



Rocky Mountain Research Station

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Providing scientific knowledge and technology to sustain our nation's forests, rangelands, and grasslands

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Fifty Years of Wildland Fire Science

ISSUE

Predicting fire behavior and fire effects—whether to manage ecosystems more effectively or to protect human lives and property—is a constant challenge to land managers. In September 2010, the Missoula Fire Sciences Laboratory celebrated 50 years of successful research that has helped managers meet that challenge in the field. Research continues at the Fire Lab—from understanding the interactions of fire and climate to protecting the wildland-urban interface.

IMPORTANCE

The Fire, Fuel, and Smoke Science Program activities are varied and diverse, with considerable integration among the following six focus areas:

- Physical Fire Processes
- Fuel Dynamics
- Smoke Emissions and Dispersion
- Fire Ecology
- Fire and Fuel Management Strategies
- Social Synthesis and Delivery

The questions studied and the technologies used at the Fire Lab have continually evolved since 1960, but the Lab's original focus on developing a greater understanding of fire and using the best technology to communicate that knowledge to land managers has been a way of life for Fire Lab scientists since 1960.

OUTCOMES

Research at the Missoula Fire Sciences Lab continues to build on past knowledge, and new technology is opening entire new fields of inquiry.



- LIDAR (Light Detection And Ranging) imagery describes smoke plumes in great detail, enabling the forecast of smoke plume transport and impact.
- Mathematical models are used to map wind flow, improving fire spread predictions.
- Field work increases managers' abilities to predict tree mortality caused by fire and bark beetles.
- Guidelines have been developed for assessing potential changes in fuel characteristics and fire behavior after mountain pine beetle attacks.
- Experimental work contributes to improved safety guidelines for firefighters and homes.
- Bioregionally-focused Climate Change Synthesis documents improve managers' abilities to design and implement climate change mitigation and adaptation strategies and are a source of information on regional climate changes and climate change impacts.

PARTNERS AND COLLABORATORS

- USDA Forest Service Wildland Fire Management Research, Development, and Application
- The University of Montana, National Center for Landscape Fire Analysis
- University of Idaho FRAMES and Wildland Fire Program