



What is? FIRE INTENSITY

Fire intensity is the amount of energy or heat given off by a forest fire at a specific point in time.

FIRE FACTS

As a general rule of thumb, we can say that fire is hot. Just like we can say ice is cold. But, how hot is fire? The heat created by a flame from a Bunsen burner, for example, is much greater than the heat created by a candle flame. The same is true with forest fires. Some fires give off much more heat than others. That is, they are more intense.

Fire intensity is simply the amount of energy or heat given off by a forest fire at a specific point in time. A lot of factors influence fire intensity, such as weather conditions; amount, size, and moisture content of the fuel (i.e., fuel load); plant chemistry (e.g., conifer needles that emit flammable terpenes contribute more to fire intensity than green maple leaves); and topography.



Low intensity



Medium intensity



High intensity

The intensity of a fire can be low, medium, or high and different areas within a large fire may burn with different intensities leaving a mosaic of post-fire conditions. Fires that are low in intensity occur when conditions are cool, moist, and wind speeds are low or when the fuel load is low. Low intensity fires may actually be beneficial to maintaining healthy forests by thinning out crowded young stands of trees, reducing the amount of fuel in the understory and on the forest floor, and releasing nutrients in the soil. High intensity fires occur when the fire weather is extreme and conditions are hot, dry, and windy, the fuel load is high, and the topography is steep. Such

fires may accelerate rapidly and burn through the tree crowns, causing massive releases of smoke and heat, and consume the understory vegetation and leaves, branches, bark, and stems on the forest floor. High intensity fires can be very hard to control because they burn extremely hot. However, high intensity fires are part of the natural fire regime for some forest types. Coastal forests, for example, have historically burned with a large proportion of high intensity fire, while others like the ponderosa pine forests have historically burned with a large proportion of low intensity fire.

For more information:

Byram, G. M. 1959. Combustion of forest fuels. In: Davis, K. P., ed. Forest Fire: Control and Use. New York: McGraw Hill.

Forest Encyclopedia Network. <http://www.forestencyclopedia.net/>

Visit us at:

twitter / @nwfirescience | **facebook** / Northwest Fire Science Consortium
email / nw.fireconsortium@oregonstate.edu | **online** / www.nwfirescience.org



Protecting nature. Preserving life.™



UNIVERSITY
OF OREGON

