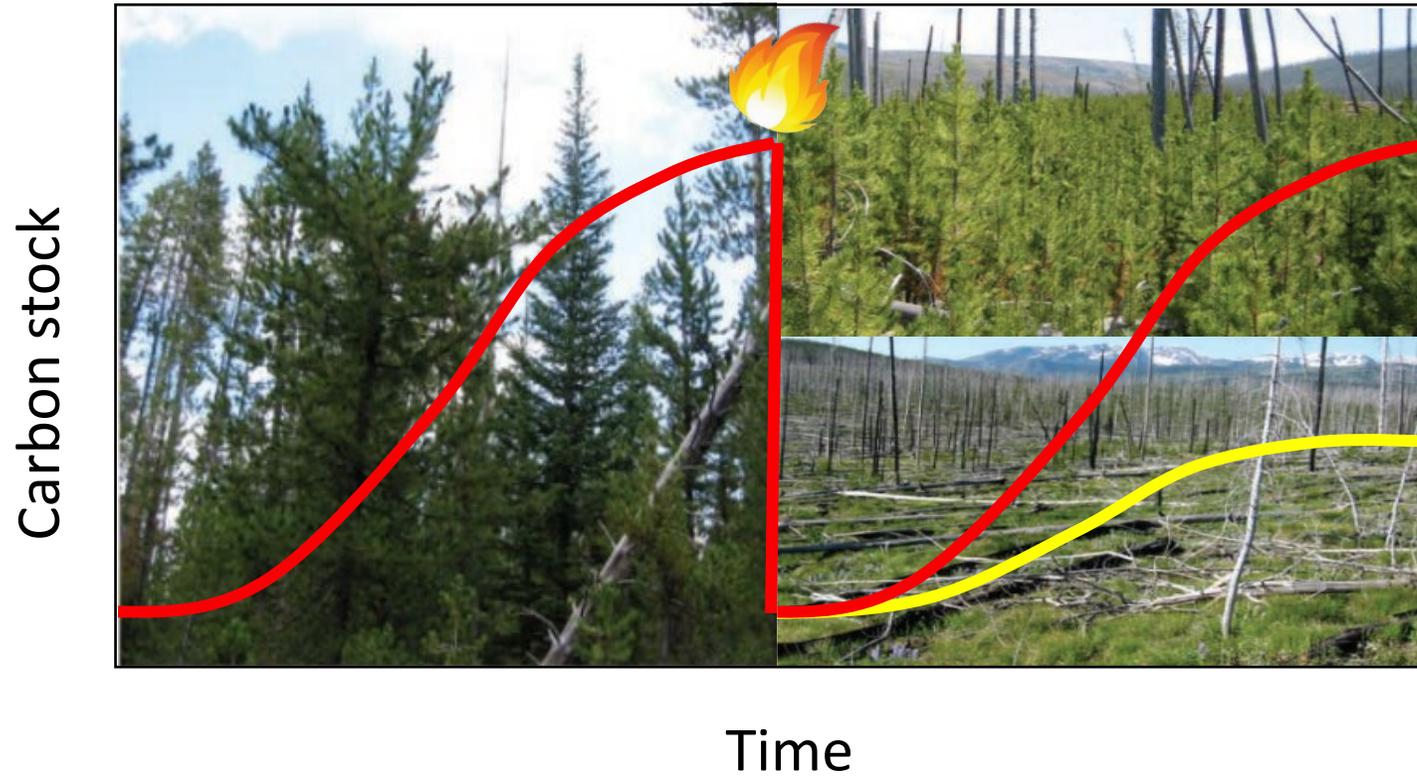


Roles of Fire in Presently Vulnerable Biomes and the Associate Net GHG Emissions: Temperate Forests

