FEPS Tutorial

INSTRUCTOR'S GUIDE

To download and/or view the FEPS tutorial, please visit the tutorial webpage at:

http://www.fs.fed.us/pnw/fera/products/software_tutorials.html

Tutorial: The FEPS tutorial is intended to be viewed individually by students either online, or downloaded to a personal computer and viewed offline. You may wish to incorporate the tutorial as a pre-course assignment or classroom exercise.

Student Workbook: The workbook contains an introduction to FEPS followed by "screen captures" of each page of the tutorial, with space provided for student notes.

User Guide: The FEPS User's Guide is also available to you for your reference.

INTRODUCTION TO FEPS

The Fire Emission Production Simulator (FEPS) is a user-friendly computer program designed for scientists and resource managers. The software manages data concerning consumption, emissions, and heat release characteristics of prescribed burns and wildland fire events. The original Emissions Production Model (EMP) was designed to help managers estimate and mitigate the rates of heat, particles and carbon gas emissions from controlled burns of harvest-slash residue in Pacific Northwest forests. In updating EPM, a significant number of improvements were made to the usability, applicability, and accuracy of the model. The calculation approach was redesigned, and the model has been renamed FEPS.

The most recent FEPS update, version 1.1, includes fuels data from the most popular fuelbeds in the Fuel Characteristic Classification System and produces hourly emission and heat release data for prescribed and wildland fires. It now accepts data imported from FOFEM, Consume 2.1, and Consume 3.0.

FEPS can be used for most forest, shrub and grassland types in North America and may be applied to other regions of the world. FEPS incorporates a flexible user interface that allows users to customize a burning Event. Users may adjust fuel loadings, fuel moistures, fuel consumption algorithms, fuelbed proportions and fire growth rates to fit specific events, and can specify durnal changes in meteorological conditions that will modify plume rise. Furthermore, many intermediate results are shared in the user interface. Users may accept these calculations or enter their own values.

Using FEPS

FEPS produces hourly emission and heat release data for prescribed and wildland fires. Users start with a description of an Event. This description includes the name, location, start date, end date, and other properties of the burn event. Users then specify up to five unique profiles. Each profile includes fuel loading and fuel moisture information. Based on these data, FEPS calculates total fuel consumption for each profile. FEPS then determines flaming, short-term smoldering (< 2 hrs), and long-term smoldering involvement and consumption. Finally, users indicate how the Event behaves over time. FEPS uses hourly data on fire size and local weather conditions to calculate emissions and heat release parameters on an hourly basis. Fuel characteristics for each hour are managed by distributing the fire across the five user-specified fuel profiles.

FEPS Events

In order to use FEPS efficiently, it is important to understand how FEPS manages Events. In FEPS, individual studies are called Events. An Event stores information about and calculates emission and release information for an entire burn (either a prescribed fire or a wildland fire) at a single location.

Because of the relative complexity of the data necessary to define an Event, users are not allowed to create one from blank input screens. All Events are created from existing Events, or System or User Defaults (templates). This approach helps the user make sure that an Event dataset is complete. However, it is incumbent on the user to review all of the supplied data and revise it as necessary to make sure that they are correct. This procedure allows a user with less specific knowledge of a fire to accept the data in a System Default as a starting point and get reasonable results. It also allows users with more specific knowledge of a fire to completely customize the data used to compute results.

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INSTRUCTIONS FOR INSTALLING FEPS SOFTWARE

System Requirements

FEPS will run on all versions of Microsoft Windows, including Windows 95, Windows 98, Windows NT, Windows 2000, and Windows XP. It requires 12.5MB of free disk space.

Downloading and Installing FEPS

1. Download **FEPS.msi** from the FEPS webpage.

   http://www.fs.fed.us/pnw/fera/feps/

2. Double-click on **FEPS.msi** and follow the on-screen instructions to complete the installation.

   During installations and upgrades, some users have received an error message:

   > **"Error 1931: The Windows Installer service cannot update the system file C:\WINNT\system32\hhctl.ocx because the file is protected by Windows. You may need to update your operating system for this program to work correctly."**

   If you receive this error, simply click the **OK** button and proceed. The error will not affect how FEPS runs on your computer.

To upgrade FEPS from a previous version:

1. To upgrade FEPS, you must first uninstall version 1.0, then install version 1.1.

   When upgrading from version 1.0 to 1.1, the installation software will retain all of your user-specified Event information. Nevertheless, we strongly recommend that you make a copy of the FEPS.mdb file in a safe place prior to upgrading FEPS. The database file, FEPS.mdb, is located in the same directory as the FEPS executable file. For a typical installation this would be C:\Program Files\FEPS\. Before you upgrade FEPS, copy this file to a safe location.

2. For advanced users, any modifications you have made to the equation spreadsheets will not be retained. Make a copy of your modified equation spreadsheets before upgrading, and then copy your saved spreadsheets back into the EquationSpreadsheets subdirectory after installing version 1.1.

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