Towards Forecasting Meteorological Conditions for Backburning Operations on Active Wildfires

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Abstract

Can we utilize the Wildland-Urban Interface Fire Dynamics Simulator (W-FDS) to replicate intentional firing operations on historical wildfires? Low intensity fire in the form of prescribed and cultural burning has seen a resurgence in popularity as a tool for managing the threat of extreme 21st century wildfires. Government agencies have begun setting goals for minimum annual acreage of fuels treatment; many of which have encountered substantial difficulties in implementation. *Backburning* is a common management tool for suppression efforts on wildfires in which containment lines are extended and reinforced by intentionally setting fire ahead of the flaming front, consuming ground fuels and thus breaking the fire triangle. The intentional burning operations may provide the opportunity to maximize acres burned with low intensity, while providing for safety and accomplishing suppression requirements. This project utilizes historical data from the 2020 North Complex wildfire in California to assess when burning operations were conducted and analyze their resultant fire effects. This data and the antecedent meteorological conditions will then be modeled in the W-FDS to replicate various ignition patterns. This research aims to develop a rubric of conditions for fire managers to conduct firing operations that meet suppression goals, provide ecosystem benefit, remove ground fuels, and increase safety for the public and firefighting personnel. The W-FDS working group is creating the framework for the planned model integration and building capacity for high resolution fire behavior modeling. This capacity building is aligned with the collaborative goals of the Fire Processes and Cyber Infrastructure and Integration components in the Harnessing the Data Revolution for Fire Science project.