Analysis of: The Rothermel Surface Fire Spread Model and Associated Developments: A Comprehensive Explanation by Patricia L. Andrews

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This will be a discussion of the paper. Since this paper closely relates to the BEHAVE model, I thought it would be a good idea to go through each one of their equations and compare it to the current code. One difference I already notice is the inclusion of the different SAVR and fuel loads. As a result there will likely be a lot of differences in the models, but we will get to that later. For now here are the equations and the math behind the model.

1 Rothermel model

Basic Model

The final ROS equation is heat source divided by heat sink and it applies to one size class of dead fuel (Insert reference). A series of equations is used to represent this relationship and can be seen in 1

$$R = \frac{I_R \xi (1 + \phi_W + \phi_S)}{\rho_b \varepsilon Q_{ig}} \tag{1}$$

For a list of the parameters, please see table 1 on page 8 where the authors go in depth on each term and the units. Please see table 3 for a list of the equations