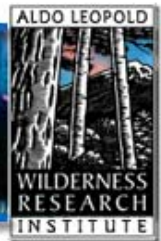


Wildland Fuels Management: evaluating risks and benefits



Frequently Asked Questions...

9. What information do I need in order to use this process?

Project overview...

We have developed a process that allows managers to systematically determine where and under what conditions fire may create benefits or pose threats to identified ecological conditions or management targets. An important feature of this protocol is that fire effects are expressed in terms meaningful to both fire and resource staff. The process is spatially explicit (ArcView and/or ArcMap); uses existing, local datasets; incorporates the latest fire and vegetation research; provides model defaults to facilitate adaptation to local conditions; and generates information for a variety of planning scales from long-range to site-specific.

Required Data Inputs...

To develop a map library of **fire behavior**, you will need all the data requirements necessary for FLAMMAP and/or FARSITE. This includes:

- Daily fire weather data. This is processed through FireFamilyPlus to generate values for threshold fire weather conditions (80th%, 90th%, 97th%, 99th%) for Energy Release Component or the parameter local fire officials use to determine safe tactics. This information is then used to produce wind and weather files for running FLAMMAP.
- Digital DEM and fuels data. These include a fuel model - using Anderson Fire Behavior Fuel Models or other system capable of integrating into FARSITE; canopy fuels data (including stand height, crown closure, crown base height, crown bulk density); and digital elevation models for calculating separate grids of aspect, slope, elevation.

To develop a map library of **fire effects**, you will need

- Digital vegetation data. We used satellite imagery classified at 30m, supplemented by stand data to create datasets indicating both stand structure and composition.
- Additional digital data. Additional data may be necessary to predict probable locations of management indicators or resource targets. Examples might be aspect, elevation, precipitation, soils, or aquatic data.
- Maps for each management indicator or resource target of interest. Rules are used where other maps do not exist to create an initial map of each process or species of management interest. These datasets become 'baseline conditions' against which progress towards or away from targets is measured.
- Fire effects rules. Rules are used to determine and map fire effects for each management indicator or resource target. The rules, which can include mathematical equations, integrate and summarize fire behavior (flame length, crown fire activity, heat/area) into effects on the species of interest and its habitat requirements. This is often on existing vegetation, but should include any parameters directly impacting the process or species of interest.

Required Software... Specialized software is required to develop map libraries of fire behavior. These are available for free download on the Internet. These include:

- FireFamilyPlus which is used to generate weather information;
- FARSITE which is used to create .lcp file input for FlamMap2;
- FlamMap2 which is used to generate fire behavior; and
- ARCMAP or ARCVIEW with Spatial Analyst.

To generate information on potential future landscapes, you will also need a landscape simulation model. We used SIMPPLLE, but also tested FVS-FFE. Other systems include LANDSUM or RMLANDS.

To generate other fire effects, we used two additional existing models:

- FOFEM for emissions and first order fire effects such as mineral soil exposed; and
- Disturbed-WEPP for sedimentation and run-off.

For more information contact: Anne Black, 406-329.2126, aebblack@fs.fed.us

And visit our website: <http://leopold.wilderness.net/research/fprojects/F001.htm> where we post examples and demonstrations.

Fire Research at the Aldo Leopold Wilderness Research Institute

The Aldo Leopold Wilderness Research Institute is helping managers devise effective strategies for managing fire and fuels across the full spectrum of lands extending from wilderness outward to the wildland urban interface. Our research encompasses the ecological and social sciences and is focused on three areas: 1) understanding natural fire regimes and their alteration by management, 2) developing information and tools to improve fire and fuel management planning, and 3) anticipating consequences of management alternatives.

For a complete list of fire-related research activities at the Leopold Institute, visit <http://leopold.wilderness.net/research/fire.htm>, or contact Carol Miller, 406-542-4198, cmiller04@fs.fed.us.

The Aldo Leopold Wilderness Research Institute is the only Federal research group in the United States dedicated to the development and dissemination of knowledge needed to improve management of wilderness, parks, and similarly protected areas. We provide a national center for scientists from different disciplines and backgrounds to address the wilderness research needs of land management agencies and organizations. The Leopold Institute was formally established in 1993 by the U.S. Forest Service and is administered by the Rocky Mountain Research Station. We operate under an agreement with the U.S. Forest Service, U.S. Geological Survey, Bureau of Land Management, U.S. Fish and Wildlife Service, and the National Park Service. Support for our fire research program includes funding from the National Fire Plan, Joint Fire Sciences Program, and the Bitterroot Ecosystem Management Research Program.

FEATURED PROJECTS

Leopold Institute

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