ENHANCED WILDLAND FIRE MANAGEMENT DECISION SUPPORT USING LIDAR-INFUSED LANDFIRE DATA

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ABSTRACT:

Accurate information about three-dimensional canopy structure and wildland fuel across the landscape is necessary for using fire behavior modeling systems to predict how wildfires will spread under various conditions. Remotely sensed data are invaluable for assessing these canopy characteristics over large areas; lidar data in particular are uniquely suited for quantifying three-dimensional canopy structure. However, lidar-derived fuel data are still relatively scarce, which can be attributed in part to two underlying issues. First, the LANDFIRE program has become the default source of large scale fire behavior modeling inputs because it provides consistent, nationwide data regarding the distribution of vegetation structure and canopy fuel across the landscape. However, LANDFIRE does not currently incorporate lidar data into the vegetation and fuel mapping process because they are not consistently available nationwide. Second, while lidar data are available for many land management units across the US, these data are underutilized for fire behavior applications. This is partly due to a lack of local personnel trained to process and analyze lidar data. This project addresses both of these issues by developing the Creating Hybrid Structure from LANDFIRE/lidar Combinations (CHISLIC) tool. CHISLIC allows individuals to automatically generate a suite of vegetation structure and wildland fuel parameters from lidar data and infuse these into existing LANDFIRE data sets. CHISLIC thereby ensures: 1) maps based on the best data available and 2) data continuity through the linkage with LANDFIRE. CHISLIC will be made available for distribution to the public through a partnership with the US Forest Service's Wildland Fire Assessment System (WFAS) and eventually could be incorporated into the interagency Wildland Fire Decision Support System (WFDSS). WFAS and WFDSS are two primary systems used to support tactical and strategic wildland fire management decisions.