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Drivers of historic and future wildfire occurrence across the United States: the relative contribution of human ignitions vs. climate to fire size and probability

Nathan Mietkiewicz
Jennifer Balch
John Abatzoglou
Bethany Bradley

In recent decades, the presence of anthropogenic activity and changes in climate conducive to large wildfires have increased. Understanding this co-occurrence of climate change and anthropogenic wildfire regimes is critical for minimizing wildfire risk to communities while managing for ecosystem function. Currently, 84% of all wildfires in the conterminous US are human-caused, and the US population is projected to increase > 100 million people (30% increase) by 2060. Furthermore, 48% of all human-started wildfires occur within the wildland urban interface (WUI), which is projected to expand by at least 40% by 2050. This study seeks to address how the pyrogeography of human-caused wildfires will change under future changes in climate and land-use across the conterminous United States (US). In order to project wildfire risk across the conterminous US, we must understand how human ignition pressure interacts with climate change. Here, we used machine learning techniques to predict dominant drivers of human-ignited wildfire probability under historical distributions and ten CMIP5 models (RCP 8.5) to evaluate and predict the expansion/contraction of the human driven wildfire regime.