Wind Speed and Drop Height

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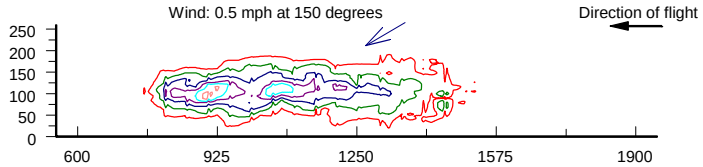
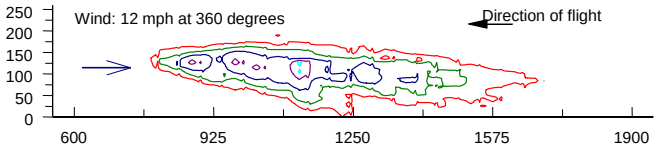
Several factors can affect the ground distribution pattern of aerially delivered fire chemicals. These include drop height, drop speed, wind speed and wind direction. This sheet will illustrate the effect of wind and height on the ground distribution pattern. The patterns below, dropped from an S2F airtanker, were chosen to illustrate the effect of wind speed and drop height on drop patterns.

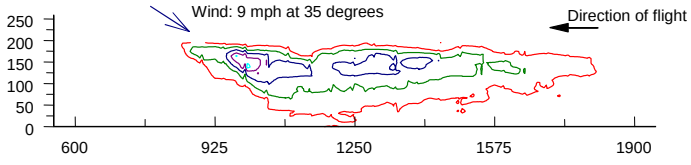


S2F dropping a full load of water at 186 feet and 128 knots



Full load of water at 173 feet and 117 knots

Wind speed and drop height have similar effects on the ground distribution of fire chemicals. That is, faster wind speeds and greater drop heights result in greater movement and spread of the smaller droplets in the retardant cloud. Wind and height will impact water more than gum-thickened retardant since water breaks into smaller droplets which are more likely to drift and evaporate relative to bigger droplets. At higher winds, the lower coverage levels depicted by the red and green contour lines show distortion while the higher coverage levels are relatively unaffected. In high winds the patterns are less centered and become more distorted.



Full load of water at 217 feet and 119 knots

As drop height increases maximum coverage levels tend to decrease. Higher drops also reduce the momentum of the retardant cloud, which makes the cloud more susceptible to wind erosion. Although these plots show the disadvantage of increasing drop height, there are also advantages. Increasing drop height is safer for the flight crew and ground personnel.

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