

# Climate Change and Wildfire Smoke

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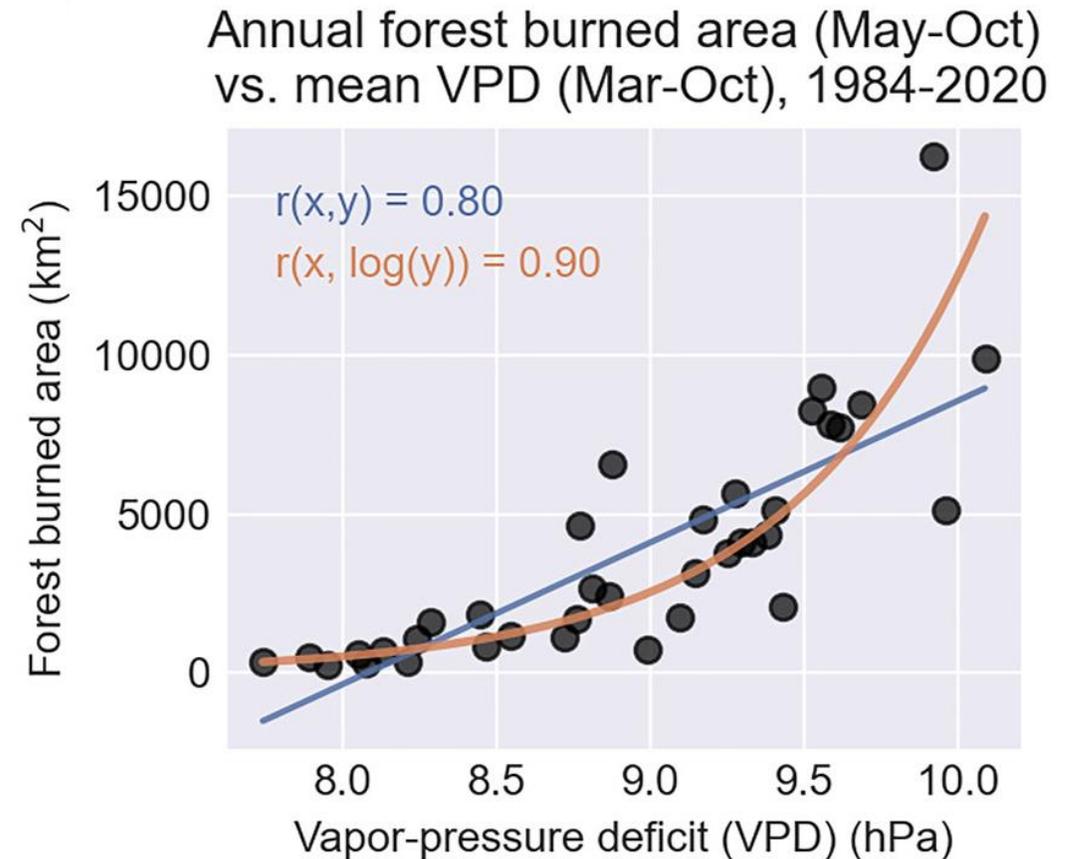


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# Smoke = area burned x amount of vegetation burned

- Warmer temperatures =
  - Longer fire seasons
  - Drier vegetation
- Forest area burned is increasing exponentially across the western US



