

Future Southcentral US Wildfire Probability due to Climate Change

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On a global level, altering fire regimes due to climate is one of the greatest threats to society and our world's ecosystems. This paper explores projections of fire probability in the southcentral USA using downscaled climate projections and the Physical Chemistry Fire Frequency Model. This is concerning partly because future fire probability is expected to both decrease and increase across the region of Oklahoma, New Mexico, and Texas; so it can vary depending on location meaning both stakeholders and decision-makers need to be aware of this changing fire probability. These changes in fire probabilities (CFPs) range from -51 to +240%.

Possibly one of the most important results of this paper is the findings of illumination of climate changes where fire probability response (+,-) may deviate (i.e., tipping points). Fire regimes of southcentral US ecosystems occur in a geographic transitional zone; from reactant- to reaction-limited conditions, potentially making them responsive to different scenarios of temperature and precipitation change. Identification and description of these conditions within unique geographic areas may help stakeholders anticipate fire regime changes that will affect human health, agriculture, habitat, water resources, as well as integrating practices for a changing climate with respect to the frequency or probability of fires.

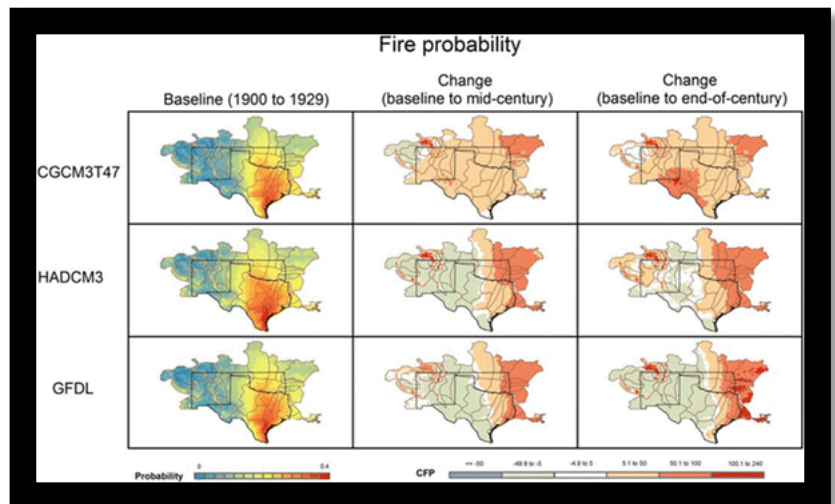


Figure 1 PC2FM-derived future changes in fire probability from baseline period (1900 to 1929) to mid-(2040 to 2069) and end-of-century (2070 to 2099) time periods