFIRE Conference was held 5–8 June 2007 in Fairfax, Virginia, with 138 presentations made during 26 plenary, concurrent and poster sessions before 168 registered participants and a large student body. The 10 papers gathered in the present IJWF issue derive from those presentations. The Conference Steering Committee (John Stanturf, John Jianhe Qu, Stephen D. Ambrose, Erik Berg, Stan Coloff, Sue Conard, George Pouliot, John Hom, Eli Jacks, John G. Lyon, Allen R. Riebau, Jun Wang, Ruixin Yang) oversaw the technical content of the conference and the Conference Advisory Committee (William T. Sommers, Peggy Agouris, Jim Hubbard, Eli Jacks, Mike C. Long, Dick Managan, Roy Patton, S.T. Rao, Jim Reaves, Peter J. Roussopoulos, Robert Szaro, Teresa Fryberger) provided sponsoring agency, association and university guidance. The Committees thank conference sponsors (US Forest Service (Southern Research Station, Northern Research Station, Research & Development, State & Private Forestry); US Environmental Protection Agency, Joint Fire Science Program, US Geological Survey, US Fish & Wildlife Service, US Weather Service in partnership with University Corporation for Atmospheric Research (UCAR) Cooperative Program for Operational Meteorology, Education and Training (COMET), National Fire Protection Association (NFPA), International Association of Wildland Fire (IAWF)) who made the conference and the continuing forum for fire science information exchange possible. The next EastFIRE conference is planned for June 2010.

The 10 2007 EastFIRE conference papers contained in the current issue represent the range of research information that better informs regional- to local-scale fire science information application while helping to assure that broadly applicable national-scale research and development efforts benefit local managers faced with managing actual fires. The first two papers (Rollins 2009; Reeves *et al*. 2009) report on LANDFIRE (the Landscape Fire and Resource Management Planning Tools Project), which is a major project aimed at producing consistent and comprehensive maps and data describing vegetation, wildland fuel, and fire regimes across the United States. LANDFIRE is committed to eastern USA implementation in 2008. The ultimate success of LANDFIRE in the east will be judged by its ability to support the type of fuels information needed by managers in such fire-dependent ecosystems as the Pine Barrens of New Jersey as described in the third paper (Clark *et al*. 2009). Fire in the Pine Barrens involves impacts on people and their social systems that personify WUI concerns, were emphasized in the 2000 US National Fire Plan, are prevalent in the east and are reported on in the fourth paper (Grayzeck *et al*. 2009). This paper is another examination of the question of whether

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Federal-scale information is really applicable at local and regional scales, in this case in the policy and social science arena. When WUI fires do occur, structures become an active part of the fuels being consumed, and the fifth paper (Rehm and Mell 2009) reports on an approach for modelling that process. It is interesting that this paper's consideration of structure combustion associated with wildland fire relates back to the post-World War II foundations of modern fire research when the similar questions were being raised concerning mass fires associated with hypothetical nuclear bomb urban ignitions. Remote sensing often offers case study examples of whether broadly applicable technologies can be applied to yield locally valuable applications. The sixth paper (Wang *et al*. 2009) demonstrates the utility of a method for generating synthetic infrared remote sensing scenes of wildland fire. Information about the ecological impacts of fire and how fire and fuels vary with local ecological conditions have always been at the heart of research concerning fire effects. Papers seven, eight and nine (Lutes *et al*. 2009; Hiers *et al*. 2009; and Reardon *et al*. 2009) describe an approach to assist managers with collection, storage and analysis of ecological information; another approach that combines remote sensing and conventional sampling techniques to characterize heterogeneous fuels; and another describing how soil moisture affects the smouldering combustion of wetland organic soils. That type of combustion contributed greatly to the amount of smoke generated during the May 2007 fires that burned more 200 000 ha (500 000 acres) in Georgia and northern Florida. One of the characteristic problems for fire management in the eastern United States, and increasingly around the world, is the exposure of expanding human populations to wildland fire smoke. The final paper (Liu *et al*. 2009) describes a regional modelling framework that simulated an earlier (February) 2007 smoke incursion event in Georgia that resulted in severe air quality effects in Atlanta, the largest city in the state. This paper highlights the value of fire research by describing a critical local public impact of fire in a high population density region using nationally applicable component models that are integrated as the platform for a regional application (Southern High-Resolution Modelling Consortium Southern Smoke Simulation System (SHRMC-4S)).

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