Title: Practical Tools for Assessing Potential Crown Fire Behavior and Canopy Fuel Characteristics

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Abstract: This proposed workshop will provide participants a chance to obtain overviews of the two software applications developed by workshop leaders, namely the Crown Fire Initiation and Spread (*CFIS*) system and the *Canopy Fuel Stratum Characteristics Calculator*. Both of these tools are based on research that has appeared in the scientific peer-reviewed literature and that have also under gone performance evaluations. These two software tools are available for downloading from: http://frames.nbii.gov/cfis

CFIS incorporates several models designed to simulate crown fire behavior. The main outputs of *CFIS* are: (1) the likelihood of crown fire initiation or occurrence; (2) the type of crown fire (active vs. passive) and its rate of spread; and (3) the minimum spotting distance required to increase a fire's overall forward rate of spread. The onset of crowning can be predicted through two distinct approaches. One approach relies on the knowledge of canopy base height and certain components of the Canadian Forest Fire Weather Index System and/or the 10-m open wind speed. The other approach requires the 10-m open wind, the estimated fine fuel moisture, fuel strata gap (or canopy base height), and an estimate of surface fuel consumption as inputs. Required inputs to predict crown fire rate of spread are 10-m open wind speed, estimated fine fuel moisture, and canopy bulk density. The minimum spotting distance to affect overall crown fire rate of spread, which assumes a point ignition and subsequent fire acceleration to an equilibrium rate of spread, requires the predicted crown fire spread rate and an ignition delay as inputs. The primary models incorporated into *CFIS* have been evaluated against experimental and wild fire observations with good results. *CFIS* has applicability as a decision support aid in a wide variety of fire management activities ranging from near-real time prediction of fire behavior to analyzing the impacts of fuel treatments on potential crown fire behavior.

The *Canopy Fuel Stratum Characteristics Calculator* is based on the regression equations for estimating the canopy base height, bulk density and fuel load in ponderosa pine, lodgepole pine, Douglas-fir and mixed conifer fuel types based on three stand characteristics (average height, basal area and stand density) that have now been programmed into an excel spreadsheet. Table versions of the calculator also exist.

Length of Workshop: 2 hours (we don't need anymore time that this).

Minimum and Maximum Number of Participants: 15 and 45, respectively.

Special Needs: None.

Costs: No additional costs.