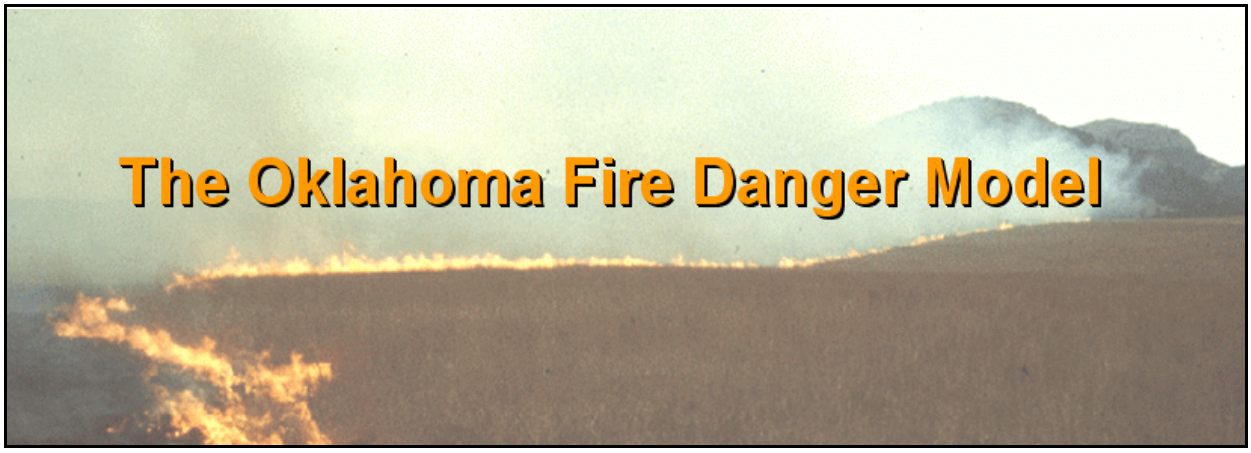

The Oklahoma Fire Danger Model is an operational management tool which can be used to estimate fire danger across Oklahoma. As such it is useful for assessing general fire behavior characteristics of wildfires and prescribed burns. The adjective "general" is used, as the model was not developed for use on a field-by-field basis, as will be seen later. The model can be assessed via the OK-FIRE web site at:

http://okfire.mesonet.org

In the FIRE section of the web site, click on "CURRENT Fire Danger" or "RECENT Fire Danger" for model output based on the Oklahoma Mesonet (for current and past conditions up to 30 days ago). There are a variety of products available, including dynamic maps, site-specific charts, and site-specific tables. For model output based on the 84-h NAM forecast model, click on "FORECAST Fire Danger". Here as well, dynamic maps, site-specific charts, and site-specific tables are available. For more details on the various outputs of the model, consult *Products of the Oklahoma Fire Danger Model*.

The Oklahoma Fire Danger Model is a prototype next-generation model of the U.S. Forest Service's National Fire Danger Rating System (NFDRS). Developed in conjunction with the Fire Sciences Laboratory at Missoula, Montana, this NFDRS model is the first to utilize a real-time automated weather station network (the Oklahoma Mesonet of 120 stations) rather than once-a-day manual observations. This allows the model to produce statewide maps of fire danger (as well as other products) which are updated hourly. In addition, the model also uses weekly satellite imagery to estimate the greenness of the surface (which is then used for calculating live fuel moisture as well as live and 1-h dead fuel loads).

The Oklahoma Fire Danger Model produces 1-km resolution color-coded maps of the four NFDRS fire danger indices: Burning Index (BI), Spread Component (SC),Energy Release Component (ERC), and Ignition Component (IC). Color-coded maps of 1-hr, 10-hr, 100-hr, and 1000-hr dead fuel moisture (DFM) are also available. The DFM maps are created by interpolating the fuel moisture values calculated by the Nelson DFM model at all Mesonet sites; for 1- and 10-h DFM, an inverse distance weighting scheme is used. All the above maps (and other associated products) are updated every hour. The Keetch-Bryam Drought Index (KBDI) is updated once daily at all Mesonet stations and a color-coded interpolated

map is produced once a day (at 4 p.m. CST). Finally, 1-km resolution maps of visual greenness (VG), relative greenness (RG), live herbaceous moisture, and live woody moisture are created once per week (upon arrival of the NDVI satellite data). In addition, other venues for this information exist, such as site-specific charts and tables. More details on these products and their interpretation can be found in *Products of the Oklahoma Fire Danger Model*.

Limitations

The Oklahoma Fire Danger (OKFD) Model, like the National Fire Danger Rating System, is a regional fire danger assessment tool. It was not developed for use on a field-by-field basis. Some of the limitations to understand before using the model are:

1) Every 1-km "grid" square of land within Oklahoma has been assigned one of five NFDRS fuel models (A, L, T, R, and P). See the default fuel model map (click on "Default Fuel Models Map" in the FIRE section). If the particular fuel in the area of concern (e.g., a particular field) differs from the assigned fuel model in that 1-km square, then the OKFD Model results for that square can be expected to be different than for the particular landscape in question (e.g., an open grassy area in a 1-km square that has been assigned a forest fuel model). There is also no NFDRS fuel model that handles landscapes dotted with eastern redcedar; we use model T as a compromise for tallgrass prairie/cedar ecosystems.

2) The OKFD model assumes a terrain slope of 0-25%, so actual fire behavior over steeper terrain will be different than model predictions.

3) The OKFD model, like the NFDRS, applies only to surface fuels and thus does not pertain to crown fires.

4) As has already been mentioned, the OKFD model is not designed for specific fire behavior predictions for a given field, fuel type, slope, etc., but rather for the predominant vegetative fuel type at scales of 1 square kilometer and for mainly flat terrain.

5) The fuel models utilized are for native vegetation and each 1-km square of land is assigned one of these five fuel models. Accordingly, for 1-km grid squares of primarily agricultural land (e.g., fields of bare soil or green wheat fields - what the satellite "sees"), the OKFD model predictions will not be accurate. The live fuel moisture assessment with respect to the agricultural vegetative cover will be reliable, but it may not be similar to native vegetation in that pixel; in addition, other aspects important to the model, such as fuel types and loads will be in error.

6) The OKFD output will be unreliable for locations having a snow cover (covering the fuels) and should be ignored. After the snow cover melts, model output will become valid once again.