

MODIFICATION AND VALIDATION OF FUEL CONSUMPTION MODELS FOR USE IN LONGLEAF PINE TYPES OF THE SOUTHEAST

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ABSTRACT: Land managers across the country are increasingly expected to use prescribed fire as a landscape-level fuel treatment mechanism to improve ecosystem health and reduce the likelihood of catastrophic wildfires. Planning and execution of these prescribed fires require managers to operate fuel and fire management decision-support systems that rely heavily on the ability to assess fuel consumption. The purpose of this project is to modify and improve existing fuel consumption models to better predict the consumption of fuels during wildland fires in fuel types where there is a limited knowledge base and where there will be an increase in prescribed burning. This study will lead to better predictions of fuel consumption during the flaming and smoldering stage in longleaf pine fuelbed types. The empirical models derived from these new data will be implemented into Consume 3.0, a software program that allows users to predict fuel consumption and smoke emissions for wildland fire planning.

Thirteen 30-50 acre units were selected on Eglin Air Force Base in longleaf pine ecosystem variants for the study. The units were burned under wet, moist, dry, and very dry fuel moisture conditions as determined by the number of days since rain, monitoring of duff wetness from an onsite weather station, and from duff moisture samples. Preliminary analysis indicates that duff consumption is controlled by duff which can be roughly estimated by the number of days since significant rainfall (0.5 inch or greater).

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