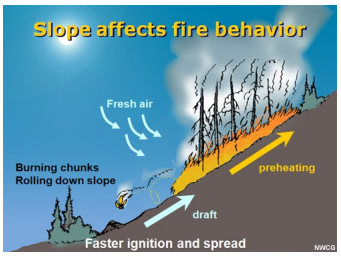
Slope Effect on ROS

When fire moves upslope, the fuel ahead of the flame front is closer to the flame than if the slope were flatter. This set-up "preheats" the fuels. The effects of slope on fire spread become greater as the slope increases.



Approximating the ROS

An easy guide for approximately the ROS due to changes in slope is as follows:

1. The first tripling of slope roughly increases the rate of fire spread by a factor of 2.
2. The second tripling of slope increases the rate of spread by a factor of 4 to 6, depending on fuel conditions.

The effect of an increase in slope on ROS depends both on the absolute slope as well as on the midflame wind speed. See Section 8.2 for more information on midflame and "effective" wind speeds.

Example 1 - An area of shrubs is burning at a ROS of 4 chains per hour at an 8 percent slope. The slope increases to 24 percent. What will the ROS be?

Step 1. How much did the slope change? The slope percent increased from 8 percent to 24 percent. This change represents an increase of three times the original slope.

Step 2. How much will this slope change affect the ROS? As stated above, a tripling of slope increases the ROS by a factor of 2.

2 × 4 chains/hr = 8 chains/hr

4 chains/hr × 2 = 8 ch/hr