Supporting Documentation for Crown Scorch Height, IFT-scorch (based on the SCORCH module in BehavePlus)

Name of Software Tool: IFT-scorch

Current Version Description/Date: IFT-scorch version 01-31-12

Software Code and History: The mathematical code for IFT-scorch is from the Fire Behavior Software Developer Kit (FBSDK) and the BehavePlus5 xfblib.cpp and xfblib.h. IFT-scorch (01-31-12) implements the critical functionality found in the BehavePlus-SCORCH module. Details comparing the functionality of BehavePlus5 and equivalent tools in IFTDSS can be found in Drury et al. (2012, BehavePlus Functionality available in IFTDSS Version 1.0). Rigorous testing has been performed to verify that the mathematical output from the IFT-scorch model is consistent with the output from the BehavePlus5-SCORCH module. Details concerning the output evaluation between BehavePlus-SCORCH and IFT-scorch can be found in PDF files included in the IFTDSS online help (under **IFTDSS Compared with Other Systems > Module Test Cases**). Future versions of IFTDSS are scheduled to expand the BehavePlus functionality.

Software Developer(s) Names, Organization, and Contact Information:

- BehavePlus was developed by U.S. Forest Service, Rocky Mountain Research Station, Fire, Fuel, and Smoke Science Program. Contact information is available on: http://www.firemodels.org/index.php/behaveplus-support/behaveplus-contact-us
- IFT-scorch was developed by the IFTDSS Development Team based on software libraries provided by the BehavePlus developers. The IFTDSS Development Team may be contacted using the Feedback function available on every page of IFTDSS.

Science Model Contact, Names, Organization, and Contact Information:

- Contact information for implementation of the SCORCH module in BehavePlus or the underlying scientific algorithms is available at http://www.firemodels.org/index.php/behaveplus-support/behaveplus-contact-us
- For questions regarding IFT-scorch, please contact the IFTDSS Team using the Feedback function available on every page of IFTDSS.

Availability of the Version of Record: The latest version of the software code for IFT-scorch resides with Sonoma Technology, Inc. (STI) and is being used in IFTDSS version 1.1. However, STI did not develop the scientific algorithms within the software code. The IFT-scorch software module code is public domain and is available from STI upon written request.

Primary Funding Sources:

- BehavePlus development and support has been funded by U.S. Forest Service, Rocky Mountain Research Station, Fire, Fuel, and Smoke Science Program; U.S. Forest Service, Fire and Aviation Management; the Joint Fire Science Program (JFSP).

- IFT-scorch development was funded by JFSP.

Application Purpose (General): The IFT-scorch model is used to predict crown scorch height from surface fire flame lengths or fireline intensity, wind speeds, and air temperature. Scorch height is the height above the ground that the temperature in the convection column reaches the lethal temperature (140 degrees Fahrenheit) to kill live crown foliage. The IFT-scorch model can be used to model crown scorch height for Element 7 (Fire Behavior Prescription) of a burn plan, and can be used to facilitate decision making for other Elements of a burn plan, including Element 5 (Objectives).

Application Purpose (Fuel Treatment): The IFT-scorch model can be used to model pre- and post-treatment crown scorch height.

User/Application Documentation:

- Documentation of BehavePlus operation and application: http://www.firemodels.org/index.php/national-systems/behaveplus

User Application Guidance:

- The IFTDSS online help includes a PDF tutorial that illustrates how to use IFTDSS to prepare a burn plan (*Preparing a Prescribed Burn Plan*).

Scientific Foundations of the Software Tool:

- Degree of validation/evaluation and availability of written results:
  No information available at this time.
- Publications describing BehavePlus and the fire models on which it is based:
  http://www.firemodels.org/index.php/behaveplus-introduction/behaveplus-publications

Training Availability:

- Training on BehavePlus can be found at:
  http://www.firemodels.org/index.php/behaveplus-support/behaveplus-training