Smoke = area burned x amount of vegetation burned



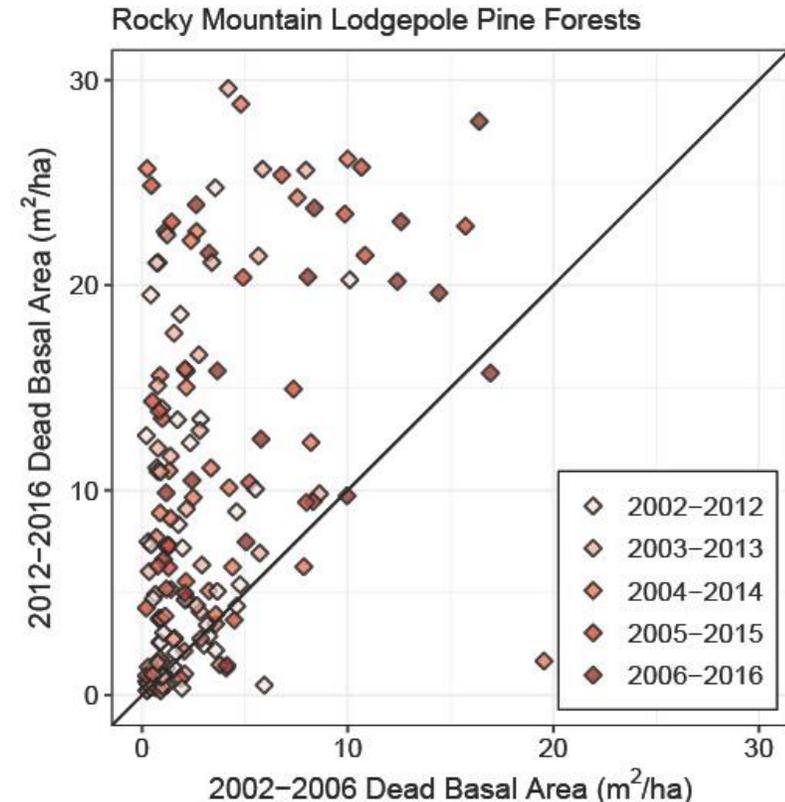
Pecos Wilderness 1999



Pecos Wilderness 2020

# Smoke = area burned x amount of vegetation burned

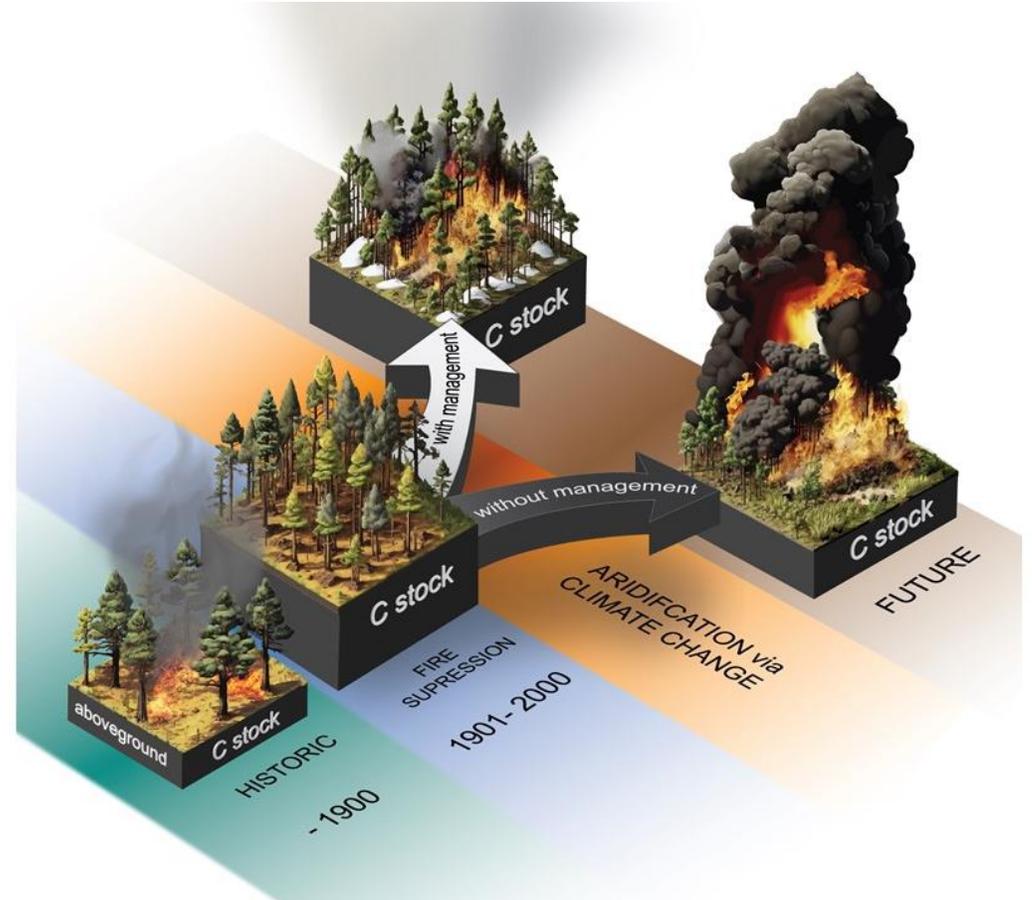
- The amount of dead vegetation is increasing because of heat, drought, and insects
- Higher temperatures and drought dry the vegetation, making it more flammable



