Station Fuel Model Options

This section of OK-FIRE is accessible by the link at the bottom of the left menu section. It allows the user to change the fuel model used at ANY Mesonet site. The “default” model assigned to a given Mesonet site is based on the 1-km fuel model default map (see “Default Fuel Model Zoom Map”). Whichever 1-km pixel of land a particular Mesonet site is located in, the fuel model assigned to that pixel also is assigned to that Mesonet site as its default fuel model. However, that may not be the fuel model that the user wants to use to represent the landscape of concern and this page allows him or her to select a different fuel model from the default one.

Upon entering this section you will see the PRIMARY (default) station from the home page listed (Stillwater in this case) as well as its DEFAULT (Model T) and CURRENT fuel models. These will be the same if the user hasn’t changed the default fuel model prior to coming to this page. To change to a different fuel model, use the pull-down menu in the “Change Current Fuel Model to:” field and select the fuel model of choice.
In this case we will select Model R (hardwood forest). Hit “Save Fuel Model” to save it as the CURRENT fuel model. You will see a brief green message (“SAVED!”) upon saving the fuel model and you will also note that the current fuel model has changed from T to R.

Model R will now be assigned to the Stillwater station in all the fire danger model calculations and will remain the current Stillwater fuel model until the user changes it either back to the default (Model T) or yet a different fuel model.

To change a fuel model for a different station (aside from the PRIMARY one on the home page), you can either click on the station dot on the map or access the alphabetical menu of Mesonet stations. Then repeat the process above.

Another nice feature allows you to easily see the Mesonet stations you have changed from their default fuel models. As you scroll down through the alphabetical list of stations, any station that you have changed from the default will be clearly noted (as in this case, Stillwater):
Fuel Model Descriptions

Beneath the Default and Current fuel model listings, there is a link called “Fuel Model Descriptions” (encircled in orange below):

Station: Stillwater
Default Fuel Model: T - Tallgrass with brush
Current Fuel Model: R - Hardwood forest

Fuel Model Descriptions

Change Current Fuel Model to: A - Western annual grasses

Save Fuel Model

Set Stillwater to default

Hitting this link will take you to a pop-up box which describes both in text and photos some of the characteristics of the fuel models which are available:

Optional NFDRS Fuel Models

The OK-FIRE user has the option to select one of 10 NFDRS fuel models (listed below) for use with any Mesonet site location. Most of these 10 models, with the exception of F, G, and K, are modified versions of the 1988 NFDRS original fuel models; models F, G, and K have not been modified. It is important to understand that there is a default fuel model associated with every Mesonet site (and every 1-km pixel of land in Oklahoma) for use in the fire danger map products (Eating Index, Spread Component, Energy Release Component, and Ignition Component). These default models stay the same throughout the year and cannot be changed in the map products. There are five default fuel models: A (annual grasses), L (perennial grasses), T (tallgrass with brush), R (hardwood forest), and P (pine forest).

For chart, table, or data box fire danger products, however, a different fuel model can be selected for a given Mesonet site location. This is called the current fuel model and will remain the same until changed again by the user. Information on the different fuel models available are listed in the links below.

We urge the user to exercise caution before selecting a fuel model different from any of the five default map models (A, L, T, R, and P). Models D and N, for example, were not developed for fuel complexes in Oklahoma and their use here can be problematic. These models were constructed for the palmetto-galberry and sawgrass fuel complexes, respectively; in the southeastern United States and because of a high moisture of extinction (30%) these models can often produce extreme fire behavior under most Oklahoma weather conditions (i.e. fire danger will be overstated).

Fuel Model Parameter Table

Grassy Models

A - Western Annual Grasses

If you click on a given model (in this case, Model T), you will get a text description of the model along with some representative photos:

**T - Tallgrass with Brush**

This is the default fuel model which is used for much of central and eastern Oklahoma to represent tallgrass prairie with intermixed brush and/or cedar trees. In the NFRDS system it is used to represent sagebrush-grass fuels of the Great Basin and Intermountain West. The shrubs burn easily and are not dense enough to shade out grass and other herbaceous plants. As originally designed, the model specifies that the shrubs should occupy at least one-third of the area.

Model T contains both 1-hour dead fuels (0.75 ton/acre residual load) and 10-hour dead fuels (0.5 ton/acre), as well as a significant live woody load (0.5 ton/acre) and a live herbaceous load (0.5 ton/acre). It has a modified fuel bed depth of 1.39 feet and a drought fuel load of 0.5 ton/acre. The dead fuel moisture of extinction is 15% and the typical spread rate under severe burning conditions rate is 90 feet/minute. This fuel model correlates to the Anderson (1982) fire behavior fuel model 2.

Below are some pictures representing this type of fuel complex.
Finally, if you wish to see the values of the different parameters that go into each of these fuel models, you can click on link “Fuel Model Parameter Table” before the list of Grassy Models.

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Grassy Models

A - Western Annual Grasses