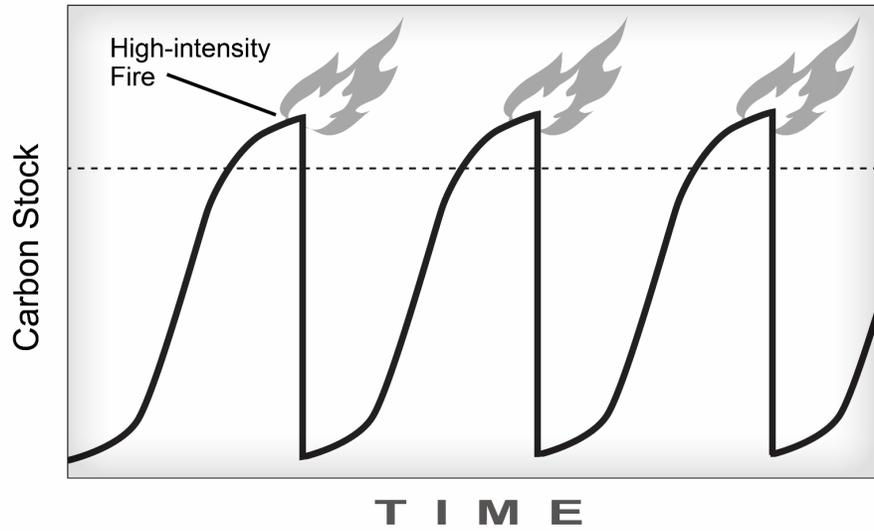
Matthew Hurteau



Carbon Carrying Capacity

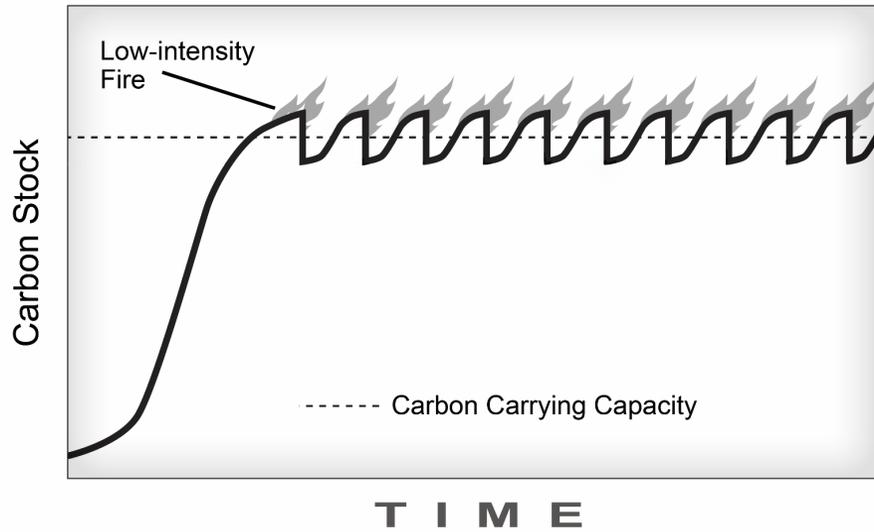


Infrequent Fire Forest



