

Fire Environment Visualization



Determining distances from known points on a map is rather simple. But when you are in the field, it is another matter, unless you can relate to something known. How long are those flame lengths? Or how fast is this fire spreading? Obviously direct measurement is the most accurate way to make determinations. But how do you physically measure flame length on a high intensity fire? Is it important to know spread distance in feet or chains per hour? Using references in the field (something of known length or size) are very good aids to make calculated estimates of fire behavior. Learn to visualize the fire environment.

Visualization tools: What is the average canopy height of the trees? Telephone poles are about 30 feet tall. Fence posts are about 5 feet tall. How tall is the brush or grass you are standing next to, which is also the same fuel the fire is consuming? By relating flame length to the height of a known object, you can come up with a ratio to estimate. Example: Trees in the area are 40 feet tall. Flame lengths are one-half the height of the trees. Average flame length is about 20 feet (.5x the height of the trees in this example).

An effective way to estimate rate of spread is to know how much time it takes to burn between two known points. To determine spread distance, measure the distance between two points. Start timing when fire reaches the first point, and

stop timing when fire reaches the second point. This establishes a ratio, which then can be mathematically applied to a unit of measure and time (ft/min, chains/hour, or miles/hour).

Other aids include using the odometer in a vehicle or by pacing to establish known ground distance. Range finders are useful if you have one. Barbed wire fence posts are about 1 rod (16.5 feet) apart. The distance between 4 fence posts then is 1 chain (66 feet). Although more variable, the distance between telephone poles is about 132 feet. On a larger scale and using a map, you can relate terrain features to distance and get a good idea of how quickly a fire is advancing. Another hint: Most detection reports list a time of discovery. By estimating how far the fire has traveled upon your arrival and noting your arrival time, you can determine fire spread. But a word of caution: the fire environment is dynamic (changing with time and space). What occurred in the past may be of value, but may not apply to the current situation or what could happen in the near future. For safety reasons, base all your actions on current conditions, the forecasted expected conditions, and what the fire is doing (fire behavior).

Awareness and relationships tend to be more important than actual measurements. In this course you are going to learn more about fire events which don't require a lot of math or figuring. When is the next "Big Change" coming? Is it very little, such as a 2-fold (2x) increase, or is it a big change, such as a 60-fold (60x) change? When the change happens, are fire fighters at risk? Is there enough time to get to a safety zone when the change comes? Understanding the fire environment along with the magnitude of the "big change" is the key.