

JFSP 2001 Principal Investigator Workshop

Project title: Application of a Fuel Characterization System for Major Fuel Types of the United States
Project location: Seattle Forestry Sciences Laboratory, 4043 Roosevelt Way N.E., Seattle, WA 98105
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Description of project: The objective of this project is to design a national Fuels Characterization Classification system (FCC) for classifying disturbed and undisturbed wildland fuelbeds according to the set of inherent properties necessary to predict potential fire behavior and effects. This fuels project, scheduled for completion in 2003, will allow fire managers, researchers, air quality managers, ecologists, and carbon modelers across the United States to obtain detailed estimates of fuel characteristics and probable fire parameters based on either of two types of information: specific fuel data (categories of fuel and their relative abundance), or general site data that is available from broader areas (such as land cover type, disturbance type, or other data obtained from remote sensing, forest inventories, or models). The detailed fuels information provided for each Fuel Characteristic Class is needed to support fire hazard assessments and fuel treatment decisions. These data can be used to drive sophisticated fire models (such as Consume, EPM, FFE-FVS, FOFEM) that will provide smoke production estimates and other required information.

Status report: This project is on schedule and within budget.

The Fuels Characteristic Classification project is being conducted in four major phases. In the design phase, fuel and fire management specialists, fire scientists, fire ecologists, modelers, and mappers have been enlisted to design the final structure of the FCC system and supply specific fuels data during 6 regional workshops held in FY00 (Fairbanks, AK (boreal); Palm Coast, FL (tropical/subtropical); Phoenix, AZ (dry), Atlanta, GA (subtropical); Portland, OR (western temperate); and Nebraska City, NE (eastern temperate). The design phase is complete and a software design document developed. The system is based on 6 fuelbed strata, 16 fuelbed categories, physiognomic properties, and gradient variables. A workshop is scheduled for October 2001 with the Fire and Environmental Research Applications Team (FERA), Missoula Fire Lab, and the Washington Office to discuss the FCC system's applicability to existing and new fire behavior tools.

In the generation and research phases we are using existing field data, photo series data, biophysical models, and expert knowledge to assign values to fuel properties for a comprehensive set of FCCs. A gray literature and model search contract has been partially completed by Fire Program Solutions for the research phase. Current in-house research is focused on collecting fuelbed data, organizing a fuels data catalog, and linking it to vegetation and fuel characteristics. We are finalizing design issues and constructing fuel characteristic generation protocols. Finally, we are finalizing the design of a three-digit descriptor that classifies fuelbeds based on potential fire behavior (x-axis, 8 levels), crown fire potential (y-axis, 4 levels), and potential post-flaming front combustion (z-axis, 6 levels).

The implementation phase, which is running concurrently with the other phases, will produce a FCC software tool with accompanying user manual and training package. In January 2001, ESSA Technologies Ltd. completed a software development guide for the system and is currently designing a protocol to link FCCs to the Fire and Fuels Extension to the Forest Vegetation Simulator (FVS). ESSA is also building a CD-ROM prototype of the FCC system for testing beginning in early 2002. A contract will be awarded in FY 2002 to develop the web-based version of FCC and training package. Release of the FCC software is scheduled for 2003.

Issues/concerns affecting the project: Actual development of FCC linkages to other models is not part of this project and will need to be considered for future efforts.