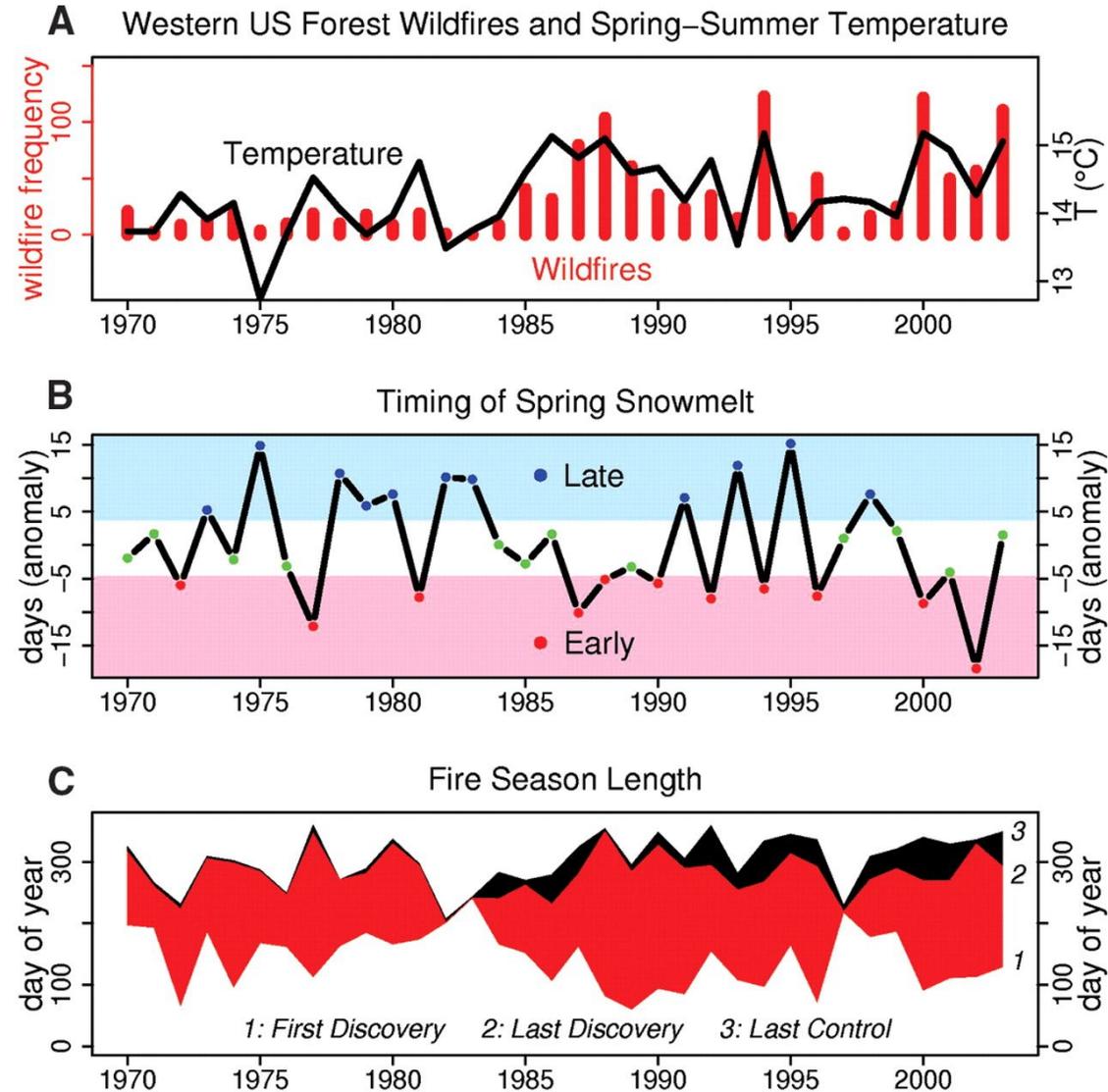
Climate-driven

Frequent Fire Forest

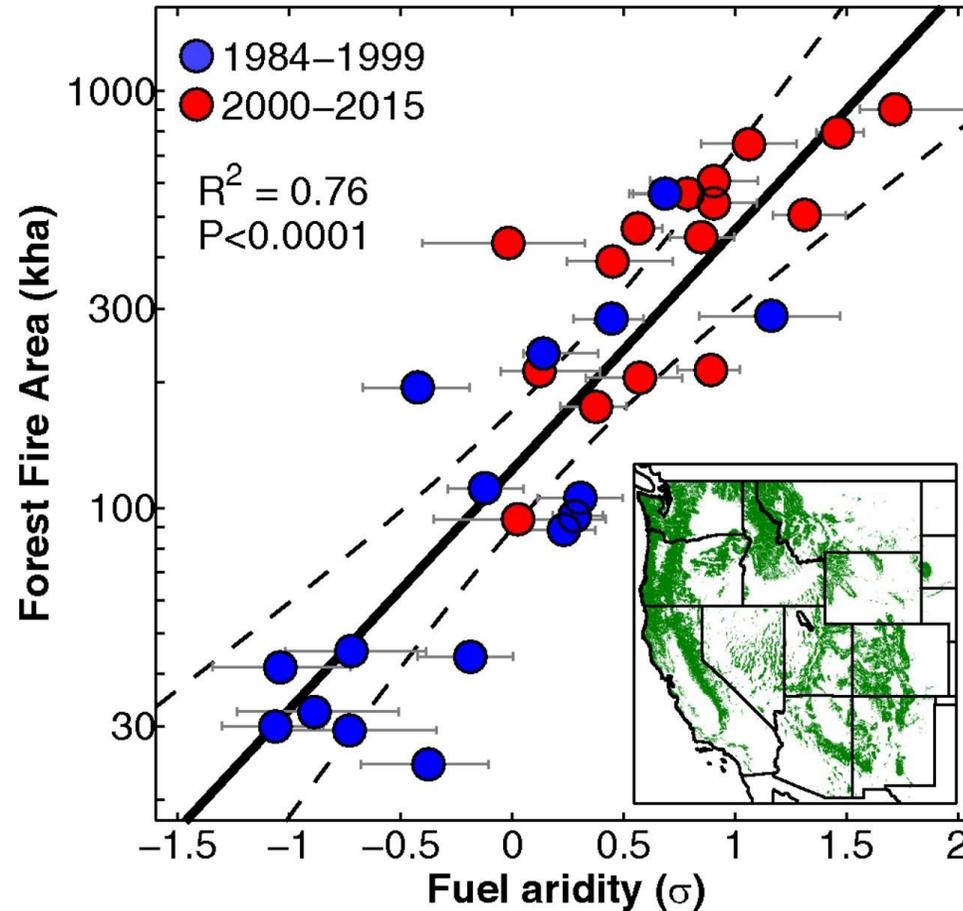


Climate- and