Goodwin et al. 2021

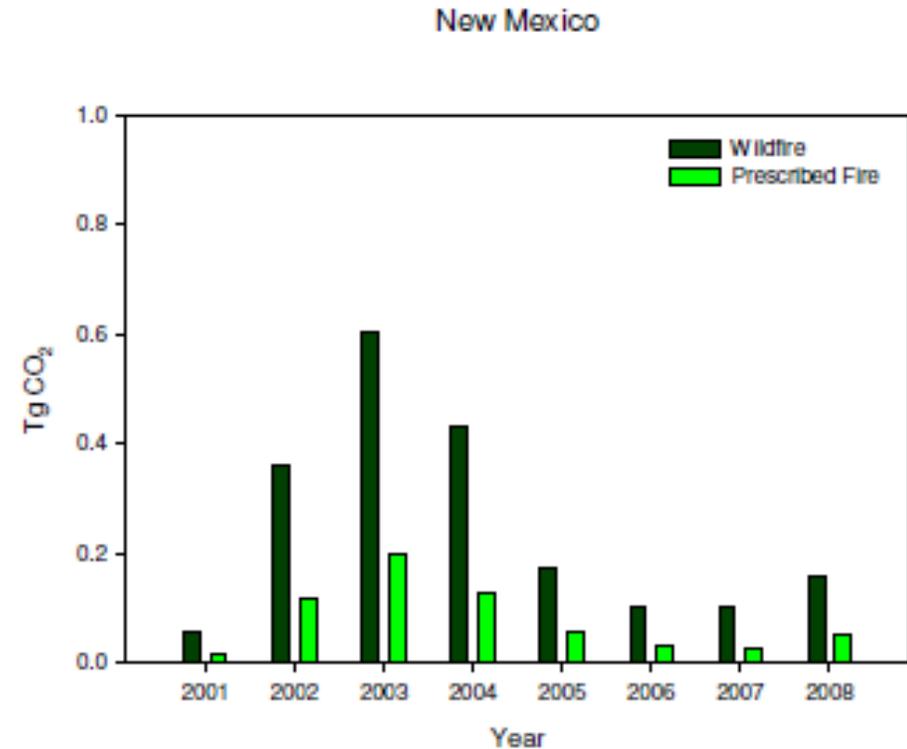
# Forest Management = Smoke Management

- We can manage the:
  - Amount of fuel
  - Structure of fuel
  - Timing of ignition
  - Area burned



