Data file documentation

Data files

Raw Data

There are two sets of raw data files, one describing the location of the transects and one containing the raw field data for combustion indicators for each tree examined.

Branch Models

These are the models used to estimate how much of the branches on a tree were consumed by fire. There are three sets of models based on how branches were weighted. For each set of models the proportion of branches in the different branch order segments is given. These are tree species and DBH class specific.

Combustion Estimates

There are six files of combustion estimates. Each file represents the results from a different calculation method. These include three methods of weighting the branch models within a tree (maximum branch order, branch volume weighting, and branch volume and stem length weighting) and two methods for estimating the losses from bole charring for the Rim Fire (maximum scorch versus minimum scorch).

Variable Names and Definitions

1st order Branch Consumption. The percentage of the first order branch segments consumed by fire.

2nd order Branch Consumption. The percentage of the second order branch segments consumed by fire.

3rd order Branch Consumption. The percentage of the third order branch segments consumed by fire.

4th order Branch Consumption. The percentage of the fourth order branch segments consumed by fire.

5th order Branch Consumption. The percentage of the fifth order branch segments consumed by fire.

Aboveground tree consumed. The percentage of the total aboveground wood that was consumed by fire.

Bole char. The percentage of the bole volume that was charred based on the height of the bole charring and the depth of charring at the tree's base.

Bole consumed. The percentage of the bole that was consumed by fire based on the bole char volume and the loss of carbon during pyrolysis.

Branch consumed. The percentage of the branches that was consumed by fire.

Crown consumption? Was the crown consumed to any degree by the fire? Y-yes; N-no.

DBH Class. This is the diameter at breast height size class. 1 (1.0-4.9); 2 (5.0-9.9); 3 (10.0-24.9); 4 (25.0-49.9); 5 (50.0-99.9); 6 ($\geq$100 cm).

DBH. Diameter at breast height in cm as determined by a caliper or DBH tape.

Fire severity. Fire severity of the area being examined as determined by RAVG in three severity classes: low (<25% basal area mortality), moderate (25-75% basal area mortality), and high (>75% basal area mortality).

Fire. Name of the fire tree is located within.

Fraction combustion in bole. The ratio of the bole consumed and the aboveground tree consumed variables.

Height. Total height of the tree in m. Estimated visually for large trees at Rim Fire (periodically checked with a hypsometer and clinometer) and estimated with hypsometer and clinometer for all trees at Creek Fire.

Largest consumed. The diameter of the largest branch part consumed by fire in cm.

Maximum char height in either percent of total height or m. This was determined on both Fires.

Minimum char height in either percent of total height or m. Note for the Rim Fire this was modeled based on the minimum that was observed. For the Creek Fire this was determined in the field.

Mortality. Status of the tree: Live-alive at time of sampling; Snag-dead at time of sampling with dead-casued by fire; Beetle-kill-dead at time of sampling, but as a result of beetle-kill several years after fire.

Notes. Additional notes on trees.

PercentCrownLengthKill. Percentage of the total crown length killed by the fire.

Pine? Is the species in the genus Pinus?

Plot. The number of the "plot" examined as determined by the plot center and location of the trees examined.

Radial depth of char. The radial depth of char at base of the tree in cm.

Smallest remaining. The diameter of the smallest branch part remaining in cm.

Species. Tree species examined: Abco- *Abies concolor*; Abma- *A. magnifica*; Cade- *Calocedrus decurrens*; Pije- *Pinus jeffreyi*; Pipo- *P. ponderosa*; Pila- *P. lambertiana*; Psme- *Pseudotsuga menziesii*.

Stump diameter. Estimated stump diameter in cm based on DBH and stem taper model.

Transect. Code for the transect in a fire which indicates the severity class (H-high, L-low, M-moderate) and number.