Human-driven

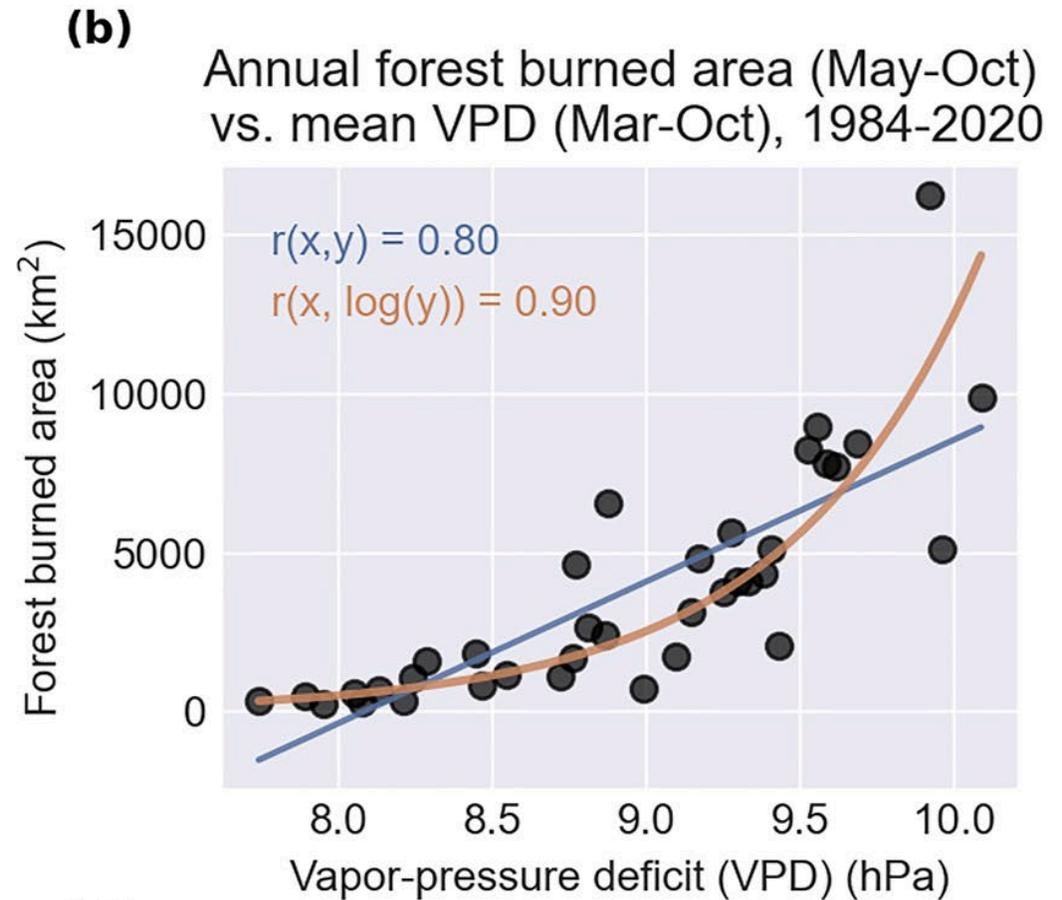
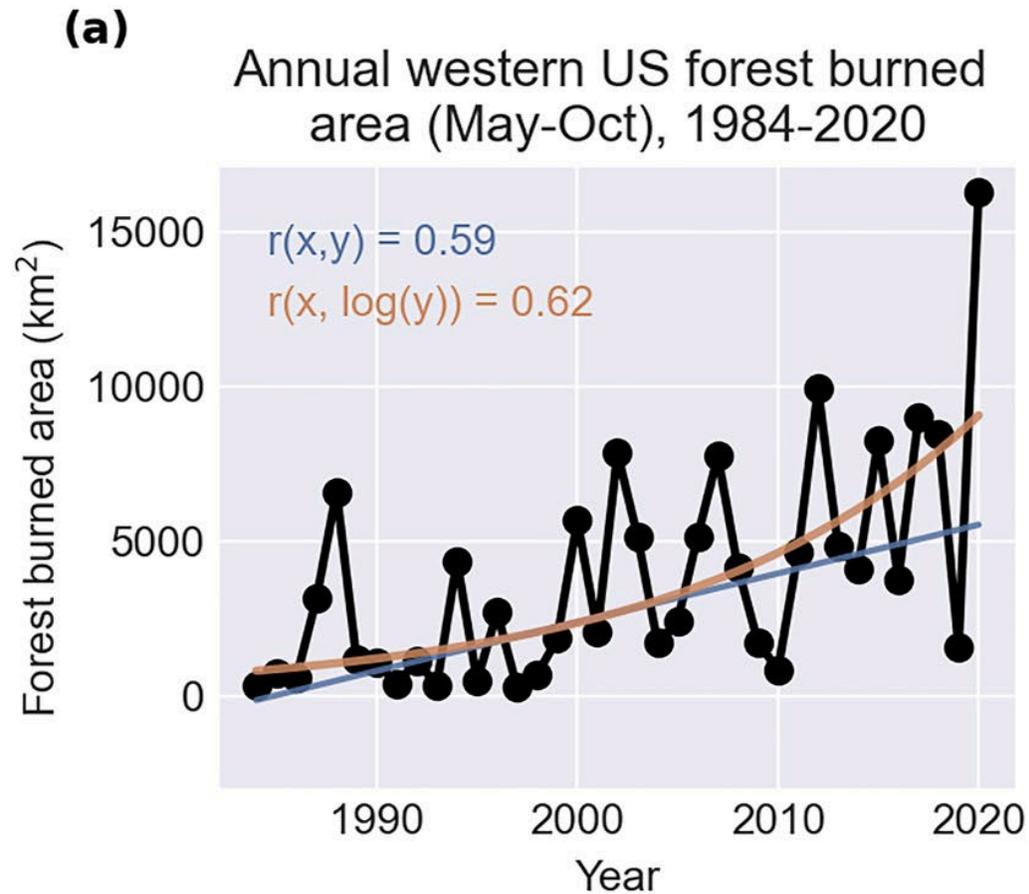
Warming + earlier snowmelt = more fire



