Background Information

Canadian Forest Fire Weather Index (FWI) System

Summary

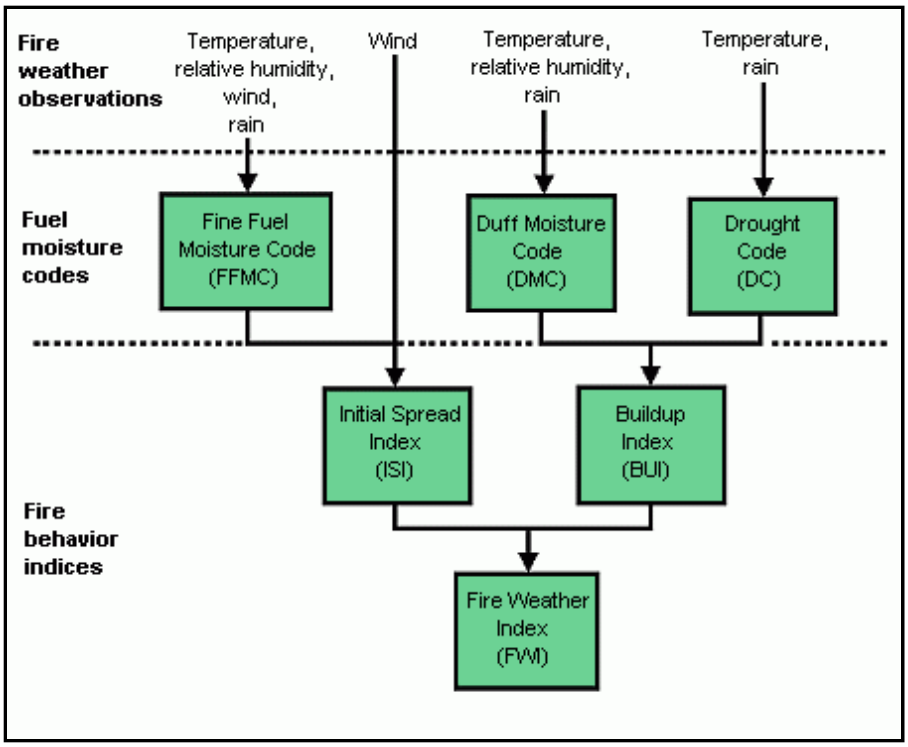
The **Canadian Forest Fire Weather Index (FWI) System** consists of six components that account for the effects of fuel moisture and wind on fire behavior.

The first three components, the fuel moisture codes, are numeric ratings of the moisture content of litter and other fine fuels, the average moisture content of loosely compacted organic layers of moderate depth, and the average moisture content of deep, compact organic layers.

The remaining three components are fire behavior indices, which represent the rate of fire spread, the fuel available for combustion, and the frontal fire intensity; their values rise as the fire danger increases.

Structure of the FWI System

The diagram below illustrates the components of the FWI System. Calculation of the components is based on consecutive daily observations of **temperature, relative humidity, wind speed,** and **24-hour rainfall**. The six standard components provide numeric ratings of relative potential for wildland fire.



Fine Fuel Moisture Code

The Fine Fuel Moisture Code (FFMC) is a numeric rating of the moisture content of litter and other cured fine fuels. This code is an indicator of the relative ease of ignition and the flammability of fine fuel.

Duff Moisture Code

The Duff Moisture Code (DMC) is a numeric rating of the average moisture content of loosely compacted organic layers of moderate depth. This code gives an indication of fuel consumption in moderate duff layers and medium-size woody material.

Drought Code

The Drought Code (DC) is a numeric rating of the average moisture content of deep, compact organic layers. This code is a useful indicator of seasonal drought effects on forest fuels and the amount of smoldering in deep duff layers and large logs.

Initial Spread Index

The Initial Spread Index (ISI) is a numeric rating of the expected rate of fire spread. It combines the effects of wind and the FFMC on rate of spread without the influence of variable quantities of fuel.

Buildup Index

The Buildup Index (BUI) is a numeric rating of the total amount of fuel available for combustion. It combines the DMC and the DC.

Fire Weather Index

The Fire Weather Index (FWI) is a numeric rating of fire intensity. It combines the Initial Spread Index and the Buildup Index. It is suitable as a general index of fire danger throughout the forested areas of Canada.

Daily Severity Rating

The Daily Severity Rating (DSR) is a numeric rating of the difficulty of controling fires. It is based on the Fire Weather Index but more accurately reflects the expected efforts required for fire suppression.

Examples of Fire Behavior in Jack Pine Stands

Data Sources and Methods for Daily FWI Maps