



# What is? **FIRE SEVERITY**

Fire severity refers to the effects of a fire on the environment, typically focusing on the loss of vegetation both above ground and below ground but also including soil impacts.



Low severity



Medium severity



High severity

Often the term fire severity is incorrectly used interchangeably with fire intensity; fire intensity is the amount of energy produced by a fire, often described by flame height or rate of fire spread.

Fire severity and burn severity are synonymous, and are sometimes separated out into vegetation burn severity and soil burn severity. For example, fire and forest ecologists measure the vegetation burn severity of a fire by observing the degree of scorch on tree trunks and limbs, the amount of vegetation burned, and the percentage of vegetation that is dead.

Severity	Definition
Low	A fire that has limited effect on overstory trees (<30% mortality), understory vegetation, and soils.
Moderate	A fire producing variable, moderate effects on overstory trees, averaging 30-80% of the vegetation killed, and/or moderate soil exposure.
High	A fire producing a high percent of overstory tree mortality (>80%) and/or extensive mineral soil exposure.

**FIRE FACTS**

Soil burn severity is measured as the estimated effect of heat transfer from vegetation burning on the surface and the combustion of organic material such as leaves and duff into the upper layers of the soil. This can cause significant changes in soil properties and is referred to as soil heating. A high degree of soil heating can result in alterations to its physical and chemical properties, the organisms that live there, and the movement of water both over and below the ground surface.

Fire severity may have positive and negative effects on an ecosystem depending on plant and ecosystems adaptations. In the broadest sense, responses to fire can include erosion, regrowth of vegetation, colonization of wildlife, and socioeconomic implications for individuals and communities.

#### For more information:

Keeley, J.E. 2009. Fire intensity, fire severity, and burn severity: a brief review and suggested usage. *International Journal of Wildland Fire*. (18):116-126.

Agee, J. 2007. Fire severity. In: *FireWords: Fire Science Glossary* [electronic]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.firewords.net/>

Helms, J.A. (Editor). 1998. *The Dictionary of Forestry*. Society of American Foresters. Bethesda, Md. 210 pps.

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