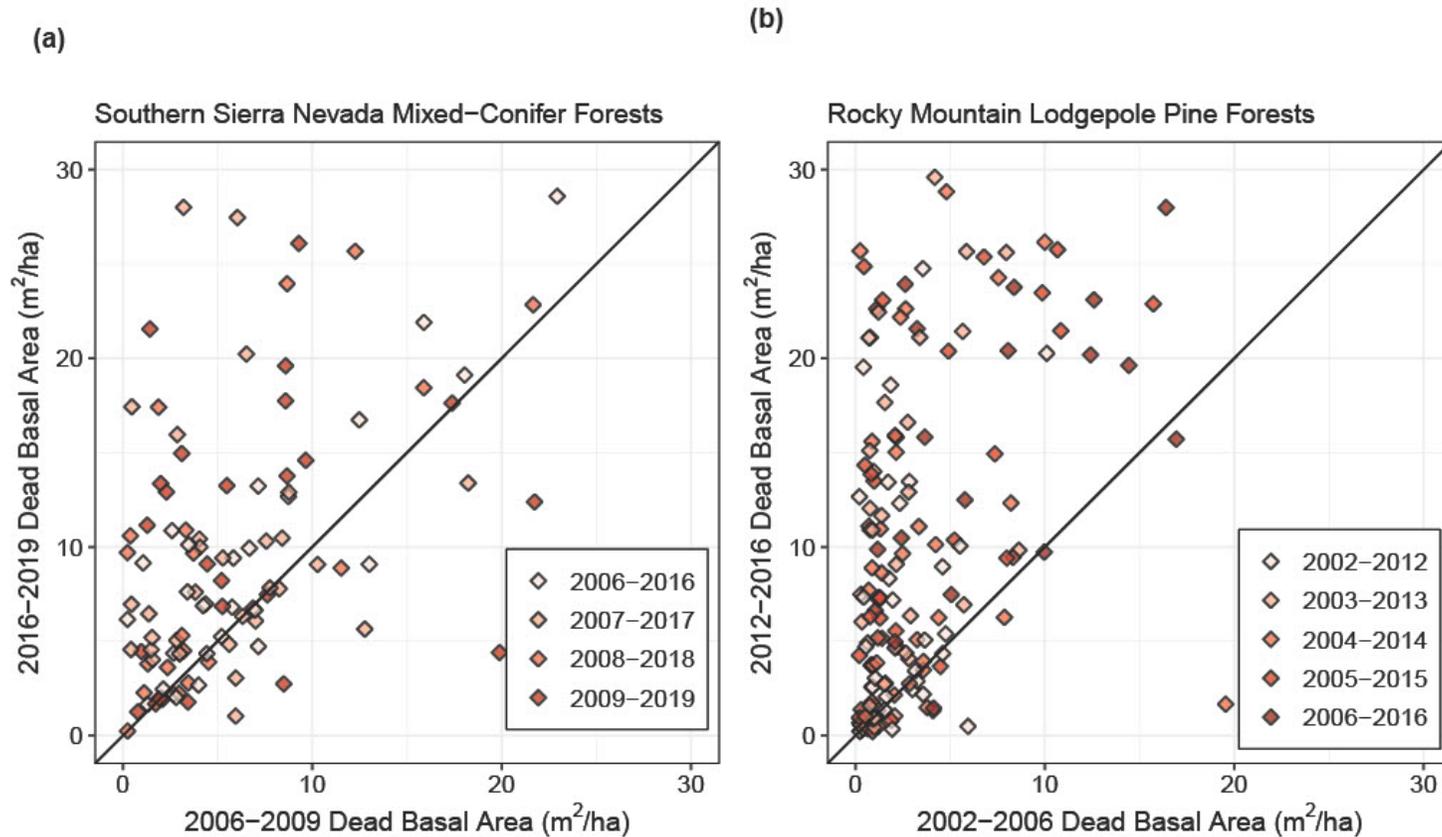
CC Fuel dryness explains ½ area burned



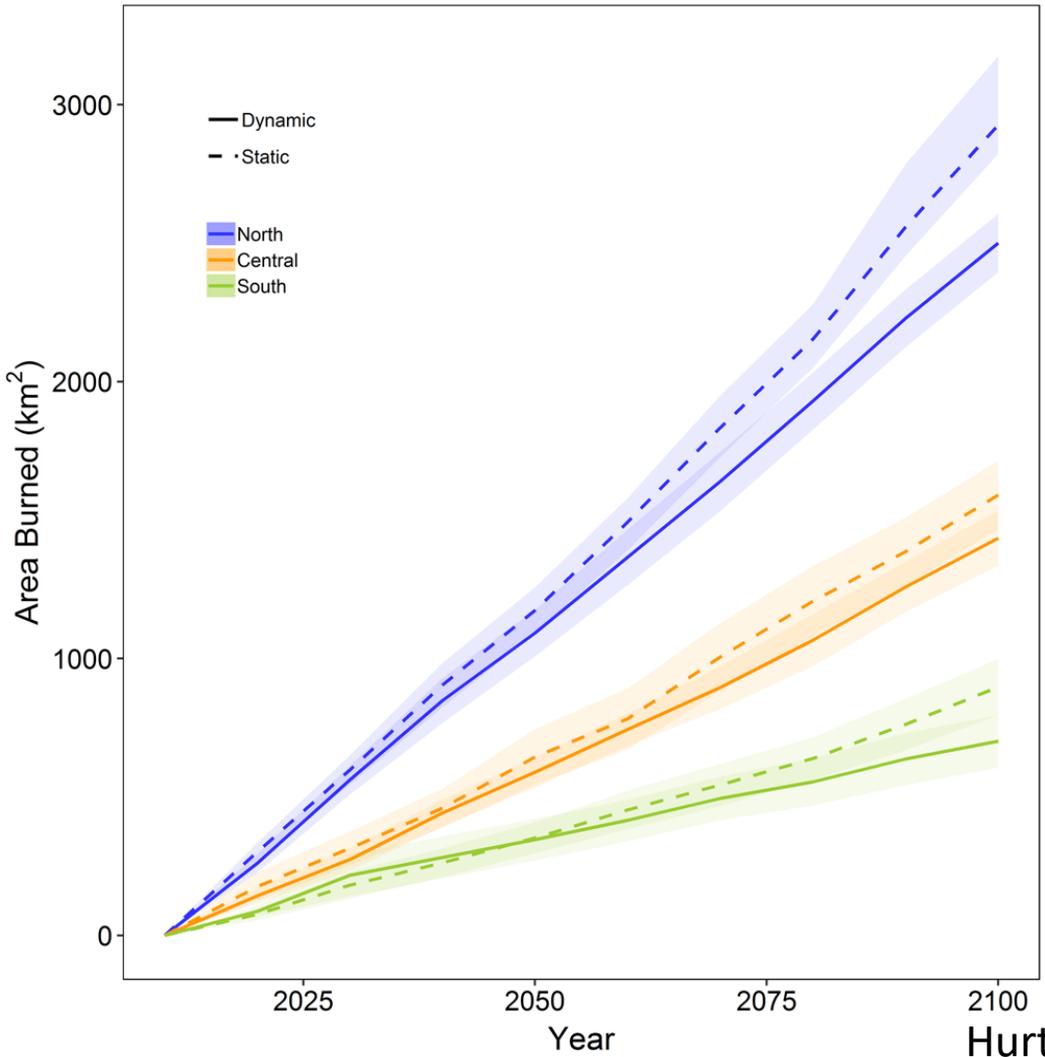
Exponential increase in forest area burned



