

Objective: Produce a comprehensive wildfire susceptibility model for southeast Idaho and compare these results to those determined by an earlier study completed at ISU's GIS Training and Research Centter (GIS TReC) between 2000-2010.

Background: This project follows methods developed as a result of a Bureau of Land Management funded Wildland Urban-Interface (WUI) Wildfire study completed at ISU's GIS TReC. Details regarding the parent project can be found by visiting http://giscenter.isu.edu/research/Techpg/blm_fire/. The present study was funded through the Idaho National Science Foundation (NSF) EPSCoR Managing Idaho's Landscapes for Ecosystem Services (MILES) project as an undergraduate research internship.

Methods: Seven component sub-models were generated describing the individual factors (such as slope, aspect, vegetation type, and structure density) expected to affect overall wildfire susceptibility. Each of these models were stored as a raster layer containing pixels with values between zero (0), indicating low susceptibility, and 1000, indicating highest susceptibility. It is important to note this is not an absolute scale, so a value of zero does not equal no susceptibility and a value of 1000 does not suggest or represent imminent danger. These models were intended to be used as decision-support tools for fire agencies, planners, and developers, not as an early-warning system for individuals. The seven sub-models were combined using scalar weighting in Idrisi Selva (figure 1) to produce the final fire susceptibility model shown in figures 2 and 3 below.



Fig. 2 The final WUI fire susceptibility model

East Idaho Fire Susceptibility 2014

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Fig. 1 The cartographic model used in Idrisi to automate much of the final geoprocessing

Decadal Fire Susceptibility Comparison

Several counties previously analyzed were revisited in the 2014 study. A comparison of fire susceptibility changes is provided below (grayscale charts show fire susceptibility approximately one decade ago, and orange charts show current susceptibility levels. Note the increase in medium fire susceptibility.









Fig. 3 Detail of the final WUI fire susceptibility model highlighting the Portneuf watersheds

Fire Susceptibility

High : 1000



While some of the observed changes in overall fire susceptibility can be attributed to ecosystem changes (vegetation and fuel characteristics), it is important to note that two changes were also made in the *modeling process* as well. Specifically, Landsat 8 imagery is currently used instead of the Landsat 5 TM sensor, and secondly a refined Vegetation Type layer is used in place of Anderson's 1982 Aids to Determining Fuel Models reference.

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