# Prescribed fire = lower emissions

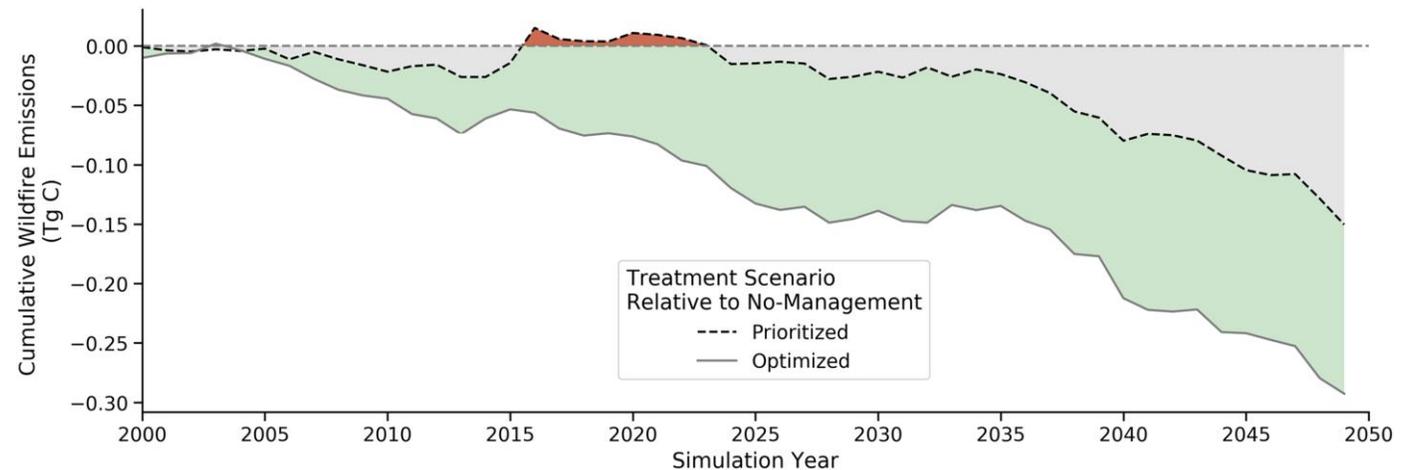
- Prescribed fire typically consumes less fuel
- 37% reduction in New Mexico



Wiedinmyer and Hurteau 2010

# Management changes the way fire burns

- Restoring frequent fire to forests reduces emissions relative to severe wildfire



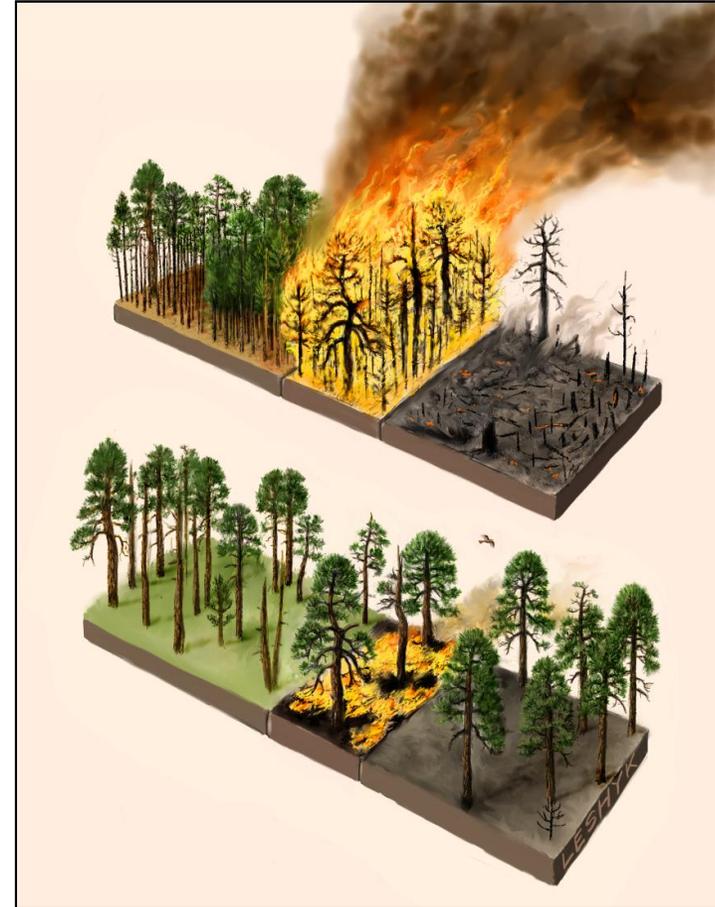
Krofcheck et al. 2019

# Human health impacts are dose dependent

- Respiratory hospitalizations increased 0.25% and respiratory emergency department visits increased by 0.36% per additional 1 microgram per cubic meter of particulate matter in wildfire smoke (Gould et al. 2024)

# Smoke = area burned x amount of vegetation burned

- We can manage the:
  - Amount of fuel
  - Structure of fuel
  - Timing of ignition
  - Area burned
- We can reduce the dose and reduce the health impacts



# References

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