Decreasing C carrying capacity = more fuel

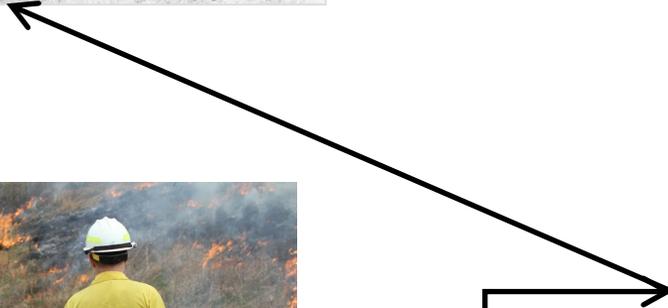


There will be plenty of fuel to support fire

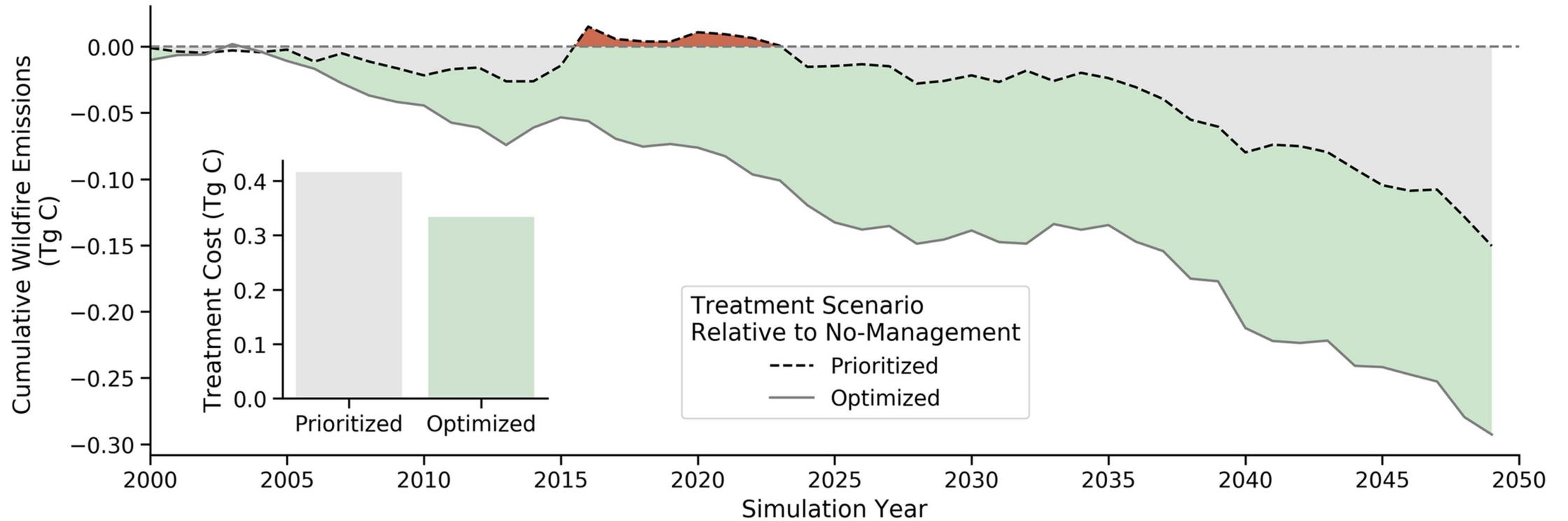


Hurteau et al. 2019

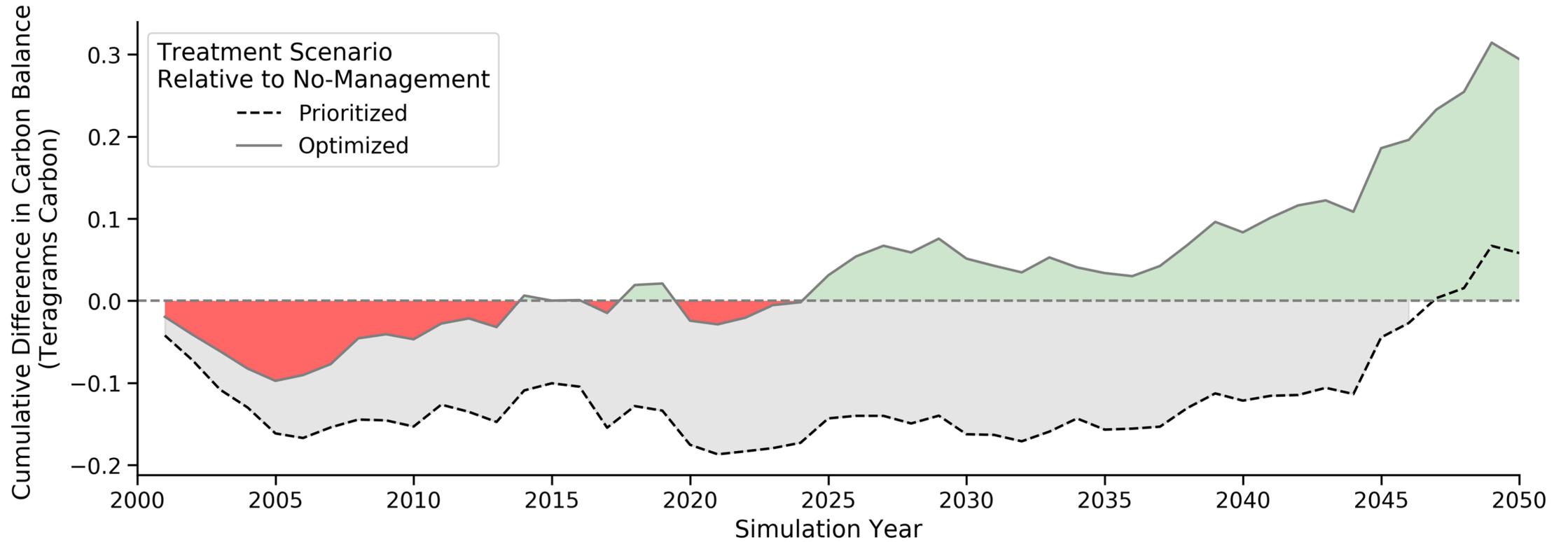
How do we stabilize carbon?



