Name of Software Tool: Consume

Current Version Description/Date: Version 4.0/October 2011

Software Code and History: IFTDSS is currently using the re-coded Python version of Consume 3.0.

Software Developer(s) Names, Organization, and Contact Information: Roger Ottmar and Susan Prichard, Pacific Wildland Fire Sciences Laboratory, U.S. Forest Service, Seattle, WA, 206-732-7826, rottmar@fs.fed.us

> **Note to Users: For questions specifically relating to the internal functional operations of this module, contact the developer(s) or help desk resources for this software tool. For questions regarding how this tool is used within IFTDSS, please contact the IFTDSS Team using the Feedback function available on every page of IFTDSS.**

Science Model Contact, Names, Organization, and Contact Information: Roger Ottmar and Susan Prichard, Pacific Wildland Fire Sciences Laboratory, U.S. Forest Service, Seattle, WA, 206-732-7826, rottmar@fs.fed.us

Help desk contact information:

- Phone: (206) 732-7826
- Email: consumehelp@fs.fed.us
- Website: http://www.fs.fed.us/pnw/fera/products/consume.html

Availability of the Version of Record: The Fire and Environmental Research Applications Team (FERA) maintains the software version of record.

Primary Funding Sources: Consume was developed with funding from the Joint Fire Science Program under Project 98-1-9-06.

Application Purpose (General): Consume assists resource managers in planning for prescribed burns and predicting emissions and other fire effects from wildfire. It uses fuel characteristics, lighting patterns, fuel conditions, and metrological attributes to predict fuel consumption, heat release, and pollutant emissions. Consume outputs fuel consumption, heat release, and emissions by combustion phase and fuelbed category. It accepts fuels data from the Fuel Characteristic Classification System (FCCS) or fuel loadings from direct user inputs. Consume is applicable to most wildland fires in forests, shrubs, woodlands, and grasslands in North America.

Application Purpose (Fuel Treatment): Consume and the Fuel Characteristic Classification System (FCCS) are often used in combination within IFTDSS. Fuel loadings and other characteristics can be summarized by stratum, category and subcategory in the FCCS and exported to Consume or directly entered by users. Consume uses input fuel characteristics, fuel conditions, and environmental variables

to predict fuel consumption, heat release, and pollutant emissions. By evaluating different environmental scenarios, Consume can help determine optimal burning conditions to achieve fuel consumption objectives while reducing potential pollutant emissions.

User/Application Documentation:

- http://www.fs.fed.us/pnw/fera/research/smoke/consume/index.shtml

User Application Guidance: No information at this time.

Scientific Foundations of the Software Tool:

- Degree of validation/evaluation and availability of written results:
    - No information available at this time
- Publication history:
    - Peer-reviewed publications
        - Hollis, J.J.; Matthews, S.; Ottmar, R.D.; Prichard, S.J.; Slijepcevic, A.; Burrows, N.D.; Ward, B.; Tolhurst, K.G.; Anderson, W.R.; Gould, J.S. 2010. Testing woody fuel consumption models for application in Australian southern eucalypt forest fires. *Forest Ecology and Management* 260: 948-964.
          Full text [.pdf]
    - Non-peer-reviewed publications
        - Joint Fire Science Program. 2009. Consume 3.0--a software tool for computing fuel consumption**.** Fire Science Brief. 66, June 2009. 6 p
          Full text [.pdf]
        - Ottmar, Roger D.; Prichard, Susan J.; Vihnanek, Robert E.; Sandberg, David V. 2006. Modification and validation of fuel consumption models for shrub and forested lands in the Southwest, Pacific Northwest, Rockies, Midwest, Southeast, and Alaska. Final report.
          Full text [.pdf]
        - Ottmar, Roger D., Burns, M.F., Hall, J.N., Hanson, A.D. 1993. Consume Users Guide, Version 1.0. Gen. Tech. Rep. PNW-GTR-304. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 118 p.
          Full text [.pdf]

Training Availability: The Fire and Environmental Applications (FERA) team hosts workshops on the Consume, FCCS and other products. Upcoming workshops are listed on the FERA website (http://www.fs.fed.us/pnw/fera) and are also advertised in our monthly newsletter (http://lists.oregonstate.edu/mailman/listinfo/pnw_fire_research_news).