Global Applications of the Fuel Characteristic Classification System (FCCS)[1]

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Abstract

The Fuel Characteristic Classification System (FCCS) is a new National system in the United States to characterize fuels at any scale, and to predict surface and crown fire behavior, and effects. The comprehensive system to build, characterize, and classify fuelbeds is needed by land managers, regulators, and scientists to drive models for land and fire management, air pollution, carbon accounting, and policy analysis.

The FCCS is a systematic catalog of inherent physical properties of fuelbeds that to build and calculate fuelbed characteristics with as much or as little site-specific information. FCCS fire potentials are a set of relative values that rate the capacity of a wildland fuelbed to release energy, and to spread on the surface and crowns, and combust under dry conditions. As initially released in 2005, the FCCS calculates and reports nine fire potentials for every fuelbed, arranged in three categories: Surface fire behavior potentials predicting reaction intensity, rate of spread, and flame length using a new fire behavior prediction system derived from Rothermel's models; crown fire potentials employs a rule-based ranking of crown fire potential based on factors that control ignition and spread through the crowns; available fuel potential is intended to approximate the combustible biomass in flaming, smoldering, and residual combustion.

The authors, in collaboration with fire specialists from Australia, Mexico and Bolivia, are working on adapting the system to their fire environments at a considerable efficiency and collaborative benefit to the alternative of establishing independent fuel classification systems. A peer review process and implementation in the United States took one year longer than planned, and consequently, adaptation to other countries is taken longer to accomplish.

The classification system was applied to the fuels in an Australian fire experiment in 2004. Systematic classification of fuels across Australia and the development of the classification hierarchy is the next challenge. The system's practicality and user-friendliness has also been demonstrated for conceptualizing fuelbeds for Central American. FCCS adaptation for Mexico and Bolivia will allow the system to work from the boreal forest in Alaska to the tropical savannas and forests in Mexico and South America.

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