Treatment costs + emissions reductions

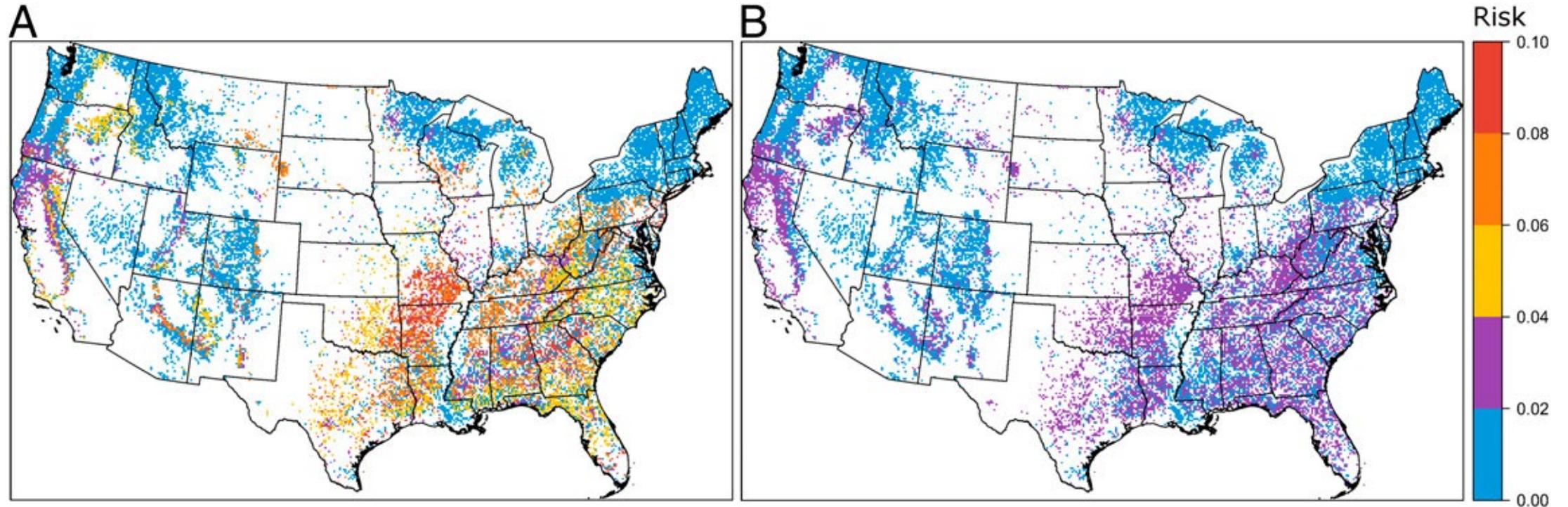


Net C benefit

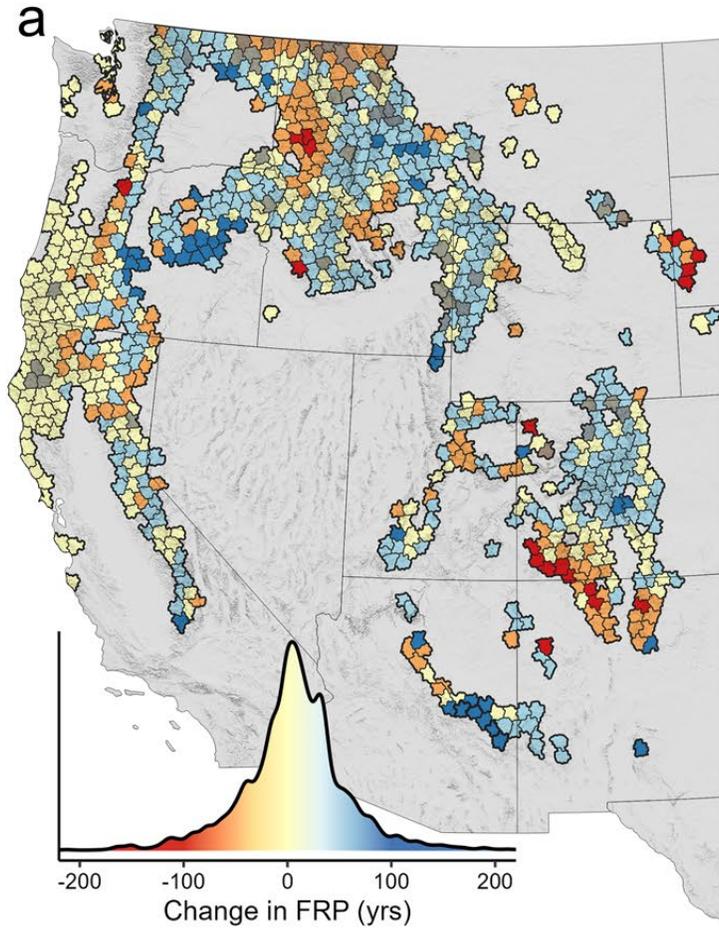


Krofcheck et al. 2019

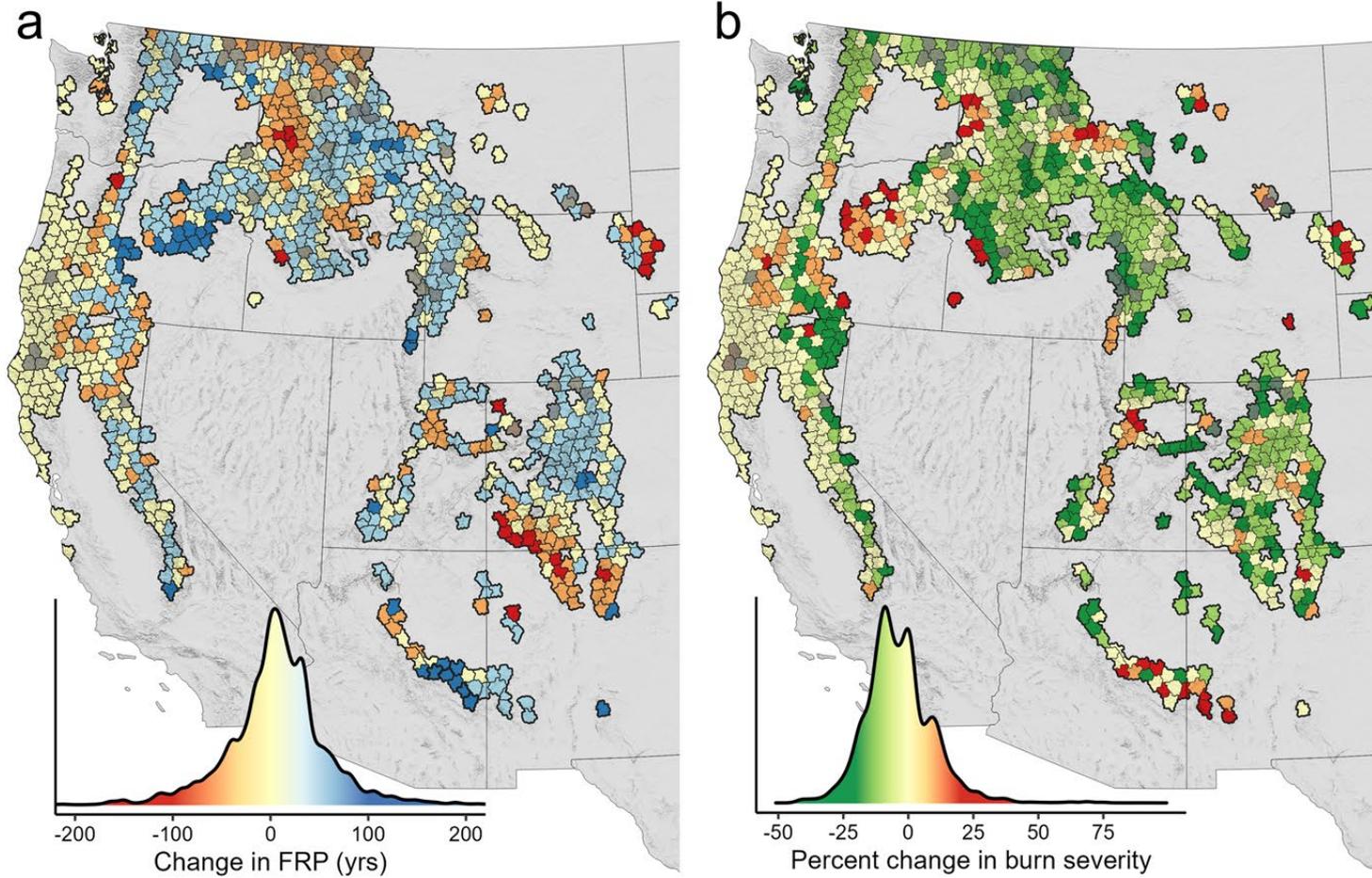
Restoring fire in frequent-fire forest = C stability



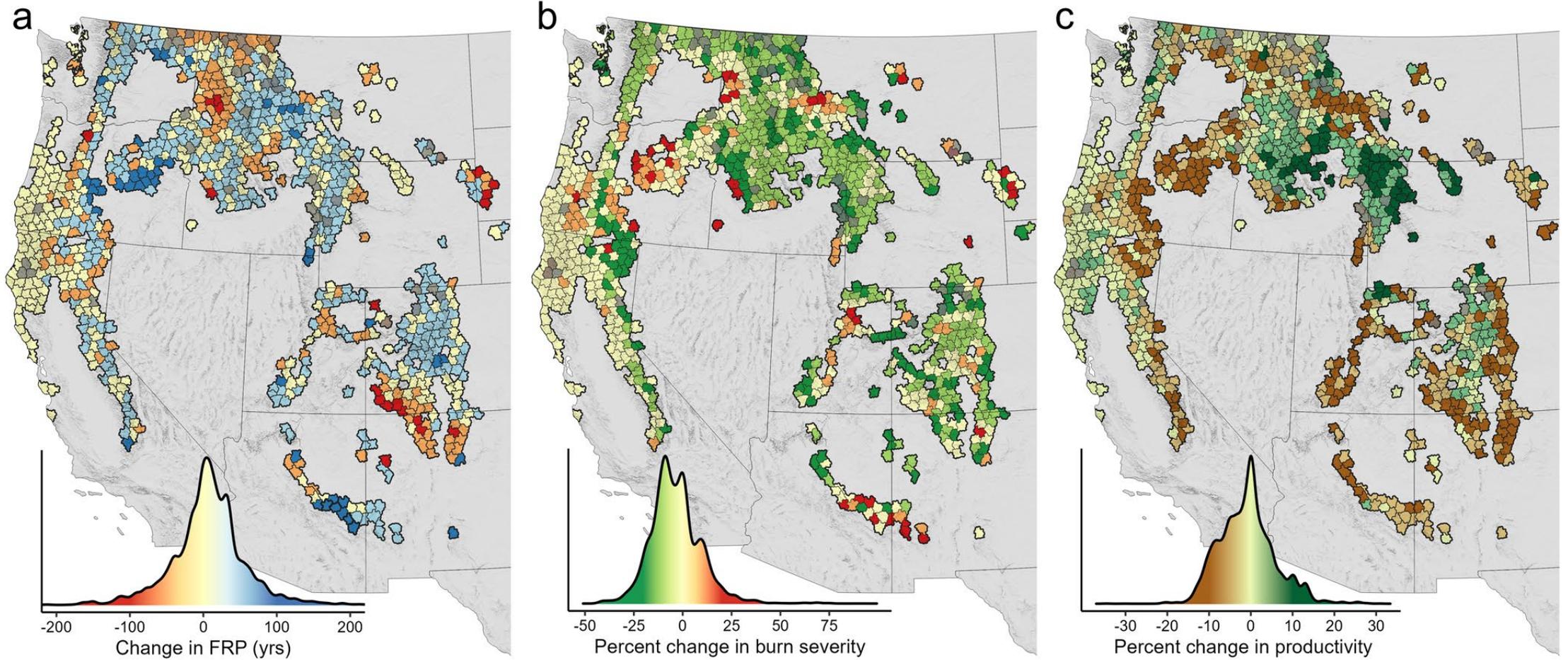
Changes in flammability with 2°C warming



Changes in severity with 2°C warming



Changes in productivity with 2°C warming



Hoecker et al. 2023

Type Conversion vs Restoring Fire

- C carrying capacity is decreasing
- Surplus of dead biomass
- Managing fuels to manage change
- Severe fire can be a catalyst for type conversion

